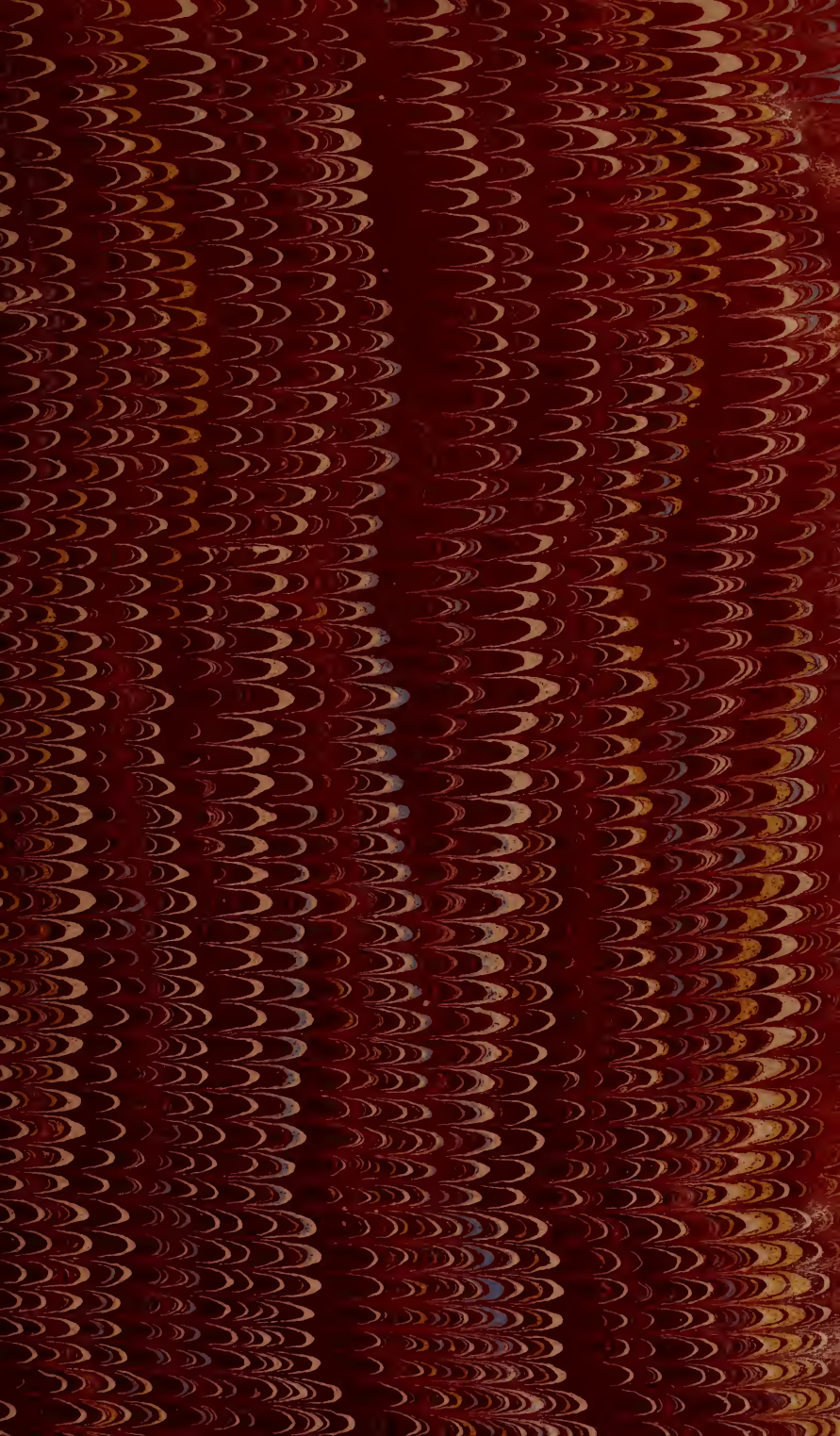


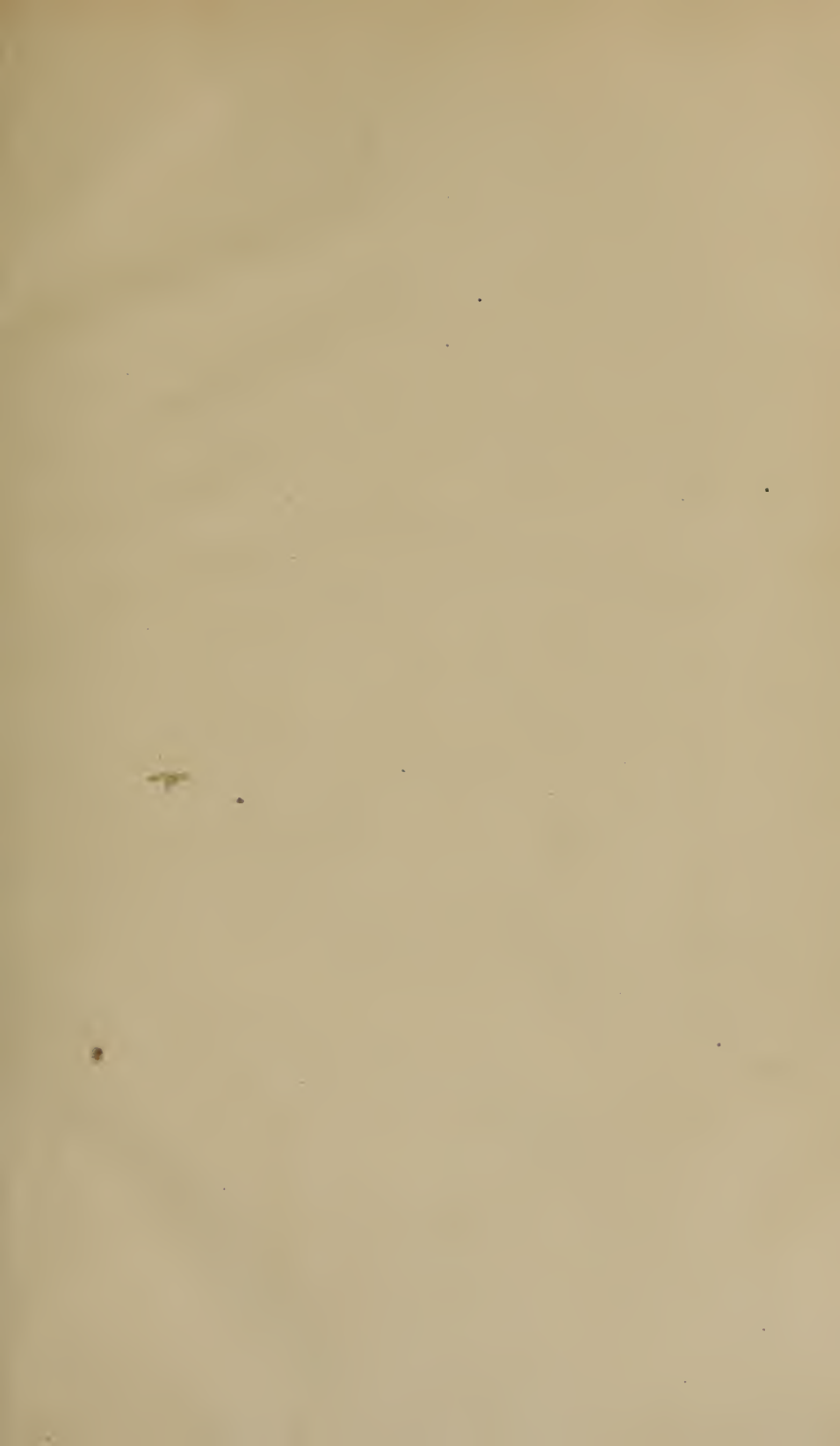
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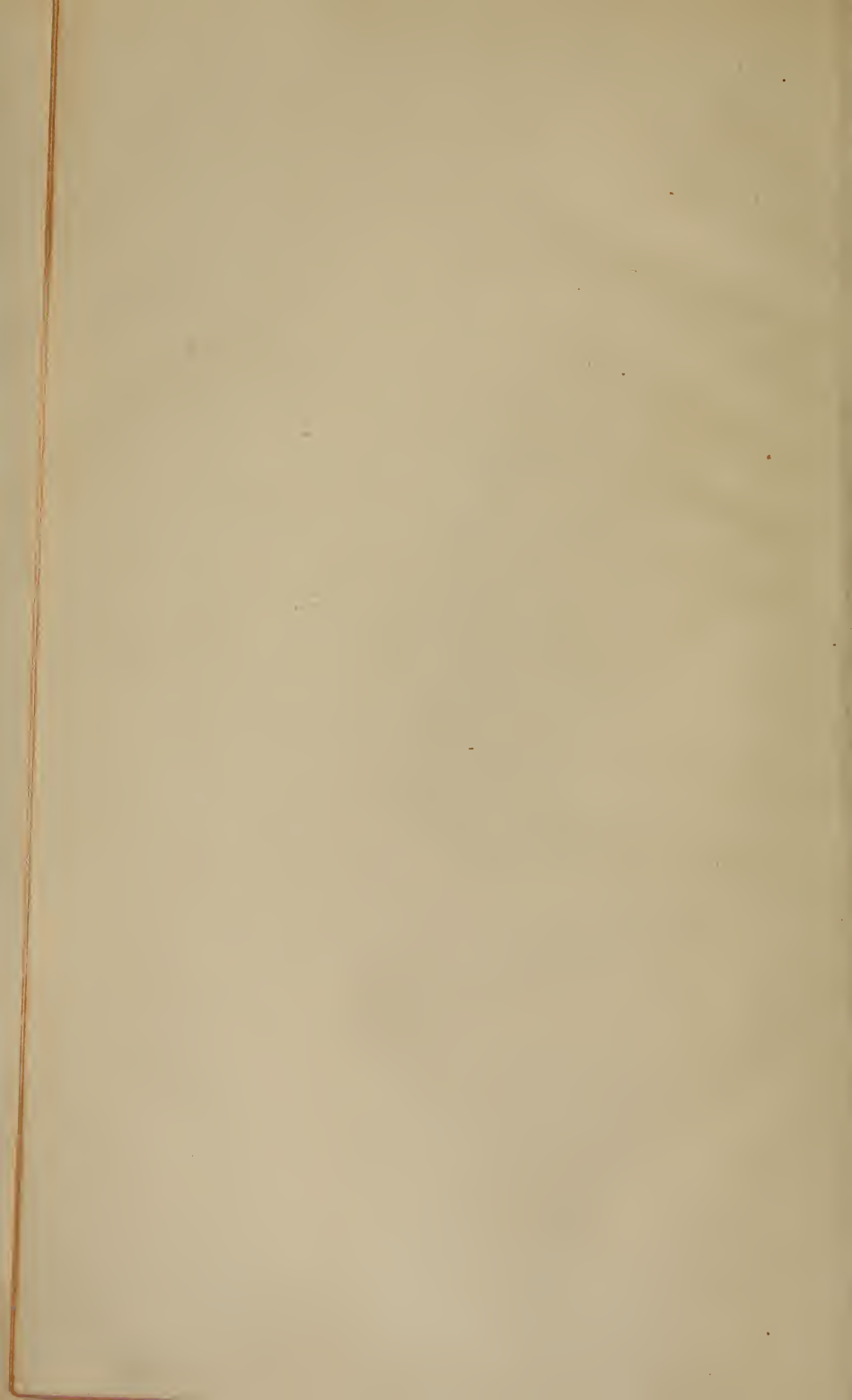
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J. E. HARTING, F.L.S., F.Z.S.,

MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION.

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P R E F A C E .

ON reviewing what has been published during the past year in the pages of 'The Zoologist,' it is sad to notice how many fellow-workers and contributors to this journal have been removed by the hand of death. Taking them in the order in which their decease occurred, we have lost from amongst us Mr. E. T. Booth, whose famous museum at Brighton forms the subject of a notice in the present number; Mr. John Henry Gurney, of Northrepps, Norfolk, the great authority on raptorial birds from every quarter of the globe; Mr. W. S. Dallas, the Assistant Secretary of the Geological Society, and *quondam* Editor of the 'Popular Science Review'; Professor William Kitchen Parker, one of the ablest anatomists and physiologists of the day; Mr. Cecil Smith, of Bishop's Lydeard, near Taunton, author of the 'Birds of Somersetshire'; and, quite recently, Mr. John Hancock, of Newcastle-upon-Tyne, a well-known ornithologist and skilled taxidermist, of whom, in the present number, our readers will find a biographical memoir. Each has left his mark in his own particular line of research, and the nature and extent of the contributions of each to zoological science may be estimated from the obituary notices which have appeared in this journal during the past twelve months.

Amongst the many interesting and useful articles which have been published in 'The Zoologist' since the 1st January last, special mention may be made of Mr. W. Eagle Clarke's account of the Birds of Jan Mayen Island; Col. Feilden's contribution on the Mammals of Barbados; the reports of Messrs. Southwell and A. H. Cocks on the Seal and Whale Fisheries; Mr. Ussher's description of the breeding of the Crossbill in Ireland, Mr. Cordeaux's account of the former haunts of the Ruff and Reeve in Lincolnshire, Mr. Gurney's

papers on the Pine Grosbeak, and Crested Tit, and Mr. Witchell's ingenious papers on the Evolution of Bird-song (pp. 233—246, and 283—288). Mr. Christy's Catalogue of local lists of British Birds, which appeared in the number for July last, will be of great utility to all students of the British *Ornis*, and we are glad to learn that the author contemplates its republication with some important additions.

An unusual number of ornithological works have appeared during the past year. Commencing in January last with the Crown Prince Rudolph's book, we have received and noticed the following County Avifaunas:—Aplin's Oxfordshire, Muirhead's Berwickshire, Browne's Leicestershire, and Christy's Essex; and have in hand for review the third volume of Stevenson's 'Birds of Norfolk,' edited by Mr. Southwell, and Graham's 'Birds of Iona and Mull.' In regard to exotic zoology, another volume of Blanford's 'Fauna of British India' has made its appearance; Backhouse's 'European Birds'; and Seebohm's 'Birds of Japan' (which we have still to notice); while attention has been already directed to another volume by Mr. Seebohm on the 'Classification of Birds,' and to Mr. Waterhouse's useful 'Index Generum Avium.'

The careful out-of-door observations which continue to be forwarded to us by many country contributors furnish a subject for congratulation, and lead us to hope for a continuance of such communications. Amongst the species observed for the first time in Great Britain during the past year may be noted *Ardea virescens* (pp. 105, 181), *Ægialitis asiatica* (p. 311), *Æstrelata torquata* (p. 454), and *Icterus baltimore* (p. 457), while in Ireland Mr. A. G. More has noticed the first occurrence of the Barred Warbler, *Sylvia nisoria* (p. 310). It is to be hoped that the Committee of Irish ornithologists, whose good intentions were announced in 'The Zoologist' for April last (p. 145), will receive that cordial support and assistance which alone will enable them to carry out the scheme they have in view.

On our own behalf, we would beg of our readers to make known 'The Zoologist' to their friends, and invite them to give it their support. The field of Zoology is a large one, in which there can be hardly too many workers, and the utility of placing observed facts on record can scarcely be over estimated.

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PLATE I. (PORTRAIT OF THE LATE JOHN HANCOCK) *to face page 241.*



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THE BIRDS OF JAN MAYEN ISLAND.*

COMMUNICATED, WITH ANNOTATIONS, BY W. EAGLE CLARKE, F.L.S.

Corresponding Member of the Ornithological Society of Vienna, &c.

[THE following is a translation of a paper, communicated to the Ornithological Society of Vienna, giving the result of the observations made by Dr. Fischer during the sojourn of the Austro-Hungarian Expedition in Jan Mayen, as an integral part of the great scheme of International Circumpolar Stations.

Of the Ornithology of this remote island but very little seems to have been known prior to the visit of this expedition, and this, together with the fact that it occupies a sort of central position among the lands of the European Polar Region, make it at once a country of considerable importance and interest to the naturalist.

Situated between $70^{\circ} 49'$ and $71^{\circ} 8'$ of N. latitude, and $7^{\circ} 26'$ and $8^{\circ} 44'$ W. longitude, Jan Mayen is 600 miles due north of the Faroe Isles, 800 miles due west of the North Cape of Scandinavia, 350 miles east of Greenland, and 400 miles north-east of Iceland, and nearly midway between that island and Spitzbergen.

Regarding its physical features, it is much to be regretted that so little information appears to be available to us, though doubtless this expedition was the means of furnishing much that

* 'Vögel von Jan Mayen.' Gesammelt von Dr. F. Fischer, Arzt der österreichischen Expedition auf Jan Mayen. Bearbeitet von Dr. F. Fischer und August von Pelzeln. Mit einer Tafel. (Mittheilungen des Ornithologischen Vereines in Wien, Jahrg. 10, nr. 17 und 18 (July 15th and August 1st, 1886).

is interesting on the subject; but to this the writer has not had access. The only accounts in English, it is believed, are those of that learned whaling-Captain W. Scoresby, Jun., in his 'Account of the Arctic Regions,' (1820, i. p. 154, *et seq.*), and the still slighter sketch given by Lord Dufferin in that charming book, 'Letters from High Latitudes.' Scoresby spent some hours in the N.E. portion of the island on the 4th of August, 1817, and also surveyed the east coast line. From his observations Jan Mayen is in length about 30 miles from N.E. to S.W., and is nowhere more than 9 miles in breadth. It is situated on the edge of the polar pack, which in the winter and early spring extends from the east coast of Greenland in a N.E. direction, and is usually surrounded by ice in the spring. The coast on the north and east and part of the west consists of a kind of wall, generally precipitous and inaccessible, and with but few stretches of beach for landing upon. On the N.E. coast are three very singular glaciers occupying recesses in the cliff, here 1284 ft. high and nearly perpendicular, extending from the base of Mount Beerenberg down to the water's edge, and have the appearance of immense cataracts congealed instantly by intense frost. In general appearance Jan Mayen is strikingly like Spitzbergen both in colour and character. The small portion of the island explored bore evidence everywhere of ancient and recent volcanic action. Two volcanos were discovered in close proximity,* and fragments of lava were numerous, and blocks of burnt clay occurred in abundance, whilst the sand on the beach was a coarse black mixture of iron-sand, augite, and pyroxene. The most remarkable feature of the island is the wonderful mountain Beerenberg, or Bear Mountain, which rises at the northern extremity of the island almost perpendicularly to a height of 6870 ft. This, Scoresby says, sinks every other object into comparative insignificance, since it rises in majestic importance into the region of perpetual frost, and he was able to see it from the deck of his vessel when at a distance of from 95 to 100 miles. Plants were found to be scarce, and a considerable distance was travelled before the least sign of vegetation was encountered, but afterwards, scattered among the volcanic minerals,

* Scoresby and other whaling-captains saw one of these volcanos on Jan Mayen in action in the spring of 1818,

were found tufts in full bloom. Among the plants recognised were *Rumex digynus*, *Saxifraga tricuspidata* and *oppositifolia*, *Arenaria peploides*, *Silene acaulis*, and *Draba verna*. Near the sea-shore the burrows of Foxes were seen, and traces of their feet below high-water mark, but none of these animals were met with. The feet-marks of White Bears, and probably of Reindeer, were also perceptible. The birds were not so numerous as Scoresby anticipated. He saw Glaucous Gulls, Fulmars, Puffins, Guillemots, Little Auks, Kittiwakes, and Terns; several cetaceous animals, principally of the species *Balæna physalis*, but no Mysticetæ.

On the 4th of August, 1817, all the highlands were covered with snow and ice, and the lowlands—in whose valleys and deep cavities large beds of snow had been collected—still retained part of their winter covering down to the very border of the sea.

It now remains to say a few words regarding the experiences of the Austro-Hungarian Expedition, which spent thirteen months on this inhospitable island. The following particulars have been culled from the 'Proceedings of the Royal Geographical Society' for the years 1883—5:—The party consisted of fourteen persons, under the command of Lieut. Emil von Wohlemuth, of the Imperial and Royal Navy, two other naval officers, Dr. Fischer, to whom we are indebted for this valuable contribution to Arctic Ornithology, and fourteen sailors. The Expedition embarked in the war-steamer 'Pola,' and left Pola on the 2nd of April, 1882. Owing to the large amount of ice encircling Jan Mayen in the spring of that year, the first attempt to land the party proved unsuccessful; but on the second attempt the Expedition was safely landed on the 13th of July, 1882. The position of the observatory and station was in 70° 59' N. lat. and 8° 28' W. long. Among the experiences of the winter the most remarkable were the violent northerly storms. Snow began to fall heavily in the latter part of August, but the cold was not severe until November. In December the island was surrounded on all sides by ice, and in January the cold reached 25° 6' below zero of Fahrenheit. The temperature was less severe than was expected, but the storms were terrific: the waves washed over all the lower-lying parts of the coast, and carried drift-wood and loose blocks of ice far inland, great ice-masses being cast up and

stranded near the observatories, which were 250 paces distant from the sea. The snow was 7 ft. deep in the neighbourhood of the station, and when the thaw commenced in spring all excursions were stopped, on account of moving snow and water, and the cascades leaping from the cliffs were magnificent sights. The party re-embarked on board the 'Pola' on the 6th of August, 1883, after spending over a year on Jan Mayen without any casualty, and having been completely successful in attaining the objects for which it was sent out.—W. E. C.]

Bird-life is comparatively well represented, but only sea-birds breed there regularly, and in considerable numbers.

Of Birds of Prey only the Iceland Falcon [“*der Isländerfalke*”] (*Falco candicans*), the Peregrine (*Falco peregrinus*), and the Snow Owl (*Nyctea nivea*), were observed.

The Falcons only showed themselves in spring and in the first summer weeks, and appeared to feed on the arriving migratory birds; later on, after the appearance of the large Gulls, they were driven away by these pugnacious birds appearing in considerable numbers.

A remarkable phenomenon is the occurrence of some migratory birds at Jan Mayen, particularly the insectivorous birds. The following, *Erithacus rubecula*, *Saxicola œnanthe*, *Turdus pilaris*, *T. musicus*, *Motacilla alba*, *Anthus aquaticus*, were obviously in the act of their spring migration.

S. œnanthe is known to wander as far as Greenland; the other species (with the exception of *Motacilla alba*, which is observed singly in Greenland), have so far not been observed in that country, nor in Spitzbergen nor Novaya Zemlya. It is supposed from this that these migrants are driven by storms on to Jan Mayen during their passage to Scandinavia or Iceland, a supposition which is confirmed by the fact that these birds arrived with southerly winds.

The appearance of a Blackbird at Jan Mayen on the 23rd of December was inexplicable. These birds had without doubt long ago gone south from the northern breeding-places in Scandinavia and perhaps Iceland. Whence, then, could this lonely wanderer in the middle of winter have come? It is also inconceivable that the bird could have sojourned for any considerable time on Jan Mayen, for on this island in winter it could not find

any nourishment at all, and must consequently have perished within a short time of its arrival.

Linota hornemanni is a true arctic species, which is known in Greenland as a resident, and beyond that only in Spitzbergen, Iceland, and now in Jan Mayen.

The appearance of two species of Bunting is not in the least surprising, as these almost belong to the high north, although only the Snow Bunting, which appears in large numbers, breeds on the Island, while a single example of the Lapland Bunting was found in a flock of Snow Buntings.

The shore-birds, those voyagers of the air, of which many are almost cosmopolitan, and in the enviable position of spending summer in Greenland, Iceland, Spitzbergen, or Kamschatka, the winter in Africa, the Sunda Isles, or the Moluccas, have also their representatives on Jan Mayen, even if, as it appears, only on migration. Thus *Charadrius auratus*, *Ægialitis hiaticula*, *Strepsilas interpres*, *Numenius phæopus*, *Tringa maritima*, *T. cinclus*, *T. schinzii*, and *Charadrius arenaria* are found on the island.

Remarkable is the appearance of *Rallus aquaticus*, the most northern occurrence of this bird.

Largely represented both in species and in individuals are the Swimming Birds, which (with exception of the Storm-bird, *Fulmarus glacialis*, that, with short intervals, remains throughout the winter) spend only the most favourable period of the year on the island, and breed there. It is these species which are met with in North Scandinavia, Novaya Zemlya, Greenland, and Spitzbergen, and in part also breed there. That we were not so fortunate as to obtain eggs of birds breeding on the ground is explained by the fact that the low level places are at all times accessible to the Arctic Fox.

The observations made by me [Dr. Fischer] at Jan Mayen are reported word for word; my colleague [Herr von Pelzeln] having taken upon himself the task of reproducing in an unaltered form the notes made on the spot.

The species of birds observed on Jan Mayen have been tabulated in a summary, along with the species occurring in the high north (Smith Sound and North Polar Basin, Greenland, Iceland, Spitzbergen, Novaya Zemlya, including Waigatsch). [It has not been thought necessary to reproduce this long list of species.—W. E. C.]

Falco candicans, Gm.—Male shot 7th of May. Iris brownish black, bill and feet light bluish white. In its stomach were found three small birds' bills, feathers, and bones. On the 9th April we saw the first Iceland Falcon, which dropped on to the Snow Buntings in front of our station. Three appeared at once on the same day; we fired at them without killing any. Wind blew on this day from S.E. with great strength. On the 7th of May I shot a Falcon, which was unfortunately very dirty. These birds now appeared oftener at the station. On the 10th of May another Falcon appeared, and, although we received him with two shots, and although he lost his right "flag-feather," he appeared two hours later, being recognisable by this defect. A volley received him at thirty yards, when he flew away, but came again twice the same day. May 11th: The Falcon was here again.

The Burgomaster Gulls [*Larus glaucus*], which, in the spring, visit their breeding-places on the bird-hills, always attack the Falcons, and, after a long fight in the air, force them to beat a retreat.

In May and June the Falcons appeared pretty often at the station, where they helped themselves to the Snow Buntings, which we attracted to the station by scattering food. With the disappearance of the Snow Buntings the Falcons also left the island. The example procured is very similar to the specimen figured in Naumann's 'Birds of Germany,' Appendix, plate 390, fig. 1; but on the back and wing-coverts the spots are a little larger. [From the geographical position of Jan Mayen it is probable that both the Greenland and Iceland Falcons visit the island. The bird obtained belonged to the former species.—W. E. C.]

Falco peregrinus, Gm., Peregrine Falcon.—Early on April the 6th a Peregrine swooped down upon the Buntings at the station. Before I returned with my gun he had already got off with his prey. Another Peregrine appeared at the station on April 25th. The Imperial Museum in Vienna possesses a Peregrine which came from the south portion of Novaya Zemlya, captured during the northern journey of Count Hanus Wilczek, in 1872. [The occurrence of this species in Jan Mayen is interesting, for it is usually believed not to have occurred in Iceland. In 1884, when in Iceland with Mr. Backhouse, we had

described to us a Falcon which had bred in the cliffs of the Fljotsdalsheii, which we could only assign to this species. It is not known to have occurred in Spitzbergen. The American ornithologists do not include the type as a Nearctic boreal bird, but the race *F. peregrinus anatum* (Bonap.) has a high range, and is doubtless the species said to have a high northern breeding range in Greenland.—W. E. C.]

Nyctea nivea, Daudin, Snowy Owl.—The Snowy Owl was often and in different situations observed on the island, where it winters. We failed, however, to shoot one. We saw the first on 19th October, 1882. In the uncertain light prevailing at the time it was at first taken for a Burgomaster Gull. Its mode of flight, however, struck me as peculiar, and we soon had an opportunity of convincing ourselves that we were dealing with a large Snow Owl. It flew around our station for many days, being attracted by the poultry, but did not come within shot. On the 13th December, when returning from skating, we saw what appeared to us a smaller kind of Owl, which swooped down upon the dogs. I had no gun,—in fact, nothing in my hands,—otherwise I could have killed it when it was at a distance of barely three metres, hovering for several seconds at one place over the dogs. I ran to the house for my gun: on my return I saw the Snowy Owl sitting on a large stone block by the north lagoon. I went up to her and shot at her breast as she was sitting there at a distance of fifty or sixty paces, but she flew away, although hit. On the 7th of January an Owl was seen. On the 14th of March a Snow Owl was sitting on the top of the sailor's grave; the dog ran up to it and frightened it away. Our search for the bird was unsuccessful, it being half-past eight in the evening, and already pretty dark. In April, May, and June the Snow Owl was repeatedly seen, sometimes on the ice, sometimes on land. Under the Beerenberg many feathers of the Snow Owl were found; the bird was also seen there once. In winter, and especially in the first weeks of spring, which brought very cold weather and closed ice, all the birds drew off, and one could then see the Snow Owl tugging away for hours at a hard-frozen bird, mostly the remains of fox-meals. As Jan Mayen is not inhabited by any small Mammalia, the food of the Snow Owl on this island consists only of birds. In spring and autumn the exhausted migratory birds offer prey easily to be obtained. In summer the

young birds falling from the nests, and the birds killed by stones loosened by the process of thawing, afford a plentiful supply of food.

Erithacus rubecula, L., Redbreast.—Male shot 5th of May. On May 6th I again saw a bird of this species. [This must be regarded as the most north-westerly occurrence of this species. It has not, I think, been recorded for Iceland or Greenland.—W. E. C.]

Saxicola œnanthe, L., Wheatear.—At the beginning of May the first Wheatears appeared. On the 4th of May the first specimen was shot. Although the number of individuals was large, the birds only showed themselves singly. As the tide ebbed, these birds, in company with Sandpipers and Plovers, collected small crabs, and other marine creatures on the shore. In summer we saw a specimen off and on until we departed from the island. On a comparison of specimens from Jan Mayen with the series in the Imperial Museum, *viz.*, a male of Herr Moschler's from Greenland, several specimens from Austria, two of von Heuglin's original specimens of his *Saxicola frenata* out of N.E. Africa, and lastly, with five specimens obtained by Emin Bey from Central Africa (Lado and Redjaf, February, March, October), complete accord showed itself, and the northern specimens are coloured quite as intensely as those which spring from the heart of Africa.

Motacilla alba, L., White Wagtail.—On the 17th of May I noticed the first Wagtails, of which two were shot. These birds were only to be seen for a few days on the island. The specimens obtained agree perfectly with the representations given by Naumann in his 'Atlas,' tab. 86, fig. 1, male in summer plumage.

Anthus arboreus, Bechstein, Tree Pipit.—I only saw one specimen of the Tree Pipit on the first days of July; the same is now in the collection brought home. [The Tree Pipit has not been recorded for Iceland or Greenland, but occurs in the far north of Scandinavia. The Meadow Pipit, however, is a common summer visitor to Iceland, and occasionally visits Greenland.—W. E. C.]

Anthus aquaticus, Bechstein [= *A. spipoletta*, L., Water Pipit.]—Two specimens were observed and shot in the first days of June. In plumage they agree with the young bird (Naumann's plate 85, fig. 4). [*Anthus aquaticus*, Bechstein, is a synonym of *A. spipoletta* (Linn.), a bird whose northern range in Europe does

not extend much beyond the central portions of the Continent. It is most probable that the birds obtained in Jan Mayen belonged to the Red-breasted form of the Rock Pipit (*A. obscurus*), a bird which is common in Northern Europe, and also in the Faroe Isles, though unrecorded, it is thought, for Iceland. *A. ludovicianus* occurs and breeds in Greenland.—W. E. C.]

Turdus pilaris, L., Fieldfare.—On the 4th and 5th of May several specimens were observed, and four of them shot. [This bird has occurred once in Iceland, in December, 1885 (Gröndal, 'Ornis,' 1886, p. 357), but is not known to have occurred in Greenland.—W. E. C.]

Turdus musicus, L., Song Thrush.—This was met with in the month of May in fair numbers, but always singly or in pairs. We never heard the song of this bird at Jan Mayen. [I think it is probable that the Redwing (*T. iliacus*) is meant. This bird is a summer visitant to Iceland, and has occurred accidentally in Greenland. The Song Thrush (*T. musicus*) is unknown in both these countries, and, although it occurs in the extreme north of the Scandinavian Peninsula, yet it is scarcely probable that it would occur in some numbers in Jan Mayen.—W. E. C.]

Turdus merula, L., Blackbird.—On the 23rd of December, 1882, a Blackbird appeared at our station, and, although we had had snow-fall for weeks, it hopped about quite cheerily, until it was shot for the collection; a male after the first moult, with black plumage drawing into slate-grey, and with black beak. [The Blackbird has occurred several times in Iceland, and on two occasions in December ('Ornis,' 1886, p. 357, and 1887, p. 157), but has not been known to breed there.—W. E. C.]

Linota hornemanni, Holb., Greenland Redpoll.—Individuals of this species, as well as pairs, appeared in the autumn months, and also off and on in May and June. They disappeared, however, on the same day on which they showed themselves. Several specimens were obtained, but only one well-shot was brought home. The characteristics distinguishing this species from its near allies have been very fully defined by E. F. von Homeyer in the 'Journal für Ornithologie,' 1879, p. 182. In that paper Greenland only, and, according to Dresser, Spitzbergen, is given as its habitat. The Imperial collection at Vienna possesses two specimens of *L. hornemanni*, stated to be from Iceland, and obtained by Herr Einbeck in 1829.

Plectrophanes nivalis Snow Bunting.—We observed the first Snow Buntings on the 7th of September, 1882. At the commencement they were to be found on the southern slopes of the mountains, where not only a richer vegetation, but also plants more beautifully developed, and bearing much seed, are to be met with. From the beginning until the 15th of October these birds were to be seen on the edge of the shallow trough-shaped puddles which lie around the southern lagoon, whither the frequent storms blew the seeds, which, after the drying up of the water, were left deposited on the edge or bottom of the pool; at this time, too, the Snow Buntings were to be seen on the steep “bird-walls,” in the fissures of which, richly covered with guano, there flourishes a luxuriant vegetation. All the specimens shot in the autumn were very fat and variously coloured. After the 31st of October these birds were no longer observed. From the 18th to 24th of February, 1883, Snow Buntings were again seen, although mostly singly. In the month of March Buntings were to be seen during every fairly long excursion. From the 25th of March onwards one saw already flocks of from five to fifteen specimens together. At the end of March these birds were to be seen in large numbers, especially around the station, where they always found nourishment. A stop was put to the shooting of Buntings, but in a couple of days we caught about thirty by a very primitive method. May 10th, 1883: although as many as twenty Buntings were daily found frozen near the station, about sixty were still to be seen, which were fed several times daily. Until the 10th of May it was continuously cold—stormy winds, snow-fall, and snow-drifts. Snow Buntings were to be seen until right into July. A pair appeared to breed on the island; the male came daily a few times to the station, flying with song from stone to rock; our only song bird cheered us with his song,—but even this last one fell a victim to a Falcon. I was not able, by any means, to keep imprisoned Snow Buntings alive. They certainly took food immediately on the first day, but succumbed nevertheless sooner or later,—at latest in three weeks. The specimens brought home showed every degree of change in plumage, starting from the immature dress to that of the adult bird in full plumage.

Plectrophanes calcarata, Pall., Lapland Bunting.—A single

bird of this species was seen on the 17th of May, in a flock of Snow Buntings, and killed. It was in its most beautiful summer plumage. [Though breeding throughout Greenland, this species is rare, seldom seen in Iceland, and is not known to have occurred in Spitzbergen.—W. E. C.]

Vanellus cristatus, M. & W., Lapwing.—About thirty birds of this species flew across the island, at a considerable height, on the 8th of April [1883]. An exhausted Lapwing fell down under the Bird Cliff; it was in full summer plumage. Beyond a pair known as coming from Greenland, this would probably be the most northerly appearance of this bird, which generally only reaches southern Iceland. [This species occasionally wanders to both Iceland and Greenland.—W. E. C.]

Charadrius auratus, Bechst., Golden Plover.—As we were returning towards evening on the 29th of June from a boat excursion, we found a pair of Plovers off Mary Muss Bay, both of which were killed; these were the only specimens we saw. According to the time of year at which we met with these birds, one might suppose that they bred on Jan Mayen. We can, however, say positively this was not the case; we have scoured the island so often that it seems to me simply impossible that this bird should have been overlooked. Holboll ('Fauna Grönlands,' p. 27) remarks that this species is very rare in Greenland, and, according to his views, does not breed there. From the white axillaries, it appears that the specimens brought back from Jan Mayen belong to the European form of Golden Plover. [It breeds annually in Eastern Greenland, and in Iceland is one of the commonest summer birds.—W. E. C.]

Ægialitis hiaticula, L., Ringed Plover.—In July and August, 1882, very rare; observed very often at the end of August and in September, generally in companies of four to six, and in pairs. One could approach them easily to within fifteen paces. In spring, 1883, they appeared in great numbers; and in May, June and July they were met with so numerously that we could often have a meal of them. In spite of the fact that the Ringed Plover was always to be seen, with only very short interruptions of a few days, we failed to find any evidence of its breeding in Jan Mayen. It appears throughout the whole of the high north, with the exception of America. [Breeds on both coasts of Greenland.—W. E. C.]

Streptopus interpres, L., Turnstone. — Two specimens in summer plumage were shot on the 27th and 31st of May. Three others in winter plumage were shot in September, and a young bird on the 2nd of that month. Appeared on the spring migration for several days in the month of May, and in the autumn migration during the first days of September. This species is widely distributed throughout the high arctic regions, and breeds also in Greenland, from which country it was probably shaping its course across Jan Mayen, since young birds were seen among the migrants.

Numenius phaeopus, L., Whimbrel. — This bird was not very often seen in the month of June, and was generally met with in pairs. Judging by the remains found, it appears frequently to fall a prey to the Arctic Fox. Although I noticed for a long time a pair which sojourned amongst the drift-wood at the north lagoon, I could not convince myself that they nested there. One day I found only a feather, and a part of the head with the beak. Hölboll obtained this species in the South, as well as in North Greenland. [The Whimbrel is a common bird during the summer in Iceland. It is only of occasional occurrence in Greenland, and one was picked up, though long dead, in Spitzbergen, but may have been carried there on the ice.—W. E. C.]

Tringa cinclus, L., Dunlin. — Met with in June and the beginning of July in flocks of as many as ten individuals, also in company with *Æ. hiaticula*, and was not very shy. Male shot on the 15th of June, and female on the 16th. According to Heuglin ('Ibis,' 1872, p. 62), common in September, in Novaya Zemlya: according to Fabricius and Reinhardt, *T. cinclus* appears in Greenland. It is remarkable that the specimens which were shot on Jan Mayen in June were not in summer plumage, but showed a youthful-looking dress; they differ, however, from the average European young birds by a darker—in fact a blacker—shade on the upper parts. Two specimens, obtained by Graf Wilczek in Novaya Zemlya, agree perfectly with those from Jan Mayen. Since, as Naumann asserts, some individuals of *T. cinclus* still wear winter plumage in their spring migration, the above-mentioned northern specimens may be regarded as birds which have started for their summer quarters before putting on their gala dress. The transition to the nuptial dress with

this species appears to consist in the feathers of the upper side becoming almost black instead of grey, with not very conspicuous whitish or rust-coloured edges.

Tringa schinzii, Brehm. — Seen on Jan Mayen in large numbers at the end of May, June, and beginning of July, mostly in companies of about fifteen, with other allied species. In autumn, towards the end of August, this bird appeared mostly in pairs or in small flocks, and remained on the island until the middle of September. It was not at all shy, and formed a much appreciated dish on our table. *T. schinzii* could always be distinguished at a distance from *Tringa cinclus* by its yellower back, and by its markedly smaller size. According to Hölboll and Paulsen, *T. schinzii* breeds in Greenland in the Julianshaab district ('Fauna Grönlands,' p. 89). [*Tringa schinzii*, Brehm, is regarded by British ornithologists as a small race of the Dunlin (*T. cinclus*, Linn.).—W. E. C.]

Tringa maritima, Brünnich, Purple Sandpiper. — The first observed on Jan Mayen appeared at the end of August, and in September, and during the autumn migration sojourned partly in pairs and partly in small companies. This species of *Tringa* appeared on the island in the spring migration at the end of May and in June, and was to be seen, like most of the allied species, on the shore, and more especially in the neighbourhood of the mouths of brooks. This species winters generally in northern latitudes, and travels only to a small extent into southern regions—exceptionally, as Finsch indicates (II. Deutsche Nordpolarfahrt, p. 207), as far as the Cape of Good Hope.

Calidris arenaria, L., Sanderling. — This bird appeared in autumn, at the end of September, mostly in companies of from three to six individuals, and was to be seen up to the middle of October: during the spring migration, although not so numerous as the allied species, it visited the island in May and June. It was so tame as to be easily surprised by the Arctic Fox. Of this species, which breeds in the Arctic regions of the New and Old World, a specimen was killed in the month of June, which differs from the others in its smaller size, and carries the youthful plumage as represented by Naumann (plate 182, fig. 3). As in the month of June no young birds could be expected to be met with, the one obtained must be looked upon as a bird which had remained behind from the previous year.

Rallus aquaticus, L., Water Rail.—On the 15th of October a Water Rail was captured, surprised in the evening in its hiding-place. It was pretty cheerful, but, as it was difficult to keep alive, it was converted into a skin. The Water Rail in Europe certainly goes pretty far north. It has been observed in Norway, on the Orkney Islands, Färoes, and Iceland, and is said to winter in the neighbourhood of hot-springs in the last-named island. The specimen caught on Jan Mayen on the 15th of October may perhaps be the most northern specimen hitherto collected. [This species breeds in limited numbers in Iceland.—W. E. C.].

Bernicla brenta, Pall., Brent Goose.—I only saw one bird of this species, on the 23rd of May, at sea. It found its way into our collection.

Harelda glacialis, L., Long-tailed Duck.—On the 7th of December I saw a specimen at sea, and shot it. In spring, and up to our departure from Jan Mayen, a pair were to be seen on and off. A pair took up their abode almost daily, in the afternoon, on the fresh-water lagoon near our station; they were, however, so shy that it was impossible to get within shot. I could not find the nest of this duck. It differs from the young birds represented by Naumann, the brown being spread more widely on the sides of the head.

Somateria mollissima, L., Eider Duck.—In Tromsö we saw this species of duck in such numbers that it is difficult to believe that it was formerly still more numerous. In the first days of our landing on Jan Mayen until the 14th of August I occasionally saw single specimens of this species, males preponderating, in the north lagoon or neighbouring bight. October 15th, swarms of male Eiders, with which were a few females, passed daily; they were, however, so shy that I could not get a shot. On Dec. 6th I shot a single passing female at sea. In spring the Eiders showed themselves for the first time on the 8th of April, in a flock of forty birds, mostly females and young dark-coloured males, led by a white specimen of the latter sex. From the 3rd of May Eiders were seen in large numbers, and it was also easy, by following the call of the males, to get within shot of the birds sitting on the ice-floes in the fog. The ice-floes pushed by the drift-ice were often covered with hundreds of Eiders. Until our departure from Jan Mayen,

in 1883, they were met with in very large numbers; they were found in fresh-water lagoons and puddles, as well as on low rocks at sea, where they also moulted. Several of these birds attempted to nest, since broken eggs and a nest of Eider-down were found. As happened with all birds breeding in low places, they fell a prey to the Arctic Fox, who can get everywhere in Jan Mayen. Amongst the males shot at Jan Mayen in spring, in May and June, there was found a progressive series of transitions from the brown to the white gala-dress. On two specimens killed on the 30th of June there was a broad white breast-band, of which the individual feathers, however, still showed brownish edges. Various feathers of the back were white, with more or less broad brown edges. Also in the rest of the plumage a more or less strong mixture of white was noticeable. A dark hemming-in of white breast- and back-feathers seems to indicate clearly, as Dr. Finsch has already shown in his second contribution to the 'Avifauna of Greenland' (p. 361), that, in addition to the moulting, discoloration of the plumage has taken place. While, as mentioned, a number of males arrived at Jan Mayen in brown dress, other specimens arrived in full gala-dress. This gala-dress was carried by many specimens until August, when the 'Pola' left Jan Mayen, while others were in full change, so that they were not in a position to fly. The latter showed a pied colouring of the plumage.

Somateria spectabilis, L., King Duck. — In the first days of our sojourn in Jan Mayen I saw a pair of males of this species.

Colymbus glacialis, L., Great Northern Diver. — From the day of our arrival at Jan Mayen I saw this bird swimming about singly in the north lagoon. Both I and Count Palffy shot several times at this Diver, which dived under water every time before the lead told. On the 8th of December the lagoon was already frozen, and the bird gone. On the 11th of January, after the ice had been pushed aside by the E.S.E. wind, I saw a large Diver, but could not decide whether it belonged to this species. From the 24th of May onwards, every time I went to sea I saw "Ice Divers," sometimes singly, sometimes in companies of four, swimming about in sheltered bights. They were also continuously to be found on the fresh-water lagoon. During my boat excursion, lasting fourteen days, towards the southern portion of the island, I daily saw several of these birds moving about in

the bights. New and old foot-prints in the loam were to be seen on the land near the fresh-water puddles, and, as this was the case even up to the end of July, one may correctly assume that this Diver breeds on Jan Mayen. A female bird shot on the 29th of June was in full breeding plumage.

Colymbus septentrionalis, L., Red-throated Diver.—I saw this Diver singly and in pairs, in autumn, in the north lagoons. We also heard now and then the call of this bird (remining one of a human wail) as it flew across the island at a great height. We could not get at one. The continued residence of the same in and near the north lagoon, in a chosen hidden corner, favours the conclusion that this Diver breeds on Jan Mayen. At last I shot one flying across the lagoon. The specimen brought home was obtained on the 10th of June, and proved to be a female in full summer plumage.

Podiceps arcticus, Boie = *Podiceps cornutus*, Gm., Slavonian Grebe.—I saw a single specimen on the 23rd of June, which I shot. Female * * * [description]. [This bird is a common summer visitor to Iceland, but only occasionally occurs in Greenland; its occurrence on Jan Mayen Island is believed to be the most northerly on record.—W. E. C.]

(To be continued.)

NOTES AND QUERIES.

MAMMALIA.

Cat with Eyes of different Colours.—There is at the present time in this village a full-grown white Cat which has eyes of different colours. The iris of one is of the ordinary pale greenish yellow, while that of the other is of a beautiful pale, but bright and pure, cobalt-blue.—O. V. APLIN (Bloxham, Oxon). [White cats with blue eyes are nearly always deaf.—ED.]

Variety of the Field Vole.—A curious variety of the Short-tailed Field Vole (*Arvicola agrestis*) was captured last month in this neighbourhood. The head and back are sand-coloured (like a sandy rabbit), this colour shading off into nearly white on the under parts.—O. V. APLIN (Bloxham, Oxon).

Bears in the Tyrol.—The European Brown Bear, it appears, is not yet extinct in Switzerland. Towards the end of May last many distinct traces of Bears were found in the Randena Valley, Tyrol.

The Moufflon in Hungary.—The Moufflon has taken so kindly to the climate of Hungary that at Ghymes, where Count Forbach has established a colony, they already number 400, and have also spread into other distant properties. The Hungarian Sports Protection Association is on the *qui vive*, and has laid before the Minister of the Interior proposals for the protection of these animals, close times being suggested as follows:—For rams, Nov. 15th to May 15th; for ewes, from Feb. 1st to Sept. 15th.

Grey Variety of the Hare in Dorsetshire.—During the past autumn a curious variety of the Hare was killed on the borders of Hants and Dorset, I believe on the estate of Lord Shaftesbury. The ordinary brown colour was replaced by silvery grey, darker on the back and paler beneath, interspersed with darker but white-tipped hairs, giving it a singularly grizzled appearance. It proved to be a male, and not full-grown.—G. B. CORBIN (Ringwood, Hants).

A Black Variety of the Fox in the New Forest.—Toward the end of July last, just before cub-hunting had commenced in the New Forest, a Fox was seen, which at a little distance appeared to be uniformly black, except the under parts, which were much greyer. Is not this a very uncommon variety in England?—G. B. CORBIN (Ringwood, Hants).

[It may be safely asserted that black or partially black Foxes in England are very rarely met with, or they would be surely detected by the keen eyes of fox-hunters and duly reported. We do not remember more than one such case to have been previously noticed. This was reported by the late Mr. R. F. Tomes, of Welford-on-Avon, who described a Fox which had been killed in Warwickshire as having all the under parts of a greyish black hue. But in this case, as will be observed, the animal could not properly be described as black, but only partially so. Occasionally Foxes are killed in which the tip of the brush is black.—ED.]

Cream-coloured and Black and White Moles.—About the middle of April last several cream-coloured Moles were taken in this neighbourhood, where others have been previously met with, and one of them (the finest I have seen of this colour) was brought to me. The man who caught them informed me that a short time before he had taken a black and white one, but this I did not see.—G. B. CORBIN (Ringwood, Hants).

BIRDS.

Two-barred Crossbill in Surrey.—I am able to record the occurrence of the Two-barred Crossbill (*Loxia bifasciata*) in this neighbourhood. Two specimens, a male and a female, were killed on Frith Hill, less than three

quarters of a mile from the town of Godalming, on the north of it, at a distance of some 300 yards from each other, on November 28th. The former was shot by a gardener named Thomas Groundsell, the latter by James Chandler, he too a gardener; with the male was another bird (possibly the female), which escaped; with the latter was a female Common Crossbill, which also was shot. The birds in both cases were feeding on the seeds of the larch, above 900 of which were taken from the crops of the three. They were by no means wild; indeed, the gun aimed at the two females missed fire three times, the birds scarcely changing their position before the fatal discharge was effected. The comparatively few instances in which this species has visited the British Isles will be accepted as my apology for these particulars. The skins of the birds are in my possession. I observe that 'The Field' of Nov. 30th contains a notice of a flock of White-winged Crossbills near Croydon, out of which two were shot; and that in the impression of the same paper of December 7th a correspondent writes that an immature specimen was shot on August 12th near Easington, in Holderness, Yorkshire. — H. BENSON (Farncombe Rectory, Godalming).

Pied Blackbirds, Rooks, and Jackdaws.—A curiously pied Blackbird was lately caught here. Four of the tail-feathers are white, there is a white patch on each shoulder, and the breast, back, and head are freely spotted with white; the legs and feet of a mottled dirty white colour. Mr. Pratt, of Brighton, tells me that an unusual number of pied and white varieties of Blackbirds, Rooks, and Jackdaws have passed through his hands during the past autumn. He mentioned one specially interesting specimen of a white Jackdaw.—E. P. LARKEN (Gatton Tower, Reigate).

Richards' Pipit and Spotted Redshank in Kent.—I obtained a specimen of Richards' Pipit about the middle of November last. It was caught by a birdcatcher near Dover, but, in pulling the net over, one of the rods struck and killed the bird. I observe that several Spotted Redshanks are recorded in your last number as having been met with in the neighbourhood of Harwich during the autumn. One of the birds was killed near Stourmouth, in this neighbourhood, about the same time, and perhaps was one of the same flight. I saw this specimen, which retained much of the dusky summer plumage. While shooting the woods here, at the end of November, a Great Shrike came out close to one of the guns. My friend, who knows the bird well, said, the day being a bright one, it looked like a gleam of silver as it went past him. It went on to an adjoining cover, but we did not meet with it again.—W. OXENDEN HAMMOND (St. Alban's Court, Wingham, Kent).

Osprey in Middlesex.—Mr. Cooper, the well-known taxidermist, of Radnor Street, St. Luke's, kindly brought for my inspection, on Oct. 22nd,

a fine male Osprey which had been shot the previous day on the river at Barnes, where it had been observed for some time before it could be approached and secured. As may be supposed, the Osprey is not a common bird in the metropolitan county; but as an autumn migrant, going south for the winter, it is occasionally observed at that season fishing in the Thames, or in some piece of water large enough to attract it. I have notes of its appearance and capture at Maidenhead, Laleham (twice), Uxbridge, Ruislip Reservoir, Hendon, Southgate, Enfield, and now at Barnes, always in September, October, and November.—J. E. HARTING.

Osprey in Notts.—One of these fine, but now, alas! rare birds was shot, about the middle of November last by Mr. George Eddison at Shire Oaks Hall, in this county. When he first noticed it, it was hovering over one of the pieces of water near the house, but was being teased by a number of Rooks, who drove it over him, when he shot it. I hear it was a very fine bird, and in good condition. Shire Oaks is just the place to attract an Osprey, having several beautiful sheets of water full of fish of good size, and many species.—J. WHITAKER (Rainworth, Notts).

[What a pity that in a spot so well suited to its habits it could not be allowed to remain unmolested. To see an Osprey catch a fish is one of the finest sights in Nature.—ED.]

Little Gull on the Thames.—Mr. Cooper, of Radnor Street, kindly showed me, while still unskinned, a nice specimen of the Little Gull, *Larus minutus*, which his son had shot the previous day (Oct. 26th) from the Essex shore below Tilbury, at a spot known as Mucking Bight. It was a bird of the year, with the barred shoulders peculiar to its age in the Little Gull, and even more conspicuous in the Kittiwake, *Larus tridactylus*. The legs and feet were of a dull flesh-colour, as in *Larus marinus* and *L. argentatus*.—J. E. HARTING.

Little Gull at Hastings.—Two specimens of the Little Gull (*Larus minutus*) have been obtained recently at Hastings and Rye. One shot near Rye was brought to Mr. Bristowe, naturalist, at St. Leonards-on-Sea, about the last week in November, and the other shot close to Hastings early in the month.—THOMAS PARKIN (Fairseat, High Wickham, Hastings).

Little Gull at Harwich.—An immature specimen of *Larus minutus* was shot in the harbour here on the 4th December. On dissection it proved to be a female. It weighed but $3\frac{3}{4}$ oz. Length from tip of beak to end of tail, $11\frac{1}{4}$ in.; expanse of wing, $26\frac{3}{4}$ in.; length of tail, $3\frac{1}{2}$ in.; length of bill, $\frac{7}{8}$ in.; gape, $1\frac{1}{2}$ in.; length of tarsus, 1 in.—F. KERRY (Harwich).

White Variety of the Little Gull.—On Oct. 29th, 1889, a white variety of the Little Gull (*Larus minutus*) was shot by a fisherman named Leonard Mainprize, about five miles E.N.E. of Flamborough Head, and

was secured by Mr. Bailey for the collection of Mr. John Marshall, of Taunton, to whom it was forwarded in the flesh. Having been sent by him to London to be stuffed, I had an opportunity, through the kind offices of the editor, of seeing it, and comparing it with other specimens in the normal plumage. It is not many degrees removed from an albino, but the terminal bar on the tail is quite visible in a pale shade of brown, showing it is not adult. The occiput and ear-coverts are faintly mottled with the same tint, and the hue of the grey mantle is quite perceptible on the back. The wings above and beneath are pure white, and Mr. Bailey particularly noticed their length and narrowness before the bird was skinned. — J. H. GURNEY, JUN. (Keswick Hall, Norwich).

Dimensions and Weight of the Roseate Tern.—Having received last autumn an adult pair of these beautiful birds from North Wales, it may be of interest to record the dimensions and weight of the sexes:—

	Male.	Female.
Weight	3 oz. 12 dr.	3 oz. 10 dr.
Total length	16 $\frac{1}{4}$ in.	15 $\frac{1}{8}$ in.
Length of wing... ..	9 $\frac{1}{2}$ in.	9 $\frac{3}{8}$ in.
Expanse of wing	28 in.	27 $\frac{1}{4}$ in.
Tail from base to end of centre feather	3 in.	2 $\frac{7}{8}$ in.
„ to end of outside feather	7 $\frac{1}{2}$ in.	6 $\frac{5}{8}$ in.
Length of bill	1 $\frac{1}{2}$ in.	1 $\frac{3}{8}$ in.
„ of tarsus	1 $\frac{1}{4}$ in.	1 $\frac{1}{8}$ in.
Toes, middle	$\frac{7}{8}$ in.	$\frac{7}{8}$ in.
„ inner	$\frac{3}{4}$ in.	$\frac{5}{8}$ in.
„ outer	$\frac{7}{8}$ in.	$\frac{7}{8}$ in.

—F. KERRY (Harwich).

Tree Pipit in North Wales.—Almost every work on British Birds, including Mr. Howard Saunders' recently-published 'Manual,' speaks of the Tree Pipit (*Anthus trivialis*) as a scarce bird in Wales. This, however, is very far from being the case, so far as the counties of Merioneth and Carnarvon are concerned. In both these counties it is very common, probably one of the most abundant of the common migrants, appearing regularly about the 20th of April. It chiefly frequents wet meadow and pasture land in the vicinity of trees and woods, and the alders along the river-banks. Such situations are very numerous in North Wales, and consequently the Tree Pipit finds a congenial home in almost every valley. —G. H. CATON HAIGH (Grainsby Hall, Great Grimsby).

{ **Great Grey Shrike near Harwich.**—A male specimen of this bird was shot here on the 7th December. The stomach contained the perfect foot of a Sky Lark. It is ten years since the last was killed here (see 'Zoologist,' 1880, p. 70).—F. KERRY (Harwich).

Birds of Devonshire.—We are informed that a book with this title, by Mr. W. E. H. Pidsley, of Blue Hayes House, Broadclyst, is in the press, and will be ready for issue to subscribers early in the spring.

Notes from Scarborough.—This part of the Yorkshire coast has been visited by many birds of interest, some in greater numbers than usual, during the autumnal migration and the first few days of December. In the early part of October a Peregrine Falcon and a Buffon's Skua were shot on Scalbyness the same day, both mature birds, the Skua retaining the long tail-feathers. On Oct. 3rd a Great Skua, two Pomatorhine, and a Fulmar were taken out at sea. The remark in Yarrell's 'British Birds' that the Great Skua is "well known to the Yorkshire fishermen," is, I think, a mistake, as the term "Morrel Hen," which in their vernacular I take to mean *Merle* Hen, is applied to all the Skuas without distinction. The Pomatorhine Skua, Great Black-backed, and Glaucous Gulls have been common, some of the two last-named in mature plumage. Little Gulls have been obtained in some numbers, but out of the many only one in winter dress was adult. It was sent from Flamborough Nov. 30th. A Spotted Crake, captured at Flotmanby, Oct. 16th. Four Great Grey Shrikes were seen in October; one taken on board a smack, and two shot. On Oct. 24th a cinnamon-coloured Chaffinch was shot near here. [There is a similar variety of the Chaffinch in the collection of the late Mr. F. Bond.—ED.] On Oct. 28th a Sooty Shearwater was obtained at Flamborough, and another near Scarborough about the same time. A birdstuffer named Benson showed me a Leach's Petrel he had received from Filey on Nov. 3rd. A fisherman brought two Fulmars and a Great Shearwater that had been taken on hooks to Mr. W. J. Clarke on Dec. 4th; this Shearwater appears to be rare on the Yorkshire coast, and this is the only specimen I have seen during my long residence at Scarborough. Numbers of Red-throated Divers were on the coast about the end of November, and a Sclavonian Grebe was obtained on Dec. 5th. I believe the occurrence of the Red-breasted Flycatcher, *Muscicapa parva*, has been recorded already by Mr. Gurney, who determined the species.—ROBERT P. HARPER (38, Esplanade, Scarborough).

Late Stay of the Turtle Dove.—On Dec. 10th I found, in the Metropolitan Market, a Turtle Dove among a number of Fieldfares and Missel Thrushes, which were said to have come from Norfolk. It was apparently a bird of the year, and probably one of a late brood, for there were no black and white feathers on the sides of the neck, nor were the centres of any of the wing-coverts dark. The breast, however, showed the vinous tint, and the feet were redder than is usually the case in young birds. The bird was freshly killed, but was moulting, and unfit for preservation.—ARTHUR H. MACPHERSON (51, Gloucester Place, Hyde Park, W.)

Notes from Rutlandshire.—On Aug. 10:h 1888, I noticed a male Sparrowhawk soaring above the pinetum near the kitchen-garden at Exton Park. This is a seluded spot, and, containing many evergreens, gives shelter to a number of small birds. The hawk was no doubt attracted thither in search of food. The pinetum, indeed, seems to be a favourite resort of these birds, as I have frequently observed them in its vicinity; and it was also close to the same spot that I obtained, in 1886, a female bird of this species, curiously enough in a sieve-trap, while endeavouring to re-capture the lost hawk of a friend, a newly-trained Barbary Falcon, which had gone off in pursuit of a Wood Pigeon on the previous day. The Kestrel, too, may often be seen in this neighbourhood, and its larger and handsomer relative, the Peregrine, has likewise been several times observed of late years at no very great distance. This noble Falcon is, however, I fear, now only a wanderer, though it would be warmly welcomed if it came to stay. Partridges during the summer of 1888 bred fairly well, and there were many coveys of "red-legs," though not so many as in 1887, which appears to have been a jubilee year for the latter species. On Sept. 17th a Grey Wagtail was seen on the brook below the waterfall in the park at Exton, and as I have never seen or heard of the nest of this bird in the county, I always look upon it as a regular winter migrant in these parts. On the 27th of the same month I noticed the hooting of the Wood Owl, which, as the days commence to shorten, is heard oftener and earlier in the day. Both the Brown and the White Owls are, I am glad to say, fairly common about Exton, and I have often heard several of these birds at a time uttering their curious and varying cries together on an autumn evening. The following day (Sept. 28th), while Partridge-shooting near Cottesmore, I saw a Wheatear in a turnip-field near to that village. The bird was shot by a friend who was with me, and is now preserved in my collection. The first Fieldfare appeared on Sept. 29th (Michaelmas Day) and the first Redwing a few days after, on Oct. 9th. On Oct. 2nd there was a sharp white frost, followed by a fall of snow, which lasted throughout the early morning, but afterwards melted away. This caused the Swallows to congregate in large numbers on that day, and a few days afterwards there were none to be seen. The Hooded Crow appeared on Oct. 15th, and the first Woodcock was seen, but not shot, on the 19th. Three days afterwards (on the 22nd) there were some Tufted Ducks on the ponds in Exton Park, and on Nov. 5th a single male Pochard at the same place. On Oct. 16th some Golden Plovers were observed on the wing near Empingham, and on the 18th, while shooting near Whitwell Village, I flushed a Common Snipe in a field of turnips. This, though really a common enough occurrence, is often looked upon as an unusual thing. A "gaggle" of Wild Geese appeared flying southwards on Nov. 23rd near Horn, but at too great a height for the species to be distinguished;

and on the 29th of the same month there was a Jack Snipe on the marsh above the mill-stream, also at Horn. This bird is not often met with in the neighbourhood, though I have seen several in a day; but it appears to be less common now than in former years. A flock of from twenty to thirty Golden Plover flew across the Exton and Stamford road, almost within shot, on Dec. 18th. They were fired at by a gentleman who was standing near with a gun, but seemed to pass uninjured, as none of them fell. The Golden Plover appears to be a mere passer-by in this county, not resting or residing for any length of time, though a few are occasionally found along the Welland River, on the Northamptonshire border, and again near the Ashwell and Whissendine brooks. Three Goldfinches were seen at Shacklewell Hollow, near Empingham, on Dec. 19th, and in Tunneley Wood on the following day, four Woodcocks rose almost simultaneously out of one patch of briars. I have never before known so many cocks rise so close together in any wood about here, where they are generally few in number, and much scattered. The Goldfinch, though not very often observed, is probably fairly common at times in this district. It is much sought after by birdcatchers, both local and professional, some of whom come from a considerable distance to obtain it. On Dec. 21st an immature example of the Tufted Duck, a female, was obtained on the ponds in Exton Park. The weather being very mild up to the end of the year but few migratory ducks were procured.—GAINSBOROUGH (Exton Park, Oakham).

Hybrid Mallard and Shoveller.—In the fourth edition of Yarrell's 'British Birds' it is stated that the Mallard is known to have interbred with the following species:—Egyptian Goose, Shelldrake, Muscovy Duck, American Dusky Duck, Wigeon, Pintail, and Teal. I may add, on the authority of Mr. Mills, of Bisterne House, Ringwood, that in 1875 a hybrid between the Mallard and Shoveller was shot upon his estate. It had the broad bill of the latter, but in the coloration of its plumage more nearly resembled the former.—G. B. CORBIN (Ringwood, Hants).

White-fronted Goose in Norfolk.—A specimen of the White-fronted Goose was shot in the fen-district of Norfolk on November 23rd. It was a solitary bird, and had settled to a gunner's decoy ducks. The cold weather has probably caused a southward movement amongst the wildfowl, as it has on all our winter visitors, which in this district, without exception, are earlier and more numerous than they have been for years past.—A. SMITH (Nordelph, Downham Market, Norfolk).

Uncommon Birds in Devon.—On the 12th September last a specimen of the Hoopoe was shot in a mangold-field near Exeter. It is not, strictly speaking, a rare bird, as almost every year a few are met with in the county, and it has been known to breed here. A Woodcock, with the primary and secondary feathers of the wings pure white, was obtained near

Exeter the first week in November, and a Hawfinch, a very uncertain winter visitor, was also taken, four or five others being seen at the same time.—W. E. H. PIDSLEY (Blue Hayes House, Broadclyst).

Great Spotted Woodpecker in Ireland.—There has been a flight of Great Spotted Woodpeckers over Ireland. Several specimens were received from different localities during the end of October and beginning of November; one from Killkeel (Co. Down), another from Doneraile (Co. Cork), and others of which I have not yet ascertained the exact locality.—EDWARD WILLIAMS (2, Dame Street, Dublin).

Great Spotted Woodpecker in Ulster.—There seems to have been an arrival of Great Spotted Woodpeckers here last autumn. The first one I heard of was shot at Millide, near Donaghadee, Co. Down, on Oct. 31st. It was a male in poor plumage. The second was shot at Gilford, Co. Down, on the 4th November. This one was also a male, and in poor plumage. Three were seen at Gilford, and, I am sorry to say, one was shot; it was being pursued and mobbed by Blackbirds. The third one was shot in the deer-park, Glenarm, Co. Antrim, on the 28th November,—a female bird in good plumage,—and was being pursued by several Thrushes. I saw all three birds in the flesh. It will be observed that in two cases the Woodpeckers were being followed and attacked by other birds. I should like to know if the same thing has been observed in England. It may have been because these birds are uncommon here. The last one I have a note of was shot at Newry, 25th October, 1886.—ROBERT PATTERSON (1, Windsor Park Terrace, Belfast).

Bittern in Co. Down.—A fine male Common Bittern (*Botaurus stellaris*) was shot near Portaferry, Co. Down, on 3rd December. It was discovered in the middle of a bed of rushes near the margin of a small lake, and was put up with difficulty. A pike, 13 in. long, was taken out of its gullet. This bird measured 4 ft. 1 in. across the wings.—R. PATTERSON (1, Windsor Park Terrace, Belfast).

American Bittern in Co. Londonderry.—I recently discovered, in a small birdstuffer's shop here, an American Bittern (*Botaurus lentiginosus*). It was shot on Ballyronan Moss, near Maglurafelt, Co. Londonderry, at the end of October last by a farmer named Lennox; sex not ascertained, I have compared it with the illustration and description in Mr. Howard Saunders's 'Manual,' and, as it agrees in all particulars, there can be no doubt about it. I am glad to be able to record this rare bird.—ROBERT PATTERSON (1, Windsor Park Terrace, Belfast).

The so-called "Martinico Gallinule" in Ireland.—In preparing a new edition of my 'List of Irish Birds,' I have done my best to clear up the doubts which have long attached to a bird picked up dead near Brandon

Mountain, in Kerry. It will be remembered that, in 1846, Thompson, from a description sent to him by Mr. Richard Chute, announced this bird as *Porphyrio hyacinthinus* of Temminck (Ann. Nat. Hist. vol. xviii. p. 311). Mr. W. Andrews subsequently saw this specimen at Chute Hall, where it still remains, and considered it to be the Martinico Gallinule (*Ionornis martinica*), an identification which Thompson accepted as correct, and under this name mentions the bird in his 'Natural History of Ireland' (Birds, vol. ii. p. 331, footnote). Having asked the assistance of Mr. J. C. Neligan, he and Lord Ventry have very kindly interested themselves in the matter, with the result that, a few weeks ago, Lord Ventry brought up to Dublin a bird of his own, which is labelled as having been obtained "in a cabbage-garden near Odooney, on the River Brick, near Ballyheigne Bay, 10th October, 1873," and which, rather to my surprise, proves to be an undoubted example of *Porphyrio smaragnotus*. Lord Ventry further assures me that his bird is identical with the "Martinico Gallinule" preserved at Chute Hall, so that in all probability we must now conclude that the latter also is *P. smaragnotus*, and that Lord Ventry's specimen is a second example of the same species, which, of the two Porphyrios, might have been thought the less likely to occur in Ireland. Mr. Neligan and Lord Ventry very kindly tried to obtain for me the loan of the original specimen, but this was not found possible, as the bird is locked up in a glass case, and the owner was absent from home, so that I could not examine it myself; but it may be added that in Mr. Chute's description, as quoted by Thompson, the bird is described as having the back and shoulders bottle-green, and that Thompson found Mr. Chute's measurements to agree with those of *Porphyrio hyacinthinus* (*cæruleus*), which is a much larger bird than *Ionornis martinica*. — A. G. MORE (74, Leinster Road, Dublin).

Porphyrio smaragnotus and *P. cæruleus* in Ireland.—In addition to the two examples of *Porphyrio smaragnotus* above mentioned under my note on the Irish Martinico Gallinule, and both of which were obtained in Kerry, Mr. J. H. Gurney informs me that there is an Irish specimen of *P. cæruleus*, but unfortunately without date or locality, in the collection of Mr. John Marshall, of Taunton.—A. G. MORE (74, Leinster Road, Dublin).

[Perhaps Mr. Marshall will kindly communicate the history of this specimen.—ED.]

Reported Occurrence of the Black-winged Stilt near Nottingham an error. — I was sorry to let the December number of 'The Zoologist' be published without a letter from me of explanation about the Black-winged Stilt, stated (p. 337) to have been killed at or near Nottingham. Correspondence with Mr. J. Whitaker, of Rainworth, and with Mr. Cording, of Cardiff, has since led me to believe that the Stilt in question was never

killed in England at all, but is a foreign skin. White, the man who, Mr. Cording says, shot the Stilt, is at the present time working for him at his shop in Cardiff. Mr. Whitaker asked a man in Nottingham, who knew White well, and he elicited from him that, so far as he knew, White had not handled a gun for the last two years. Moreover, as this Nottingham birdstuffer knew White well, and was also in the habit of communicating the occurrence of any rare or interesting bird to Mr. Whitaker, it seems highly improbable that the occurrence of such a rarity as the Black-winged Stilt should have been unmentioned. I think it only right that I should at once lay these facts before the readers of 'The Zoologist,' for there is no doubt whatever in my mind that Mr. Cording disposed of a foreign-killed bird as a British one, and I think that such practices (too common with birdstuffers generally, I am afraid) should be immediately exposed, and collectors put on their guard. — DIGBY S. W. NICHOLL (The Ham, Cowbridge, Glamorgan).

American Bittern in Co. Kildare. — An American Bittern (*Botaurus lentiginosus*) was shot on Maddenstown Bog, Co. Kildare, on October 31st last. It is a very rare visitor, having hitherto only occurred six times in Ireland. — R. F. SCHARFF (Science and Art Museum, Dublin).

Protection of Birds on the Farne Islands. — Reporting on the result of the measures taken to protect the sea-birds which resort to the Farne Islands during the breeding season, Mr. H. G. Barclay says:—"I have every reason to believe that the birds were very well protected in 1889. I visited the Islands twice, and each time I satisfied myself by personal investigation that the birds had not been unduly disturbed. My last visit was on the 3rd of July, in company with Mr. J. H. Gurney, jun. On this occasion I noticed a considerable number of young birds. I mention this to show that there had been no general robbery of eggs. Sometimes a few were taken, and one or two such cases were reported to me, but I thought it best to take no notice of them, except by a letter of remonstrance in one rather flagrant case. Early in the breeding season I thought it seemed advisable to order the collection, three times a week, of all the Gulls' eggs that were laid on the Islands. This continued until the 24th of May, after which date the Gulls were not further molested. Eighteen hundred eggs were taken and distributed amongst the fishermen in the neighbourhood, and this, I believe, helped to promote a more friendly feeling towards the watchers on the Islands, and also prevented a too early increase in the number of young Gulls, which is not desirable where they breed in close proximity to birds of a less rapacious character. No harm attached to the Gulls, as I can testify, for they hatched off in considerable numbers towards the end of June and the beginning of July. The weather was more favourable than last year, but the watchers reported to me that many young birds were destroyed by heavy rains about the

second week in July. There was a marked increase in the number of birds last summer. This I specially noticed, and my own impressions were generally confirmed by the opinions of others. Mr. Nelson, of Redcar, wrote me on the 15th June:—‘Gulls, Puffins, and Guillemots about as plentiful as formerly. Eiders more numerous. Common and Arctic Terns plentiful, but fewer eggs. Cormorants on the increase.’ Mr. Cresswell Cresswell wrote;—‘Far more birds than last year, and the large increase was very apparent.’ In a letter from Mr. Paynter, he says;—‘I think there were twice as many Terns as usual. * * * * As regards the Roseate Terns there were at least two pairs. * * * There were also more young Ring Dotterels than usual. At least one Sheldrake brought out a brood on the Islands. * * * Cormorants were also plentiful. The Black-backed Gulls as numerous as usual, and about the old number of Herring Gulls.’ Darling, the watcher on the Inner Farnes, and his assistant, counted the nests of the Sandwich Terns on or about the 13th of June, and found that 220 pairs were sitting on eggs at that date. They also counted 72 Eider Ducks’ nests on the Knoxes and Wideopens. White, the watcher on the Outer Farnes, informed me, at the end of the season, that 66 Eider Ducks’ nests were hatched off from the Islands under his charge, producing 253 young birds. Mr. Nelson counted 117 Kittiwakes’ nests, nearly all with young birds in them; and Mr. Cuthbertson informed me there were 120 Cormorants’ nests this year on the Megstone. I received very few applications for leave to take eggs last summer. I allowed Mr. Gerrard, President of the Wakefield Naturalists’ Society, to take two eggs of each species of bird. A similar collection was made by the watchers for the Rev. C. F. Thorp, son of the owner of the Inner Farnes; and Mr. Pybus, of Newcastle, had permission, very early in the season, to take a few Lesser Black-backed Gulls’ eggs. Last year, at the request of the authorities, as mentioned in my report, I allowed some young birds to be taken from the Islands for the purpose of being placed on the lake in St. James’s Park, London. The following extract from a letter I received from Mr. Rilly, the bird-keeper there, may be thought interesting:—‘The only birds alive now, of those brought from the Farne Islands, are the Cormorants, which are thriving. The Puffins all died during the first three months. The Guillemots lived somewhat longer, the death of the last one being the result of an accident. The one Kittiwake also died by an accident. The Terns died during the severe frost, being apparently unable to get about on the ice: their tails and wings collected the ice, I suppose, on account of their being pinioned and not being able to use their wings freely.’”

The Colour of Pallas’s Shrike, *Lanius major*. — In the eighth volume of the ‘Catalogue of the Birds in the British Museum’ (p. 238), Dr. H. Gadow describes *Lanius excubitor* as being “pale whitish grey on

the rump and upper tail coverts," and *Lanius major* (p. 239), as differing from it "in having the lower rump and upper tail coverts white." Pale whitish grey well describes the colour of those parts in *excubitor*, though the exact shade varies in different specimens. But I certainly should not expect *L. major* to have white upper tail coverts, *i. e.*, paler than those of *L. excubitor*. For this reason: in this group of Shrikes the degree of development of the white on one part of the bird is greater or less in proportion to its development on the other parts; but there seem to be some exceptions to this rule. For example, as an instance of the rule applying, in my two specimens approaching *L. homeyeri*, in which species the white on the secondaries and tail is much more extensive than in *L. excubitor*, the upper tail coverts are pure white and the rump paler than in that species. Something must doubtless be allowed for age, and perhaps sex. Thus *L. borealis*, in adult summer plumage, is described by Dr. Gadow as having a pure white rump and upper tail coverts. But young birds appear from his descriptions to have these parts coloured. In my specimen from Massachusetts (apparently a young bird in winter dress), they are pale grey, with a strong wash of light brown. This made me think that perhaps *L. major* did not acquire the white rump until quite adult. For I have for some time been possessed of a Norfolk example of this form (evidently a young bird, from the well-marked and extensive vermiculations on the under surface, and the wash of pale brown on the head and mantle), which has the rump and upper tail coverts grey, quite as dark as in the darkest of my three skins of the typical *excubitor*, or as in even two birds intermediate between that form and *L. major*. This winter, however, I have obtained a specimen of Pallas's Shrike, killed at Wardington, Oxon, in November, which, as far as I can see is quite adult, but still has the rump and upper tail coverts grey. The vermiculations, always present in this species, do not extend on to the cheeks and lower throat, as in my immature specimen; and although there is a slight wash of warm brown on the cheeks and breast, more apparent at the sides of the latter, this is extremely faintly developed, if at all, on the head and back. This Wardington bird is the darkest-coloured Grey Shrike I ever saw, quite a plumbaceous grey on the head and back, as dark as that of *L. meridionalis*, but without the blue cast. The rump is the same dark grey as the back, and the tail coverts are darker than those of any other Grey Shrike I have, but are slightly tinged with a brownish colour. I am aware that Mr. Seebohm says of *L. major*, "the thoroughbred adult male * * * differing from the Great Grey Shrike in having a white rump," and although I do not presume to call his opinion and that of Dr. Gadow in question, I should be very glad to know if *L. major* is generally observed to have a white rump and upper tail coverts, and if so, then to what form my two birds with grey rumps and upper tail coverts (one at least of which cannot be called young), which agree with the

description of *L. major* "in having the white at the base of the secondaries almost obsolete," are to be referred. In my specimens, careful search only reveals a very little white next the shaft of the feathers at their extreme bases. If my birds are not pure *L. major*, they must be intermediate between that form and *excubitor*. And if it is really true that *L. major* with white on the secondaries "almost obsolete," has a white rump and upper tail coverts, then, surely, birds intermediate between this form and the pale-rumped *excubitor* ought not to have those parts *darker* than in the latter, as they certainly have, if my birds are intermediate and not pure-bred *major*, as I am inclined to believe them to be. On the other hand, if these grey-rumped birds are intermediate, then, *à fortiori*, *L. major* should have a grey and not a white rump. And if my birds are pure-bred *L. major*, then this form *has* a grey rump.—O. V. APLIN (Bloxham, Oxon).

FISHES.

Large Roach and Perch in the Hampshire Avon.—As I am informed that Roach of 2 lbs. weight are rarely met with, I may note that last October two were landed by a gentleman who was fishing in the Avon, each of which weighed 2 lbs. At the same time (within a week) he also caught a superb Perch, weighing $3\frac{1}{2}$ lbs., and a Pike $18\frac{1}{2}$ lbs.; the latter, of course, is nothing extraordinary, but, although I have recorded a Perch of a similar weight (Zool. 1883, p. 471), yet this specimen was so perfect in condition, form, colour, and markings, that it was the admiration of all who saw it. A very finely-marked Trout, weighing 7 lbs., was also caught in July last in the same water. Several fine Salmon were "brought ashore" early in the season, but I believe there were oftener more rods plied than fish to be caught, at least in the upper portions of the river.—G. B. CORBIN (Ringwood, Hants).

CEPHALOPODA.

Gigantic Squid on Achill Island.—Mr. J. R. Sheridan, of Dugort, Achill Island, writes to the 'Mayo Examiner,' Nov. 9th:—On the little strand at Dugort, in Achill Island, on the west coast of Mayo, now lie the remains of one of the most curious animals perhaps to be met with in the animal kingdom. It was stranded some months ago on one of the outlying reefs at the entrance of Blacksod Bay, when the villagers took it to be the carcase of a large Whale. It was afterwards carried on to the Achill strand by the gale of the 4th October, which swept over the western ocean with great fury. This large sea-monster is no doubt a gigantic Squid, and is of such rare occurrence on our shores that it should not go unrecorded. To what species it belonged will ever remain unknown, as it was too far gone in decay for identification. The measurement of this curious monster, though shrunk and distorted, was as follows:—Length of two long arms or

tentacles, each 30 ft.; circumference of body, including the short arms, 60 ft.; circumference of tentacles, in some places 4 ft. There are three instances of such a monster having been found in British waters, and are as follows:—One stranded on the coast of Kerry, more than 200 years ago ('Zoologist, 1875, p. 4526), another recorded from Shetland by Mr. Gwyn Jeffreys, and the last we read of was captured off Boffin Island, Mayo, a portion of which was sent to the Museum of Dublin, and named and identified by Mr. A. G. More, in 'The Zoologist' for 1875 (p. 4569).

CRUSTACEA.

Foreign Substances attached to the Shells of Crustacea.—At the last meeting of the Linnean Society I exhibited a number of Crabs and certain shells of the genus *Phorus* having various foreign substances attached to them, about which it is desirable that more should be known. Some of the Crabs manage to fasten bits of sea-weed to the hairs on the carapace and legs; Polyzoa, Balini, Serpulæ, &c., in their earlier stages, fasten themselves on others; a Crab of the Indian Seas—*Camposcia retusa*—is sometimes completely covered on every part with sand, small shells, and bits of sea-weed—coralline chiefly. These could only be attached by some adhesive matter, but whence derived? *Dromia vulgaris* is occasionally found with a sponge extending over the carapace, and almost completely hiding the animal. The species of this genus have two hinder pairs of legs much reduced, flattened, and lying close to the back, and this is assumed to be an adaptation for the purpose of retaining the sponge. Out of a number of specimens dredged in the Bay of Naples, I recollect only getting one with a sponge on it, and that very soon shrivelled up, leaving a leathery-looking substance attached to the base of the carapace, not held by the legs apparently. Bell, in his 'British Crustacea' (p. 371), states having received "numerous young specimens from Sicily, every one of which had the carapace entirely covered with a sponge, which had grown over it, concealing even the two hinder pairs of legs, which were closely placed against the back, and rendered immovable." No mention is made of a sponge on those that came from the Channel. Two Crabs—*Aethusa mascarone* and *Dorippe lanata*—having similarly reduced hind legs, but directed upwards, seem much better adapted for retaining a foreign substance, which, however, they are not known to do. In a Mauritian Crab—*Dynomene hispida*—the hind pair only are reduced, but to such an extent as to be merely rudimentary and incapable of any use. *Paramithrax barbatus*—a New Zealand Crab—has, like some others, hooked hairs; but in the specimen exhibited they appear to be free of any foreign substances, although many small

fragments of an uncertain nature appear between them. In *Phorus* a strong cement only could hold on those large and heavy substances,—shells, stones, &c.,—completely covering the shell, as in *P. agglutinans*. I have not seen any account of their *modus operandi*, but, as the animals have a long proboscis, it is possible that that may be the organ employed; but it is difficult to believe that it would be able to lift any arge substance, or that it could reach the top of the shell. Another difficulty is that they must cast off, from time to time as they grow, the smaller substances to replace them by larger ones. There is one *Phorus*, however—*P. calyculatus*—in which small shells imbed themselves at short intervals along the whorls, leaving the greater part of the shell uncovered; these little cup-shaped depressions are marked inside, as far as the mouth of the shell will permit them to be seen, by corresponding protuberances. This would seem to indicate a certain softening of the shell at one time or other. I do not see where protection comes in in any of these cases.—FRANCIS P. PASCOE.

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

Nov. 21, 1889.—Mr. W. CARRUTHERS, F.R.S., President, in the chair.

Mr. Edward E. Prince was admitted, and Col. J. H. Bowker was elected a Fellow of the Society.

Prof. Duncan exhibited and made remarks on a stem of *Hyalonema Sieboldii*, dredged between Aden and Bombay, a remarkable position, inasmuch as this glass sponge had not previously been met with in any waters west of the Indian Peninsula. Prof. Stewart criticised the occurrence, and referred to a parasite on the sponge which had been found to be idenical with one from the Japanese Seas.

Mr. James Groves exhibited, and gave some account of, a new British Chara, *Nitella batrachiosperma*, which had been collected in the island of Harris.

Mr. Thomas Christy exhibited some bark of *Quillaia saponaria*, from Chile, which has the property of producing a great lather, and is extensively used for washing silk and wool. It is now found to solidify hydrocarbon oils and benzoline, and thereby to ensure their safe transport on long voyages; a small infusion of citric acid rendering them again liquid.

Dr. F. Walker exhibited and made remarks on some plants collected by him in Iceland.

Mr. W. Hachett Jackson gave an abstract of an elaborate paper on the external anatomical characters distinctive of sex in the chrysalis, and on the development of the azygos oviduct, in *Vanessa Io*.

Mr. E. B. Poulton followed by giving a *résumé* of his researches on the external morphology of the lepidopterous pupa. Mr. J. H. Leech gave an account of some new Lepidoptera from Central China.

Dec. 5.—Mr. J. G. BAKER, Vice-President, in the chair.

The following were elected Fellows of the Society:—Rev. J. H. Crawford, Major A. R. Dorward, Messrs. S. A. Moor, W. Rome, J. Shirley, H. L. Stonham, C. W. Turner, J. T. Tristram Valentine, J. H. Veitch, J. J. Walker, and John Watson.

Mr. George Murray exhibited and made some remarks upon specimens of *Struvea macrophylla* and *S. plumosa*.

Mr. A. W. Bennett communicated some observations on a new and a little-known British Freshwater Alga, *Schizothrix anglica* and *Sphæroplæa annulina*. It was pointed out that *Schizothrix* of the 'Phycologia Britannica' is really an *Inactis*.

Mr. E. M. Holmes exhibited, as a new British Marine Alga, a specimen of *Gracillaria divergens*, a rare native of the warmer portions of the Atlantic and the Mediterranean, which had been recently found at Brighton by Mr. J. Myles. The specimen exhibited possessed tetrasporic and cystocarpic fruits not described by Agardh.

Mr. Pascoe exhibited (with a view of eliciting information as to the *modus operandi*) a number of Crustacea and certain shells of the genus *Phorus* having various foreign substances attached to them. Commenting upon these specimens, Prof. Stewart gave an interesting account, from personal observation, of the way in which certain Crustacea collect and adorn themselves with fragments of shell, sea-weed, &c., apparently as a protective covering.

Mr. T. Christy exhibited and made remarks on some "liquid amber," or resin, *Attingia excelsa*, from Cochin China.

A paper was then read, by Mr. George Masee, on the life-history of a stipitate Freshwater Alga, illustrated by some excellent diagrams. A discussion followed in which the Chairman, Mr. Murray, and Mr. Bennett took part.

In the absence of the author, Mr. Harting detailed the chief points of interest in a paper, by Mr. George Sim, on the anatomy of the Sand Grouse, *Syrrhaptus paradoxus*, and the habits of this bird as observed on the sand-hills of the coast of Aberdeenshire. A comparison was made of the sternum and the alimentary organs with the same parts in the Pigeon and Red Grouse.

ZOOLOGICAL SOCIETY OF LONDON.

Nov. 19, 1889.—Prof. 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 October, 1889, and called special attention to the arrival of a young male Gaur, *Bibus gaurus*, from Pahang, one of the native States in the Malay Peninsula, presented to the Society by Sir Cecil C. Smith, Governor of the Straits Settlement.

The President exhibited and made remarks on a head of an African Rhinoceros, *Rhinoceros bicornis*, with a third posterior horn partially developed. The animal from which it was taken had been shot by Sir John Willoughby, in Eastern Africa.

The Secretary exhibited a skin of an albino variety of the Cape Mole-Rat, *Georychus capensis*, forwarded to the Society by the Rev. G. H. R. Fisk, of Capetown.

Mr. A. Smith-Woodward exhibited and made remarks on a portion of the rostrum of an extinct Saw-fish (*Schlerorhynchus*) from the chalk of Mount Lebanon.

Mr. Goodwin exhibited and made remarks on specimens of some rare Paradise-birds obtained by him on Mount Owen-Stanley, New Guinea, when in company with Sir William Macgregor's recent expedition; also some photographs taken on the same occasion.

A communication was read from the Rev. Thomas R. R. Stebbing and Mr. David Robertson, containing the descriptions of four new British Amphipodous Crustaceans. These were named *Sophrrosyne robertsoni*, *Syrrhoë fimbriata*, *Podoceropsis palmatus*, and *Podocerus cumbrensis*. Of these *Sophrrosyne robertsoni* belonged to a genus first observed at Kerguelen Island.

Mr. G. W. Butler read a paper on "The Subdivision of the Body-cavity in Lizards, Crocodiles, and Birds," in which an attempt was made to analyze the complex conditions of the membranes observable in the last two groups, and to express them in terms of the simpler structures found in the Lizards.

Mr. J. H. Leech read the third part of his paper on the Lepidoptera of Japan and Corea, comprising an account of the *Noctuæ* and *Deltoidæ*; in all upwards of 475 species. Of these forty-six were now described as new to science, and two others were considered to be varietal forms.

Mr. R. Lydekker read a paper on the remains of a Theriodont Reptile from the Karoo System of the Orange Free State. The remains described were an associated series of vertebræ and limb-bones of a comparatively large Theriodont, which was probably different from any described form. The humerus was of the normal Theriodont type, and quite distinct from the one on which the genus *Propappus* had been founded, which the author

considered to belong to a form closely allied to, if not generically identical with, *Pariasaurus*.

Mr. G. B. Sowerby read the descriptions of thirteen new or rare species of Land-Shells from various localities.

A communication was read from Mr. Edward A. Minchin, containing an account of the mode of attachment of the embryos to the oral arms of *Aurelia aurita*. It was shown that the embryos of *Aurelia aurita* are developed on the arms, in broad capsules formed as evaginations of the walls of the oral groove, and that the capsules increase in size with the addition of more embryos.

Dec. 3, 1889.—OSBERT SALVIN, Esq., 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 November.

An extract was read from a letter received from the Rev. G. H. R. Fisk concerning some specimens of *Bipalium kewense*, which he was keeping in captivity at Capetown.

Mr. Henry Seebohm exhibited and made remarks upon some specimens of new or rare species of birds lately received from the Bonin Islands, North Pacific.

Mr. Sclater exhibited and made remarks on an egg of the Crested Screamer, *Chauna chavaria*, from the collection of Mr. J. J. Dalgleish.

Mr. F. E. Beddard read the first of a series of contributions to the anatomy of Picarian birds. The present communication treated of some points in the structure of the Hornbills (*Bucerotidæ*), particularly of the syrinx, and of the muscular anatomy of these birds.

Mr. Beddard also read a paper upon the anatomy of Burmeister's Cariama, *Chunga burmeisteri*, and pointed out the differences between this form and *Cariama cristata*.

Mr. G. W. Butler read a paper on the relations of the fat-bodies (subperitoneal and subcutaneous) of the Sauropsida. The author showed that a consideration of the subperitoneal fat-bodies appeared to throw light on the condition of the abdominal membranes in the Monitors.

A communication was read from the Rev. H. S. Gorham, containing descriptions of new species of the Coleopterous family *Erotylidæ* from various localities.

A communication was read from Mr. L. Taczanowski, containing the description of a new Warbler of the genus *Locustella* from Corea, which he proposed to call *Locustella pleskei*.

Mr. Oldfield Thomas pointed out the characters of a new Mongoose, allied to *Herpestes albicaudatus*, which he proposed to call *H. grandis*. The type specimen (a skeleton) had been obtained by Mr. T. E. Buckley in S.E. Africa.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

December 4, 1889.—The Right Hon. Lord WALSINGHAM, M.A., F.R.S., President, in the chair.

Prof. Franz Klapálek, of the Zoological Department, Royal Museum, Prague, was elected a Fellow of the Society.

Mr. W. L. Distant exhibited, on behalf of Mr. Lionel de Nicéville, a branch of a walnut tree, on which was a mass of eggs laid by a butterfly belonging to the *Lycanidæ*. He also exhibited two specimens of this butterfly, which Mr. de Nicéville had referred to a new genus and described as *Chatoprocta odata*. The species was said to occur only in the mountainous districts of North-West India, at elevations of 5000 to 10,000 feet above the sea-level.

Dr. D. Sharp exhibited the eggs of *Piezosternum subulatum*, Thunb., a bug from South America. These eggs were taken from the interior of a specimen which had been allowed to putrefy before being mounted. Although the body of the parent had completely rotted away, the eggs were in a perfect state of preservation, and the cellular condition of the yolk was very conspicuous. Dr. Sharp also exhibited a specimen of *Pæcilochroma lewisii*, Dist., a Pentatomid bug from Japan of a dull green colour, which when damped with water became almost instantly of a metallic copper colour.

Mr. J. H. Leech exhibited a large number of Lepidoptera recently collected for him by Mr. Pratt in the neighbourhood of Ichang, Central China. The collection included about fifty-four new species of butterflies and thirty-five new species of moths.

Capt. Elwes observed that he noticed only two genera in this collection which did not occur at Sikkim, and that the similarity of the insect fauna of the two regions was very remarkable. He added that about fifteen years ago, in a paper "On the Birds of Asia," he had called attention to the similarity of species inhabiting the mountain ranges of India, China, and Java.

Mr. M'Lachlan remarked that he had lately received a species of dragon-fly from Simla which had previously only been recorded from Pekin.

Mr. Distant said he had lately had a species of *Cicada* from Hongkong, which had hitherto been supposed to be confined to Java.

Mr. W. H. B. Fletcher exhibited a preserved specimen of a variety of the arva of *Sphinx ligustri*, taken in a wood near Arundel, Sussex. Mr. W. White asked if the larva was normal in its early stage; he also exhibited drawings of the larvæ of this species, and called especial attention to one of a variety that had been exhibited at a previous meeting by Lord Walsingham.

Mr. F. D. Godman read a long letter from Mr. Herbert Smith, containing an account of the Hymenoptera, Diptera, Hemiptera, and Coleoptera he had recently collected in St. Vincent, where he was employed under the direction of a Committee of the Royal Society, appointed to investigate the Natural History of the West Indies. A discussion followed, in which Dr. Sharp, Capt. Elwes, Lord Walsingham, and Mr. M'Lachlan took part.

Capt. Elwes read a letter from Mr. Doherty, in which the writer described his experiences in collecting insects in the Naga Hills by means of light and sugar. Mr. Doherty expressed an opinion that light, if used in very out-of-the-way places, rather repelled than attracted insects; in fact, that they required to be accustomed to it, and that the same remarks applied to "sugar."

Colonel Swinhoe said that the attractive power of light depended very much on its intensity, and on the height of the light above the ground. By means of the electric light in Bombay he had collected more than 300 specimens of *Sphingidæ* in one night. Mr. J. J. Walker, R.N., stated that he had found the electric light very attractive to insects in Panama. Mr. M'Lachlan, Dr. Sharp, Mr. Leech, Capt. Elwes, the Rev. Canon Fowler, Mr. A. J. Rose, and others continued the discussion.

Mr. Lionel de Nicéville communicated a paper entitled "Notes on a new genus of *Lycanidæ*."

Mr. F. Merrifield read a paper entitled "Systematic temperature experiments on some Lepidoptera in all their stages," and exhibited a number of specimens in illustration. The author stated that the darkness of colour and the markings in *Ennomos autumnaria* resulted from the pupæ being subjected to a very low temperature. In the case of *Selenia illustraria*, exposing the pupæ to a low temperature had not only affected the colour of the imagos, but had altered the markings in a striking manner.

Lord Walsingham observed that it appeared that exposure to cold in the pupa-state produced a darker colouring in the imago, and that forcing in that stage had an opposite effect; that insects subjected to glacial conditions probably derived some advantage from the development of dark or suffused colouring, and that this advantage was, in all probability, the more rapid absorption of heat. He said he believed that an hereditary tendency in favour of the darker forms was established under glacial conditions, and that this would account for the prevalence of melanic forms in northern latitudes and at high elevations. Capt. Elwes, Mr. Jenner Weir, Dr. Sharp, and others continued the discussion.—H. Goss & W. W. FOWLER, *Hon. Secs.*

NOTICES OF NEW BOOKS.

Notes on Sport and Ornithology. By His Imperial and Royal Highness the late CROWN PRINCE RUDOLF OF AUSTRIA. Translated with the author's permission by C. G. DANFORD. 8vo, pp. 648. London: Gurney & Jackson. 1889.

His well-known love of natural history and keen enjoyment of field sports, coupled with the unusual facilities for indulging

such tastes which his exalted position afforded him, would lead one to expect in the narrative of the Crown Prince's experiences a most entertaining book. Nor will the reader be disappointed, especially if he be an ornithologist, for to this branch of Zoology was the Prince chiefly addicted. He was particularly interested in the larger birds of prey, and felt as much triumph in stalking and shooting an Eagle as he did in slaying a deer. Few men probably have ever had the chance of killing so many Eagles as he had, and it was something to boast of that he had seen in their natural haunts, and had outwitted and shot with his own gun or rifle, such grand Raptores as the great Sea Eagle, the Golden, the Imperial, the Spotted, Bonelli's, and the Booted Eagles, to say nothing of Ospreys, Kites, and Buzzards, and the Great Eagle Owl. His adventures in search of these and other birds whose haunts lay in the wildest parts of his dominions are simply yet graphically told in the book before us, and are interspersed with still more stirring episodes relating to the chase of the Wolf, Bear, and Wild Boar.

The first portion of the volume is occupied with an account of an expedition to the low-lying, swampy, yet well-wooded, district of the Lower Danube, where several pairs of White-tailed and Imperial Eagles had their eyries, where Ospreys fished unmolested, Kites and Marsh Harriers preyed upon a great variety of water-fowl, and Herons, Night Herons, Bitterns, Ibises, Egrets, and Cormorants nested, it might almost be said, in profusion; so wild, so lonely, and so generally inaccessible was their chosen stronghold.

In this paradise for ornithologists fifteen days were spent, in company with Drs. Brehm and Von Homeyer, assisted by guides, keepers, and skilled taxidermists to preserve such trophies as were selected for the royal collection. Every evening after dinner, as the members of the party enjoyed the post-prandial cigar on board the little steamer which conveyed them, the events of the day were discussed and noted in the journal, the specimens obtained were examined, admired, and properly labelled, and the programme for the next day arranged. Everything was done methodically and well, and no opportunity was lost of learning as much as possible about the fauna of the country explored. The general accuracy of the observations made is apparent upon every page of the book, not only in con-

nection with the expedition down the Danube, but also in regard to the 'Journey in the East' (Egypt to the Nubian frontier and Palestine), and the sketches of sport and natural history in Spain and Transylvania which follow.

Nowhere do we remember to have read so good an account as is given (pp. 409—415) of the Cinereous Vulture, as observed at Gödöllö, in Central Hungary, and in the great woods of Syrmia and Fruska-Gora, on the right bank of the Danube. In these districts it is a true forest bird as regards its nesting and roosting-places, for both are situated in the midst of woods many miles in extent. Its food it seeks beyond the wooded mountains among the bare stony hills that slope partly northwards to the Danube, and partly southwards to the valley of the Save, and the author was convinced that those which breed in the Fruska-Gora range into the Bosnian and Servian Mountains in search of prey. During the afternoon they like to rest on rocks, and where these are scarce they evidently search for them and congregate there. In the midst of the Fruska-Gora Woods was only one very small group of rocky pinnacles, and these of an afternoon were crowded with Vultures, while the extraordinary quantity of droppings, castings, and feathers lying about showed that the spot must be a favourite resort of these huge raptorial birds.

Did space permit there are many interesting observations which we should like to quote, but must refer the reader to the book itself. English naturalists who are unable to read it in the original German will be grateful to Mr. Danford for his excellent translation.

There are no illustrations or route-maps, which, we think, is to be regretted, especially as an artist accompanied the royal party; but what is intended for a portrait of the Prince (with his first Bear lying dead in the snow), appears as a frontispiece, though it is not in the least degree like him. We speak advisedly, having had the honour of spending the best part of two days in his company only a few months before the Danubian Expedition was undertaken, and having seen him again in June, 1887. His photograph, presented by himself, lies before us as we write. It is but fair to add that the frontispiece is the only unsatisfactory page in the whole volume.

The Birds of Oxfordshire. By O. V. APLIN. 8vo, pp. 213.
With a map. Clarendon Press, Oxford. 1889.

PARTLY by personal observation, and partly through the assistance of friends and correspondents who have paid attention to the birds to be found in Oxfordshire, Mr. Aplin has brought together a good deal of information on the subject, and has arranged it concisely and well. In an Introduction of some twenty pages he has sketched the physical features of the county, and noticed the principal published sources of information from which any ornithological notes relating to Oxford could be gleaned. These are by no means numerous, the most important being a list of the Birds of Oxfordshire, comprising 232 species, contributed by the Revs. A. and H. Matthews to the pages of 'The Zoologist' in 1849—50. Dr. Lamb's 'Ornithologia Bercheria,' written about 1814, but printed for the first time in 'The Zoologist' for 1880, is also quoted, as is Mr. Fowler's list of 104 species appended to his little book, 'A Year with the Birds.' From these and other sources Mr. Aplin has been able to find evidence of the occurrence of 242 species, of which 60 are regarded as resident in the county, 71 periodical migrants, and 111 occasional or accidental visitors.

Amongst the changes in the avifauna which have taken place within the century, Mr. Aplin deplors the almost total disappearance of the Kite, Buzzard, Harrier, Raven, and Bittern. The trips of Dotterel once seen regularly on their passage in spring and autumn are now rarely observed, and the Stone Curlew no longer rears its young on the stony fields on the hills about Sarsden and Chadlington, and has probably entirely ceased to breed in the county, save in one locality in the extreme south. The Quail is less often seen, and in fewer numbers than formerly, a fact observed in other parts of England. On the other hand, the Goldfinch, which, as a breeding species, had a few years since become very scarce, has within the last four or five years (probably owing to the operation of the Wild Birds Protection Act) been steadily increasing again, and at the present time is fairly numerous. The Red-legged Partridge, too, which fifty years ago was very rare, is increasing and spreading, and is now generally distributed over most parts of the county. The Hawfinch, Wood Pigeon, Starling, and Sparrow are likewise included

amongst the species which have been observed to be more plentiful of late years.

Amongst the rarer birds included in his list, Mr. Aplin seems to set great store by the Alpine Chough, *Pyrrhocorax alpinus*, a specimen of which was shot in the park at Broughton in April, 1881, and a coloured plate of which does duty as a frontispiece. As this species is not migratory, and no other specimen has been noted elsewhere in England, we think too much importance has been attached to the Broughton specimen (see 'Zoologist,' 1881, pp. 422, 471, and 1882, p. 431); at the same time it may be said that, if really a wild bird, and not escaped from confinement, it is as remarkable a bird as any which has been found in Oxfordshire, unless perhaps the Andalusian Hemipode, which has occurred in but one other English county.

Index Generum Avium. A List of the Genera and Subgenera of Birds. By F. H. WATERHOUSE, Librarian to the Zoological Society of London. 8vo, pp. 240. London: Porter. 1889.

WITH such an excellent library at his command as that of the Zoological Society of London, Mr. Waterhouse has had the best possible material for the preparation of such an Index as the present, and right well has he utilised it. The labour must have been considerable, for he has found, and arranged alphabetically, about 7000 names of genera and subgenera which have been employed by various authors since 1766, the date of the 12th edition of Linnæus's 'Systema Naturæ,' the starting-point of modern zoological nomenclature.

Such an Index was very much needed, and ornithologists who may consult it will be saved a considerable amount of time and trouble, since they will be spared many a journey to see some old book which they do not possess, and perhaps only desire to consult for the purpose of acquiring the very information which Mr. Waterhouse has extracted.

As regards the accuracy of the 'Index,' we can only say that we have tested it critically in various places, and have looked for several little-known and now disused genera, all of which we have found correctly entered. This being so, we can cordially recommend it as a most useful addition to the bookshelf of any worker in systematic Ornithology.

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THE BIRDS OF JAN MAYEN ISLAND.

COMMUNICATED, WITH ANNOTATIONS, BY W. EAGLE CLARKE, F.L.S.

Corresponding Member of the Ornithological Society of Vienna, &c.

(Continued from p. 16.)

Uria grylle, L., Black Guillemot.—On the coasts of Norway, as well as in the fjords which we passed, we saw in summer several single “Tysties.” At Jan Mayen we saw the first Tysties when we were hardly ten miles distant from the island. In comparison with other northerly birds, the Tysties are seldom met with. On the Vogelberge this species is only poorly represented. I saw a few nests in clefts and small holes at low elevations. On the 6th of December I shot two specimens which were already in winter dress. Out of the many specimens which I had seen or shot there were not two birds in winter dress which were coloured alike. On the 21st of April I shot one black and one white bird. The latter had, however, already more dark feathers than those shot in winter. On the 27th of April these pale birds were met with in great numbers, and only disappeared when the ice had completely surrounded the island. Although the nests of the Tysties were not placed high above the ground, it was difficult to get at them, as we had no ladders; and to get at them from above, we should have had to descend many hundreds of yards; hence, in spite of the utmost efforts, we were only able to get two nests of this breeding bird on Jan Mayen. In

one nest, found on the 20th of July, there were two already fairly developed young ones; in the other nest there was a dead young one which had hardly hatched. The young birds sat on bare stones without any nest under them. With regard to the relation of *U. mandti* to *U. grylle*, in so far as it is considered a distinct species, or at least a variety, Dr. Finsch has given us a full as well as clearly-defined explanation. The examination of rich material has led us to the same conclusion—namely, that *U. mandtii* is not to be looked upon as a distinct species or variety. The following birds were at our disposal:—Twelve examples from Jan Mayen; two from North Europe; one from England; a typical example from Spitzbergen, in the Berlin Museum; a specimen from Spitzbergen, purchased in Leipzig; one from Novaya Zemlya, from the voyage of Count Wilczek; two from Greenland, from Prof. Gieseke; two from Greenland, from Prof. Reinhardt; and one purchased specimen, also from Greenland. Neither the dimensions of the bill and legs, nor the extent of the white on the primaries, and colour of the bases of the secondary coverts offer constant distinctions. With regard to the tips of the secondaries, which form a white stripe, the view expressed by Malmgren, that this mark is characteristic of birds of the second year, appears to be correct. We had an opportunity of examining some amongst the specimens brought from Jan Mayen, in which the band relied upon is only partly developed—*i. e.*, it was disappearing. A male shot the 4th of June, having quite unspotted wing-spots, had white tips on only four secondaries, which were wanting in all the others. In a specimen in winter plumage, shot on December 14th, in which dark tips on the wing-spots formed almost regular stripes, the front secondaries were ornamented with white tips; the rest were quite dark. Two birds, male and female, shot on the 6th and 12th of December, had exactly the same colouring as the former, only the wing-spots were unspotted and the secondaries were entirely black. A male killed on April 21st had dark spots on the wing-spots and black secondaries unspotted at the ends. This one is in an interesting transition stage, almost the whole upper surface of the region of the throat being black, with broader or narrower edgings; on the back there are a considerable number of new black feathers. [In 'The Ibis,' 1865 (p. 518), Prof. Newton indicates "an unfailing means" of

differentiating *U. mandti* from *U. grylle*—namely, that in the former species the feathers forming the conspicuous white wing-spot are pure white at their base; while in *U. grylle* they are always black at their base. The value of this character is not conceded by the authors of this paper, but, unfortunately, they have adduced no evidence against it. These species or races are still recognised as distinct by many British ornithologists.—W. E. C.]

Uria arra, Pallas = *U. brünnichii*, Sabine, Brünnich's Guillemot.—The so-called Loom put in frequent appearance soon after we approached the limits of drift-ice. In small or large companies, swimming or sitting on ice-floes, as well as in flights of from one to four specimens, this bird accompanied us continually in our wanderings for several weeks in the drift-ice. Next to the Grey "Storm Gull" [*P. glacialis*], these birds were most numerous represented. Their nests, if we can so call the rocky ledges on which they deposit their large eggs, without any underlayer, are mostly to be found on perpendicular walls or steep terraced cliffs which are usually approachable only from the sea. On the 14th of July, 1882, I obtained a slightly incubated egg. By the middle of August most of these Auks had departed. On the 20th August I saw some young still in down in the nest, of which I shot a few for the collection. By the beginning of September there were very few Auks to be seen on the Vögelberge, and after the 10th there were no more breeding birds to be met with. About this time a few single ones were still to be seen at sea. On the 11th of October large flights of Auks passed the island; they came, most probably, from more northern breeding-places. On January 16th, 1883, I saw one sitting on a stranded ice-floe. On Jan. 27th I shot an Auk at sea. On February 20th I shot one with an abnormally high and very curved beak. On April 10th I saw three Auks at sea; and on the 20th flights of these birds appeared after the ice had been driven off in a north-westerly direction. They were more shy than previously. The wooing of the females took place amidst much noise and after long battles. On May 17th I obtained an Auk which showed already a spot on the breast, and was discoloured from sitting on the nest. On June 14th I took some eggs, of which some were well incubated. The Auk lays but one large egg; it varies much in form, colour, and marking,

and is not always of the same size. The eggs had generally to be taken away from under the birds, which had to be pushed aside. Below the breeding-places were found many smashed eggs, with young in various stages of development, which had been knocked down by the birds during their quarrels. On July 16th I obtained some young from three to four days old; the majority of the birds were, however, still sitting on eggs already cracked: on the 20th I obtained elsewhere some fairly developed young ones. The plaintive piping of the little birds which had fallen from their nests into the water, and which sounds louder than that of any other young bird known to me, reminding one of the piping of a lost chicken, caused the old Auks every time to leave the breeding-places and to drop down after the young ones. As the old ones touched the water, the little ones dived under, and the old ones after them, and shortly they appeared on the surface some distance off, the old birds grouped round the young ones, and apparently reconciled. The young birds, which were often hardly bigger than a Little Auk, were generally quieted thereby; occasionally, however, after a little time, their pitiful cry was resumed, though at greater intervals. It was noticed that the scene above described also took place when the parents as well as the immediate neighbours of the fallen birds had been killed. In late autumn of the previous year half-grown birds were often seen at sea singly. Among the many examples taken was a female shot on Feb. 20th, distinguished by its smaller size and aberrant form of head. The total length of this specimen in the flesh was 40 centimetres; expanse of the wings, 30 c.; length of wing from carpal joint to tip, 18 c.; length of tarsus, 3 c.; length of bill from angle of mouth to tip, 5.5 c. The bill is rather high in proportion to its length, and is more strongly arched. In the lower mandible the angle of the mandible is prominent and is directed upwards. The feathers do not extend to the front of the nasal groove; on each side small white feathers form a narrow stripe from the eye to the base of the bill. The bill and feet of the bird when killed were blue-black. Nothing was seen of the characteristic light longitudinal stripe at the base of the upper mandible. The following Table, in which the measurements of the four smallest and of the largest specimen is noted in centimetres shows how important the dimensions are in this Guillemot:—

	Total length in flesh.	Breadth across wings.	Length of wing, shoulder to tip	Bill from angle of mouth.	Foot.	Remarks.
♀ Winter	35	—	16	4.6	3	Measurements from skin.
♀ Winter	35	32	21	5.3	3	
♀ Winter	43	33.5	22	6.2	3.8	{ Feet in fresh bird light brown. Beak black. Plumage brilliant blue-black.
♂ Summer	40	33	21	5.8	3.8	
♂ Summer	46	34	22.8	6.4	4	

The flesh of the skinned Auk tastes uncommonly good, and these birds, together with ducks, formed a favourite dish of fresh food. [From the description, and from the figure on the plate, there can be no doubt that this supposed variety of Brünnich's Guillemot was a specimen of the Razorbill—an error concerning the two birds which is not without precedent in arctic Ornithology. The occurrence of this species at Jan Mayen is, however, not without interest, since it is believed that this is the most northerly record within the European Polar Region.—W. E. C.]

Mergulus alle, L., Little Auk.—Met with on our first attempt to land on Jan Mayen, as well as in June near the ice. It supplied our first arctic dish, and was much enjoyed. Numerous in the Vogelberge and in fissures of the lava-fields, and inhabits any small cavities and crevices in the Vogelberge to which it can obtain access. Is met with at a height of a few feet above sea-level as frequently as on the highest peaks of the mountains. During the breeding-season, however, the majority of the birds are obliged to put up with stone-heaps and loam or clay fields ("Lehmfeldern"), depositing its eggs in holes at the depth often of a metre below the surface. On August 31st the birds had nearly departed. On October 15th solitary specimens were seen at a short distance from the shore; none visited the Vogelberge. At the end of November and beginning of December the number seen in the bays was so great that hundreds could have been shot with ease. On Dec. 23rd two specimens were caught alive among drift-wood, having been driven in by the north

wind; their nostrils were encrusted with ice, and ice had also formed on the swimming membrane between their toes. From the 23rd December the bay, as well as the sea on the whole north side of the island, was frozen, in consequence of which no birds were seen. On the south coast, where there was still much water free from ice, a few Little Auks remained. On Jan. 13th I saw a few examples near the shore, the ice having scarcely gone. On Feb. 27th dead birds were again found after a strong N.W. wind, as was also the case after a similar wind on Dec. 23rd. A female on Feb. 27th had nearly fully developed ovaries, and the largest eggs were a millimetre in diameter. On April 21st birds were seen on the north coast of the island in fair abundance. The noise made by these small creatures can be heard at a great distance, and in consequence of its high pitch drowns that of all other birds. On April 23rd birds arrived in great flocks. Already, from May 2nd, the birds were to be met with regularly in the Vogelberge and other breeding-places. In the middle of June I found highly-incubated eggs, which were deposited not only on the naked rock, but also on the ice remaining in the crevices. I met, too, with many eggs which were laid in former years and had not been hatched. This bird lays only one light green egg, from which it allows itself to be removed by the hand. On July 16th, besides eggs, young birds were also met with.

Fratercula arctica, L., var. *glacialis*, Leach, Northern Puffin. —On our attempt to reach Jan Mayen in the summer of 1882, these birds were always the last we saw. Only in the closest proximity of the island were they noticed more frequently. In the spring I saw the first specimen, not before May 23rd; after this, however, as in the year before, pretty frequently, and generally in small companies. Until the middle of July these birds were still occupied with nest-building. The nest is built in a cavity, or under a covered projection, or in a crevice, and is formed of quills, which are deposited in several layers in a circle, and nearly cover the site. On July 17th I picked up the first egg; no eggs were to be found in the other nests. On July 23rd I found, in another spot, fairly incubated eggs. The bird lays only one egg. All the specimens of this species, fifteen in number, belong decidedly to the large northern variety described by Dr. Bureau, in his monograph of the *Mormonidæ*,

as the variety *glacialis*. In the majority of our specimens the length of wing was 18 centimetres, in the remainder 17 centimetres. * * * * The birds remain on the island from the second half of May until about the beginning of September. In all the specimens examined at this time, of which there were hundreds, the beak was found in full summer phase, without sign of moulting, which would seem to take place therefore after leaving the island.

Procellaria glacialis, L., Fulmar.—On our two passages from Norway to Jan Mayen this bird was a constant companion of the 'Pola.' The birds sat in thousands, employed in the capture of crustacea, on calm spots near the ice and between the drift-ice and the island. It is scarcely possible to form a conception of the numbers breeding on Jan Mayen. This bird breeds here on the perpendicular face of the rock in niches, from which, as a rule, the head only of the sitting bird can be seen projecting. At the end of September some of the birds had departed, and grey-coloured young specimens were now also to be seen frequently. Until Sept. 30th, 1882 the Petrels returned with every south wind to their haunts and were frequently seen (*e. g.*, on Dec. 19th) nearly as numerous as in summer. They disappeared with every north wind, though I have seen solitary specimens on days on which the lowest temperatures were recorded. Jan. 18th, 1883.—For several weeks Petrels were then constantly seen. Even temperatures of -18° , accompanied by north winds of a force of from 5 to 6, did not drive these birds away. This bird forms during the winter the sole food of the Arctic Fox at Jan Mayen. As soon as the bird had disappeared for a few days we saw the fox sneaking around our station, regardless of all precaution. It struck me as singular that neither birds severely wounded and roughly despatched nor those slightly wounded and captured by the dog, expressed either fear or pain by cries; when, on the other hand, one fell a prey to the Arctic Fox, the poor bird cried like a fowl roughly handled by a cook. The bird becomes an easy prey to the fox, both from its curiosity and from its habit of flying very low on the sides of the mountains and cliffs, so that it skims the ground with the tips of its wings. On Feb. 27th, a hurricane suddenly arising from the N.W. after a warm S.E. wind, killed hundreds of these birds; in the morning we found some still living, many already

frozen in ravines and under declivities, where they had been blown by the wind and dashed to the ground; their nostrils and eyes were covered with ice, their legs and wings were broken, extravasation of blood was found beneath the skin, and the snow all round was covered with ejected gastric fluid. In the month of March the temperature remained at between -10° and -22° , and the sea was at times completely frozen, and comparatively few or no Petrels were to be seen. Of specimens shot after March 13th the ovaries were already fairly developed, the eggs being 1.5 mm. in diameter. In April, May and June Petrels were often met with; as early as June 17th I found eggs deposited without any nest on the bare rock. This species lays a large white egg, which it defends by discharging an oily secretion. The majority of the birds do not abandon the nesting-site after the eggs have been taken, and if pushed off crawl back underneath the arms and legs of the plunderer. Though I have seen this bird in all situations, and can positively say that for fifteen months I have had *P. glacialis* continually under my notice, I have never seen one dive below the surface. The bird may push its head underwater in order to rescue sinking prey, but it never dives completely under the surface. An albino male shot on June 21st had only a grey spot on and under the wing-coverts, especially conspicuous on the right side; no deviations in respect to colour of iris, beak and foot. Among the skins procured is a series of young in down; the first young birds were taken on July 20th.

Stercorarius pomarinus, Tem., Pomatorine Skua.—Several examples were seen inland in August, 1882. I shot a specimen on Aug. 10th, but did not skin it.

Stercorarius parasiticus, L., Richardson's Skua.—The first examples of this species appeared at Jan Mayen on June 2nd. It is numerous and breeds on the island, but the nest was not found. I noticed a specimen of the dark variety in the month of June for a long time, but the bird being very cautious I failed to capture it.

Stercorarius cephus, Brännich, Buffon's Skua.—A pair of this species was noticed among the Sea-swallows on the South Lagoon in July, 1883. The male was shot, and the female was not seen again.

Larus glaucus, Brännich, Glaucous Gull.—During the passage

from Tromsö to Jan Mayen we noticed this bird neither at sea nor on the ice. The first were seen in the immediate proximity of the island. Twenty to twenty-five pairs of this species, and not more, breed on Jan Mayen. The first young gulls I noticed on the shore in the first days of August, 1882, where, under the care of the parents, they were devouring cast-up animal remains. Both old as well as young birds were seen as long as the sea was free from ice—*i. e.*, until December. On Jan. 22nd, 1883, I shot a young specimen at sea, as also on March 17th. On April 1st I saw a young bird. During the night I repeatedly heard the call of this gull, which now frequented the Vogelberge, and no longer departed. On June 20th three nearly fully incubated eggs were found in the nests, which were built on peaks very difficult to approach, and consisted of a layer of moss. On July 15th we took young gulls out of several nests showing a complete series of developmental stages. The young leave the nest as soon as they can fly, and walk freely about on the rocks. Both males and females defend the brood, and will even pursue the plunderers for hours. Of three living young specimens which I kept in a small coop near my tent, one was visited by its parents for several days; this bird also on one occasion followed the parents from my station to the sea, a distance of 600 paces, and was only recaptured after much trouble; the same bird, too, usually became excited on hearing the call of its parents, while the two others, their heads bent sideways, looked on with perfect indifference. This gull seldom dares to attack healthy birds, but those wounded or injured by falling pieces of rock are recognised as easy prey and immediately attacked, even though they may swim about on the sea in an apparently sound condition. Young birds that have fallen out of the nest, as well as the leavings of the Arctic Fox,—which when prey is abundant consumes only the entrails,—likewise supply abundant nourishment for this bird, which is otherwise contented with carrion of any kind. Of this high northern species, which winters also in Iceland and Greenland, young specimens in different stages of transition were procured; three live young ones were sent to the Imperial Menagerie at Schönbrunn. Among the skins are some completely in full plumage, others in young dress, as pictured by Naumann (plate 264, fig. 3), and one intermediate, in which the brownish coloration of the spots has become very

faint, partly shading off into cream-colour, and in parts has quite disappeared. Eggs and young in down were also procured. As a remarkable circumstance may be here mentioned the capture of a female of this species in full plumage on Lake Ossiach, in Carniola, on Jan. 2nd, 1884.

Larus leucopterus, Faber, Iceland Gull,—As abundant as the preceding, and frequently observed in its company. This is especially the case with the young birds which occasionally appear in winter at sea in pairs, one of this and one of the preceding species. This gull nests on low ledges, which often scarcely project above high-water mark. In mode of life this species resembles the last. *L. leucopterus* inhabits only the North Polar Sea, Iceland, Greenland, and the coasts of North America, but in the east is absent from Spitzbergen and Novaya Zemlya. We obtained specimens in all stages of plumage, from the young dress, which is darker than that represented by Naumann (pl. 265, fig. 3), through the most varied transitional stages, to that of the adult. [This bird is only a winter visitor to Iceland, and Jan Mayen appears to be the only breeding station for this species within the European Polar Regions, a fact hitherto unnoticed. Mr. Howard Saunders, in his 'Manual of British Birds,' p. 666, says, "during the breeding season it appears to be confined to Greenland and the arctic regions of America."—W. E. C.]

Larus argentatus, Brünnich, Herring Gull.—On June 23rd we captured a female in young dress and with undeveloped ovaries. In the autumn this gull was met with for a short time in larger companies in a bight near the Vogelberge Crater. This gull belongs to lower latitudes than the preceding, advancing in Scandinavia to 66° N., and is absent from Iceland. Isolated cases of its occurrence are those from North America, and that of Jan Mayen here recorded.

Pagophila eburnea, Phipps, Ivory Gull.—I saw the first gulls of this species on May 3rd, 1883, under the walls of the N.W. Cape; they were seen on this day both in pairs and singly, although not known to breed on Jan Mayen. Of this species, which belongs to the extreme north of Europe and America, two young birds from Greenland are in the Imperial Collection; one from the north of Novaya Zemlya, from the Voyage of Count Wilczek, and a pair of unknown origin. One was captured on Neusiedler See, in Hungary, when the fish were dying owing

to the falling of the water. ('Abhandlungen des Vereins für Naturkunde in Pressburg,' 1864, 1865.)

Rissa tridactyla, L., Kittiwake.—Observed in the North Sea, in the Norwegian fjords, especially numerous at Tromsö; rarely seen near the ice. At Jan Mayen breeds in fair numbers in a few low-lying districts. It is the only bird at Jan Mayen which builds a large and durable nest, though quite devoid of artistic pretensions. * * * The nest is placed against the projecting ledges of the cliffs and consists of moss, grass-blades, and mud, of which mixture a new layer is added annually, and thus gradually consists of parallel layers which can be easily separated. The bird lays two eggs. On June 19th these were already partly incubated; on July 25th young birds were taken. Isolated specimens were noted in late autumn and in winter. Two specimens were shot at sea on Feb. 20th, and we saw several at sea on April 5th, and on May 3rd. They were to be seen in numbers from May 17th, and were already busy nest-building. This species was constantly accompanied by the Robber Gull [? *S. parasiticus*].

Xema Sabinii, Sabine, Sabine's Gull.—Eyelids coral-red; iris brown; feet black; apex of bill horn-yellow, base of bill black. Single specimens of this species appeared now and then at Jan Mayen, but did not remain for long. The males in full breeding plumage. This species, which is generally distributed in high northern latitudes, on the west coast of America, travels rather further south, even to 8° S. lat." (Saunders, Proc. Zool. Soc. 1878, 219). On the east coast of America and the west of Europe it advances much less south. A specimen shot near Mólks, and another shot in Hungary, in the Pesth Museum, form isolated cases of its occurrence on the continent of Europe (Newald, Mitt. Orn. Ver. in Wien, 1878, p. 26; Hermann, Természetráji fuzetek, 1879, 2—3, 92, und Rev. 184, t. 4).

Sterna macrura, Naumann, Arctic Tern.—Frequently met with in the summer months singly and in pairs or small parties. The birds sat in larger numbers on the sand-banks near the South Lagoon; nests I could not find. The examples procured were in summer plumage.

NOTES ON THE TERRESTRIAL MAMMALS OF BARBADOS.

By COLONEL H. W. FEILDEN, F.G.S.

IN 'The Zoologist' for 1889 (pp. 295—298) I published some remarks on the terrestrial reptiles inhabiting the island of Barbados, and there briefly gave my reasons why Barbados should be designated an oceanic island, in the sense that it has had no continental connection since the introduction of its present fauna and flora. Barbados is an interesting example of an island which has received its terrestrial animals and plants from the effects of ocean currents, winds, accidental occurrences, or by the agency of man. Its reptilian fauna certainly bears out this view, and when we come to examine the mammals now inhabiting the island the same conclusion must be arrived at.

The number of mammals I found in the island, reproducing their species in a state of nature, is eight—namely, a Monkey, Raccoon, Mongoose, Rat, Mouse, two species of Bats, and the European Hare. Sir Richard Schomburgk, in his 'History of Barbados,' published in 1848, writes as follows:—"The scarcity of birds in the island of Barbados is only surpassed by the rarity of quadrupeds. If we except domestic animals, Barbados possesses five genera of terrestrial animals, comprising only a few more species in number. The most interesting is the Barbados Monkey, now nearly extinct, although formerly so frequent that the legislature set a price upon its head. I have much to regret, on account of Natural History, that my endeavours to procure a specimen for the purpose of determining the species have entirely failed. From the outer appearance of a living specimen, I consider it to be *Cebus capucinus*, Geoff., the Sai or Weeper, or a very closely-allied species. It is not likely that it was introduced, as the first settlers found it in large numbers on their arrival. The Raccoon, *Procyon lotor*, Cuv., is now equally scarce, although formerly so abundant that they were included in the legislative enactment for extirpation. If we add to this two animals, perhaps an indigenous Mouse and two species of Bats, we come, as far as my knowledge extends, to the end of our enumeration of indigenous Mammalia."

This account by Sir Richard Schomburgk of the Mammalia inhabiting Barbados is misleading, and his statements are not

borne out on investigation. The Monkey which he suggested to be a South American species, and which is still found in some numbers in the more inaccessible parts of the island, is an Old World form, the Green Monkey, *Cercopithecus callitrichus*, Is. Geoffr., and its original habitat is the West of Africa. This undoubtedly proves its introduction to Barbados by the Guinea trading-ships. I cannot discover any warrant for Schomburgk's statement that this animal was found in large numbers by the first settlers on their arrival. Ligon, in his 'True and Exact History of Barbados,' published in 1657, only thirty-two years after the landing of the first settlers, makes no mention of a Monkey in his remarks on the birds, beasts, and insects of the island, and it is unreasonable to suppose that a writer of his undoubted sagacity and power of observation, particularly with reference to all the living creatures he met with, should have neglected to make some remarks about a Monkey, had it then been found in large numbers in the island. Hughes, in his 'Natural History of Barbados,' published 1750, includes the Monkey, so that it must have been introduced, and become feral in the island between the periods of these two writers.

The Racoon, which is still found in the cliffs, glens, and rocky parts of the island in considerable numbers, is, as might be expected, the South American form, *Procyon cancrivorus*; its introduction from the South American continent, on a raft drifted by the influence of oceanic currents is possible, though its presence may be due to the direct agency of man. I am not aware that this animal is found in a state of nature in any other West Indian island, which is another proof of its recent introduction to Barbados.

I only met with one species of Rat, abundant enough about the town of Bridgetown and in the Garrison—namely, *Mus decumanus*.

I entirely failed, in spite of assistance from several friends,—planters in the island,—to obtain any evidence of an indigenous Mouse. I received many examples captured in the fields, and caught several myself; they all proved to be the common House Mouse, *Mus musculus*, though their coats were in some instances redder than usual—the result, probably, of greater exposure to a tropical sun than their stay-at-home relatives enjoy. This negative evidence does not preclude the possibility of there

being an indigenous Mouse in the island, though I think it unlikely.

The Mongoose, introduced a few years ago for the purpose of stemming the ravages committed by the Rats in the cane-fields, has done the work effectually; it is now very rare to see damage done to the growing canes by rats. The introduction of the Mongoose has not, however, been an unmixed blessing; it has largely increased and spread over the entire island; it plays havoc amongst poultry, especially with young turkeys and guinea-fowl. I was also informed that it had taken to devouring *Centropyx intermedius*, the "Iguana Lizard." I am unable to determine which species of *Herpestes* is the one introduced and now flourishing in Barbados; I did not obtain a specimen for identification, as there is an Act of the Legislature protecting them. The coloured people dread the bite of the Mongoose, and many of them believe that it may bring on rabies in individuals: I cannot say whether there are the slightest grounds for their apprehension.

I am indebted to Dr. Sinclair Browne, M.D., of Barbados, for the following information in regard to the introduction of the European Hare. Examples were brought to the island from England by Mr. Thomas Trotman in 1842, and kept in an enclosure on the Bulkeley Estate, in St. George's parish. In this enclosure they bred; after a very heavy rainfall the enclosure broke down and the Hares escaped. From thence they spread all over the island and increased rapidly, for in those days the negroes did not possess firearms, as they do now. Twenty years ago Dr. Browne remembered a man in St. Philip's parish who used to shoot from two to three hundred Hares annually. They are not so numerous now, owing to the more general possession of firearms by the coloured people, but more from the increase in the number of the Mongoose during the last ten years. Dr. Browne informed me that the Mongoose undoubtedly destroys a large number of leverets and half-grown Hares. The Hare in Barbados attains a good weight, sometimes twelve pounds. Dr. Browne has evidence that they breed during each month of the year; they generally have one or two young.

The Rabbit, *Lepus cuniculus*, has not succeeded in a feral condition in Barbados; they increase rapidly at first, but mangle soon attacks the old ones, and the rats kill the young before they are old enough to leave their burrows.

The two species of Bats I have found in Barbados are *Brachyphylla cavernarum*, Gray, a fruit-eater, which is certainly not common; it is known locally as "Night-raven." There are specimens of this species in the British Museum, from Cuba, St. Vincent, and other parts of the West Indies. The second is *Molossus obscurus*, Geoffr., a common species throughout the West Indies; it is very abundant in Barbados, and constantly to be seen on the wing immediately after sunset. I shot many specimens, for on the wing there seemed to be a great difference in size between examples flying in company, but all I procured belonged to this species. It is possible that there may be more than two species of Bats in Barbados, for the individuals to be seen flying about at sunset and sunrise are in immense numbers, but I only secured the two kinds here recorded.

I may add that in all my excavations in caves and kitchen-middens the only remains of land-animals that I came across were bones of man, generally broken up and charred, proving the cannibalistic propensities of the old inhabitants.

The following is the list, so far as my observations go, of the feral terrestrial Mammalia of Barbados:—

Cercopithecus callitrichus, Is. Geoffr. Hab. West Africa.

Brachyphylla cavernarum, Gray. Hab. West Indies.

Molossus obscurus, Geoffr. Hab. West Indies.

Herpestes ———? Hab. Old World.

Procyon cancrivorus (Cuvier). Hab. South America.

Mus decumanus, Pall. Hab. Old World.

Mus musculus, Linn. Hab. Europe.

Lepus europæus, Pallas. Hab. Europe.

ORNITHOLOGICAL NOTES FROM NORFOLK.

BY J. H. GURNEY, JUN., F.Z.S.

THE following diary of ornithological events for the second half of the year 1889 comprises all that is likely to be considered of more than local interest. The absence of the Willow Wrens, usually so common a species, was very marked last autumn at Cley, more so than I ever remember it before, as its presence forms quite a feature of our coast migration, and we generally see them passing in great numbers. The duties of a local recorder

seem to me to be, not only to notify rare birds, but also to report the unusual absence of common ones.

On July 9th a Crossbill flew into a cottage at Northrepps, a young bird, probably bred in the county. About the same time, as I learn from Mr. Southwell, one flew into a greenhouse at Neatishead. Crossbills have been very abundant of late in various parts of England, and from a reliable source I have received particulars of their nesting in the county, though it may be as well not to mention the precise locality. The Northrepps bird, which very quickly changed from the streaked to the yellow plumage, is still alive in my father's possession. There was a spot of red on its nape when it was caught, which disappeared with the immature plumage (*cf.* Zool. 391). An immature streaked Crossbill which I shot in August, 1866, had a spot of yellow on its crown. I mention these spots with reference to the correspondence which has appeared between Messrs. Macpherson and Howse, and will only add that I for one can see no reason why every male Crossbill should pass through a red plumage to reach a yellow one or *vice versa*; indeed I doubt their ever passing from yellow to red. [If this be so, then the bird now living at Northrepps, which "quickly changed from the streaked to the yellow plumage," *ut supra*, will never become red, which seems almost too much to predict.—ED.]

On July 18th, a Sparrowhawk's nest, from Hempstead, from which the young had been taken, contained remains of Pheasant, Partridge, Robin, Sparrow, Thrush, Chaffinch, Sky Lark, Wren, Redstart, a warbler of some kind, and a mouse. On July 30th eight Great Crested Grebes and several Shovellers were seen on Ranworth Broad. No Garganeys appeared there this year.

On August 1st several Curlew Sandpipers, *Tringa subarquata*, retaining more or less of the red dress of summer, were shot at Cley and Yarmouth. On the 2nd I shot a Grasshopper Warbler on one of the Broads—not a common bird with us by any means. On the 5th Mr. Upcher shot a Sabine's Snipe at Hockwold, which has been preserved by Mr. Gunn—the second of this variety for Norfolk, and a very good specimen. I have been informed on good authority of a case in the South of England, several years ago, in which a clutch of four Snipe's eggs produced, as is believed, four "Sabine's Snipes," all of which were secured and preserved.

[We should be glad of particulars.—ED.] The Norfolk bird above referred to seems to have had no other companions.

On August 11th, a Pintail was shot at Cley, and a Little Bustard at Waxham. On the 13th a white Sand Martin and a young Purple Sandpiper were shot at Cley. Another white Sand Martin, or perhaps the same, was seen by Mr. R. B. Sharpe at Yarmouth on July 17th. On Aug. 19th, Mr. Smith, the taxidermist, of Great Yarmouth, informed me of a hybrid Linnet and Greenfinch (a cross which has occurred in Norfolk before) having been taken at Yarmouth. In the beak, wings, and tail it resembled a Greenfinch, but the back and breast are similar to a Linnet, much like a specimen which my father had alive (Zool., 1887, p. 267). I shot a couple of Greenshanks at Cley on Aug. 29th, and saw a Wood Sandpiper and a Little Stint.

On Sept. 1st a male Two-barred Crossbill was shot at Burgh, near Yarmouth. It is very brightly coloured, and with the lesser wing-coverts a deep plum-colour, the two alar bars well developed. From its stout bill and other marks it is evidently *Loxia bifasciata*. The Rev. Mr. Benson, I observe, mentions (p. 18) others in Surrey, and one in Yorkshire. On the 2nd a Tawny Pipit, an old bird in change, was caught near Lowestoft, but only survived its capture a few days. I had an opportunity, in company with Sir Edward and Prof. Newton, of examining this rare bird, and am indebted to the former gentleman for the notice of its capture. *Anthus campestris* has not previously been identified in either Norfolk or Suffolk. On Sept. 3rd Mr. George Power saw a Crossbill at Cley, close to the beach, and some Pied Flycatchers.

Migration in full swing on the coast on Sept. 5th. In a comparatively short walk Mr. Power and I saw four Bluethroats, one Ortolan Bunting (which I shot), one Lesser Whitethroat, about thirty young Pied Flycatchers, at least 100 Redstarts, and a few Whinchats and Greater Whitethroats. The Ortolan was a young bird resembling Mr. Dresser's figure in the 'Birds of Europe' (iv. pl. 215), but rather more streaked. The wind was N.W. the night before, but was N.E. when it was shot. Mr. Power's quick ear caught its note, which led to our obtaining it. Length 6 in.; expanse, 10; claws, mouth, and beak, directly after it was shot, pale pink; eyes dark brown. Some yellow feathers on the chin faded soon after Mr. Gunn stuffed it for me.

On Sept. 7th two Bluethroats and a Garden Warbler were seen in the saltwort-bushes by the sea. On the 9th fourteen more Bluethroats were seen in the same bushes by Mr. F. Barclay, who shot six of them, all immature birds. He says there were a great many Redstarts with them: a female Black Redstart was shot during this month. On Sept. 17th my father saw the first Hooded Crow at Northrepps.

On October 6th a young male of Sabine's Gull was shot at Hickling while consorting with some Lapwings—very immature in respect of its plumage. On the 10th a Little Bittern was shot at Runham. About the 15th of this month Lord Lilford was informed by a good observer (Mr. G. Hunt) of hundreds of passing Chaffinches, and many Jackdaws among the sand-hills near Hunstanton, and a flock of Sand Grouse which "rose at his feet."

On October 22nd a Lapland Bunting (a remarkably small one) was caught at Lowestoft, and a Grey Shrike on the Lemn-and-Ower light-vessel, the wing of which was sent me by Mr. Cordeaux, and shortly afterwards Mr. Smith reported several Grey Shrikes seen near Yarmouth. About this date a large arrival of Goldcrests was reported on the coast at and near Waxham; three or four were cut down with a whip, and a fence near the sea is said to have swarmed with them. One which flew into a house at Yarmouth, on the 24th, was taken to Mr. Lowne. Mr. Smith caught another in his garden, and at Cley some boys knocked down twelve with bacuba canes, and took them to a local naturalist. I hear from correspondents of their abundance at Harwich, in Essex, and Scarborough, in Yorkshire. The last great migration we had was in 1882, when I saw hedgerows about a quarter of a mile from the cliff full of these little birds.

I hear from Mr. George Smith that on November 7th a Short-toed Lark was shot on the South Breydon marshes. Some are reported to have been caught alive in Devonshire shortly before ('Field' of Nov. 9th, 1889, p. 667). On Nov. 10th an Egyptian Goose was shot at Cley, and three others were seen.

On December 4th eleven Sand Grouse were seen at Docking by Sir William Ffolkes. On the 12th a female Shoveller was shot at Cley.

SOME UNPUBLISHED LETTERS ON ORNITHOLOGY,
 ADDRESSED TO MR. JOHN CORDEAUX, BY THE LATE COL. RUSSELL,
 OF STUBBERS, NEAR ROMFORD, ESSEX.

Stubbers, Romford, 19th June, 1880.

SINCE writing to you the other day I found some notes which I had forgotten.

Feb. 16th, 1880. Heard that there had been thousands of Wigeon on that day on the coast. They were yellow-bellied. I have heard the fen people attribute the yellow colour often seen on the under parts of Teal and Wigeon to their having been on the coast; the coast people think they have been on the fens. I think the latter more likely to be right, as nothing seems so likely to give the colour as peat-stained water. I was not on the coast then, but on my return saw a very few Wigeon on Feb. 21st. I was on the coast great part of the time till March 15th, and, as I said before, saw only four Wigeon. Those seen on the 21st were probably the last of the flight which came (or began to come) on Feb. 16th.

March 1st. Saw two flocks of Lapwings on the Blackwater river (many had passed southward Dec. 2nd). 13th. A Starling came on board at sunset. 15th. Saw many Loons (Red-throated Divers),—more than at any time in winter,—Oxbirds, a few Grey Plover, but no Knots about; we had very few of these last through the season. I do not know whether the question has ever been decided whether the red throat of the Diver is seasonal or mature plumage (Yarrell seemed uncertain). I have never seen a trace of the red colour in winter, but have seen it in spring: this would suit either opinion. But I shot one last autumn (I think in October) which showed some red, and it seemed to me evidently in the course of disappearing. I sent it to a friend who had it skinned, I believe. Should you like to see the skin?

I now send you the proportion of young and old Brent Geese killed at different times last winter, 1879-1880. I shot 113, my man 51. Of the whole 164, 45 were old, 119 young. Except in one case, I only made a note at the end of the time of getting them. In October, November, and December, up to Dec. 6th, one old, ten young; to Dec. 18th, twenty old, fifty-five young; to end of December, six old, twenty-four young; Jan. 10th to

19th, thirteen old, thirteen young; to Feb. 4th, five old, sixteen young; March, one young. (I am not sure that the second lot, to Dec. 18th, is quite accurate, as I forgot to count, and it was done for me at home when away.) I think that the proportion of old geese was greater in January than earlier; but one man told me about that time that he was getting more young than old. Old and young are always mixed in the flocks, and when there are a fair proportion of young, it is not often we get half-a-dozen out of a flock throughout the season without old and young among them. Of course there is much chance in this; those shot out of a flock may not show the same proportion as the whole lot would. I heard of ten old out of fourteen being killed when we were getting mostly young ones last winter. On Dec. 2nd several of us shot together at a flock, and got forty, seven of them old ones. It is noticed that the geese shot some distance off at sea on calm nights are apt to have a larger proportion of old birds than those which—probably because there are more young ones among them—are tame enough to be shot at by day.

The almost entire absence of young birds in some years does not depend on the weather; it has occurred in mild as well as sharp winters. 1874-5, 1870-1, and 1879-80 were severe, and young geese abounded in these years. The most complete failure I have known was somewhere about 1847, I think; there was one week or so very sharp, the rest of the season mild. Throughout the winter I only heard of one young one out of some thousands being killed. The winter before last (1878-9) was the worst excepting one during the last fourteen or fifteen years. The first shot were two out of three young, but those shot next told a different story. I shot sixty-five altogether, twelve of them young; but this was not the proportion of the whole, or anything like it. Many of my geese were got out of small lots, probably families, which, being mostly young, were tamer than the others, and swam nearer inshore at high-water. In shooting at big lots collected together, a fairer sample was got. In two shots at big lots,—one on the water, the other on the mud,—I got ten and fifteen; two young ones among the twenty-five. Some others got shots at flocks. and had a still smaller proportion of young ones.

On Feb. 4th, 1879, a large number of White-bellied Geese came, probably from the south, as just before coming to us they

appeared at Leigh, on the north side of the mouth of the Thames; there is little or no feed for them there, and only geese which do not know the country call there, but of course do not stay long. Their ignorance was also shown by their foolishness when they came on our coast; a great many were shot for five days, but these were very thin. Most likely they had been southward, but had failed to find a good feeding-ground. I was not on the coast till about Feb. 20th; by that time the White-bellied Geese were fat and almost unapproachable; they were then mixed with the black sort. They stayed, to my knowledge, till March 15th, I believe much longer. As usual the white-bellied had no more young with them than the black. If, as I suppose, the two varieties are bred in different parts of the world, the cause of failure of breed must be wide-spread. I wonder whether those who have been at their breeding-places have noticed which variety they saw. I think I told you that we have not only the two well-marked varieties, but every intermediate shade—perhaps from intermediate places.

* * * * *

It would be interesting to know whether the young birds breed their second year. Any naturalist who has been at the breeding-places would hardly fail to notice this, as they keep the white-tipped secondaries, tertiaries, &c., till they leave us, and they can hardly have lost them all by nesting-time. I have now and then seen a white-tipped feather or two remaining on birds otherwise in mature plumage. I take these to be birds in their second winter.

A passage from a letter of a correspondent, received some time back, may interest you—speaking of Wigeon:—"They are handsome birds, and it is a pretty sight to see them when they have young. Though you may not have previously seen the cock, no sooner do you disturb the hen, either with her brood or off her nest, than he immediately makes his appearance and is very noisy. They are rather late breeders; I think the earliest brood I have seen was in the first week in June in Sutherland." I must write and ask the writer whether the males are "handsome birds" then. I thought they lost their gay plumage about the time the female lays.

Some time, at your convenience, I should be glad to hear something about your last change of "close-time" for wildfowl,

and how you think it likely to answer. With regard to the protection of rare birds from collectors, it seems to me that it would be better to legislate for them separately, though, in the present state of opinion, I doubt if any penalty would have much effect. If the thing is to be done at all by legislation, those rare birds only which are likely to breed here if unmolested should be protected by a very heavy penalty, which might apply to killing them at any time. No penalty applicable to the cases of some of the birds now protected will have any effect while we protect, by the same law, birds like the common Godwit, Whimbrel, Wild Goose, &c.,—birds which will never breed here, and in some places the best time—indeed the only time—to shoot them is during their spring passage. Godwits do not appear on our coast in the spring passage. Whimbrel do, very fat, and in flocks in May. On their return they are only seen as scattered stragglers, and no one shoots any then. So few Whimbrel, however, appear with us in spring that they are of no great consequence; but in some parts, as the West of Ireland, I hear that they and the common Godwits come in dense flocks from the last week in April, all through May; not one-tenth of the number are seen in autumn. The case of the Grey Geese in Ireland and Scotland, I dare say, you have seen published in 'The Field.' The position of the scientific enquirer is a hard one, especially with regard to common birds which will never breed here. A system of granting licenses might answer; but it would be very difficult to discriminate between the man of science and the mere collector. It would hardly answer to expect magistrates to know where they ought to inflict a heavy penalty, if they had the power of doing so. By-the-way, the time of migration of the Common Godwit is a puzzle that wants clearing up.

Stubbers, Romford, 31st March, 1882.

I have been thinking of writing to you for a long time, but had not much to tell you about the movements of birds.

I am much obliged to you for sending the very interesting 'Report of the Committee.' I had seen the 'Report on the Migration of Birds in the Spring and Autumn of 1880' advertised, and ordered it. I have since got it. Mr. —'s notes, which failed to reach you last year, were not, I think, of very

much interest. I enclosed them in a letter to you, but do not remember whether I posted the letter myself or not.

I now enclose copy of some more notes by him. Last September I sailed to the Deben River, took him with me, and stopped there a few days; then came away, leaving him there, before many migrant birds came. The Godwits (two) were on the mud near my boat. My man took him in a punt to them; they were very tame: he waited till they walked together, and shot both with one barrel of a small gun. I watched them with a telescope, and saw one pull a reddish worm out of the mud, take it to the edge of the water, wash, and swallow it. As the bird's bill pointed straight to me, I could not see whether its action in eating the worm was the same as the Snipe's. I shot the Plover and Knot next day out of a flock of about twelve, mostly Plover. One Godwit was with them. There were very few birds there of this class. I think there is a mistake in the date of the Grey Geese; if I remember rightly they were seen on the 23rd.

The earliest Brent Geese I could hear of last autumn, on the Essex coast, were seen or heard about Oct. 8th or 9th. When I sailed into the Deben River, about Sept. 20th last, I asked a pilot whether any wildfowl had been seen; he said that he had seen a "Black Goose" a day or two before. A fisherman who lives there, named Frost, does some shooting, and is well acquainted with birds. Soon after I told this man what the pilot had said, and asked him whether he believed it; he said at once, No,—that he had seen the bird himself, and that it was a Cormorant.

I have little doubt that a similar mistake was made in the Report from the 'Cortin' light-vessel, of Black Geese in July, some three years back I think. Black Geese are well known about the mouth of the Deben, as they frequent that part of the coast, feeding on the drift-weed, *Zostera* (their only food on this coast), between the Orwell and Stour Rivers, the mouths of which are at Harwich, close by. I sailed to Lowestoft last summer, and think that the Brent Geese are very unlikely to frequent that part of the coast, as there is nothing for them to eat there; and Cormorants are likely to be passing in July—they are abundant on the Essex coast by August 1st.

A report I had of a Woodcock settling in a tree looks

rather incredible ; it was said to have been seen by Frost (already mentioned). He said he was sure it was not an owl. He is a pretty good judge of birds : for instance, some small birds were flying overhead ; he was asked what they were, and replied Goldfinches. — shot one to see, and it was a Goldfinch. The *tree*, I think, was a scrubby bush of willow. I have not seen the man since to question him.

The Brent Geese seem to come to the Essex coast pretty regularly about the beginning of the second week in October. Sometimes the first I hear of are not seen at all ; with a fair light wind they may be heard miles off at sea, far out of sight. In October, 1880, my informant, a very experienced gunner, told me he was afraid there were no young ones ; he was right, — throughout the season, from the time of their first arrival, there was not one young one to a hundred old ones. Last October my informant about their arrival was another gunner, who lives close to high-water mark in the part most frequented by the geese ; he told me that there were young ones among them. These men are pretty close observers of some things ; they know when there are young among the geese by their *voices*. I soon had an opportunity of verifying the presence of young geese — some time in October last, I think — by examining a small flock of fifteen or twenty with a telescope, the sun shining on them. By watching them as they turned their sides to the sun, I could make out that something like half of them were young of the year. As far as I could find out, this was about the proportion all through the season ; I think there were nearly, but not quite, as many young as old. I only shot eighteen, seven of them young. Other people's experience was much the same. To repeat the proportions for the last four winters, we had : —

1878—79, about one young goose to twelve old ones.

1879—80, great numbers of young all the season.

1880—81, about (or less than) one young goose to a hundred old ones.

1881—82, nearly as many young as old.

(Young very numerous almost every season for about twelve years up to 1878).

I do not think that of these birds the young and old migrate separately ; they generally appear about the same date, sometimes all old, sometimes old and young together, and the presence

or absence of young remains the same all through the winter. Young ones alone, so far as I can find out, never come to us without old ones among them. If young ones came alone, they would sometimes be tame; but on their first appearance they are always very wild, commonly even wilder than they are in March, so that they are rarely shot when they first come: when any are shot there are always some old ones among them (when not all old). Although my observation and information is chiefly in one place, yet the birds change a good deal; from 100 to 300 or more come in October, and we have fresh arrivals at various times in the winter from the North,—and after severe weather breaks up great numbers more come, probably from the South,—yet the abundance or scarcity of young ones remains the same as when they first appear, and prevails alike, or nearly so, in the black- and white-bellied races.

The mildness or coldness of the winter has nothing whatever to do with the presence or absence of young Brent Geese. I have kept no record, but remember that throughout some of the most severe winters I have known the young ones have abounded—for instance 1855-56 and 1870-71. On the other hand, in some of the mildest winters there has been a nearly complete absence of young Brent Geese; and when they are nearly all old ones, and the weather mild, of course very few are shot. One very mild winter (I forget the date, within the last ten years I think) I shot sixteen; one was a young one—I only heard of three or four young being got on our coast. Mr. J. Wiseman was shooting in Holland that winter; he got 500 or 600 Black Geese; only one was a young one. I feel confident that, had we any means of finding out, when the young fail to appear here they are also absent in all places frequented by these birds in Western Europe, and doubtless the same will be the case on the eastern coast of North America. I hear from Mr. Sharpe that all the Brent Geese sent by Capt. Feilden to the British Museum, from Grinnell Land, are white-bellied.

The most complete absence of young Brents was in a season when many old ones were killed (about 1846, '47, or '48); weather mild, except a week of sharp frost (in January I think). One man shot thirty dozen Brent Geese in that week; he did not see a young one all the season. I only heard of one being shot by anyone on the Essex coast that winter. Many old ones

also were shot after the frost. I got five dozen in the week following the frost, in quite mild weather. I forget whether many geese were got before the frost.

Capt. Feilden says (in his Appendix to Capt. Nares' book) that the Brent Geese gather into flocks of old and young while the latter are small. The old ones lose their quills early in July, and the new quills are full grown in a month, so old and young can fly about the same time, and from what we observe here I think they migrate together. Early in the autumn they come; some in flocks of 100 or more, some in quite small lots; the latter may probably often be families which have been isolated in the breeding places. Seven is a very common number, and is, according to Feilden, the usual number of a family, young and old. We do not often have a chance of finding out how many old and young are in these small lots, but they never seem to be all young. If several are shot, at least one is almost always an old one. In one case a man killed six young at a shot out of nine when they first came; he said that one of the old ones, after flying away, came back and flew round the others, apparently trying to get them away.

The companies of Brent Geese, as they arrive, often I think associate together all the winter, especially if there is no frost. They are mostly scattered over the sea, picking up the drifting weed. When a good width of mud has ebbed dry, the geese collect on it—a few at first; then more keep coming to them in lots of from three or four to a hundred or more, until perhaps there are some thousands in one flock. When they have done feeding, the whole lot will fly up and scatter like a fan, the different parties keeping together in small lots or strings which separate themselves, sometimes widely, over the sea. Severe frost and easterly wind, however, soon break up the companies when there are many young ones. A great mass will be ashore upon the mud; when the tide is flowing towards them, the wilder birds will give warning to go, set all the heads up, and start the lot by flying up; a few, perhaps some hundreds, will go off to sea, the rest will wheel round and settle again: as an old gunner used to say, "So much the better; some of the wild ones are sifting off." This is sometimes repeated several times till—on the tide bringing the punters within shot—most of the remaining geese are found to be young ones, which, being more

greedy and careless, would not leave their feeding. These birds always seem hungrier in cold than in mild weather; easterly wind, too, if long continued, makes them eager to be in shore, as it prevents weed from drifting off to sea, so that they get nothing to eat without coming ashore for it. They pull up the weed when ashore, and eat by preference the roots or white part below the surface, leaving the green blade by cart-loads; with westerly wind this drives off to sea with the next ebb-tide, and furnishes them with plenty of food, day and night, far from land. In severe frost much thin ice forms on the mud, floats with the tide pulling-up weed, and gets packed into thick lumps, holding much weed. When the ice drifts off to sea the geese follow it, and we see hardly any for some days, when they come back again as thick as ever, probably having eaten all the weed as it thawed out of the ice.

In the way already described, in frosty weather and easterly wind, the companies of geese get much broken up, the birds probably being re-arranged in fresh combinations; and we then find some flocks nearly all old ones, and others mostly young ones. When there has been no hard weather it is a pretty sight, if you are outside the middle of a large lot coming off the mud, to see the great congregation coming and gradually spreading, the air being full of the various strings for perhaps more than half a mile wide, and as deep.

In the winter 1880-81, as I think I told you, we had not many White-bellied Geese; I had some difficulty in getting a good specimen for you and another for Capt. Feilden. There were very few young among them, but I think a larger proportion than among the black sort. Last winter we had hardly any white-bellied ones at all. I heard of one being shot among some black ones quite early in October, the only one I heard of being got. My man saw one among a flock of black soon after; and I saw only one white-bellied, a single bird, early in November or late in October, I forget which. One gunner, always on the coast, said he had seen only one little lot of the white-bellied sort, about a dozen, all the winter.

I am anxious to see what Stevenson says about the races of Brent Geese, but have not yet heard that his third volume is out. I saw a specimen in the British Museum, labelled "*nigricans*"—I think from Western N. America: it was high up

in a bad light, but so far as I could judge, it has no claim to be a distinct species ; its belly is blacker, but it seemed to differ less from our black kind than does the white-bellied. Capt. Feilden tells me that he thought he had sent a specimen from Nova Zembla : Mr. Sharpe cannot find it ; it may possibly be in one of the chests packed to go to South Kensington, and I hope may turn up yet.

We had a good many Brent Geese this last winter, considering the mildness of the weather ; quite early there were about 300, and more came from time to time till there were 1000 or more between the Blackwater and Crouch Rivers. Very few were shot. I heard from different places on the Suffolk coast that, on Dec. 13th and 16th, in foggy weather, there were great numbers of wildfowl on the sea, near land—Wigeon, Ducks, and Brent Geese. Many passed along the Essex coast about the same time, but made no stay. They were probably migrating southward cautiously in the fog.

Our coast is more disturbed than ever ; people have taken to hunting the fowl in steam-launches, which have about beaten off the sailing-boats, and of course drive the birds away more, as they can go dead to windward, and without any wind ; every bird that swims is driven away,—even such rubbish as Scoters,—except the Brent Geese, which keep well out of the boat's way, but will not, however, leave the country. I think they will soon cease to visit us, the disturbance getting worse and worse, and the feed failing more and more. The *Zostera marina* is gradually disappearing everywhere on the Essex coast, and in all the rivers. The first I heard of this disappearance was at Whitstable, in Kent, some forty years ago. The history of the growth and increase of mud-flats and weed, and breaking up of the former and disappearance of the latter, is curious. I do not know whether it would interest you.

The geese have less and less feeding-ground every year ; there is hardly a place where they can sit at low-water and feed far enough from the edge not to be liable to be disturbed, yet the geese of late years come more regularly than thirty to forty years ago ; then in mild winters we often saw none, or next to none, through whole seasons. I know not why this is ; perhaps because, on account of a run of good breeding years, there are more of the birds ; or perhaps, as there is much less of the weed

they eat, there may be less of it adrift at sea—for the geese used sometimes to remain all the winter without coming within sight of land.

I fear you will be tired of so much about the Brent Geese; but I will make one more remark about them. They never seem to sleep; look at them when you will with a telescope, all day they are wide awake, and all night they seem equally busy, whether you find them near the land or go off to sea after them on a calm night. When far off at sea you may hear their noise the whole night, shifting its bearing with the tide. I never saw, or heard of anyone seeing, a Brent Goose with its head on its back as if asleep. Ducks and Wigeon may often be seen in this position.

We have had hardly any Wigeon outside last winter, though many have been taken in decoys. Were it not for these, giving a few a quiet place to induce them to stay and act at night as call-birds to those passing, we should hardly see any at all. I have not heard lately from Mr. —; his decoy did not do so well as usual in the first part of the season. Many years ago the Wigeons' chief pond was one situated about a mile and a half to the south of this; indeed Wigeon were almost exclusively caught in the south decoy, the north one only holding some teal and ducks. Then some twelve or fourteen years ago the latter was improved, and the Wigeon took to it, hardly anything but Teal and a few Ducks frequenting the former wigeon-pond. This last season they have again taken chiefly to the south decoy again, where they have done well. The only explanation I could hear was that cattle and people were near the north pond when the Wigeon began to come. I had accounts of great numbers of Jack Snipe about Oct. 1st from Norfolk, Suffolk, and Essex. Another flight came later.

Was there any great flight of Woodcock last autumn on the Lincolnshire coast? I have heard of very few this way.

The almost complete absence of shore birds has been remarkable; they seem to come here less and less. In the severe winter of 1880-81 we had very few. I cannot account for their falling off. From the nature of the ground they frequent, shooting troubles them little; to some extent the change of ground, which does away with the food of wildfowl, may—and most likely does—diminish their food. Perhaps they are changing their time of migration.

NOTES AND QUERIES.

MAMMALIA.

Number of Dogs in the United Kingdom.—Few people have any idea how many dogs there are in this country. There is no canine census in England, but as the law requires a license of 7s. 6d. per annum to be paid for every dog in the United Kingdom (except puppies, shepherds' dogs, and dogs employed to lead blind persons), the annual revenue received from the dog tax should enable us to calculate how many dogs there are in this country. The total amount paid for dog licenses in 1888 was about £386,000 (more exactly, £386,603). This shows that there were 982,000 animals (exactly 982,941) paying duty in that year throughout the British Islands. The number must strike everyone as incredibly small—less than a million dogs in all the United Kingdom. The conclusion that there must be an immense number of animals whose owners habitually evade payment for them is strengthened when we remember that the population of Great Britain is now over 38,000,000. Thus it appears that there is only one dog to every thirty-eight persons in this country. The number of stray and ownerless dogs taken in the streets of the Metropolis is counted by thousands; and this again points to the fact that a large number escape the duty. There can be no question that it is amongst these ownerless and ill-cared-for creatures that rabies is most likely to be developed. The question is, in what way can the Revenue laws, which are now evaded, be best enforced, and our streets and roads kept clear of these useless and dangerous animals.

Cats' Eyes of different Colours.—With reference to the note which appeared in the last number of 'The Zoologist' (p. 16), on a cat with eyes of different colours, I think this is not a very unusual occurrence, as I have heard of one or two instances in which a similar peculiarity was noticed; in fact, I once possessed a kitten in which the iris of one eye was of a greenish hue, and the other dark brown. The Editor truly remarks that white cats with blue eyes are nearly always deaf. Some friends of mine had a Persian cat presenting a similar coloration both in eyes and fur, and was stone deaf; so much so, that if you fired a pistol close to its head it seemed hardly conscious of it. Its progeny showed a similar imperfection. Can this peculiarity be accounted for?—ROBERT USHER (Newcastle-on-Tyne).

Varieties of the Hare in Ireland.—A variety of the so-called Irish Hare was obtained in the Co. Kildare in December last, having the centre of the back black, shading into blackish grey on the sides, the only parts normally coloured being the sides of the mouth and a small space round the eyes, which are of the usual dark brown. A sooty-black Hare has been

recorded by Thompson, in his account of Irish Mammalia, as having been killed in the same county in January, 1850. I have received several specimens of another variety which occurs persistently on the coast from Malahide to Balbriggan, Co. Dublin. In this the colour is a rich buff, shading into pure white on the lower parts; the eyes are a pale straw-yellow, with a greenish tint. Of this variety I have had a number of specimens, and have seen others in the market from time to time, but have never heard of it in any other district except that mentioned. I have at the present time a doe hare and leveret a few days old, both taken together, the young one exactly similar to the parent.—EDWARD WILLIAMS (2, Dame Street, Dublin).

Destruction of Vermin in Pennsylvania.—The legislature of Pennsylvania has recently passed a law by which it has been decided to pay the following capitation fees:—Wolves, 10 dols.; Wild Cats, 2 dols.; Foxes, 1 dol.; Minks, 25 cents. The fox-hunters are up in arms, and tried hard to prevent the passing of the Bill, but the interests of the poultry-farmers carried the day.

Food of Bats.—Mr Aplin is no doubt correct in attributing (p. 382) the small hoards of moths' wings which we so frequently find in outhouses and other sheltered places to the work of the Long-eared Bat; though the readers of 'The Zoologist' will recollect that it was at one time difficult to convince some correspondents that they were not collected by either spider or mouse. My office-porch is a favourite place for these bats to devour the bodies of their moths while hanging suspended from the roof, at the same time nipping off their wings, which fall to the doorstep, and may sometimes be seen in numbers the following morning—principally those of *Noctua*, together with a few beetle-elytra, and an occasional wing of the large spotted winged crane-fly. These bats some summer evenings may be observed constantly flitting in and out, but some evenings seemed much more successful than others, just as the entomologist is with his captures at sugar. One summer evening, about August, some twenty-five years ago, I was much interested in watching a party of the Long-eared Bat flitting round a small arbutus shrub, the numerous blossoms of which had attracted great numbers of *Plusia gamma*. Many of these moths were actually taken on the blossoms, the bat closing its wings, folding down the ears, and making its meal there and then without quitting the tree. The Noctule, however, seems to masticate its food while on the wing, the grating of the teeth being plainly audible as it passes to and fro over-head. I saved the contents of the stomach of a Noctule I shot last September. It was a filthy looking mass when emptied into a cup of water, and required repeated washing to cleanse. Even now the insect-remains are covered with flocculent matter which prevents a free view of them under the microscope. One

beetle-wing is nearly perfect, but the greater part of the mass is reduced to small proportions, which appear to me to belong to the Diptera; but of this I do not feel in the least certain, and shall be glad to submit the material to any one who would care to work it out and report.—WILLIAM JEFFERY (Ratham, Chichester).

CETACEA.

Bottle-nosed Whale in Wexford and Wicklow.—In September last I obtained at Feltard, on the Wexford coast, some bones of a whale, which I am told was stranded there about three or four years ago. Prof. Flower very kindly identified one of the bones, a vertebra, as belonging to a young Bottle-nosed Whale, *Hyperoodon rostratum*. Through the kindness of Mr. E. Williams, of 2, Dame Street, Dublin, I have obtained an account of two whales taken off the Wicklow coast in 1888. Mr. H. B. Rathbone, who bought them, writes as follows:—"The two Bottle-nosed Whales, caught on August 25th, 1888—a male, 19 ft., and a female, 18 ft. long, both young. The male weighed 34 cwt., and yielded 10 cwt. of blubber, which contained two-thirds oil, one-third skin and sinew. The oil weighed 145 gallons, and is the same specific gravity as sperm oil. There was also a small yield of spermaceti of good quality, but small grain. The beak was 18 in. long, furnished with lamellæ instead of teeth. The distance between the extreme points of the fork of the tail was also 18 in., and the front fluke 18 in. long and 8 in. broad." I am informed by Mr. A. G. More that this species of whale is the commonest species on the Irish coast.—G. E. H. BARRETT-HAMILTON (Kilmanock, New Ross, Co. Wexford).

Sperm Whale in Mayo.—Mr. Richard Widdicombe, of the Blackrock Lighthouse, Co. Mayo, has kindly sent me a tooth of a Sperm Whale, *Physeter macrocephalus*. It is between seven and eight inches long, and belonged to a whale, which, according to Mr. Widdicombe, was found dead in June, 1889, near Innishkea Island, Mayo. This whale was "about 60 feet long, with a tail about 13 feet broad." It was towed out to sea by order of the sanitary authorities.—G. E. H. BARRETT-HAMILTON (Kilmanock, New Ross, Co. Wexford).

BIRDS.

Tree Pipit in North Wales.—I can quite confirm what Mr. Haigh says (p. 20) about the abundance of this species in North Wales. I have found it in the spring most common in the wooded valleys of Carnarvon and Merioneth quite down to the sea. A remarkable circumstance in connection with the geographical distribution of the Tree Pipit is that not less than seventy miles westward from the Welsh coast there is a land which, so far as can be judged, seems as well adapted for its home as North Wales. In the oak-clad glens of beautiful Wicklow it might certainly be expected, yet it is absent from Ireland altogether, so far as I am aware, no

example as yet having been obtained. The Irish avi-fauna offers some strange anomalies. I have found the Carrion Crow fairly common about Holyhead, yet in the sister island it is of extremely rare occurrence, and the records are few and far between.—JOHN CORDEAUX (Great Cotes, Ulceby).

[As to the supposed occurrence of the Tree Pipit in Ireland, see a note from the Rev. C. W. Benson (Zool. 1878, p. 348), and his observations in 'Our Irish Song Birds' (p. 109). But see also Mr. A. G. More's remarks in his 'List of Irish Birds' (p. 11). We are glad to learn that a new edition of this 'List' is in preparation.—ED.]

Tree Pipit in North Wales.—Referring to Mr. Caton Haigh's note (p. 17), testifying to the abundance of the Tree Pipit in parts of North Wales, notwithstanding the statements in some of our best books on birds, I may state that it is also very common in Breconshire. It is, with two or three exceptions, the most abundant of our summer migrants. Its favourite haunts here are hedgerow-trees and the borders of woods; it also makes use of the telegraph-posts and wires along the railways. In such situations its cheerful song may be heard, and its graceful flight seen every few hundred yards, from about the 18th of April to the middle of July. I have specimens of eggs of this bird representing eight different varieties, selected from different nests I have found here.—E. A. SWAINSON (Woodlands, Brecon).

Snipe and Quail Netting in Italy.—Sport in Lower Italy is, with each year, getting less and less important, so far as the Snipe family and Quails are concerned. This falling off is stated to be due to the large amount of netting that is carried on along the coasts, the birds being captured fresh from their long migratory flight. Around the swamps nets eight or ten feet high are erected, and there is a great outcry in consequence of the practice, which is actually carried on after the legal shooting season is ended.

Introduction of the Californian Quail in South Australia.—The Californian Quail (*Lophortyx Californianus*) may some day become the sporting bird of South Australia. There are a good many now at large in the colony, and a number are being acclimatised on an estate near Oakbank. At one time the Common Quail was very numerous, but, owing to the reckless way in which they were shot down at all seasons, the bird has become quite scarce. The only Quail-shooting worthy of the name now to be had in the colony is on the islands about Port Lincoln and one or two other places.

The Attitude of Grebes on Land.—On looking through last year's volume of 'The Zoologist,' I was reminded of my unfulfilled intention to send you some remarks anent the Rev. H. A. Macpherson's note on this

subject (p. 230). Yarrell's statement, quoted by Mr. Macpherson, that "Grebes sit upright on the whole length of the tarsus," is all the more extraordinary, since the true state of affairs must have been pretty well known for many years. In Wood's 'Natural History,' the woodcut of the Crested Grebe (misnamed "Eared Grebe"), shows the bird with the tarsus at perhaps a greater angle than $22\frac{1}{2}^{\circ}$ with the ground, and in the same work the Little Grebe is shown standing with it at 45° at least. These attitudes are, I should say, pretty correct. The Little Grebe carries its tarsus, if anything, even more upright. Anyone who has had the opportunity of studying the ways of a Dabchick when brought into a room, must have been struck with its activity, and the rapidity with which it will "patter" about the floor,—entirely contradicting Yarrell's remark that their "walk is constrained." In writing of this species in particular, indeed, the latter author, while he notes that in walking "its progression has been asserted to be still more embarrassed" [than its flight], records on the authority of the late Mr. Gatcombe and others, that one kept in the Zoological Society's Gardens "could run very swiftly from one place to another, and could stand upright, although in a somewhat knock-kneed position." I have only once had an opportunity of handling a living specimen of the Great Crested Grebe; in September, 1881. It could stand fairly upright (in a very similar attitude to the bird in Wood's book, before mentioned), with its tarsus well off the ground, but at this distance of time I cannot say just at what angle. In this position it was quite capable of walking. The bird was, however, very tired (it had been picked up in a field at a little distance from water), and when left to itself preferred to lower its body and rest on its breast. On being introduced to a large tabby cat, who had evinced great curiosity about the Grebe while the latter was confined in a hamper, the energies of *Podiceps*, however, at once rose to the occasion, and with a couple of well-directed strokes of his long sharp bill, he completely routed grimalkin, who after that could not be induced to come within two or three yards of the bird.—O. V. APLIN (Bloxham, Oxon).

Martinique Gallinule in Hants.—Although Mr. More has knocked the so-called "Irish" Martinique Gallinule on the head, *Porphyrio martinicus* must not be too hastily struck out of the British list. Mr. Edward Hart has recently discovered one killed in Hampshire. It has been recorded as a Purple Gallinule in 'The Zoologist' (1865, p. 9418), and was killed by Mr. C. Stares in a marsh while flapper-shooting in August, 1863. In the same month a *Porphyrio* of some kind was caught alive in Northumberland (cf. Hancock, 'Birds of Northumb. and Durham,' p. 126), which may have been another Martinique Gallinule. Mr. Hancock writes to me that he had but a very slight view of it, and that it was afterwards sent to London, and has since been lost sight of, but he saw enough to be sure that the plumage was perfect, and showed no signs of the bird having been in confine-

ment. American naturalists give the Martinique Gallinule a character for migration, and those who are inclined to think that all *Porphyrios* found in this country must be escaped birds should read Lord Lilford's remarks in the 'Birds of Northamptonshire' (part ii. p. 39). Messrs. Baird, Brewer, and Ridgway, writing of the Martinique Gallinule (*Birds of N. Amer.* p. 385), remark, "it is a great wanderer, or in its migrations is driven by tempests to distant points," and refer to some being met with at sea. Incidentally Mr. More mentions that he has discovered a hitherto unrecorded Irish Green-backed Gallinule, *P. smaragdonotus*, killed so long ago as October, 1873. This almost synchronises with another recorded by Mr. Hancock (*l. c.*), caught in Northumberland in August, 1873, and which, though mentioned in his list as a Purple Gallinule, has since been ascertained by him to have been a green-backed bird, being doubtless also *P. smaragdonotus*. It is only fair, however, to add that about the time it was captured, Mr. Hancock heard that "a bird of the kind" had escaped from a sailor at Newcastle. But, setting this aside as doubtful, there still remain nine unimpugned instances of the occurrence of *P. smaragdonotus* in the British Islands,—*viz.*, one in Scotland, two in Ireland, and six in England,—besides six instances of the occurrence of *Porphyrio cæruleus*, *viz.*, one in Scotland, one in Ireland, and four in England. Mr. More has alluded to an example of *Porphyrio cæruleus* in Mr. Marshall's collection. It was bought by him at Mr. Troughton's sale in 1869, and subsequently given to Mr. Murray Mathew, who some years ago obliged me with a sight of it. In the sale catalogue it is entered as:—"539. Purple Moorhen, 1, killed in Ireland, 1846, &c., *Annals of Natural History*." Some time afterwards I wrote to the late Mr. Chute to ask if this was his bird; he replied in the negative, but gave me several interesting particulars relative to the capture of his specimen in Kerry. These particulars are at Mr. More's service for his new List.—J. H. GURNEY, JUN. (Keswick Hall, Norwich).

Crane near Bridgwater.—A fine specimen of the Crane, *Grus communis*, was shot at Country-Sea-Wall, one mile eastward of Stolford, near Bridgwater, on the 5th December last, by Mr. Richard Chilcott, of that place. It was taken to Sir Alexander Acland Hood, Bart., St. Audries, for whom it has been preserved by Mr. Wm. Bidgood, Curator of the Taunton Museum. About twenty-four years ago another Crane was shot near Ham-Sea-Wall, half-a-mile westward of Stolford, which is now in the collection of Mr. Chas. Haddon, of Taunton. These particulars were communicated to one of the Taunton papers by Mr. James Rawlings.—M. A. MATHEW (Buckland Dinham, Frome).

Crossbills in Ireland.—The years 1888-89 will always be remembered in the ornithological annals of this country for the remarkable invasion of

two rare birds of strange and wandering habits—Pallas's Sand Grouse and the Crossbill. Crossbills for the last two years have been found generally dispersed over Ireland, and, in a few instances, have been found breeding. No doubt they have nested also in many instances unobserved. Of this fact I have met with distinct proof. On June 10th last, just outside the town of Clonmel, but on the Co. Waterford side of the river Suir, I met with a considerable flock of Crossbills, nearly all young birds just fledged, in striped brown plumage, feeding on the catkins of some large elm trees. There seemed to be three or four family parties, the parents with the young, and these had no doubt been reared not far away. Afterwards I observed some of the birds again on the Tipperary side of the river. On July 28th a large number of Crossbills appeared suddenly at Shillelagh, Co. Wicklow—the first time I have found them in this locality. These appeared to be in almost all stages of plumage, some red, others gold, but the majority in the striped brown of the young bird. One which I shot was a fine male, very brilliantly coloured: wings and tail black, with faint greenish borders; throat, breast, and sides bright orange-gold; head, back, and upper tail-coverts golden yellow, with orange reflections on head and tail-coverts, and a tendency to olive on the back and shoulders. I leave it to naturalists of greater experience to tell the age of this specimen. The actions of these birds, whilst feeding are very amusing. The loud cracking of the fir-cones, split open by their powerful beaks, is audible to a considerable distance, while the birds themselves are usually quite invisible among the thick pine-branches, where they cling very closely, and are not easily disturbed. The ripe cone is wrung from the tree by a twist of the beak and then grasped tightly under the claws, while with the tongue and crossed mandibles the bird extracts the seeds. I noticed that the birds bite off numbers of the green cones and let them drop to earth, perhaps merely to remove them out of the way. The rattling of these among the branches, and on the ground as they fall, often leads to the discovery of the flock. Though generally silent while feeding, these birds are very noisy on the wing, and their loud, rattling call, "chick, chick, chickup," is not likely to be forgotten when once heard. I frequently heard the males utter a short song, not unlike that of the Greenfinch, but louder—sometimes on the wing. Their restless actions,—climbing, clinging attitudes when feeding, chattering twitter, and predilection for fir-trees,—all remind one strongly of the Siskin. They have remained about this place since their first appearance, and, being undisturbed, will very probably stay to breed at the beginning of spring, as from the abundance of spruce and Scotch fir, this district is eminently suited for them.—ALLAN ELLISON (Shillelagh, Co. Wicklow).

Montagu's Harrier breeding in Suffolk.—Two pairs of these birds frequented Scott's Hall Estate (Westleton) last season. One pair nested

and laid three eggs, and the other pair would no doubt have done so had they been allowed to remain unmolested. On May 25th a hawk was trapped and stupidly destroyed. From the description I have had of it, I have no doubt it was a female of this species. On May 29th a male Montagu's Harrier was trapped, and another on the 31st; both these birds were forwarded to Mr. Gunn for preservation, and both, from the frayed and worn condition of their primaries and tail-feathers, showed that they had mates in the neighbourhood. On May 30th one of the keepers flushed a hawk from its nest on Dunwich Common. The bird, he said, was not more than three or four yards from him when it rose; he described it as brown on the back, lighter underneath, and larger than the male Harrier he had previously trapped. The nest, in the middle of a clump of heather, was of very simple construction—a slight depression in the ground, lined with a few dead heather-twigs and a little grass. There were three eggs in it of a bluish-white colour. Two days after, on again approaching the spot, the keeper found the birds had forsaken the nest, the eggs being quite cold. He therefore took them, as he considered it useless leaving them to be destroyed by Rooks or ground vermin. They were sent to Mr. Gunn, who identified them as those of Montagu's Harrier, and they were slightly incubated. These with the birds and nest are now preserved in my collection. As the nesting of Montagu's Harrier may now be considered of rare occurrence in the eastern counties, the foregoing notes may be of interest.—MENTIETH OGILVIE (Sizewell, Leiston).

Eared Grebe near Scarborough.—A specimen of this somewhat rare visitant was shot from a fishing-coble, near Scarborough, on Dec. 16th, and is now in the possession of Mr. Head, of this town, who states, that on dissection, it proved to be a female, with eggs in the ovary in an advanced stage. The shape of the bill in this species is a marked feature, distinguishing it from the Slavonian Grebe, and reminding one of the bill of the Turnstone, or that of a Thrush when the natural position is reversed, *i. e.*, with the under mandible uppermost. This is the only example, to my knowledge, that has been obtained near Scarborough, though the Slavonian Grebe is not uncommon from autumn to spring.—R. P. HARPER (Scarborough).

Pectoral Sandpiper: Correction of Misprint.—In my note on the Pectoral Sandpiper, see 'The Zoologist' for December last (p. 452), there occurs a misprint in the date. For "Aug. 26, 1887," read "Aug. 26, 1889."—T. E. GUNN (84 & 86, St. Giles Street, Norwich).

Short-toed Lark at Great Yarmouth.—A male example of the Short-toed Lark (*Alauda brachydactyla*), was shot near South Breydon Wall, Great Yarmouth, on Nov. 7th last, and is, I believe, the first that is known to have occurred in Norfolk.—G. SMITH (North Town, Great Yarmouth).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

December 19, 1889.—Mr. J. G. BAKER, F.R.S., Vice-President, in the chair.

Messrs. S. A. Moore and J. J. Walker, R.N., were admitted, and Messrs. C. Curtis and P. Groom were elected Fellows of the Society.

Prof. P. M. Duncan made some supplementary remarks on a specimen of *Hyalonema Sieboldii*, which he had exhibited at a previous meeting.

Mr. W. Hatchett Jackson exhibited and gave an account of an electric Centipede, *Geophilus electricus*, detailing the circumstances under which he had found it at Oxford, and the result of experiments which he had made with a view of determining the nature and properties of a luminous fluid secreted by it. This he found could be separated from the insect, and could be communicated by it to every portion of its integument. An interesting discussion followed, in which Mr. Breese, Mr. A. W. Bennett, Prof. Stewart, Mr. A. D. Michael, Dr. Collingwood, Mr. Christy, and Mr. J. E. Harting took part. The last-named speaker pointed out that the observations made by Mr. W. Hatchett Jackson on this Centipede had been long ago anticipated by Dr. Macartney in an elaborate paper on Luminous Insects published in the 'Philosophical Transactions' for 1810 (vol. 100, p. 277).

A paper was then read by Mr. T. Johnson on *Dictyopteris*, in which he gave a detailed account of the life-history of this Brown Seaweed, with remarks on the systematic position of the *Dictyotaceæ*. Dr. Scott, Mr. George Murray, and Mr. A. W. Bennett criticised various portions of the paper, and acknowledged the important scientific bearing of the facts which had been brought out by Mr. Johnson's careful and minute researches.

In the absence of the author, Mr. W. P. Sladen detailed the more important portions of a paper by the Rev. John Gulick, "On Intensive Segregation and Divergent Evolution in Land Mollusca," a paper which might be regarded as a continuation and amplification of the views which the same author had expressed in a former paper published in the Society's Journal last year (vol. xx., Zool. pp. 189—274).

Jan. 16, 1890.—Mr. J. G. BAKER, F.R.S., Vice-President, in the chair.

Mr. S. Lithgow was elected, and the following were admitted Fellows of the Society:—Messrs. C. W. Turner, J. T. Tristram Valentine, William Rome, and Major A. R. Dorward.

Mr. Clement Reid exhibited and made some remarks upon a collection of fruit of *Trapa natans* from the Cromer Forest Bed at Mundesley.

Mr. J. G. Baker exhibited and described a collection of cryptogamic plants from New Guinea, upon which Mr. A. W. Bennett and Capt. Elwes made some critical remarks.

In the absence of the author, Mr. A. Barclay, a paper was read by Mr. B. D. Jackson on the life-history of a remarkable Uredine on *Jasminum grandiflora*. A discussion followed in which Mr. A. W. Bennett and Prof. Marshall Ward took part.

This was followed by a paper from Mr. Edward E. Prince, "On certain protective provisions in some larval British Teleosteans."

ZOOLOGICAL SOCIETY OF LONDON.

January 14, 1889. — Prof. A. NEWTON, 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 December, 1889.

Mr. Sclater exhibited and made remarks on a specimen of a very singular Duck from N.E. Asia, apparently referable to the genus *Tadorna*, sent to him for determination by Dr. Lütken, of Copenhagen. After a careful examination, Mr. Sclater was inclined to think that it was probably a hybrid between *Tadorna casarca* and *Querquedula falcata*.

Mr. Sclater exhibited and made remarks on a set of small birds' bones obtained from beneath some deposits of nitrate in Southern Peru, transmitted to the Society by Prof. W. Nation.

Mr. David Wilson Barker exhibited and made remarks on some specimens of Teredos taken from submarine telegraphic cables off the Brazilian coast.

Prof. F. Jeffrey Bell exhibited and made remarks on some living specimens of *Bipalium*, transmitted to the Society by the Rev. G. H. R. Fisk, of Capetown.

A communication was read from Mr. R. Lydekker, containing an account of a new species of extinct Otter from the Lower Pliocene of Eppelsheim. The author described part of the lower jaw, which he had previously referred to *Lutra dubia*, from the deposits indicated. Having, however, now seen a cast of the type of the latter, he found that the present specimen indicated a distinct species, for which the name *L. hessica* was proposed.

A communication was read from Prof. Bertram C. A. Windle and Mr. John Humphreys, on some cranial and dental characters of the Domestic Dog. The paper was based on the results of the measurements of a large number of dogs' skulls of various breeds. Its object was to ascertain whether cranial and dental characteristics afforded sufficient information to permit of a scientific classification of the breeds, or would throw any light upon their origin. The conclusion so far arrived at was that interbreeding had been so extensive and complicated as to make it impossible to distinguish the various forms scientifically from the characters examined. Several points with regard to the shape of head and palate and the occasional occurrence of an extra molar were also touched upon.

Mr. G. A. Boulenger read the fourth of his series of contributions to the Herpetology of the Solomon Islands. The present memoir gave an account of the last collection brought home by Mr. C. M. Woodford. Besides known species, this collection contained examples of a new Snake, proposed to be called *Hoplocephalus elapoides*.

A second paper by Mr. Boulenger contained a list of the Reptiles, Batrachians, and Freshwater Fishes collected by Prof. Moesch and Mr. Iversen in the districts of Delhi and Langkat, in North-Eastern Sumatra.

Dr. Günther read a paper entitled "A Contribution to our Knowledge of British Pleuronectidæ." The author described the true *Arnoglossus grohmanni*, a Mediterranean Scald-fish recently discovered by the Rev. W. S. Green on the Irish coast, and quite distinct from *Arnoglossa lophotes*. Dr. Günther also stated that the Mediterranean Lemon-Sole, *Solea lascaris*, was specifically identical with the British species, *S. aurantiaca*, but was distinct from that of the Canary Islands and Madeira, *S. scriba*; and gave it as his opinion that the Mediterranean *S. lutea* and British *S. minuta* cannot be separated by any constant character.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

January 15, 1890, the 57th Annual Meeting.—The Right Honble. Lord WALSHINGHAM, M.A., F.R.S., President, in the chair.

An abstract of the Treasurer's accounts, showing that the finances of the Society were in a thoroughly satisfactory condition, was read by Dr. Sharp, one of the Auditors. The Secretary then read the Report of the Council, from which it appeared that the Society had lost during the year several Fellows by death and had elected 24 new Fellows; that the volume of Transactions for the year extended to nearly 600 pages, and comprised 23 memoirs, contributed by 20 authors and illustrated by 17 plates; and that the sale of the Society's Transactions and other publications is on the increase. It was then announced that the following gentlemen had been elected as Officers and Council for 1890:—President, The Right Honble. Lord Walsingham, M.A., F.R.S.; Treasurer, Mr. Edward Saunders, F.L.S.; Secretaries, Mr. Herbert Goss, F.L.S., and the Rev. Canon Fowler, M.A., F.L.S.; Librarian, Mr. Ferdinand Grut, F.L.S.; and as other Members of Council, Mr. J. W. Dunning, M.A., F.L.S., Captain H. J. Elwes, F.L.S., Mr. F. DuCane Godman, M.A., F.R.S., Dr. P. B. Mason, F.L.S., Prof. R. Meldola, F.R.S., Mr. R. South, Mr. Henry T. Stainton, F.R.S., and Mr. Roland Trimen, F.R.S. Lord Walsingham nominated Mr. J. W. Dunning, Captain Elwes and Mr. F. DuCane Godman, Vice-Presidents for the Session 1890—1891, and then delivered the annual Address.—H. Goss, *Hon. Secretary*.

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NOTES ON THE SEAL AND WHALE FISHERY OF 1889.

BY THOMAS SOUTHWELL, F.Z.S.

THE last three years have shown a progressive improvement in the Newfoundland Sealing, so far as the numbers taken by the British vessels is concerned. The year 1887 produced 177,733; 1888, 210,810; and the past season of 1889 has resulted in the capture of 303,287 of these animals; but the price of produce, I believe, has declined somewhat, so as to render the catch less valuable than would otherwise have been the case. This important branch of the industry of our oldest colony, however, has certainly proved more remunerative than has been the case for some years past. The distribution of the Seals amongst the vessels engaged has also been more equal, therefore even those ships which have not made a paying voyage have suffered less loss than is sometimes the case.

There were, last season, nineteen British vessels present, all of which secured more or less Seals, only three returning with fewer than 8000, seven between 8000 and 15,000, whilst nine had more than 15,000 each, *viz.*:—the 'Ranger,' 34,373; 'Wolf,' 31,473; 'Neptune,' 28,103; 'Terra Nova,' 25,734; 'Vanguard,' 21,000; 'Falcon,' 22,425; 'Esquimaux,' 20,036; 'Polynia,' 19,350; and the 'Iceland,' 16,000—an average of 24,277. No such great catch as that of the 'Neptune' in 1888 (42,242), has fallen to the lot of a single vessel; but it will be noticed that the cargoes were much more even, and that, as previously mentioned,

nine vessels secured more than 15,000 each, against seven the previous season; whilst the remaining ten averaged 8479 against 4309 last season, and none returned "clean." The average of the whole nineteen reached 15,963. Two vessels made second trips, the 'Wolf' and the 'Panther' for 4561 and 1651 Seals respectively. The 'Wolf' is said to have made the quickest voyage on record, leaving St. John's on March 10th and returning on the 20th with a cargo of 26,912 Seals. As last year, four Dundee ships were present at the Newfoundland Sealing, *viz.* the 'Terra Nova,' which took 25,734; the 'Esquimaux,' 20,036; the 'Polynia,' 19,360; and the 'Aurora,' 11,166—all of which are included in the above total.

The young Seals at the Greenland fishery this year were found about lat. 72° N., long. $1\frac{1}{2}^{\circ}$ E., and the fishing commenced early on the morning of April 3rd, about nineteen Norwegian and four Scotch vessels being present; the former captured 29,000 or 30,000 (I have only returns of seventeen of them), and the latter 2500 young Saddle Seals. In addition to these, the Scotch vessels killed some 10,099 old Seals, and the 'Germania' returned from Cumberland Gulf with 2480 others, the total number of Greenland Seals being 15,079, against 14,388 in 1888. I am told that the Norwegians had twenty-seven sealing vessels in all, and that they took about 70,000 Seals, old and young.

It thus appears that at Newfoundland and Greenland old and young sealing together, eleven vessels from Dundee and Peterhead captured 91,365 Seals, yielding 1062 tons of oil (against 82,235 skins and 997 tons of oil in 1888)—a considerable increase in numbers, but owing to the value of the skins having declined to something like 8s. 6d. each, and the oil to £19 per ton, the total value would probably be about £59,000, against an estimate of £61,057 in the previous voyage. Included in the seal-oil is the yield of 312 Walruses from Davis Straits and Cumberland Gulf.

The total number of vessels which left Dundee for the Seal and Whale fishery in 1889 was ten, the same as in the previous season, the vessels being identical; from Peterhead there were four, and the 'Germania,' which returned from Cumberland Gulf.

Turning to the Whale fishery, although the catches have not been large, a very considerable improvement has taken place, both

in the Davis Straits and Greenland Fishery, the present very high price of whalebone, owing to the scarcity of this valuable commodity in consequence of the failure of the American Fishery in Behring's Straits, proved of immense advantage to the Scotch merchants who had not disposed of their bone before the months of November and December, when the great rise took place.

It will be remembered that the reason assigned for the want of success in 1888 and previous years, in Davis Straits, was the great accumulation of ice which blocked up the principal fishing-ground; this year the ice which has so long been blocking the Straits has cleared away, and the Whales being more accessible, the fishery was much above the recent average. Capt. Phillips, of the 'Nova Zembla,' reports that though the "summer" fish were very scarce, in the fall large numbers of heavy Whales were seen; in fact, he does not remember to have seen so many Whales since the season of 1880. In consequence of the improved state of the ice, and the number of Whales seen, it is expected that five ships will go to the Straits Fishery in 1890, for three in the past season. The only unsuccessful vessel was the 'Chieftain' (a sailing vessel), which for want of steam power was unable to penetrate the ice in search of Whales; I am informed, however, that she is to be fitted with engines for the next voyage. The 'Maud' killed three fine Whales, yielding 60 tons of oil and 50 cwt. of bone; and the 'Nova Zembla' returned with five Whales, yielding 58 tons of oil and 55 cwt. of bone—no doubt a very satisfactory result from the owner's point of view.

From Greenland also the reports are much more favourable, no fewer than sixteen Whales having been captured, for four the previous season; these, however, were not so fine as the Straits Whales. The remarkable feature in the Greenland Seas was the prevalence of southerly winds, and the consequent almost entire absence of the southward drift of the ice which takes place in summer; the result was that an immense body of ice collected in lat. 74° , stretching in the month of July from the east coast of Greenland so far as 7° E. long. The Norwegian sealer 'Hecla' is said to have turned the south end of the Greenland ice (which usually extends as far south as Cape Farewell), in lat. 70° , and reaching the coast killed 300 Walruses and forty Musk-oxen. In passing round this tongue of ice to reach the south fishery-

ground somewhat to the north-east of Scoresby's Sound, Mr. Robert Gray tells me that between June 12th and July 18th their ship never once dipped to the swell of the ocean, and that from July 11th to the 18th they bored their way through the ice fully 200 miles as the crow flies. Many Whales were seen both at the north and south fishing-grounds, but they were shy and difficult of approach, and the 'Eclipse' succeeded in killing only four. They also shot ten Bottle-nose Whales, some very interesting notes on which I trust Mr. Gray may find time to communicate to 'The Zoologist.'

In addition to the Seals and Whales nineteen Bottle-noses were killed, yielding 19 tons of oil. The pursuit of this animal is left almost entirely to the Norwegians. Mr. Gray was informed by the captain of one of their vessels that in 1888 they had a fleet of thirty, mostly schooners, employed in their fishery, and that they had killed in that season about 1100 Bottle-noses. Most of these Whales are shot off the ship (especially in the case of schooners), the guns being mounted two aft on the rail, two forward, also on the rail, and sometimes one on the jib-boom end. They sail at very small cost, and of course our expensively equipped vessels, with better-fed and paid crews, cannot compete with them in this industry. Some of these vessels also attend what is known as the White Sea Sealing, which is prosecuted on the ice off Sviatoi Nos, only old Seals being killed there.

The total produce of the Scotch whaling voyage was 323½ tons of Whale-oil and 16 tons 6 cwt. of bone from twenty-seven Whales; and 19 tons of Bottlenose-oil from nineteen of these animals. The Whale-oil at £20 per ton, and the Bottlenose-oil at £30 per ton represents a sum of £7040.

It is difficult to state, even approximately, the amount realised by the owners from the sale of their whalebone; had they held it till the end of the year, it would have been worth £2500 per ton, if six feet long or over; but probably the bulk of the "size" bone was sold out at £1600 or £1700 per ton,—say £1650,—at which price, deducting 17 per cent. of the total weight for under-size bone,—worth only half-price,—it would produce about £24,600, together with the oil making a total of £31,600, against £12,808 in 1888. The present very high price of whalebone is likely to impart a very considerable stimulus to the Whale Fishery in the coming season.

As on previous occasions, I have to express my indebtedness to Mr. David Bruce and Mr. R. Kaines, of Dundee, Capt. Gray and his son Mr. Robert Gray, of Peterhead, and to Mr. Walter Thorburn, of Greenock, for their kind assistance.

THE EFFECTS OF MUSICAL SOUNDS ON ANIMALS.

BY ROBERT E. C. STEARNS.*

SOME years ago I observed in a casual way the effect of musical sounds upon certain animals, and was inclined to pursue the inquiry and endeavour to learn by careful experiment through the medium of music how far, or in what degree, there might exist between man and certain animals that fellow-feeling which makes the whole world kin.

The fraternal relation between dog and man, whether the latter be civilized or savage, is too well known to require remark. So, too, with other animals which man has domesticated, notably the horse and cat.

Some four or five years ago, at a meeting of the Biological Section of the British Association, Sir John Lubbock read some interesting notes on the intelligence of the dog. The man and the dog, he said, have lived together in more or less intimate association for many thousands of years, and yet it must be confessed that they know comparatively little of one another. That the dog is a loyal, true, and affectionate friend must be gratefully admitted, but when we come to consider the physical nature of the animal, the limits of our knowledge are almost immediately reached. I have elsewhere suggested that this arises very much from the fact that hitherto we have tried to teach animals rather than to learn from them—to convey our ideas to them rather than to devise any language or code of signals by which they might communicate theirs to us.

So it occurred to me that we might learn something of the animals around and about us,—add somewhat to the stock of knowledge, and get many interesting hints, some useful and some curious, as to their inner nature,—by the aid of music or musical sounds, by observing the effect of such sounds upon them.

* From the 'American Naturalist,' Jan. 1890, pp. 22—29.

In pursuing an investigation of this kind, we would naturally experiment with the domesticated animals first, and of such animals those with which we are the most intimate. Thus the dog and cat are household pets; in many cases housemates from birth to death. Generations of these animals are born within the social atmosphere of the same human family, and quite likely derive or receive through heredity, as well as by individual contact or experience, a feeling or sense of security, protection and fraternity.

While such animals may be regarded perhaps as becoming, through such contact, somewhat humanized, and therefore less adapted or satisfactory for the purposes of such experiments, on the other hand their familiarity with a great number of sounds which their untrained brethren know nothing of would seem to be fully an offset, and again their familiarity with man would operate adversely to a feeling of fear when experimental sounds were being made.

We do not know that any influence analogous to music inspires the Military Ants in their great marches, or that the Monœcious Snails have any occasion for love-songs. But these are not next of kin in the scale of Nature, and we have poor relations nearer home who seem to be moved by the same or similar impulses with ourselves.

By voice or sounds fully as much as by facial expression or gesture—movement of body or limb—the emotions are expressed by the human animal, and this is in great measure the case among the animals which follow along after or below man. The moods and tenses of feeling, pleasure and pain, joys and sorrows, are made apparent by the intonation of the voice, by the sounds which such conditions induce, provoke or compel.

We speak of the sense of hearing. An inquiry of the kind herein suggested relates to the sense of sounds.

The sense of sounds among the higher animals we may assume to be nearly universal, and among dogs and some other animals, combined with memory, tends to the development of the intellectual quality, as the sense of hearing in a certain aspect is an intellectual rather than a physical sense.

To what degree this sense of sounds is developed or exists, can be learned only by experiment, and requires on the part of the experimenter what I unfortunately do not possess—a knowledge of music, and the ability to play upon one or more instruments.

The sense of sounds, we may assume, varies in animals below man as it does in man, or as the colour-sense varies; often limited, or nearly or quite wanting; hence the term colour-blindness, and we may use the term sound-deafness in an analagous way.

The experiments of Sir John Lubbock referred to show a great difference in the perceptions and receptivity of dogs, as between his black poodle "Van" and Lady Lubbock's collie "Patience." In speaking of it Sir John says:—"I was rather disappointed at this, as if it had succeeded the plan would have opened out many interesting lines of inquiry. Still, in such a case, one ought not to wish for one result more than another, as of course the object of all such experiments is merely to elicit the truth, and our result in the present case, though negative, is very interesting."

To the terms music and musical sounds, in this connection, an exceedingly liberal definition must be conceded—liberal in a simple and non-technical sense, so as to include:—

1. Sounds not even musical, but occurring in simple rhythmic order or succession, like the common marching drum-taps, when the full military band is resting.

2. Melodious sounds, or sounds in themselves musical, occurring in harmonious sequence.

3. The same in various strains or keys, more or less complex, but combined and arranged in accordance with harmony.

Of these definitions the first will oftenest serve the purpose.

It would seem that in the selection of tunes or sounds for experimental use, a hint may be had from the animals by observing the special sounds uttered by them in their various moods.

With the birds, for instance, a tune, or sounds which include the notes uttered in their amorous moods at or about mating-time.

Many of the sounds which by man are regarded as musical and agreeable may not produce an agreeable impression upon animals, but may have an annoying effect upon them, as the monotonous, attenuated and irritating hum of the mosquito, the filing of a saw, or the rivetting of a steam boiler, with its rasping and tumultuous clangour, have upon us.

I spoke of sounds that are regarded as musical by man, but here comes to mind a wide chasm in the way of difference between the musical sense or taste of the European or Caucasian, and the

Chinese or Mongolian, idea of music and musical sounds, whether vocal or instrumental.

Some time ago there appeared in a New York paper an account of an interview with an Englishman residing in that city, who, it was stated, had a mania for collecting and taming various small animals, lizards, snakes, spiders, &c. The question was asked, "How do you manage the taming process?" Answer.—"It was simple enough. First of all I tried kindness. By kindness I mean warmth and music, and as much food as the animals could possibly eat, so as to get them into a state of torpor. If they were not well advanced in amiability in a week, the music was stopped altogether, and I gave but little food. This made them savage. They then had music occasionally, the doses increasing in proportion to the improvement in their temper."

Question.—"What kind of music did you give them?" Answer.—"It varied a great deal. Some of them liked a piano best. Some liked a violin, and others a flute, and one was never so happy as when listening to an Æolian harp I had erected on the window of the room I kept them in. They all liked a musical box. You might not believe it, but there was not a single one of my snakes or lizards that could not distinguish instruments and tunes. They had very good taste and ear, and would keep time to slow measured music by wagging their heads, and if I ever created discord when playing they would get quite in a rage. I remember a thunderstorm angered them once, and I could hardly keep them from attacking one another and indulging in a free fight. Luckily an itinerant German band was within hail, and I prevailed upon its members by financial arguments to play to these beasts for an hour. They were pacified, but the neighbours for two hundred yards around were not."

While conceding a liberal margin for the embellishment of the interviewer and the enthusiasm of the interviewed, there is no doubt that the leaven of the fact prevails in the foregoing. The statement as to the wagging of heads, however, may safely be disregarded.

Without further preamble or speculation, in proceeding with the data which are here brought together, we will begin with the domestic animals, and first with the dogs—"dogs of high and low degree."

Dogs and Music.—Goodrich relates many interesting anecdotes

on the apparent effect of music on various animals, among which I find this:—"A dog in Paris, at the commencement of the Revolution, was known to musicians by the name of 'Parade,' because he regularly attended the military at the Tuilleries, stood by and marched with the band. At night he went to the Opera, and dined with any musician who intimated, by word or gesture, that his company was asked, yet always withdrew from any attempt to make him the property of any individual." Mr. W. S. Jones states that he has "a Skye terrier, about four months old, who, when the piano is played, seems to be curiously fascinated by the sound, and comes towards it, but then howls in a most plaintive way, with his nose in the air, as if protesting against the sound." C. J. W. says:—"A black-and-tan terrier that we kept for some time was particularly sensitive to music. Although scales played on the piano made her yell piteously, it was by the concertina's sweet influences that she was most affected, flying before it, and, if unable to leave the room, whining until the tune was stopped. A Spitzbergen dog-friend of ours is much excited by music, but when one tune is played its excitement is more marked; the tune is 'Bonny Dundee.' Dogs are not peculiar in their feeling for music; witness the fact that retired cavalry horses obey the call of the bugle when accidentally heard." To the Rev. Mr. James, of Tuscarora, Nevada, I am indebted for the following and other pertinent instances:—"In Eureka, Nevada, I visited in a family who were the proud possessors of a dog named 'Ben.' Ben was one of those smart dogs who know everything. He was passionately fond of piano music; it silenced the wagging of his tail, and the studious look of the eyes, as you sat at the instrument, denoted pleasure; but no sooner would the harmonica (mouth-organ) be played than he would howl and give short yelps in a ferocious style. The music of the ordinary organ affected him in the same way." An old friend, Prof. George Davidson, of California, has kindly furnished me with many interesting items, among which the following relate to dogs:—"A small black-and-tan, named 'Bessie,' belonging to Mr. A. B. Carson, of North Fifth-street, Philadelphia, will, on hearing 'Shall we meet beyond the River?' sung, throw her head back and set up a most dismal howl, while the tears will run down her cheeks. If the tune is played solemnly on an organ and no word spoken, the same thing will occur; but if any of the words are spoken, without the slightest musical

intonation, she will run to the speaker, and beg and plead in her own way, and do everything but speak, to have it stopped. 'Toodles,' a Spitz, belonging to the same person, will howl when a discord occurs, or when an accordion is played, but is not otherwise affected; while 'Rose,' another Spitz, will lie at the foot of the organ, apparently pleased with the music, but making no demonstration of either pleasure or annoyance. A black-and-tan, rather larger, named 'Duke,' belonging to Mr. Loney, of North Sixth-street, Philadelphia, will, on hearing 'Hold the Fort' sung, start in with the rest, and will actually sing in dog fashion as long as the singing goes on, and appears to be delighted with the music. A Spitz which belonged to Mr. Charles Wetherald (formerly of North Sixth-street, but now of Bryn Mawr), named 'Blanco,' was so affected by the music of a violin that he would howl, and, if the music was persisted in, would fly at the musician, and one or the other would have to leave."

Dogs and Church Bells.—"Living next door to us in our English home was the sexton of a church, in the belfry of which was a beautiful peal of eight bells. Each Sunday morning and evening before service the sexton, as leader of the bell-ringers, would go to the belfry (the church stood exactly opposite his house) to perform his duties. He had a large Newfoundland dog, which—no sooner did he perceive the sexton going out—would take his stand just outside the door of his master's house, and immediately the bells began to ring would raise his head and howl in the most melancholy and profound manner. No speaking to him would change his position; he would go on until the ringing ceased." A Salem (Illinois) dog has been reported as similarly affected by the sound of church bells, and, it would seem, by a Presbyterian bell in particular:—"Conrad Bollinger for some years past was the owner of two dogs which were much attached to each other. Several months since one of them died, and the effect thereby produced on the one living was very marked. It for days acted strange, as if lost; and when the bell of the Cumberland Presbyterian Church rang it set up a doleful noise. This it does at each ringing of the bell, during which time it will gaze intently up at the belfry. If the ringing is not protracted it keeps up the whining, howling noise, and when done it returns to the house, which is near to the church. None of the other bells seem to affect this dog."

Hounds and the Bugle.—In Mrs. Custer's entertaining volume, 'Boots and Saddles,' she mentions the effect of the cavalry bugle-call as follows:—"The pack of hounds were an endless source of delight to the General. We had about forty; the stag-hounds [*i. e.* deer-hounds], that run by sight, and are, on the whole, the fleetest and most enduring dogs in the world, and the fox-hounds, that follow the trail with their noses close to the ground. The first rarely bark, but the latter are very noisy. The General and I used to listen with amusement to them striking the key-note of the bugler when he sounded the calls summoning the men to guard, mount, stables, or retreat. It rather destroyed the military effect to see beside his soldierly figure a hound sitting down absorbed in imitation. With lifted head and rolling eyes there issued from the broad mouth notes so doleful they would have answered for a *misericordia*." During a period of ill health, I boarded for several months at a hotel in Auburn, California, and a part of nearly every day was passed in the shade of a vine-clad summer-house, on the neighbouring grounds of an acquaintance, Dr. Todd. A friend of mine, a young man in poor health, boarded with the Doctor, and we were together every day. Dr. Todd had an old collie that served the purpose of a watch-dog. Our relations with the animal were such that it knew us to be friendly; during the day the dog was always with us. Without the slightest look, word, or sign of command, rebuke or menace by either of us, the moment I commenced to imitate a French-horn he would immediately leave and skulk away to his kennel, evidently very much annoyed, and that, too, without regard to the tune. When a veritable horn was played upon by my companion, the poor dog trembled in every limb, went to his kennel, and remained there in a state of nervous agitation, made neither a bark, howl or moan, but wore a deplorably pitiable expression, as if his nerves were absolutely unstrung. No doubt the sounds affected him as the fling of a saw or Chinese instrumental music affect me.

THE LATE MR. F. T. BOOTH, OF BRIGHTON.

To most of our readers, if not to all of them, the name of Edward Thomas Booth will be perfectly familiar, as that of the author of an important work on British Birds, and the owner of one of the most remarkable private museums in this country. No one who could afford the cost of an expensively illustrated work like his 'Rough Notes on British Birds' would be without a book which abounds in original and accurate information; no visitor to Brighton with any taste for Natural History would miss seeing Mr. Booth's Museum in the Dyke Road, fortunate indeed if the owner happened to be there, to impart, in answer to enquiry, some of that fund of information which he had spent a lifetime in acquiring.

We very much regret to know that our last visit to him has been paid, and that we shall never again listen to that cheeriest of companions, whose animated descriptions of his shooting and fishing experiences were so entertaining and so instructive. He died on the 8th February last, at the age of fifty, and was buried, by his own desire, at Hastings in the same vault in which his parents are laid.

In some respects Mr. Booth was a fortunate man. Born at Chalfont St. Giles, in Buckinghamshire, in June, 1840, he was educated at Harrow and Cambridge, and on leaving the University found himself, as an only son of well-to-do parents, sufficiently well off to be independent of a profession. Possibly the previous knowledge of what was in store for him exercised a prejudicial influence over his early studies. At any rate study of any kind was unacceptable to him, and the nature of his distractions may be best expressed in his own words:—"To an undergraduate with a strong predilection for the gun, the proximity to Cambridge of the various fens and rough marsh lands was a temptation scarcely to be resisted. The pursuit of the 'longbills,' however, for several consecutive days in the week during term time, and consequent absence from lectures, coupled with a 'scratch' for more than one examination, raised at length the long-cherished wrath of the authorities," and—he had to leave before taking his degree. His tutor assured him that before ten years could elapse he would regret the time he had wasted at the University.

Twenty years later he said his tutor's words had come true, though not in the sense they were intended. He only regretted that he had not spent more time in the fens! He never was so happy as when out of doors, in some wild part of the country; in some lonely marsh after Snipe; lying in a punt in some tidal harbour waiting for a shot with the big gun at Wigeon, or Brent Geese, or clambering amongst heather and boulders through a Scotch mist in search of Ptarmigan. Or if it was not the shooting season, trout- and salmon-flies would engage his attention, and few things he loved better than to put off to sea for a day's fishing with net or hand-line, on which occasions he would always have a gun handy, as he said, in case anything turned up that was wanted for the collection.

When first we became acquainted, twenty years ago, he was living at Vernon Terrace, Brighton; or perhaps it would be more correct to say that he had a house there, for he was scarcely ever at home, except by appointment. He was almost sure to be away somewhere shooting or fishing, and only came home, as he said, to deposit his trophies, or to lay in a fresh stock of clothes, ammunition, or whatever else was needed for the success of his next campaign. When the house in Vernon Terrace became too small to hold the collections, and every room from cellar to garret was full of cases of stuffed birds, it became necessary to look out for another habitation, and a piece of vacant ground upon the downs being for sale, Mr. Booth conceived the idea of being his own architect, building his own house, and subsequently a museum. This he carried out entirely to his satisfaction, erecting a museum 200 ft. long, 40 ft. wide, and 30 ft. high, and lighted with a skylight throughout its entire length. This building he connected with his drawing-room by a charming fernery, composed of natural boulders, carted thither at great expense, between which ran an artificial stream, spanned by a rustic foot-bridge, and tenanted by fish and Kingfishers, while Robins and Wagtails, in undisturbed tranquility, built amongst the ferns which cropped out in profusion from the rocks. Out of doors in the grounds a pond of sea-water, periodically renewed, surrounded by shingle from the beach, and protected on all sides with a high oak paling, served as an excellent observatory for studying the actions of Razorbills, Guillemots, Puffins, Skuas, Gannets, and other seafowl which

from time to time were procured alive and turned out to enjoy a state of comparative freedom. What this freedom was may be inferred from the unprecedented fact that a pair of Gannets bred there, and reared a young one which Mr. Booth was enabled to watch through its various phases of plumage towards maturity, taking note of its appearance almost daily.

The museum building being ready, he had a fresh incentive to collect for the purpose of filling it. When at home, he used to say that he held himself in readiness to leave again by the next train for any place in the United Kingdom, on receipt of a telegram from an acquaintance or ally to the effect that a strange bird was awaiting his attention in such-and-such a parish, and had eluded all attempts to secure it. If he had reason to suspect that it was something worth going for, he would start at once, and, in nine cases out of ten, would return home with the prize, and a pocket-book full of field-notes concerning it. It has been our privilege to see many of these note-books, in which evidence of his power of observation and keen enjoyment of sport was apparent on every page.

By some people, it is true, Mr. Booth has been regarded as a ruthless destroyer of animal life; as a man who would go any distance to kill something; and who would shoot every rare bird he could come across. This character he did not deserve; for while he undoubtedly took infinite trouble, and spared no expense to secure specimens of any bird not already in his collection; yet having secured them, and caused them to be well preserved and mounted, he killed no more than he wanted, unless, as in the case of game and wild fowl, he shot them in the legitimate exercise of a sportsman's instinct, or to supply his own larder and that of his friends. His moderation, therefore, in this respect was much greater than some people were inclined to believe, and the destruction of a rare or brightly-plumaged bird was almost always compensated for by the excellent field notes which he took care to write down when observing it, by the subsequent publication of these notes for others' benefit, and by the undoubted enjoyment and instruction which he afforded to the public by admitting them unreservedly to view his collections.

Nor was this the only good that resulted from the pursuit of his hobby. Not only have hundreds of people been instructed

by means of his admirably displayed collection of British birds, contained in upwards of three hundred glass cases, and of the printed catalogue, in which the birds in each case are described, and some account given of their habits, but the poor and the sick who could not personally attend, were also indirectly benefited. For with a liberality which was characteristic of the man, Mr. Booth decided that, while in order to prevent the inconvenience which would arise if he were to announce "free admission" to the museum, it would be necessary to make a small charge (which was fixed at one shilling), he would devote the proceeds (after paying the wages of the attendant in charge) to charitable purposes in the county in which he resided. In consequence of this generosity, the Sussex County Hospital, the Brighton Hospital for Women and Children, the Brighton and Hove Dispensary, the Brighton Volunteer Fire Brigade, and other institutions near home, to say nothing of charities at a distance (as in the case of the Welsh Miners' Subscription Fund), were considerably and often unexpectedly benefited.

No one knew better than Mr. Booth, who was so much amongst them, the hardship and privation with which seafishermen have often to contend; and we feel quite sure that many an "old hand" who, on the occasion of loss of boat or nets through accident, or loss of income through ill-health, has had cause to be grateful to a liberal employer, will miss in the late Mr. Booth a real good friend. Under these circumstances, it would be ungenerous to grudge a man the privilege of following his inclinations as a sportsman and a collector, because, forsooth, he could kill more birds than a less fortunate collector, knowing much better from experience how to set about it.

Of the kind of knowledge he possessed, those who did not know him personally, may form some opinion by turning to his three folio volumes, entitled 'Rough Notes on British Birds,' a work which was reviewed in this journal from time to time, as it appeared in parts. Its high price (in consequence mainly of the expensively coloured plates by Mr. Edward Neale) will, of necessity, prevent it, in its present form, from ever becoming very widely known; but should the publishers ever decide, as we hope they may do, to reprint the letterpress in an octavo volume, we venture to predict for it a popularity which will rival that of any work on British Birds which has preceded it.

As to the destination of his valuable collection, consisting, as we have said, of over 300 cases of British birds, all obtained by himself, and beautifully mounted with their natural surroundings, we learn on good authority that it has been offered to the Trustees of the British Museum, on the condition that it is not amalgamated with the general collection of mounted birds there, but kept distinct as the "Booth Collection." We sincerely hope that this offer will be accepted. Indeed, it is difficult to conceive upon what grounds it can be declined. Want of room can scarcely be urged, for should another gallery be required for the display of such a collection (which is very probable), there is plenty of vacant land immediately adjoining the present building which could readily be utilised; while want of money should surely not be pleaded by the Treasury, when so valuable a collection (worth at least £5000) is offered to the nation as a gift. As to the suggestion that its acceptance would imply the acquisition of a great many duplicates, that difficulty might easily be got over by parting with a good many specimens now in the museum wall-cases which, being old and badly stuffed, might well be dispensed with.

Furthermore, a moment's consideration will suffice to show that the acquisition by the nation of the Booth Collection would be not only a distinct gain from its intrinsic and educational value, but in the long run would prove a saving of expense, even if a new side gallery were to be provided. For, at the present estimated cost of the modern table-cases in the museum (in which the birds are being mounted in imitation of Mr. Booth's cases), it may be safely predicted that before anything like a complete collection of British birds could be formed (a task that would necessarily occupy many years), a larger sum of money would have to be expended than would now suffice to provide accommodation for this collection *ready made*, in which to add to its value, every bird has its history entered in a printed catalogue.

Nor should we lose sight of the fact, that Mr. Booth, having seen, at one time or another, every one of the birds in his collection alive in its natural haunts, has been thereby enabled to give them those graceful and life-like attitudes which charm the critical naturalist, but which the professional London birdstuffer, for want of out-door observation, is hardly ever able to impart.

NOTES AND QUERIES.

MAMMALIA.

Black Variety of Fox.—I have on several occasions examined specimens of a blackish variety of the Fox, killed in this neighbourhood, which were probably similar to that reported by Mr. R. F. Tomes, and mentioned in the Editor's note (p. 17). On looking through my notes, however, I can only find one entry relating to them, but as far as I remember, the others would resemble the description I then wrote down. My note, dated Feb. 18th, 1886, to this effect is: "Saw the head and brush of one of these so-called 'Black Foxes.' The throat is dark blackish grey. The long hairs on the head and neck have long black tips, giving the head a blackish cast, instead of the ordinary red. The brush has very long black tips to the hairs, and is very dark in appearance; there is no white 'tag.'" This Fox, when seen alive and at a little distance, would probably look so much darker than an ordinary red one, as to almost warrant anyone in casually calling it black. A considerable variation in the colour, as well as the size of different Foxes, may often be observed, some being much greyer than others. The season would partly account for this, the short bright red fur of summer being replaced with a longer fur with grey-tipped hairs in midwinter and early spring. The same thing occurs in the case of the Squirrel. Age may also be a factor, very large and old Foxes being probably greyer than younger ones. Perhaps this is the foundation for the common idea about here that there are two varieties, *viz.*, the large grey Fox (described sometimes as being as large as a sheep-dog), and the small red Fox, which I have heard called the "French Fox." In a list of vertebrate animals in the 'History of Banbury' (1841), it is remarked of the Fox,—“Two varieties; known as the Greyhound Fox and the Terrier Fox.”—O. V. APLIN (Bloxham, Oxon).

Pied Variety of the Brown Rat.—A pied Rat was killed at Burnthouse Farm, Farnham, Suffolk, at the latter end of January last. It was a male, nearly full-grown, and evenly marked, nearly the whole of each side of the body being white. The head, limbs, and a narrow line along the middle of the back were of the normal colour.—G. T. ROPE (Blaxhall, Suffolk).

Mouse-coloured Variety of the Mole.—A local birdstuffer, Mr. Reeves, has lately shown me a curious mouse-coloured variety of the Mole, which he received in the flesh. In certain lights the fur has a yellowish tinge. The most interesting point about this Mole, however, is its maimed and scarred condition. When it was taken it was found to have lost the whole of one hind leg and nearly all its tail. These losses had evidently

been incurred some time, as the wounds were quite healed up. Part of the skin on one side, for about an inch, had been ripped up and was hanging loose with the fur still attached, and underneath this loose hanging skin new fur had grown. Do not these facts show well for the vitality as well as for the pugnacity of the Mole?—E. P. LARKEN (Gatton Tower, Reigate).

The Eye of the Mole.—Carl Hess, the German naturalist, has proved by minute microscopical investigation that the eye of the Mole is perfectly capable of seeing, and that it is not short-sighted, as another naturalist (Kadyi) would have us believe. Hess maintains that, in spite of its minute dimensions,—1 millimètre by 0·9 millimètre,—the eye of this little creature possesses all the necessary properties for seeing that the most highly-developed eye does; that it is, indeed, as well suited for seeing as the eye of any other mammal, and that in the matter of refraction it does not differ from the normal eye. In order to bear out the theory of short-sightedness, the physiological reason was adduced that in its subterranean runs the Mole is accustomed to see things at close distances, and that its eye had become gradually suited to near objects. But to this Hess objects that the Mole when under ground most probably makes no use of his eyes at all, as it would be impossible to see anything owing to the absence of light; but that when he comes to the surface, and especially when he is swimming, he does use his eyes. In order to accomplish this, he only has to alter the erect position of the hairs which surround and cover his eyes, and which prevent the entry of dirt when he is under ground, and at the same time to protrude his eyes forward.—*Nature*.

Bank Vole and Short-tailed Vole in North Cheshire.—Early in January, 1889, I noticed that the bark of many of the holly-bushes growing in a roadside hedge near Northenden village had been gnawed off to such an extent as to completely strip twigs the thickness of my little finger for a space of four inches or more. After remaining quite still for a few minutes, I was rewarded by seeing a Vole come out of the grass in the hedge-bottom and climb up into the hedge to resume the meal which I had disturbed. Within half-an-hour I saw half-a-dozen Voles, all at work, some close to the ground, others more than two feet from the hedge-bottom; they did not touch the hazel, hawthorn, or briars in the hedge, but confined their attentions entirely to the hollies. Thinking that possibly some of the Voles might be *Arvicola glareolus*,—a species not, I believe, hitherto recorded from Cheshire,—I set several traps in the hedge, and others in a dry ditch about a mile away. I had the traps down for about three weeks, and caught several Field Voles, *A. agrestis*, and two or three Long-tailed Field Mice, *Mus sylvaticus*, in the hedge, but no examples of *A. glareolus*. The trap used was the ordinary box-shaped mouse-trap with a falling door, and baited with a piece of bread. I also tried almonds and cheese at first, but never

caught a mouse with either. On visiting my traps one evening I found that a Field Vole which had been caught had been dragged to the back of the trap and then partially through the wire-bars, presumably by a Weasel; the brains had been extracted from the skull, and the flesh torn from its back and shoulders. The traps set in the ditch yielded, besides a couple of Long-tailed Field Mice, a male *A. glareolus*, on the 21st and a female on the 23rd. Both of the Voles were dead when I took them from the trap, although in neither case had thirty hours elapsed since my previous visit. The fact that, with the exception of the Vole which was partially eaten, all the examples of *A. agrestis* caught in the hedge were alive, seems to indicate a more robust habit in *agrestis* than in *glareolus*. The traps were covered with leaves and bents, and were equally protected from the cold in both situations. At first I was frequently puzzled by finding a trap sprung, but empty, the little prisoner having eaten the bait and escaped. I therefore set some small-tooth traps, baiting with bread, and then caught several Shrews (I cannot say whether *S. tetragonurus* or *S. minutus*), both in the hedge and in the ditch. They had, no doubt, been able to insinuate their bodies between the wires of the box-traps, which were close enough together to retain the Voles and Field Mice. Within the last few years the Short-tailed Vole has increased in this neighbourhood to such an extent as to become a positive nuisance on some farms; and it may be noted as a significant fact that, thanks to the policy pursued by the game-preservee its natural enemies are being gradually exterminated. A Kestrel is seldom seen here now, and Weasels are growing sensibly rarer.—CHAS. OLDHAM (Ashton-on-Mersey).

The Pipistrelle in Confinement.—On August 26th I caught a Bat (the common Pipistrelle, I think), which flew in at the open window. I put it in a small wicker cage. After a short time it became quite tame, and would take flies out of my hand. It was very amusing seeing it catch and eat a moth. When the moth was put in, the Bat used to climb round the cage, uttering a shrill, squeaking sound, making snaps at the moth the while. When it had caught the moth it used to beat it against its breast to stun it, and then commence eating it, beginning at the head. It used to reject the wings. It ate an immense quantity of flies, sometimes as many as forty small house-flies in a day. After living for eight weeks the cat knocked over the cage, and the bat was either eaten or escaped. I never saw it again.—H. WOOLLCOMBE (Morth Grange, Exbourne, N. Devon).

Whiskered Bat in Cumberland.—On the 9th November last I received a specimen of this bat from the Solway. It had been caught by a fisherman flying about in his cottage. It was identified as *Vespertilio mystacinus* by the Rev. H. A. Macpherson, who states that it has occurred in one or two previous instances in Cumberland.—E. TANDY (Penrith).

BIRDS.

Great Skua on the Yorkshire Coast.—With reference to Mr. Harper's comments (p. 21) on the ignorance of Yorkshire fishermen as to the identity of the Great Skua, allow me to say that, although this may apply to the Scarborough fishermen, their Redcar brethren are not equally ignorant. The Great Skua is distinctly known here as the "Morrel Hen," Richardson's and Buffon's Skuas are called "Allans," and the Pomatorhine Skua is the "big Allan." Whenever any of the men have reported having seen "Morrel Hens" on the fishing-grounds, I have always questioned them particularly as to the bird they mean, and on more than one occasion have had ocular proof that they were correct. In October, 1886, Mr. Emerson and I were out in a boat with W. Dobson, an old Redcar "standard" who has often told me he has seen "Morrel Hens" in the offing. We had shot several *S. crepidatus* and seen two or three *S. pomatorhinus* near enough to recognise them, when a Skua passing within shot, was brought down by Mr. Emerson; I was sitting in the bow near old Dobson, who directly he saw the bird, which was some thirty or forty yards away, said, "That's a Morrel Hen," and on picking it up I found it was a fine Great Skua. We showed it to several other fishermen, who all declared it was what they called a "Morrel Hen." Since writing the above I have shown Mr. Harper's note to Dobson's son, who confirms what I have written, and tells me he saw a Great Skua last autumn, and described it as being as big as an Iceland Gull.—T. H. NELSON (Redcar).

The Extinction of Pallas's Cormorant.—It seems rather strange that, while skins and eggs of the Great Auk are so highly valued, the public rarely hear of Pallas's Cormorant, the extinction of which in the North Pacific corresponds to that of the Great Auk in the North Atlantic. Only four specimens of Pallas's Cormorant are known to exist in museums; no one possesses its eggs; and no bones were found or preserved until Mr. Leonhard Stejneger, of the Smithsonian Institution, was so fortunate some years ago as to rescue a few of them. Yet this bird was the largest and handsomest of its tribe. So says Mr. Stejneger in an interesting paper,—just issued by the Smithsonian Institution,—in which he records how the bones referred to were found by him in 1882 near the north-western extremity of Behring Island. In an appendix to this paper Mr. Stejneger's "find" is fully and exactly described by Mr. Frederic A. Lucas.

Bee-eater in Devon.—Perhaps it might interest some of your readers to know that twice during the summer of last year I saw a Bee-eater, *Merops apiaster*, in the neighbourhood of Exeter, namely, on July 17th and Aug. 13th. The first time I saw it, it was only for a moment, the chief thing which struck me about it being the rusty or chestnut-brown about

the body. The second time I had a better view of it, and specially noticed that it had a long and slightly-curved bill, and a good deal of greenish blue about the chest, &c.; also a yellow throat divided from the breast by a black line, and wings somewhat like a Swallow's. Of course it may not have been the same bird each time; the second time I am sure it was a male, the throat being of a darker yellow than that of the female seems, by the accounts in books to be; but the first time I did not see it long enough to determine its sex. I should think that it was the same male each time; but the birds might possibly have been a pair, the first one being the female and the second the male.—LEONARD M. KENNAWAY (Homefield, Exeter).

Goosander near Cardiff.—A female Goosander was shot on the Ely River, near Cardiff, on Dec. 30th, and was examined in the flesh by Mr. Robert Drane, of Queen Street, Cardiff.—DIGBY S. W. NICHOLL (Cowbridge, Glamorganshire).

Sabine's Snipe.—I have no doubt Mr. Gurney refers (p. 56) to a conversation we had in November last. Speaking then of the dark variety of Snipe known as "Sabine's," I stated that one season I saw four that had been killed in one small district, the dates on which they were shot being July 29th, Aug. 19th, Sept. 28th, and Nov. 15th, 1869. They were all birds of the year, and, from the limited area in which they were found, I consider it more likely that they belonged to one brood than to several.—EDWARD HART (Christchurch, Hants).

Merlin with feathered Feet.—Two years ago Dr. Turnbull, of this town, brought to me, for preservation, a female Merlin which had been shot on the beach here. I observed at the time some minute feathers on its feet, but thinking that this might be not uncommon I omitted to record the fact at the time. Having enquired of several naturalists, and closely examined every specimen of this bird which has since come in my way, I find that this appears to be an uncommon occurrence. The bird referred to is now before me. Three patches of feathers of a brown colour, and about an eighth of an inch in length, occur on the inner edge of the membrane between the third and fourth toes, similar to the feathers about the middle of the tarsus of the common Barn Owl.—GEORGE POW (57, High Street, Dunbar, N.B.).

[Is our correspondent quite sure that the feathers in question are not the feathers of some small bird which have become attached to the hawk's feet, as they often do after feeding?—ED.]

Sand Grouse in Staffordshire.—As I have not seen any record of the Sand Grouse having been observed in Staffordshire during the recent visit of this bird to England, I venture to send the following particulars:—I was told recently by a farmer that he possessed a bird which he thought was a Sand Grouse. A few days afterwards I went to see it, and found it

to be a male Sand Grouse, *Syrrhaptes paradoxus*, in very fair plumage. It was killed near Ibstones, a moorland village, about five miles from here, in September, 1888; it was one of a party of four. Another bird was wounded at the same time, and picked up dead a few days afterwards; the man who shot them mistook them at the time for Partridges. He came upon them as they were dusting themselves in a sandy hedgebank, as Partridges are very fond of doing.—E. W. H. BLAGG (Cheadle, Staffordshire).

Pied Flycatcher in Norfolk.—On June 8th, 1887, whilst driving over Grimston Heath, by the road leading from Rudham to Congham, my attention was suddenly attracted by the conspicuous black and white plumage of a small bird, which I recognised as an adult male Pied Flycatcher. I pulled my horse up and had a good view of the bird, both whilst perched within ten yards of us and also when flying. In the summer of 1878 I found the Pied Flycatcher breeding in the parish of East Somerton, in this county; the site of the nest—which I found before it was completed, and at first suspected to be that of the common Spotted Flycatcher—was under the eaves of a tumble-down, disused shed. When the first egg appeared I thought it must be a Redstart's, although the structure of the nest was of rather too neat compilation for that comparatively careless architect. Moreover, I had not seen a Redstart at Somerton until Aug. 29th, 1880, when a few of these birds stayed a few days with us at the period of the autumn migration. I did not see the Pied Flycatchers themselves till their nest contained seven eggs, which were always laid early in the morning; I refrained from taking one for my collection until the seven were laid, and then, on going to the nest for that very purpose, I found it had been already plundered and "pulled." The birds when seen were especially shy, and quite the opposite to the description given under such circumstances in 'Yarrell' (4th ed. vol. i. p. 23); in fact, I never heard either male or female utter a note. The hen bird I put off the nest once or twice, and the cock bird I saw several times, but until incubation commenced I never could catch a glimpse of either. On Aug. 3rd, 1883, I saw a cock bird of this species, and three immature or hen birds on Aug. 29th, in both instances in oak trees, and also a cock bird in splendid plumage, which my brother and myself watched for some minutes on an aucuraria on the lawn. The same day we picked up a young bird dead on the lawn without any apparent injury; this I now have stuffed. Within a day or so of this date a friend of mine shot an immature Pied Flycatcher in the parish of Witton, Norfolk. In the northern counties *Muscicapa atricapilla* is reported to frequent birch-plantations; at Somerton they exhibited a preference for oaks, and I think these two trees, the birch and the oak, attract a greater amount and a more varied choice of insect-life than any other two trees of the forest.—M. C. H. BIRD (Brunstead Rectory, Stalham).

Long-tailed Duck in Co. Waterford.—On Jan. 15th inst. I obtained at a poulterer's in Dungarvan a specimen of the Long-tailed Duck, *Harelda glacialis*, recently shot upon the estuary of the Brickey, western bay of Dungarvan, by a man who told me that it was accompanied by five or six others, some of which differed in colour, having more black upon them. The toughness of this bird's tissues inclined me to think, when skinning it, that it was an old female, but its scapulars had a more reddish tint than the rest of the upper surface, which was brown. This is the first instance in which I have met with this northern oceanic species, which Mr. A. G. More and Sir R. Payne Gallwey tell us is rare, except in the North of Ireland. I see by 'The Field' of Jan. 18th that the Long-tailed Duck has recently occurred on the coast of South Wales, and previous numbers of that paper record other captures in the North of England.—R. J. USSHER (Cappagh, Co. Waterford).

Ornithological Notes from Co. Wexford.—The following notes on birds, made in the past year in Co. Wexford, may be interesting to Irish ornithologists. On Jan. 17th, 1889, ten Woodcock were shot at Caringbyrne, as I learn from Mr. C. F. Dean Drake. Both Woodcock and Snipe are very scarce this year in Wexford, and I hear the same report from Waterford and Cork. On March 13th a white Missel Thrush was shot by a fowler, near Carnsore. The only traces of colour in its plumage are some dusty looking marks on the breast, which seem to do duty for spots. On the 17th there was a Waterhen's nest at Dunbrody Park, with the young birds already hatched. This seems an unusually early nest. On April 11th I saw a Bittern, at Mr. T. W. Robinson's, Wexford. It was shot, he tells me, by a gentleman out snipe-shooting, near Wexford, in Feb. 1887. Mr. Robinson also tells me that another Bittern was shot near Macmine Junction, about 1873; it is now in Liverpool. When down at Rosslare, I did my best to find out whether any unrecorded Sand Grouse visited the Wexford coast in 1888. But all that I could learn was that Mr. R. J. Ussher's bird (Zool. 1888, p. 301), was one of a party of three birds. There appears also to have been a flock of twelve or fifteen birds at Rosslare, but none seemed to have remained long. They are said to have taken to the reclaimed slob-lands, whence they flew northwards. I got a wounded Brent Goose, shot during the winter, for a collection of live wildfowl kept at Kilmanock. It appears to belong to the light variety mentioned in 'Yarrell' (ed. 4, iv. p. 293). From what I heard at Rosslare from the fowlers and from Mr. Gibbon, who has a copy of the 4th edition of 'Yarrell,' and knows all the wildfowl which visit our coast, it is certain that the Barnacle Goose occasionally visits the harbours and lagoons of Co. Wexford. Mr. Gibbon mentioned two which were shot in Tachumshin in 1888, and I heard of others. It is known to the fowlers as the "King or White-headed Barnacle." On May 2nd some eggs of the

Twite were obtained for me from the coast at Fethard. Mr. C. B. Moffat, of Ballyhyland, informs me that he found a nest on Blackstairs Mountain in 1885. 'The Zoologist' for January contains a notice by Mr. E. Williams, of a Scops Owl shot at Foulksmills, by Mr. F. R. Leigh; Mr. Williams, however, does not mention that another of these Little Owls was seen about the same time by Mr. Leigh. Mr. C. B. Moffatt, writing from Ballyhyland, says:—"This year the long drought produced quite a famine amongst the *Corvidæ*, and not only the Grey Crows and Magpies, but even the Jackdaws made serious depredations in the poultry-yard, the Jackdaws killing the chickens, while the Crows made havoc among the ducks. On one occasion, three full-grown ducks were set on and killed by the same number of Grey Crows." A young Wild Drake, unpinioned, but quite tame, kept on the pond at Kilmanock, showed signs of green colour on his head on Aug. 17th and two or three following days. By the 23rd he assumed all the actions of the male, and on the 25th I saw him pair with a Black (East Indian) Duck, although he had not yet assumed his full plumage, nor was the change fully completed till about the 10th of September. The voice of the male is assumed by young Mallards before the change in plumage begins; the plumage is therefore the last sign of maturity. I did not notice any change in two old Mallards kept on the same pond, until Aug. 23rd. I believe that nearly all Wild Ducks pair after the autumn moult. A tame Sheldrake on our pond has the habit of diving for food like a Pochard. At first I thought he was merely playing in the water, but I distinctly saw him eating something after one of his dives. On Sept. 1st a male pinioned Pochard has attained his full winter plumage, being the first bird on the pond to do so, and on the 7th or 8th a man at Rosslare brought in four Wigeon,—the first of the season. He said he had shot seven brace of them. Mr. Gibbon, of Rosslare, says that when he was a boy (about 1855), he used to shoot Quail about Rosslare. This agrees with the statement in 'Thompson,' vol. ii. 73, that "In the county of Wexford Quails are frequently met with in marshes of large extent." I know of no locality in the county where they occur now. I am assured by Mr. Gibbon, and all the fowlers about Rosslare, that the Shoveller remains in the county to breed. I hope to be able to confirm this statement. It is locally known as the "Spoonbill." Other local names are "Whinnard," for Pochard; "Sandharling," for Merganser; "Harling," for Pintail, and "Skraw" (or "Skirrawn"), for Tern. Mr. C. B. Moffat says (speaking of Ballyhyland),—"This is just now (Sept. 15th), the annual influx of many small birds, Titmice, Goldcrests, Tree Creepers, and Pied and Grey Wagtails arriving about here, I suppose from the North of Ireland. The Thrushes, however, have not come yet. It is a rather singular fact that the Song Thrush almost disappears from here from mid-summer to September, whereas the Blackbird continues quite plentiful;

then there is a sudden arrival of Thrushes some time during the present month, and throughout the winter they are commoner than Blackbirds." A bird seen at Fethard on Oct. 9th corresponds so exactly with the description of an adult Black Tern, that I have no hesitation in putting it down as such. It flew to sea. I know of no other occurrence of this bird in Wexford. I must conclude with a brief reference to the kindness of Mr. A. G. More, whose advice and assistance are always at the service of every Irish naturalist; of Mr. C. B. Moffatt, of Ballyhyland, to whom I am indebted for a list of the birds of his neighbourhood; and of Mr. E. A. Gibbon, whose kindness and hospitality to me during a short visit to Ross-lare I shall long remember.—G. BARRETT-HAMILTON (Kilmanock, New Ross, Co. Wexford).

Little Bittern in Devon.—Last June a Little Bittern was shot by a farmer on the banks of the Okement, near Monk Okehampton, Devon, and sent to our gardener for preservation. It was a fine bird, standing about ten or twelve inches high. I have not heard of one being shot in our neighbourhood for a long time.—H. WOOLLCOMBE (Morth Grange, Exbourne, North Devon).

Loxia bifasciata in Yorkshire.—I recorded the occurrence of an immature example of this bird in the (Yorkshire) 'Naturalist,' No. 171, October, 1889. This is the one referred to by Mr. Benson (p. 17), and by Lord Clifton in 'The Field' for Dec. 7th, 1889. As it seems to have been the first of the recent migration which has been ascertained to have been seen in England, the above reference may be useful. I have recently heard of five more in Bedfordshire; four of these were shot by a schoolboy with a catapult; two of them (an adult male and a female) I have seen in the Modern School Museum in Bedford.—HENRY H. SLATER (Irchester Vicarage, Wellingborough).

Ardea virescens in Cornwall.—Towards the end of last year I saw in the shop of Mr. Foot, the birdstuffer, in Bath, a small Heron which was new to me, and which he told me had been shot at large by a gamekeeper in Cornwall during the past autumn. From an inspection of some skins at the South Kensington Museum of Natural History, I have since been able to determine that this bird is a young example of *Ardea virescens*, the Common Green Heron of the United States. The bird shown to me was in perfect feather, and had no appearance of having been in confinement, and must be looked upon as another addition to the long list of stragglers from North America which have visited this country.—MURRAY A. MATHEW (Buckland Dinham, Frome).

[So many instances are on record of the occurrence in Great Britain and Ireland of the American Bittern, *Ardea lentiginosus*, that there is no *à priori* improbability of its smaller relative *A. virescens* having also found

its way accidentally to this country. At the same time it should be borne in mind that so many ornamental water-birds are now-a-days imported by dealers that the chance of some of these making their escape and being found at liberty in perfect plumage is being daily increased. Considerable caution should therefore be exercised before regarding any New World species as a genuine immigrant unaided by man's intervention. We have yet to learn whereabouts in Cornwall, and under what circumstances, the specimen above referred to was taken.—ED.]

Hybrid Finches.—At the late Crystal Palace show of Canaries and other cage-birds, an interesting series of hybrid finches was exhibited. Altogether fourteen different cases of hybridism were shown, exclusive of Canary-mules. These were:—An interesting specimen of the uncommon cross between Brambling and Chaffinch, exhibiting the general appearance of the latter, but wanting the white coverts on the wings, which more closely resembled those of the male parent; a Goldfinch and Greenfinch hybrid, stated in the catalogue to have been caught wild three years ago, exhibited by Mr. A. Waterman, from whom I hope to get further particulars; Goldfinch and Bullfinch; Goldfinch and Siskin; Goldfinch and Linnet; Siskin and Bullfinch—great disparity between sizes of the parents; Siskin and Goldfinch; Greenfinch and Goldfinch; Greenfinch and Linnet; Greenfinch and Redpoll; Redpoll and Linnet; Linnet and Bullfinch; Bullfinch and Linnet; and Bullfinch and Goldfinch. The exhibits numbered 1260 to 1412 inclusive were all Canary-mules, the alliances being with Goldfinch, Siskin, Linnet, Greenfinch, Redpoll, Bullfinch and Alario Finch.—ARTHUR H. MACPHERSON (51, Gloucester Place, Hyde Park, W.).

Pied Variety of the Jay.—A curiously coloured Jay has been about my woods for a month, but the keepers have never been able to secure it. To-day (Feb. 20th) I suggested a decoy Jay, if one could be got, and I was about to write to a bird-dealer to see if he could supply me, when, about two hours later, the keeper came in with the bird, having shot him. The head, neck, breast, back, and scapulars are white, except that the black moustache is perfect, which is very telling. The crest has a few black-tipped feathers, and there are some chocolate feathers here and there on the back. The lesser wing coverts are pure white, the greater are barred blue and black, but are white at their tips about a third of their length. The primaries have white outer webs, black inner; the secondaries and tertials are white at the base for about half their length, the remainder black with white tips. The rump white; tail black, with white tips; legs and toes flesh-colour; bill black.—W. OXENDEN HAMMOND (St. Alban's Court, Wingham, Kent).

Great Grey Shrike and Peregrine Falcon in Lincolnshire.—A Great Grey Shrike was shot at Grainthorpe Fen on the 15th November

last, and a Peregrine Falcon in Tothill Wood, on the 2nd January, both in the neighbourhood of Louth. They have both been preserved by Mr. Kew, taxidermist.—HENRY F. ALLISON (Beckingham, Lincoln).

Kestrel chasing and killing a Bat.—On the 15th November last, about noon, I was crossing Ranmere Hills; it was a sunny day, and my attention was suddenly drawn to a Kestrel soaring high over Dorking Wood. It hovered and wheeled as if in the act of making a swoop at some kind of prey on the bare open field below the wood. While I stood watching it I saw what at first sight appeared to me to be a bird of some kind circling round and round over the Kestrel, though much higher in the air. Then all of a sudden the Kestrel gave chase, and what I supposed a bird I soon discovered to be a great Bat, *Vespertilio altivolans*. I called the attention of an acquaintance who happened to be passing at the time, and we both watched the Kestrel and Bat over the little valley, well known to Surrey rambles, leading from Ranmere Church to Box Hill or Mickleham. The poor Bat seemed sorely puzzled, wheeling and darting in all kinds of zig-zag courses, the Kestrel following in keen pursuit. Once it almost came to ground, but instantly and rapidly again mounting high in the air, took a sort of dodging or tumbling course, and seemed to give the Kestrel a good deal of trouble. At last the Kestrel, gaining considerably on its intended victim, made one eager and determined swoop; the poor Bat, giving one despairing, shrill squeak, was seized by the Kestrel with its talons, and so carried away to Norbury Park.—CHARLES CRIDDLE (Gamekeeper to the Rt. Hon. George Cubitt, M.P., Dorking). [Communicated by the Rev. H. Benson, Farncombe Rectory, Godalming.]

Variety of Great Tit.—A rather pretty variety of this species was shot near Nottingham in November last. The head and throat, which are black in normal specimens, are in this bird bronzy brown; breast pale yellow; primaries cream-colour, shoulders grey, tail sandy. The bird was so badly shot that only a skin, and that a poor one, has been made of it; but as *vars.* of this Tit are rare I am glad to have a skin, and though I have the Coal and Long-tailed Tits in my collection of varieties, I have as yet never been able to get a variety of the Blue Tit.—J. WHITAKER (Rainworth, Notts).

Kittiwakes inland in Surrey.—The keeper brought me the other day a dead Kittiwake, which he had picked up near an ornamental piece of water in this parish. On examination the crop and stomach were found to be quite empty, proving that the bird had died of exhaustion. On the same day another Kittiwake was found in this neighbourhood in a very feeble condition. These birds had evidently been driven inland through stress of weather; but it seems odd that they should have starved when we consider the mildness of the season. Flocks of Gulls and Common Terns often pay

us visits after stormy weather. Some years ago a Black Tern was shot here.—E. P. LARKEN (Gatton Tower, Reigate).

Large race of Great Grey Shrike.—I received on Feb. 12th a good specimen, apparently immature, of the large race of Great Grey Shrike, with one broad white bar on the primaries. This bird was shot on the previous day by my gamekeeper near Bank Hall, Bretherton, Lancashire, and is remarkably dark in the plumage of the upper parts, with a considerable amount of transverse markings on the breast.—LILFORD (Bournemouth).

Birds flying against Window-panes.—From time to time birds here are constantly killing themselves against the house windows. This happens almost always on two bay-windows. These have stone mullions, and I think the birds fancy they can pass through them. Ten birds have been killed in this way in the last few years, and I think others, but I do not remember; and these ten were all of different species, which is rather singular. They are:—Whitethroat, Blue Tit, Nuthatch, Titlark, Willow Wren, Blackbird, Thrush, Cuckoo, Yellowhammer, Garden Warbler.—W. OXENDEN HAMMOND (St. Alban's Court, Wingham).

Rare Birds in North Devon.—The following birds have been recently shot in North Devon:—Hen Harrier, *Circus cyaneus*, at Heanton, near Barnstaple, in December last; Reeve, *Machetes pugnax*, at Braunton, in November last; Bittern, *Botaurus stellaris*, at Fremington, Dec. 9th last; four Hawfinches, *Coccothraustes vulgaris*, one of which I shot myself, and is now in my collection. I have noticed three of these birds in my garden almost every day since Jan. 4th.—J. G. HAMLING (The Close, Barnstaple).

Green Sandpiper in Winter in the North of Ireland.—As Mr. A. G. More, in the recently issued second edition of his useful 'List of Irish Birds' (1890), has characterised the Green Sandpiper, *Totanus ochropus*, as "a rare visitor, occurring chiefly in autumn," it may be of interest to report that on Feb. 26th I received a specimen of this bird, *still unskinned*, which had been shot a couple of days previously in the Co. Tyrone. On referring to Thompson's 'Natural History of Ireland' (vol. ii. pp. 208—210), I find that several instances are noted of the occurrence of this bird in Ireland in winter, and I have marginal notes to the effect that on the 15th Sept. 1876, I received one in the flesh from Athy, Co. Kildare, and in Sept. 1877, another from an inland pond in the west of the Co. Cork. In all three cases the birds were sent to be named, as being unknown to the shooters and their friends.—J. E. HARTING.

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

Feb. 6, 1890.—Mr. CARRUTHERS, F.R.S., President, in the chair.

Mr. H. L. Stonham was admitted, and Mr. T. W. Kirk was elected a Fellow of the Society.

Referring to an exhibition at a previous meeting, Prof. Stewart communicated some interesting observations on the habits of certain seaweed covered Crabs. He also made some remarks on the "pitchers" of *Nepenthes Mastersiana*, upon which criticism was offered by Mr. Thomas Christy, Prof. Howes, and Mr. G. Murray.

Prof. G. S. Boulger exhibited a series of original water-colour drawings of animals and plants of the Falkland Islands.

Mr. W. H. Beeby exhibited some forms new to Britain of plants from Shetland.

Mr. C. B. Clarke then read a paper on the stamens and setæ of *Scirpeæ*, illustrated by diagrams, which elicited a detailed criticism from Mr. J. G. Baker, to which Mr. Clarke replied.

A paper was then read, by Mr. B. D. Jackson, which had been communicated by the late Mr. John Ball, on the Flora of Patagonia, prefaced by some feeling remarks by the President on the loss which the Society had sustained through the recent death of this able botanist.

Feb. 20.—W. CARRUTHERS, F.R.S., President, in the chair.

Messrs. W. Eagle Clarke and J. H. Veitch were admitted, and Mr. James Jack elected Fellows of the Society.

Mr. G. C. Druce exhibited specimens of *Agrostis canina*, var. *Scotica*, and a small collection of flowering plants dried after treatment with sulphurous acid and alcohol, and showing a partial preservation of the natural colours of the flowers.

Mr. F. P. Pascoe exhibited a series of Coleopterous and Lepidopterous insects, to show the great diversity between insects of the same family.

The Rt. Hon. Sir John Lubbock, Bart., M.P., P.C., then gave an abstract of four memoirs which he had prepared—(1) On the fruit and seed of the *Juglandiæ*; (2) On the shape of the oak-leaf; (3) On the leaves of *Viburnum*; and (4) on the presence and functions of stipules. An interesting discussion followed, in which Mr. J. G. Baker, Mr. John Fraser, Mr. D. Morris, and Prof. Marshall Ward took part.

ZOOLOGICAL SOCIETY OF LONDON.

February 18, 1890.—Dr. ST. GEORGE MIVART, Vice-President, in the chair.

Mr. Tegetmeier exhibited and made remarks on two Cats' skulls, out of the large quantity of remains of these animals recently brought to this country from Egypt.

Mr. G. A. Boulenger read a report on the additions made to the Lizard Collection in the British Museum since the publication of the last volume of the British Museum Catalogue of this group. A list was given of ninety-one species new or previously unrepresented in the collection. Ten species and three genera were described as new.

Mr. P. L. Sclater read some notes on a Guinea-fowl from the Zambesi, allied to *Numida cristata*, and gave a general account of the recognised species of this group of Gallinaceous birds.

Dr. Mivart read some notes on the genus *Cyon*, mainly based on an examination of the specimens of this genus of *Canidæ* contained in the British Museum.

Mr. P. L. Sclater read a paper containing the characters of some new species of the family *Formicariidæ*.

Dr. Augustine Henry read some notes on the Mountain Antelopes of Central China, *Nemorhedus argyrochates* and *N. henryanus*.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

February 5, 1890.—The Right Hon. Lord WALSINGHAM, M.A., F.R.S., President, in the chair.

The President announced that he had nominated Mr. J. W. Dunning, M.A., F.L.S., Captain H. J. Elwes, F.L.S., and Mr. Frederick DuCane Godman, M.A., F.R.S., Vice-Presidents for the Session 1890—1891.

Mr. B. A. Bristowe, of Champion Hill, S.E.; Mr. J. E. Eastwood, of Witley, Surrey; Mr. Albert B. Farn, of Stone, Greenhithe, Kent; and Mr. O. Goldthwaite, of Leyton, Essex, were elected Fellows; and Mr. R. S. Standen was admitted into the Society.

Mr. F. D. Godman exhibited a specimen of *Papilio thoas*, from Alamos, in the State of Sonora, Mexico, showing an aberration in the left hind wing. Mr. R. Trimen remarked that butterflies of the genus *Papilio* were seldom liable to variation.

Mr. Charles G. Barrett exhibited a series of specimens of *Phycis subornatella*, Dup., from Pembroke, the east and west of Ireland, the Isle of Man, and Perthshire; and a series of *Phycis adornatella*, Tr., from Box Hill, Folkestone, Norfolk, and Reading; also a number of forms intermediate

between the above, taken in the Isle of Portland by Mr. N. M. Richardson. He said that these forms proved the identity of the two supposed species, which he believed were both referable to *P. dilutella*, Hb. He also exhibited specimens of *Hesperia lineola*, and a pale variety of it taken in Cambridgeshire by Mr. H. W. Vivian; specimens of *Epischnia banksiella*, a recently-described species, taken by Mr. N. M. Richardson in Portland; and a specimen of *Retinia margarotana*, H.-S., a species new to Britain, discovered in Mr. Hodgkinson's collection amongst a number of *Retinia pinivorana* which had been collected in Scotland.

Mr. W. H. B. Fletcher showed a series of *Gelechia fumatella* from sand-hills in Hayling Island and near Littlehampton, and, for comparison, a series of *G. distinctella*, from the same place. He also showed a few bred specimens of *G. terrella*, and a series of preserved larvæ. He stated that on the downs the larvæ live in the middle of the tufts of such grasses as *Festuca ovina* and allied species, and that on sand-hills where herbage is more sparse, they make silken galleries under stones, and sally forth to eat blades of grass growing near their homes.

Mr. H. Goss read a communication from Dr. Clemow, of Cronstadt, St. Petersburg, on the subject of the coincidence of vast flights and blights of insects during the years 1757, 1763, 1782, 1783, 1836 and 1847, and the epidemic of influenza. During the year 1889 no unusual activity in the insect world had been recorded. Mr. H. T. Stainton and Mr. M'Lachlan made some remarks on the subject, the purport of which was that there was no connection between epidemics and the occurrence of swarms of insects.

Mr. G. A. J. Rothney communicated "Notes on Flowers avoided by Bees." It appeared, according to the author's observations, made in India, that dahlias were exceptionally attractive, but that the passion-flower was only resorted to by a few species of *Xylocopa*; and that, with one exception, he had never seen any insects feeding on the flowers of the oleander. Mr. Slater, Colonel Swinhoe, Mr. Trimen, Lord Walsingham, and Mr. M'Lachlan took part in the discussion which ensued.

Dr. D. Sharp read a paper entitled "On the structure of the Terminal Segment in some male Hemiptera."

Colonel Swinhoe read a paper entitled "On the Moths of Burma." This paper contained descriptions of several new genera and 107 new species.

Dr. F. A. Dixey read a paper entitled "On the Phylogenetic Significance of the wing-markings in certain genera of the *Nymphalidæ*." A long discussion ensued, in which Lord Walsingham, Mr. Jenner Weir, Capt. Elwes, Mr. Trimen and others took part.—H. Goss, *Hon. Sec.*

NOTICES OF NEW BOOKS.

The Birds of Oxfordshire. By O. V. APLIN. 8vo, pp. 217. With a coloured Frontispiece (the Alpine Chough), and a folding Map of the County. Oxford, Clarendon Press. 1889.

THE ornithological literature of Oxfordshire, so far as Mr. Aplin has been able to trace it, is not extensive, but dates back to the latter part of the seventeenth century.

“ ‘Oxfordshire,’ writes Camden in 1586, ‘abounds with all sorts of game both for hunting and hawking’; but when Childrey in 1661 brought out his ‘*Britannia Baconica, or the Natural Rarities of England and Wales,*’ in which work he appears to have collated all the published accounts of the natural history of each county, he dismissed Oxon in a few lines, making no mention of its Zoology, and it is not until 1677 that the Ornithology of the county seems to have received any attention. In that year appeared ‘*The Natural History of Oxfordshire,*’ by Robert Plot, a folio work dedicated to Charles II. Chapter VII., in which the author treats ‘*Of Brutes,*’ contains a few notes upon birds, which will be quoted under the heads of the several species to which they refer. A second edition appeared in 1705. Dr. Plot was elected one of the Secretaries of the Royal Society in 1681. He was a friend of Pepys and Evelyn, and the latter tells us, in his ‘*Diary,*’ that, when at Oxford in 1675, he went to see ‘that rare collection of natural curiosities of Dr. Plot’s, of Magdalen Hall, all of them collected in this shire.’ The collection comprised among other things certain ‘*foules,*’—but what these were Evelyn does not say, probably the Cormorant killed from St. Mary’s steeple,—and the white Linnet, given to him by Mr. Lane, of Deddington, were included in the collection.

“ In the account of Oxfordshire birds by the Revs. A. and H. Matthews, to be more fully mentioned below, the authors refer to ‘an old manuscript list of birds, collected by the late Dr. Lamb of Newbury, extending as far back as the latter part of the last century,’ which was lent for their perusal by Dr. Tomkins of Abingdon. Under the title of ‘*Ornithologia Bercheria*’ the list was, some years afterwards, printed in ‘*The Zoologist*’ (1880, pp. 313—325), the Editor furnishing the following information relating to it:—‘This list, it would seem, was originally intended for publication in the ‘*Transactions of the Linnean Society,*’ and was forwarded for that purpose, about the year 1814, to Thomas Marsham, who was then Treasurer of that Society. For some reason, however, it never appeared, and the original MS., as we learn from the Assistant-Secretary, was either lost or mislaid during the subsequent removal of the Society from the rooms formerly

occupied in Soho Square. A copy, however, is in the possession of the Rev. W. Smith Tomkins, of Weston-super-Mare, who has kindly placed it at the disposal of the Editor for publication in 'The Zoologist.' This list refers to Oxfordshire, inasmuch as some of the birds recorded in it were procured on that part of the River Thames which divides this county from Berkshire, such occurrences belonging therefore with equal propriety to both counties. It is also interesting to compare the condition of the avifauna, at the beginning of the last century, of the neighbouring parts of this border county, which would probably differ very little from that of the district treated of in the present volume at the same time.

"An account of the Vertebrate Animals of the district is appended to the 'History of Banbury' (1841), by Mr. Alfred Beesley. It is little more than a bare list of species, and includes 109 birds. The author acknowledges assistance from Mr. James Loftus, formerly of Banbury, Mr. M. Jessop and Mr. T. Abbott of Banbury, and Mr. T. Busby of North Newington.

"In 'The Zoologist' for 1849, and the following year, appeared a series of articles by the Revs. Andrew and Henry Matthews, entitled 'The Birds of Oxfordshire and its Neighbourhood.' The list comprised 232 species, but of these nine must be excluded from the census of Oxon birds, as the examples upon which their title to inclusion rests were procured in the neighbouring parts of Berkshire or Buckinghamshire. The authors wrote from Weston-on-the-Green, in the Otmoor country, where they had been resident for many years, a district most favourable for observing the more uncommon wildfowl which visit us in winter; the list is accordingly very rich in records of this group of birds. For this reason, and from the fact that the writers' experience goes back to the time when the country was less carefully drained than it is now, and to the time when not only were the ordinary wildfowl far more numerous than at present, but when the Kite, the Buzzard, the Raven, the Harriers and the Bittern were not infrequently met with, the Messrs. Matthews' excellent account of our birds is of especial interest and value to the county faunist. In 1876 and 1877 Mr. C. M. Prior contributed to the 'Banbury Guardian' a series of articles upon the 'Birds of North Oxon.' In 1882 was published a pamphlet, entitled 'A List of the Birds of the Banbury District, written by the author in conjunction with his brothers; and the list, which included 180 species, applied mainly to North Oxfordshire. In June, 1886, appeared 'A Year with the Birds,' by an Oxford Tutor. A second and enlarged edition, in which the author, Mr. W. Warde Fowler, revealed his identity to the public, was issued before the year was out. This edition contains a list of the birds observed within a radius of four miles around Oxford during the three preceding years, including 104 species. The present writer is indebted to this work for much useful information relating to the birds in

the neighbourhood of Oxford, and in the north-west of the county, contained in the chapters on the Birds of an English City and a Midland Village."

Such are the only works treating of the Ornithology of Oxfordshire especially which Mr. Aplin has been able to discover, but he has industriously collected scattered notes from various other printed sources, and has added numerous observations of his own. As a result, we have probably as good a guide to the Avifauna of Oxfordshire as existing materials will permit.

On the strength of a single occurrence of the Alpine Chough in the county, a specimen having been shot in the park at Broughton, in April, 1881 ('Zoologist,' 1881, pp. 422, 471, and 1882, p. 431), Mr. Aplin gives a coloured plate of this bird for a frontispiece. Feeling some misgiving as to the advent of this non-migratory species without the intervention of some importer of live birds, from whom it may have escaped, we would rather have seen a coloured portrait of the Hemipode shot at Chipping Norton (p. 135), or the *immature* Black Stork (p. 187) which was killed by a wildfowl shooter at Charlton-on-Otmoor, in August, 1865. The Alpine Chough furnishes the only illustration to the book, but a good map is appended, which will be found useful for determining the precise position of localities mentioned when they happen to be little known.

The Birds of Berwickshire: with remarks on their local Distribution, Migration, and Habits, and also on the Folklore, Proverbs, Popular Rhymes and sayings connected with them. BY GEORGE MUIRHEAD, F.R.S.E., F.Z.S. In two Volumes. Vol. I. 8vo, pp. 334. With numerous illustrations and a folding map. Edinburgh, David Douglas, 1889.

It will be seen from the wording of the title above quoted, that there is a good deal more in this volume than one is accustomed to find or expect in an ordinary local Fauna, and interesting enough as the letter-press undoubtedly is, we question the wisdom of bringing together in this way such very distinct subjects as county ornithology and popular rhymes and proverbs. There is of course, in one sense, a connection between them, but

it reminds us of a surveyor who having to survey the estate of his employer, thought he might as well, being so near it, report upon the adjoining estate of his neighbour. The result is that, in perusing Mr. Muirhead's volume, we are being perpetually distracted from the purpose in view, which is obviously to make us acquainted with the nature of the Berwickshire Avifauna, and not with a hundred and one other things, poetical and proverbial, many of which have quite as much relation to birds in general as to those of this particular county. We think therefore that the author would have done better to keep these matters distinct, and by so doing to have embodied his county ornithology in one volume instead of two. Subject to this objection, which with many readers may be no objection at all, we have nothing but praise to bestow on Mr. Muirhead's work. It is impossible to peruse his pages without perceiving that he has read wisely and well, a qualification for authorship which is quite as important as the knowledge of how to observe.

We have read every word of his well-written 'Introduction' (pp. xiii—xxvi) with pleasure and profit, and commend it to the perusal of our readers in its entirety, since it furnishes an excellent idea of the former condition of the county of Berwick and the changes which have been brought about by drainage, cultivation, and the gradual extension of civilization. Some of the chapters on common birds strike us as being unnecessarily spun out, and the fourteen pages of tables relating to Rookeries (pp. 221—234) might have been summarised in a single page or two.

Like all books that emanate from the house of Mr. David Douglas, of Edinburgh, it is admirably printed, and the etchings and vignettes (by Mrs. Muirhead, and Messrs. M'Kay, Hole, and Blair) with which it is profusely adorned, are amongst the prettiest illustrations we have seen for a long time. In this first instalment of the work, which is to be completed by the publication of a second volume, we find that the *Passeres*, *Picariæ*, *Striges*, and a portion of the *Falconidæ* are dealt with, shewing that the second instalment will be quite as bulky as the first. We trust that it may speedily make its appearance.

The Vertebrate Animals of Leicestershire and Rutland. By MONTAGU BROWNE, F.Z.S. 4to, pp. 223. With four plates and a map. Birmingham and Leicester: Midland Educational Company, Limited, 1889.

EVER since Mr. Browne's notes on the Vertebrate Animals of Leicestershire appeared in 'The Zoologist' for 1885-6-7, it has been no secret that he proposed to reprint them with additions, and to incorporate notes, by the Earl of Gainsborough and Mr. Horn, of Uppingham, on the fauna of the adjoining county of Rutland. This he has at length done, and the handsome volume now before us is the result.

As a matter of convenience, an octavo volume (to range with the numerous county bird-books already published) would have been preferable to a quarto, which has no apparent advantages to recommend it. It would have been just as easy to figure Natterer's Bat, and the three birds which have been selected, on octavo plates, while a map on a larger scale than that given, folded to octavo size would have been more useful. Indeed, so far as their utility is concerned, the three plates of birds might have been altogether omitted; for while the Black Redstart is too well known and has been too often and too well figured to be again represented, the plates of the Sand Grouse and Cream-coloured Courser, being merely copies from Dresser's 'Birds of Europe,' have no particular connection with Leicestershire. It would have been more to the purpose to have figured, if still preserved, the actual specimen of the Cream-coloured Courser which was procured in the county in Oct. 1827, and passed into the possession of Mr. Gisborne, of Yoxall, or even to have copied Selby's, or Bewick's figure of it.

As regards the text, we regret to have to express our disappointment; not so much in regard to the subject matter, as to the arrangement of it. We regard it as a mistake to have mixed up, as the author has done, living and fossil species. The extinct forms should have been kept distinct, and dealt with separately. By this plan the reader would have been enabled to form a clearer idea of the existing fauna of the area in question which we take it is the object of such a book, instead of having his attention perpetually distracted by the interposition of matter altogether foreign to the purpose.

Nor can we see any justification for importing into an account of the fauna of an inland county remarks on the bones of some unknown species of whale, obviously and admittedly transported from a distance, to serve as gate-posts, and heralded with the announcement in large type "Order Cetacea; Suborder Mystacoceti; Family Balænidæ: Whale, *Balæna* (sp. inc.)."

Equally out of place, as it seems to us, are the observations on the first page of the book which follow the words "Order Mammalia; Subclass Eutheria (or Monodelphia). Order Primates; Suborder Anthropoidea; Family Hominidæ: Man, *Homo sapiens*, Linnæus." This labelling of every species in museum fashion has a pretentious and pedantic look about it which, in our opinion, detracts very much from the appearance and merit of the book.

Mr. Browne, it must be confessed, has displayed considerable industry in collecting materials for his undertaking, and if he has sometimes attached too much importance to the bombastic utterances of such writers as Harley (whose statements usually convey the smallest modicum of fact with the greatest amount of verbosity), it has been doubtless from a desire to omit nothing which seemed to have any relation, however slight, to the fauna of Leicestershire. This endeavour, however, to make the most of things, may be carried too far; as, for example, in the case of the Dartford Warbler, the Grey-headed Yellow Wagtail, Golden Oriole, and Temminck's Stint, species which are only introduced for the purpose of showing that they have no claim to be included in the Catalogue of county birds. Similarly, the Avocet is accorded a place in the list merely on the strength of a bird seen, and supposed to have been an Avocet, at the junction of the Rivers Trent and Soar, where the counties of Leicester, Nottingham, and Derby meet.

It is always a matter of regret for the naturalist to note the disappearance of any species from its ancient haunts; and the extinction of both the Black and Red Grouse in Leicestershire, as chronicled by Mr. Browne (pp. 142, 143), furnishes another illustration of the changes which may be effected in the fauna of a district by man's alteration of the original condition of things. The Goshawk and the Kite are also considered to be extinct. It is surely by some inadvertence that the author expresses his happiness (instead of his regret) at being enabled to record the

death of the last Ruff seen in Leicestershire, where one was shot at Saddington Reservoir, in August, 1887.

One of the most interesting notes in the present volume relates to the occurrence of the Bearded Titmouse at the back-water, Bede House Meadows, Leicester, in November, 1870; in the reed-beds under the Castle, Leicester, in 1876-77; and at Groby Pool, in July, 1883. From reports which reach us from time to time of the appearance of this little bird in small parties, in localities far removed from the great reed-beds of the Eastern Counties (generally regarded as its proper home), it would seem that, like the Long-tailed Titmouse, this species, as soon as the young are full-fledged and able to accompany their parents, quits its breeding-haunts and wanders away in little family parties, being sometimes met with in the most unexpected situations, as, for example, in such localities as those above mentioned.

Mr. Browne is to be congratulated upon the completion of his work, which, if not quite so satisfactory as it might have been, will doubtless be the means of instructing many residents in his county, and of encouraging there, and elsewhere, a taste for out-door observation.

A Tabulated List and Description of the Birds of East Kent: with Anecdotes and an account of their Haunts. By GEORGE DOWKER, F.G.S. 8vo, pp. 42. London: Gurney and Jackson. 1889.

ALTHOUGH it can hardly be termed a book, this separately printed pamphlet of forty-two pages deserves notice as of interest doubtless to many of our readers. We regret to say it is very imperfect. Perhaps this is not to be wondered at when we learn from the Preface that the author's "chief guides" have been Jenyns' 'Manual of British Vertebrate Animals,' Macgillivray's 'British Birds,' and the *second* edition of 'Yarrell'—all good enough books, no doubt, half a century ago, but surely Ornithology has not stood still ever since! Mr. Dowker seems to be quite unaware of the existence of Mr. Pemberton Bartlett's paper in 'The Zoologist' on the birds of Kent, and the same writer's notes on the nesting of the Golden Oriole in that county; and

the more recently published account, by the Editor of this Journal, of the breeding of the Oriole in Dumpton Park, Isle of Thanet; Mr. Bartlett's notice of the Gadwall, of which Mr. Dowker says he could find no record; the notes by Messrs. Mummery, and Gordon, and so on,—all of which sources of information should have been looked at before printing the present list.

Nor has Mr. Dowker adopted anything like a clear mode of expressing such facts as he has collected. On the contrary, his statements are sometimes contradictory, and often obscure. For instance, a bird is described in one place as an annual visitor, and in another as of rare occurrence. A pair of Blue Tits accomplished the remarkable feat of building one nest "beneath two inverted flower-pots placed upon the ground." We are surprised to learn that "among the *annual visitors* are to be found many rare birds, such as the Blue Throat, Icterine Warbler, Great Reed Warbler, Aquatic Warbler, the Orphean Warbler, and Dartford Warbler."

The Little Bustard is confounded with its larger relative; the specimen from Whitstable in the Dover Museum, unless we are mistaken, being of the former, not the latter species, as is implied. We are told that Herons arrive about the middle of February in their breeding-quarters, or later if the weather is cold; and that they rear their young *about the end of August!* The author notices but one heronry in the county, and makes no mention of that at Cobham Hall, the seat of Earl Darnley.

As for misprints, they occur on nearly every page. We read of the "genera *Acrocephalus*" (p. 28), of the Ringed Guillemot being a *distant* species (p. 39), of a Black Monk [*qu.* Stork] being reported from Lydd Beach (p. 41), and so forth.

We should have supposed that Colonel Feilden's name was by this time sufficiently well known to prevent it from being persistently spelled "Fielding," and that the equally familiar name of an American ornithologist would not appear twice as "Coue." Intending to deplore the destruction of rare birds in general, and Eagles in particular, Mr. Dowker writes "What a pity it is to think how these birds are destroyed"! With all these faults we can only say, What a pity it is that such a pamphlet as this should have been issued without that careful revision of which it stands evidently so much in need,

An Authenticated List of the Birds of Herefordshire. Compiled by GEORGE HORNE. 8vo, pp. 24. Hereford: Jakeman and Carver.

THIS may be described as a companion pamphlet to the last-named, and is about as reliable. The expectations raised by the word "authenticated" on the title have not been realised, and, instead of having a treatise to supersede the very unsatisfactory work which bears on its title-page the name of the late Dr. Bull of Hereford, we meet with nothing but disappointment on nearly every page.

There are several species named which seem to us to have no claim to be included at all in a list of Herefordshire birds; such, for example, as the Swallow-tailed Kite (which, if a Kite at all, was more likely to have been *Milvus regalis*), Tengmalm's Owl, Little Owl, Mealy Redpoll, Roller, Rock Dove, Little Bustard, Slavonian Grebe, Garganey, Scoter, and Smew.

The Cream-coloured Courser is included on the strength of a specimen said to have been shot at Backney Marsh, near Ross, in 1854. The month, or season of the year, is not mentioned, and in Dr. Bull's book (p. 213) it is said to have been shot in 1852. This specimen is not noticed in the fourth edition of "Yarrell," and, though it is stated to be preserved in the Hereford Museum, the information which is given respecting it is meagre and unsatisfactory in the extreme.

After all the correspondence which has appeared on the subject of the Great Black Woodpecker in Herefordshire, and the positive statements made by the Rev. Clement Ley and others regarding its occurrence in that county, Mr. Horne, for some reason or other which he does not disclose, omits it altogether from his List without a word of comment.

As we believe there is no Catalogue of the birds in the Hereford Museum, nor any history of many of the specimens exhibited there, several of which are known to be of foreign origin, it would have been better to have abstained from the inference that because certain species are to be found there they were probably obtained in the county. On the whole, we are forced to the conclusion that an "authenticated" account of the Birds of Herefordshire remains to be written.

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THE HORSE AND ITS HISTORIANS.

BY THE EDITOR.

IF we consider its antiquity as a domesticated animal, and its great utility to man—greater, perhaps, than that of any other species—it is not surprising that the Horse should have furnished a theme for writers in all ages and in every civilised country. The works which have been written on its natural history, anatomy, and physiology; its dentition, diseases, and cures; its use and treatment in relation to agriculture, cavalry, hunting, and racing; with treatises innumerable on equitation, breaking, training, and stable management; bits and bridles, saddles, and harness of every description—would form a library of no mean proportions. And should anyone feel disposed to collect all the works that have been written relating to the Horse, he would have to provide shelf-room for at least 4000 volumes.

We have been at the pains to count the titles quoted in the most recent bibliography on the subject,* and find that, exclusive of editions and translations, there have appeared since the days of Xenophon (B. C. 380) down to the issue of the volumes on Hunting and Racing in the 'Badminton Library' (A. D. 1886), no less than 3800 works in eighteen different languages. We have been at the further trouble to apportion the titles of all these

* 'Works on Horses and Equitation: a Bibliographical Record of Hippology.' By F. H. Huth. Sm. 4to, pp. 440. London: Quaritch. 1888.

works (which in the bibliography referred to are quoted chronologically) amongst the nations which have produced them, with a view to ascertain as nearly as may be in what proportions each has contributed to the literature of the subject. The result is rather curious. The earliest works are in Greek, beginning with that of Kimon of Athens (B. C. 430) on the Veterinary Art, and including the well-known (and, for the time they were written, really excellent) treatises by Xenophon (B. C. 380) on Horsemanship and on the duties of a Commander of cavalry (first printed at Florence in folio in 1516) besides the veterinary work of Hippocrates, the remarks on the Horse in Aristotle's General History of Animals, and the little-known treatises of such writers as Sextus Julius Africanus (A. D. 225), and Ammianus Marcellinus (A. D. 360), many of them only fragments, and first made known through Latin translations. No modern Greek author appears to have written on the Horse, and amongst the ancients we find but seven names of Greeks who have contributed to the literature of this subject. Works in Latin, though rather more numerous—and some of them, like those of Pliny and Aldrovandus, better known—do not exceed twenty-six, of which twenty-three were printed before 1784, and three only—in the shape of theses by candidates for degrees at German Universities—during the present century.

Most people, without reflection, might be disposed to assert, and to back their opinion, that more books on the Horse have been written in English than in any other language; but, assuming Capt. Huth's 'Bibliography' to be tolerably complete, the careful analysis which we have made by reference to it enables us to show that this impression is erroneous. English writers on hippology are, doubtless, numerous enough; but they do not stand at the head of the list. Up to the year 1886 they may be credited with 950 works, of which 185 were printed before 1800; 120 more before 1825; another 180 before 1850; and since that date no less than 464. If to these we add the thirty-four English books printed in America since 1850, and one in Australia in 1864, we have a total not far short of a thousand. Of these it may be safely asserted that a large proportion at the present day would be difficult to meet with, and if found would prove of not much value. The names of those who have written for all time would not make a very long list, although it should be observed that many works of perhaps little intrinsic merit are sometimes of

value as illustrating the growth of knowledge on the subject of which they treat.

The earliest English works relating to the Horse are concerned chiefly with hunting, and cannot be said to refer so much to the horse individually, or his management, as to the wild animals which he enables his owner to chase. It is only because they relate to hunting that they have any claim to be included in a bibliography of Hippology. Amongst such works may be mentioned 'The Art of Hunting,' by William Twici, written, originally in Norman-French, about the year 1307, by the huntsman to King Edward II.; the treatise on hunting in the 'Boke of St. Albans,' 1486; and Turberville's 'Booke of Hunting,' 1575, a second edition of which appeared in 1611.

Amongst the earliest books on equitation by English writers we find Blundevile's 'Foure chiefyst offices belonging to Horsemanship,' 1565; Astley's 'Art of Riding,' 1584; Clifford's 'School of Horsemanship,' 1585; Gervase Markham's 'Discourse of Horsemanshippe,' 1593; and his 'Cavelarie, or the English Horseman,' 1607, the last-named writer being also the author of several other works of a somewhat wider scope, such as the treatise on horses in his 'Country Contentments,' 1611; 'Markham's Maister Piece,' 1615; and his 'Faithful Farrier,' 1635, all of which passed through several editions, and were very popular in their day. De Grey's 'Compleat Horseman,' 1639, many times reprinted, was another popular book in its day. In Charles the Second's time (1683) there appeared rather a notable work on the 'Anatomy of the Horse,' by Andrew Snape, farrier to his Majesty—sufficiently esteemed to be translated into French, and to pass through three or four editions. Nearly a century later, 'An Anatomical Description of the Bones in the Foot of the Horse,' by James Clark, of Edinburgh (1770), and the same author's 'Observations on the Shoeing of Horses' attracted considerable attention, and were translated into German; while, later still, the name of Bracy Clark became well known through his numerous treatises on the pathology and anatomy of the Horse, his first essay, "On the Bots in Horses," appearing in 1796, in the third volume of the Linnean Society's 'Transactions.'

The earliest treatise on horse-breeding by an Englishman, though it was written in Latin, is the work of Richard Sadler, published in 1587. The first English book on racing is one by

Gervase Markham, entitled 'How to Choose, Ride, Traine, and Dyet both Hunting and Running Horses.' It at first formed part of his 'Discourse of Horsemanshippe,' 1593, but in 1596 was separately printed under the title just quoted. The same writer is to be credited with the first English work on 'Cavalry,' of which the title has been already given. In regard to the natural history and external form of the Horse, we have perhaps the earliest English specimen in Topsell's 'Historie of Foure-footed Beastes,' 1607, although manifestly a compilation from older authors of different nationality.

As already intimated, English books on the Horse number not far short of a thousand, of which very nearly one-half have been printed since 1850; while, even as we write, fresh works and new editions are everywhere appearing.

Our French neighbours are not far behind us; for we have been able to count 919 works by French authors on the Horse, of which 105 were printed before 1800, 30 more in the next quarter of a century, 204 in the succeeding quarter, and since 1850 no less than 580; so that, although prior to 1800 there were nearly twice as many English as French books on the Horse, during the last five and thirty years the latter have exceeded the former by 116.

But in voluminous writing on this special subject the Germans have distanced all competitors. Less active than our own countrymen before the commencement of the present century, when they had produced only 142 different works, they added 275 in the next quarter of a century, and 256 more by 1850, since which date a further contribution of 579 has been issued, making in all, to 1886, no fewer than 1252. In regard to the subject matter of these, we find more books relating to anatomy, veterinary practice, and cavalry than exist in England, but fewer relating to hunting, and, as might be expected, to racing. Those dealing with equitation are perhaps a trifle more numerous, but on this subject, as well as on breaking, training, and stable management, the authorship is pretty equally divided.

The Dutch literature relating to horses is not very extensive, and Capt. Huth's bibliography does not enable us to count more than 30 works in this language. Next to the French, who stand third on the list after the Germans and English, the 'greatest number of works have been written in Italian and Spanish, the

former numbering 167, the latter 127. Not more than a dozen have been found in Portuguese; and in the Scandinavian languages the number dwindles down from 62 in Swedish and the same number in Danish to nine only in Norwegian.

In Hungarian we find three; in Polish, eight; in Russian, twenty-one; while the Eastern languages are represented by Persian, eight; Arabic, one; and Hindustani, one. In regard to these the numbers are probably under-estimated; for we should certainly expect to learn that in Persian and Arabic a good many treatises on horses, not easily accessible, are well known to Oriental scholars.

These statistics are of interest, as showing not only the importance attached to the history of the Horse in all ages, but the shares in which different nations have contributed to the literature of the subject in all its branches. What a splendid monograph of the Horse might now be prepared from the materials which have been shown to exist!

ON THE CLAIM OF THE PINE GROSBEAK TO BE
REGARDED AS A BRITISH BIRD.

BY J. H. GURNEY, JUN., F.Z.S.

To quote from Mr. Howard Saunders's recently published 'Manual of British Birds,' "the Pine Grosbeak is a bird which is at most an exceedingly rare visitor" (p. 191), but he adds that, all things considered, he does not feel justified in rejecting it. Now, agreeing as I do with his remarks, I am the more convinced that the history of every reported British example requires the most careful sifting; for the unsatisfactory nature of the evidence generally offered will hardly be credited by those who have not examined the records. Yet because no amateur British ornithologist has ever had the good fortune to handle, in this country, a recently-killed bird of this species, we are not to cast doubt on every specimen said to have been procured. Indeed Mr. Saunders mentions some killed in Heligoland, Belgium, and other countries of Europe. Then, why should it not be found sometimes in England? In a former volume of 'The Zoologist' (1877, p. 242), I gave a list of every supposed occurrence (twenty-five in all) of this bird in the British Islands, and now propose

to bring that list up to date. My additions will bring the total up to thirty-six. Of these probably the most authentic specimens are No. 5, in Mr. A. Backhouse's possession, obtained sixty years ago or more (Zool. 1877, p. 244); No. 12, Yarrell's, also shot about sixty years ago, though Prof. Newton considers (Yarrell's Brit. Birds, 4th ed. ii. p. 179) that doubt may be reasonably entertained about it;* No. 27, in the Whitby Museum, shot out of a flock near Whitby, by Mr. Kitching in the winter of 1861, and No. 32, Mr. Edward Hart's specimen, procured in the New Forest. The first two of these were described in my former article (*l.c.*), the last two will be noticed in the present communication.

But because these four are believed to be authentic, it does not follow that the others are not so. Possibly some of them are to be relied on; but, in my judgment, Nos. 28, 30, 33, 34, 35, 36, are probably cases of mistaken locality, and Nos. 26, 29, of mistaken identity.

26. Mr. G. Muirhead, in his 'Birds of Berwickshire,' reviewed in the current number of 'The Zoologist,' states that the Pine Grosbeak is recorded by Dr. R. D. Thomson, in the 'New Statistical Account of Scotland.' Dr. Robert Thomson, F.R.S., died in 1864, and the occurrence referred to must have taken place more than thirty years previously.

27. In Messrs. Clarke and Roebuck's useful 'Vertebrate Fauna of Yorkshire,' mention is made, on the authority of Mr. Thomas Stephenson, of a Pine Grosbeak in the Whitby Museum, which was shot about 1861, in the winter, by Mr. G. Kitching, the same person who on another occasion got a Crested Titmouse (Zool. 1872, p. 3021). Mr. Stephenson says it was shot at Littlebeck, five miles from Whitby, a locality abounding with plantations of larch and fir, and adds that Mr. Kitching at the same time shot four others. These he preserved as skins, but they have been since unfortunately lost sight of, and are probably not now in existence. Mr. Stephenson and Mr. J. Wilson, after

* This doubt applies not to Yarrell's specimen shot at Harrow-on-the-Hill, and now in Bond's collection (*tom. cit.* p. 177; Zool. 1877, p. 246; 1889, p. 414), but to the specimen stated by Fox (*Synops. Newc. Mus.* p. 65) to be in his possession "through the favour of Mr. Yarrell," and believed to have been procured at Welwyn, in Hertfordshire.—ED.

thoroughly examining the one in the Museum, have failed to detect the least indication of its having been in confinement, and there is no doubt about its being a Pine Grosbeak, for, at my request, they have compared and matched it with a specimen procured by Wheelwright in Sweden. As regards the date, there is an important piece of corroborative evidence in 'The Field' of March 22nd, 1862, where Wheelwright, writing from Sweden under his well-known *nom-de-plume* of an "Old Bushman," about the plumage of the Pine Grosbeak, says:—"This winter [*i. e.* 1861-2] they have been unusually numerous, and about forty specimens have passed through my hands." Nothing is more likely than that some of the birds seen should have crossed the sea, just as in 1884,—when, on the 12th of September, great numbers of Bluethroats appeared in Heligoland ('Report on Migration,' p. 44), and on that very day appeared also in Norfolk,—and if the Pine Grosbeaks did cross the North Sea, where would they be more likely to occur than on the coast of Yorkshire?

28. In 'The Zoologist' for 1883 (p. 222), Mr. R. M. Christy reports a Pine Grosbeak shot at Little Abington, in Cambridgeshire, in January, 1882. I have examined this bird. It is a good red male, and is said to have been shot by a groom in the vicarage-garden. It was sent to a village birdstuffer named Unwin, who sent it to Travis, the taxidermist of Saffron Walden, to whom we are indebted for its correct identification, and on whose authority its reliability and rescue undoubtedly rest.

29. In the late Mr. Churchill Babington's 'Birds of Suffolk,' the author, on the authority of the late Rev. F. Tearle, of Gazeley, mentions (p. 234), a Pine Grosbeak shot at Heigham in 1874. Correspondence has failed to trace its whereabouts, and Mr. Babington has marked this and the next as doubtful.

30. Mr. Babington also mentions, on the authority of the Rev. H. T. Frere, of Burston Rectory, Diss, another shot near Bury, about 1830. Mr. Frere thinks it was 1836: whatever the precise date may have been, it was preserved by Head, a birdstuffer at Bury, and afterwards acquired (as Mr. Frere believes) by the late Mr. Vernon Wollaston.

31. Mr. T. J. Monk, of Lewes, has favoured me with the sight of a handsome yellow male bird of this species, obtained at Shoreham, which he procured through the late Mr. Swaysland. It is said to have been killed near the old bridge, far away from

any trees, a curious place for this dweller among forests ; possibly it may have escaped from captivity—a supposition which is favoured by its yellow plumage. In the Zoological Gardens, Regent's Park, there have been several in captivity.

32. Mr. Edward Hart has been good enough to submit for examination a male Pine Grosbeak killed many years ago in the New Forest. It was stuffed by Barrow, of Christchurch, and afterwards passed to Mr. H. Jenkins, who is no longer living, but is believed to have had no foreign skins, and Mr. Hart's bird certainly looks as if it had been mounted from the flesh at a time when bird-stuffing was not the advanced art which it is at the present day.

33. About March 1st, 1889, a taxidermist at Great Yarmouth received four Pine Grosbeaks in the flesh, affirmed to have been shot in the Wolmer Forest, Hampshire. Probably either a trick had been attempted by the sender, or an unconscious mistake made ; and instead of having been killed in Hampshire, very likely they were sent in ice from Russia, as happened a few years ago when some of these birds were sent in a frozen state to the principal poulterer at Brighton.

34. In the Natural History Museum at South Kensington may be seen a male and female Pine Grosbeak labelled "Norfolk," which probably came from a notably unreliable birdstuffer named Hubbard, now deceased. But, from whatever source received, there is no evidence whatever to support the statement that these two birds were procured in Norfolk.

35. Mr. J. G. Millais has shown me a Pine Grosbeak, said to have been killed by a gardener at Beccles, in Suffolk, and given to him by a tailor at Lowestoft named Freeman. Mr. Crowfoot, of Beccles, has endeavoured to ascertain more about it, but without success, and were it not that its owner has implicit belief in the statement made to him concerning it, I confess I should feel much doubt about it. It seems clear that it cannot be identical with either of the other specimens reported from Suffolk, and it should be remembered how often mistakes are made without the slightest intention to deceive.

36. Lastly, some reference should be made to a Pine Grosbeak, a red male, affirmed to have been shot at Powderham, in Devonshire, and stuffed by a gardener named Major, since dead. Without any evidence one way or the other, I may simply state

that I do not in the least believe that it was killed anywhere in England, although the late Mr. Byne, of Taunton, and Mr. Truscott, of Exeter, both believed in it. According to my experience, the shooters of such rare British birds as the Great Black Woodpecker, Spotted Sandpiper, and Pine Grosbeak are generally found to be dead when wanted to give evidence—an inconvenient circumstance which naturally casts some doubt on the marvellous statements attributed to them.

ORNITHOLOGICAL NOTES FROM MAYO AND SLIGO.

BY ROBERT WARREN.

THE exceptionally mild temperature of the winter of 1889—90 had a considerable effect on the movements of many of our birds, both residents and migrants, there being no frosts during the season to limit the supply of food, or drive them to more southerly haunts. November was mild and dry, the mercury ranging from 58° to 33° during the month, and rain falling on only fifteen days.

December was also mild but very wet, there being only nine dry days, and the thermometer registered 54° as the highest, while the mercury marked 32° only once during the month. January was an exceedingly wet and stormy month, the worst I can remember. There was a continued succession of gales until the 29th, and only seven dry days; while the average maximum temperature was $47\frac{1}{2}^{\circ}$, and the minimum $35\frac{2}{3}^{\circ}$; the mercury only three times falling to 32° and once to 29° , and on the 29th the thermometer registered 50° by day and 44° that night. The month of February began with a very mild temperature; on the 1st, with a S.W. wind, the mercury stood at 54° and 45° ; but after the N.E. winds set in the nights were colder than in the previous months, the thermometer marking on some nights the freezing-point, and occasionally a degree or two below it, and but once down to 29° and 28° . The month was the driest ever remembered in this part of the country; there being the very unusual number of twenty-one dry days; while the early part of March, on the contrary, was very wet, with a low temperature, the coldest night of the season being that of the 2nd, when the mercury fell to 25° .

As already observed, the mild season had a marked effect on some of our birds; the Lapwing, for instance, remaining in the district in undiminished numbers all through the winter, whereas in other seasons the majority disappear with the early December frosts; and in February, when returning to their breeding haunts, a score or so are generally seen about; but this winter I observed flocks as numerous as those seen in October and November, thus giving promise of a good breeding season in consequence of the large number of birds returning to their breeding grounds.

I observed few Golden Plover about the Moy estuary, the mild weather not inducing them to leave their inland haunts to rest by day on the sands, as is their usual habit in mild seasons; and I have heard from some shooters that they have been rather scarce in their usual inland haunts. On September 9th I was surprised at seeing three Swifts flying about over the old Rath here; they were in the company of some Swallows and Martins, but all had disappeared the following day. On the 22nd I saw a little flock of twenty Teal on a small lough in one of my fields next the shore, but although I did not shoot at them, they only remained a few days, and did not return later in the season. I saw a flock under similar circumstances at the same place last year, and they also went off after a visit of a few days. On October 2nd, observing a few Wigeon resting on the water off the point of the Hillfield, I launched my punt, and putting the gun on board, paddled down to them, but they scattered so much on the approach of the punt that I only knocked over three birds by the shot, and on picking them up was surprised to find that two were Pintails, an old female and a young male, the latter beginning to moult, and just showing a few feathers of the male plumage; the third bird was a young male Wigeon of the year.

Wigeon were very scarce, not more than a score being seen about until the end of November, when the main flight appeared near Bartragh about the 25th. Not having been down for some days, I did not know of their arrival, until one of the pilots asked me one day "why I did not go after the Wigeon that were feeding in hundreds at the Sloke Rock;" but owing to the mildness of the weather I was unable to look after them until the 28th, when I went down the channel, and sure enough when I

got to Bartragh I saw them more numerous than in any year since 1880—81, and as tame as when starved by the hard frost of that season. I never saw them so tame so early in the season before frosts, and can only account for it by their being so knocked about by the heavy gale of the two or three previous days, or by there being so many young birds in the flock, and yet there were quite sufficient old birds to give the alarm if they thought of danger from the punt.

On reaching the Point of Bartragh where I got a good view of the birds, I saw between 300 and 400 Wigeon scattered feeding along the shore by the Sloke Rock, and extending fully 400 yards along the edge of the water, but not crowded together anywhere so as to offer a tempting shot; so taking the bunch nearest me I fired, knocking over five out of seven birds; the entire flock then rose at the report of the gun, and to my great surprise, pitched again on the water a few hundred yards lower down, swimming in to the bank, many walking upon it while I was loading. Having loaded as quickly as possible, I threw a few bunches of seaweed on the punt, and paddled down quietly close along shore, passing many scattered birds at fifteen and twenty yards distance without alarming them, until I got near the main flock, which had separated into two companies, the nearest on the bank consisting of thirty or forty birds, and the far one of nearly 200 also on the bank, while a great many birds were in the water near them. On approaching almost within shot I found that, owing to the scattered birds in the water, it was impossible for me to get within range of the big flock without alarming the swimming birds between; so after some hesitation, not liking to risk my chance of a shot by pushing on to the big flock, I decided on taking the small one, and firing when I got within sixty or seventy yards, I knocked down twenty birds, picking up nineteen, one cripple getting off amongst the weed-covered stones where I was unable to find him.

Most of those obtained were birds of the year, very small ill-thriven birds (some scarcely larger than Teal), and appearing as if want of food when young had checked their growth; indeed, I never saw such small Wigeon before except in 1880—1, when a great number of those I shot were of similar small size.

Notwithstanding that these two shots were fired within such a

short time of each other, the birds were not driven off, but merely moved about a mile further up the channel, where I saw them on my return with the flood-tide; but as the night was just falling I made a bad shot for want of light to enable me to aim correctly at a bunch lying on the side of the bank, and only picked up ten birds for the shot, having fired over them, aiming too high as is generally the case in a bad light.

Having been obliged to leave home the following day, and living away for three weeks, I lost the whole of December; and January being far too stormy, there being only one or two days calm enough for punting, it was not until February 3rd that I again came across the Wigeon.

I was returning from the Moyne channel in my punt, where I had been all day without obtaining a shot at anything (even the Godwits were too wild and unsettled to let me get within shot), and when I got into the main channel I observed about 200 Wigeon resting on the edge of the bank on the Scurmore side, opposite the Sloke Rock. The wind was very squally and blowing on shore, and as I paddled up to the birds the wind took the punt on the beam; and, during a heavy squall, as I got just within that, the wind forced her up on the bank, and before I could get afloat again, and her head turned to the Wigeon, they all made off, and I lost a splendid shot, for the birds were packed as close together as they could stand.

On the following day I found them near the same place, but the day being calm and very bright they were much wilder, and would not let me get close enough for a heavy shot, so I was obliged to fire a long shot, by which I got only fifteen birds. However, when returning on the flood tide, I saw another little flock of a dozen, out of which I got seven birds. A few Mallards were down during November and December, but after that date they changed their haunts and remained inland altogether, for there were no frosts to drive them down to the seashore. Three or four Scaup Ducks frequented the channel part of the winter, and thirty or forty Goldeneyes haunted the tidal part of the river near Belleek Manor; and, strange to say, fully one half of the flock, if not more, appeared in the plumage of old males. A large number of Black Scoters were in the bay all the season, fishing just outside the breakers along the island of Bartragh. The fishermen often told me of the Black Ducks, but having

often seen large flocks of Wild Ducks in the bay, I thought the latter were the birds they spoke of; for in the distance Ducks often look very dark, and in some lights look quite black to the naked eye. However, on February 3rd I was at Bartragh, and as the surf had fallen considerably in consequence of the wind blowing off the land, the Black Ducks came closer than usual to the shore, and with the aid of my glass I was able to observe them pretty closely as they dived along the breakers, and fully satisfied myself that they were Black Scoters, though two or three times I thought I could detect Velvet Ducks in the flock; for as they rose and flapped their wings I could plainly distinguish white markings on their wings.

This was the only occasion that I was able to get a good view of these Ducks with a glass, for they had always previously kept too far outside the breakers to make out what they were, and it was impossible to reach them from either punt or boat. Of wading birds visiting our shores, the Gray Plover was the scarcest this winter, while Turnstones and Sanderlings were unusually numerous. Godwits appeared in about their usual numbers, but Knots were not at all plentiful, though Curlew were positively in thousands on the sands of the estuary and adjacent islands.

There is seldom any difference to be remarked in the Red-shanks or Greenshanks, although this winter I think the little flocks of the latter birds appeared larger than last year. Fifteen, I think, was the largest flock of Greenshanks observed this winter, but the general number seen together is about seven or eight birds. In this district Greenshanks remain all through the winter, never leaving our shores except for their breeding grounds in spring; and their stay is so short that they are frequently seen back again on our shores the last week in July.

When walking along the shore on March 15th, observing some Wigeon and Godwits feeding on the sands, I was rather surprised to see a Sandwich Tern flying past; it appeared to be a solitary bird, no others being in sight at the time, so I suppose it is the first visitor of the season, till followed soon by the rear-guard of our summer migrants.

NOTES AND QUERIES.

MAMMALIA.

The Wapiti in Europe.—Near Luckenwald a wealthy Berlin manufacturer owns an important shooting, whereon the Wapiti, *Cervus canadensis*, has been acclimatised, and between Jan. 20, 1889, and Jan. 20, 1890, seven of these animals were shot there, one of them having a head of fourteen points. Whether the difficulty of stalking them is as great as is the case in the wilds of North America may well be doubted.

Wolves and Bears in France.—On certain estates in the Department of the Marne, poison is used for destroying Wolves, and in this way sixteen of these animals have been killed during the present winter, the last of which weighed over 70 lbs. The Bear is still at home in the mountains of Isere, bordering on Savoy, and has lately made its appearance in the forests of Haut-Diois, in the Department de la Drôme. Bear drives have been organised, but so far without success.

The Wild Cat in Hungary.—It is said that the Wild Cat, *Felis catus*, is not uncommon in some of the forests of Austria. During the past shooting season no less than twelve were killed on the property of Count Franz Szechenyi, at Tarnocz.

Marten in North Wales.—A correspondent, writing to the Editor of 'Shooting,' reports that in February last two Martens were trapped on Lord Penrhyn's moors, by Conway Lake. They were said to be male and female, and both fine animals of the average size.

A Trap for Field Mice.—On March 7th I discovered a curious mouse-trap, which had caused the death of eight Field Mice. It was nothing more nor less than an old tin can, which was standing against the wall in a field, and contained the bodies of eight mice. They had evidently run along the wall, and, while investigating the mysteries of the old tin pot, had fallen in, and as it contained about four inches of water, and was itself about eighteen inches deep, it was of course impossible for them to get out again, consequently they fell victims to their own curiosity; at least this is the only way I can account for their being there. — R. FORTUNE (Harrogate).

Polecat in Cornwall.—I beg to record the capture, in Upton Wood, Lewanick, East Cornwall, of a male Polecat, an animal which I believed to be nearly extinct in the South of England. It was formerly very plentiful here, but I have not seen one for twenty-five years. The measurement and weight of the one just obtained are:—Length, from nose to tip of

tail, 1 ft. 9 in. ; weight, 2 lbs. 10 oz. The fur in fine condition.—FRANCIS R. RODD (Trebartha Hall, Launceston).

Number of Dogs in the British Islands. — I observe in 'The Zoologist' for January last that, speaking of the number of dogs in the British Islands, you say that the Dog-tax for the United Kingdom is 7s. 6d. I write to point out that in Ireland the Dog-tax is only 2s. 6d. for each dog, with a 6d. stamp for the license ; that is, for one dog we pay 3s., for two 5s. 6d., for three 8s., and so on. Will this not make an alteration in your figures?—ROBERT PATTERSON (1, Windsor Park Terrace, Lisburn Road, Belfast).

Mus alexandrinus and *Mus hibernicus*.—Having in my possession several rats which differ from both the Brown Rat (*Mus decumanus*) and the Black Rat (*Mus rattus*), I am inclined to think that I can throw some light on the questions discussed by Mr. Southwell and others in your pages last year. The rats in question were caught in Mr. Jamrach's well-known establishment in East London, where there are many, both black and brown. Three are brown, but have the long muzzle, ears, and tail of *M. rattus* : surely these are the *M. alexandrinus* of writers. Another is black (male), with white throat and feet, but the short ears and tail of *M. decumanus*,—however, its muzzle is long, as in *M. rattus* : is not this the so-called *M. hibernicus* ? Lastly, I have a pure *M. rattus* (female), with long muzzle, ears, and tail, from the same place. My friend Mr. Kelsall, who suggested this letter, has received both white-throated and pure black specimens from Mr. Jamrach, and was told by his neighbour, Mr. Abrahams, of a whole family of Black Rats with white throats. Surely both *M. alexandrinus* and *M. hibernicus*, as briefly described above, are hybrids between *M. decumanus* and *M. rattus*, each showing some peculiarities of both parents. I have thirteen young rats, out of brown and white and black and white does, by the white-throated male above-mentioned : ten of these are black, with white bellies and feet, three are brown similarly marked.—MAURICE STUBBS (Wavertree, Liverpool).

BIRDS.

Wild Hybrid between Goldfinch and Greenfinch. — I have lately obtained full particulars of the curious bird, supposed to be a hybrid between Goldfinch and Greenfinch, which was lately exhibited at the Crystal Palace, and is referred to in the last number of 'The Zoologist' (p. 106). The exhibitor, Mr. Waterman, has also kindly furnished me with a detailed description of its plumage to supplement the hurried note I was obliged to take at the show. The bird was caught in the month of November, three years ago, by an amateur bird-catcher named Richard Brown, at Hackbridge, in Surrey, with two others supposed to be examples of the same cross, but of the opposite sex. This bird, believed to be a

male, was very wild when first taken, and remained so for quite a year after capture, and was then much yellower in colour than it is now. It used to sing the Greenfinch's note, but louder. Since being placed by the side of Goldfinches and Linnets, however, it has taken almost entirely to the notes of the Goldfinch. The owner states that it will eat "almost anything in the shape of seed—including oats." As to its description: in its general appearance it resembles a Greenfinch in shape, but is too finely built for a bird of that species, has a less distinctly forked tail, and appeared to me to have a somewhat narrower skull; while in colour it gives one the impression of a Goldfinch with a wash of yellowish green over it. The feathers at the base of the bill are black. The face of this bird has the part which is crimson in the Goldfinch coloured bronze. The other markings on the head correspond to those of the Goldfinch, substituting pale greenish grey for white, and dark greenish grey for black. The back of the neck and back are greenish brown, inclining to yellow on the upper tail coverts. The tail has the two outer feathers white with black margins; the rest are black with "a slight fringe of yellow." The under tail-coverts are white. Belly yellowish green; throat greyish. The wings are "similar to those of the Goldfinch:" the colours, however, are not so bright, but "otherwise the three colours found in the one are also shown in the other, and in exactly the same order." Legs pale in colour; and the beak is pale flesh-colour, tipped with black. I have not yet been able to trace the two other birds caught at the same time. The bird in question shows such obvious similarities to both Goldfinch and Greenfinch that there can be no doubt of its parentage. Its present owner has caught Greenfinches and Goldfinches at the place where it was captured. Moreover, the Greenfinch pairs so readily with other birds that there is hardly one of our common British Finches with which it has not mated in captivity; and breeds when wild not infrequently with the Linnet ('Zoologist,' 1883, p. 379; 1887, p. 303), and perhaps also occasionally with the Siskin ('Zoologist,' 1887, p. 266).—ARTHUR H. MACPHERSON (51, Gloucester Place, Hyde Park).

Lapwing's Nest made of Rush.—On June 8th, 1889, I found in Jutland a nest of the Lapwing, made solidly of pieces of dead rush-stems, exactly like Black Terns' nests found in the same neighbourhood, but larger, and not so deep in proportion. The four eggs were those of the Lapwing, and one of the birds was wheeling about overhead.—JOHN P. THOMASSON (Woodside, Bolton).

Ornithological Notes from Redcar.—The following notes relate to the capture or occurrence of uncommon birds in the neighbourhood of Redcar during the past year of 1889:—On Jan. 3rd eight Swans were noticed, at 10 a.m., about a mile out at sea, flying to the N.W. On the 30th great numbers of shore birds were on the Tees sands, but quite unapproachable

with an ordinary gun. On Feb. 14th a Green Cormorant was shot in the river, by a Redcar fisherman; the Shag is, in my experience, a rather rare bird in this district. On the 15th I purchased a Red-necked Grebe in winter plumage, which had been picked up alive on the sands. About the end of May a Grey Plover, in full breeding plumage, was shot by the riverside near Lackenby. During the summer a local taxidermist had four young Hawfinches brought to him, and he is of opinion they were from two different broods: two of them (male and female) he reared, and they are now thriving and in good plumage. It would not be advisable to mention the exact locality where the nests were found, but it was within a mile or two of Redcar. During the middle and latter part of August shore birds arrived in considerable numbers. About twenty Little Stints and two or three Pigmy Curlews were shot; two of the latter were adult birds. Knots and Turnstones were also very numerous towards the end of the month; two of the former with red breasts were procured. On Aug. 30th, and for several days afterwards, Sandwich Terns passed to the S. in small parties of three or four. While off in a boat, E. of Redcar, I shot two, both mature examples. On Sept. 6th my friend Dr. Kershaw shot a Pigmy Curlew, with partly red breast, from a flock of Dunlins; and on the 9th he shot an immature specimen of Buffon's Skua on Coatham Sands. The Skua tribe was well represented in September, chiefly *S. parasiticus*, but on one occasion—when sailing between Redcar and Saltburn—I noticed several *S. pomatorhinus* in adult plumage. On the 11th a large flight of Duck and Wigeon passed during a N.E. gale. I shot two of the latter, both immature birds. On Oct. 6th I purchased an immature example of Sabine's Gull, which had been killed in Tees Bay. On the 12th (N. gale, rain) a great flight of Ducks, also a few Hooded Crows and Woodcock; two Spotted Crakes were obtained on the marshes near Middlesbro'. On the 13th (N. wind, light) Larks and Hooded Crows crossed in large numbers. A Fulmar Petrel was taken in a rather extraordinary manner; it alighted on the water, near the wreck of a screw-steamer on which some fishermen were working; one of them put off in a small boat, and, rowing towards the bird, threw a piece of wood at it, which hit it on the head and stunned it. I examined a Peregrine Falcon which had been shot near Ingleby, in Cleveland, and brought to the Middlesbro' taxidermist to preserve. On Nov. 23rd a Rose-coloured Pastor, the first I have known in this neighbourhood, was shot at W. Coatham, and taken to our local bird-stuffer. Early in January of the present year I was informed that some Shore Larks had been observed at the Tees Mouth. On the 29th one was shot, and I went out several times to see if I could fall in with them, but, although I saw a few each time, they were very wild, and I was not successful in getting a shot; but on Feb. 14th I managed to secure six, and saw seven or eight others feeding among the rough grass near the shore edge. During

the latter part of January and beginning of February the fishermen reported numbers of Little Auks at sea. In February one was picked up on the sands, it having been killed at sea and washed ashore. Feb. 26th, 27th, and 28th, several Puffins, Guillemots, and Little Auks were driven ashore during a strong N.E. gale. Some of the Puffins and Guillemots were alive when found. On Feb. 28th another Shore Lark was shot at the Tees Mouth.—T. H. NELSON (Apsley House, Redcar).

The Green Sandpiper in Ireland.—On Aug. 23rd last I obtained a specimen of this Sandpiper, in full summer plumage, on the River Dodder; and on Dec. 15th I saw another bird of this species at the same place. I observed the latter repeatedly till the middle of February, when it disappeared. I have occasionally met with it in winter hanging up with Snipe in the market, but it certainly occurs more commonly in the autumn.—EDWARD WILLIAMS (2, Dame Street, Dublin).

Hawfinch and Brambling in Ireland.—Hawfinches have been very numerous in Ireland this winter, and have been quite common in the fine old hawthorn woods of the Phoenix Park. Up to this date (March 15th) they show no signs of migrating. Strange to say, they have never been found breeding in Ireland, though I have had specimens from, or heard of these birds occurring in, many other parts of this country. Bramblings have been common in the southern part of the Co. Dublin, and have remained late enough to assume the full summer plumage. I have seen some specimens with the head quite black, every trace of the ashy grey having worn off.—EDWARD WILLIAMS (2, Dame Street, Dublin).

Habits of the Kentish Plover.—Being in the haunts of this interesting little bird last summer, I had an opportunity of noting down on the spot a small item in its economy that may be of interest to other observers of bird-life. The day was exceedingly boisterous, not one that an observer would choose. The dry sand of the shore was being swept over the damp sand in clouds that only rose up some ten inches, but at times entirely hid everything on the ground. I had been watching the movements of one of the Plovers attempting to entice me forward, when my eye fell on a tiny little speck moving rapidly windward on the wet sand. On my approaching it squatted down, without any shelter, head to the wind, and remained almost perfectly quiet. How such a little ball of down, about the size of a walnut, was not blown over and over, as were many rolls of seaweed, was strange enough; but, stranger still, how was it not at once banked up with sand on the windward side, as were all the few scattered pebbles that were about? Stretched out, and held stiff against the sand on its "port-quarter," was one of its powerful legs, thus effectually preventing any bowling over. I have said that it remained almost perfectly quiet. Such movement as there was, I think was too slight to attract any

predatory bird that might be passing, and yet it fully answered the purpose. The tiny little bill was pointed downwards, and moved slowly but regularly from side to side, thus displacing any sand that drifted right up against the little creature; all passed harmlessly away on one side or the other. Instead of the smothering pile of sand that might have been expected, there was really a slight depression. Of course, had the little thing turned its back to the wind, and thus kept its head clear, it would not have been able to have used its leg to such purpose as it did.—CHAS. J. HOLDSWORTH (Hill Top, near Kendal).

Jack Snipe in Norfolk in Summer.—A Jack Snipe was picked up dead, beneath the telegraph-wires, in the parish of Sutton, Norfolk, on May 30th, 1889. It was apparently in full feather, and externally in good condition. This is not the first or only occurrence of the Jack Snipe in the Broad district, during the summer months, which has come under my notice; although probably compulsion, and not choice, has been the cause of their non-migration at the usual period,—an imperfectly healed shot-wound, or loss of feathers, then rendering them unfit for so long a journey or retarding their northerly flight until the natural inclination to do so had departed. I regret now that I did not pluck and dissect the Jack Snipe that I have met with in Norfolk at the abnormal dates of April, June and July. I see, on reference to my note-book, that Sept. 26th is the average date of the first Jack Snipe being shot in the ordinary course of events, during the past ten seasons. In a local publication, entitled 'Unnatural Natural History Notes,' by Col. H. M. Leathes, at p. 64, is this passage:—"Early in the month of August, 1869, my gamekeeper came up to the Hall one fine morning and announced the following fact, *viz.*, that during the summer some Jack Snipe had bred in one of our marshes at Herringfleet. As I was aware that this was an unheard-of occurrence, I closely questioned the man on the subject. He assured me that often during that season he had put the 'Jack' off their nests; that they had without doubt bred there, and that their young were now strong and healthy on the wing. He finished up by adding, 'If you do not believe me, sir, bring your gun and come and see for yourself.' A few minutes later saw me equipped and ready for the fray. The marsh we entered was always a favourite one for Snipe; in fact, more a 'rand,' than a marsh, and about two acres in extent, surrounded, however, by miles of Snipe ground. In less than a quarter of an hour I had fifteen Jack Snipe in my bag. I killed them nearly all with my first barrel; those I did not, simply flew a few yards, settled down again, and never left this small marsh. One little chap I had to shoot at no less than five times before I secured him. What I would have given for an egg nobody can tell. I believe I should have been the only owner of a veritable Jack Snipe's egg fairly laid in England. Talking afterwards to the Rev. Mr. Talman, a Fellow of King's

College, Cambridge, a learned naturalist, and a dependable clever man, who resided in the adjacent parish of Haddiscoe, I was informed that, "without doubt, Jack Snipe had been bred in these marshes, and that he had known instances of this fact upon more than one occasion. My gamekeeper swears to having often flushed the Jack from the nest during the season." I wonder whether Col. Leathes had any of these Jack Snipe stuffed, and if so, by whom. If Mr. Gunn had handled them, I fancy he would have discovered their being birds of the year, and we should have heard something more of this exceptional occurrence through the Natural-History journals. Just fancy, seven and a half couple of Jack! Three nests, at least, must have contributed their quota towards the bag.—M. C. H. BIRD.

[On the other hand, we have repeatedly known the Dunlin, *Tringa alpina*, to be mistaken for a Jack Snipe, even by men who have been shooting for many years. The book to which our correspondent refers, and which contains some very pleasant reading, was printed by Clowes and Sons, London and Beccles, 1884.—ED.]

Grey Shrike and Peregrine in Lincolnshire. — With reference to Mr. Allison's letter, at p. 106, on this subject, the following notes may be of interest:—I first met with the Grey Shrike in 1889, on Oct. 31st, on which date I saw two on a poplar tree near North Cotes sluice. The wind was blowing fresh from the S., and there had been a gale from the same quarter during the previous night. Both birds flew inland, and I did not see them again. On Nov. 16th I put up a Grey Shrike far out on Tetney "fitties." It also flew inland in the direction of a Plover decoy belonging to Henry Stubbs, the well-known wild-fowler, and was seen on a hedge there by young Stubbs the same day. Wind N., light, with rain and fog. These three birds showed very little white on the wing during flight and perhaps belonged to the race *Lanius major*. On Dec. 4th a fine adult bird, having the two wing-bars of typical *L. excubitor*, was found dead in a stack-yard near the coast, in the parish of North Cotes. It had been somewhat disfigured by mice, but I succeeded in making a good skin of it. The farmer who found it told me that he had seen this bird, or another like it, on the farm a few days before. The weather had been very severe since the snow-storm of Nov. 27th, and much snow still lay in the marsh country. The next Grey Shrike I met with was on Jan. 1st, 1890. It was also of the double-barred form. I saw it at a very short distance on a thorn-hedge at North Cotes. Light S. wind, with fog and rime frost. Lastly, one was seen on a willow tree at Marsh Chapel, by John Stubbs, on January 3rd. Wind S., light, sharp frost with fog. Stubbs shot at this bird at short range, but missed it. In addition to these, two birds were seen by separate persons,—one at Tetney, the other at Grainsby,—both about Christmas, which, from the description I received, were doubtless of this species. The only Peregrine I saw during the winter was on Jan. 6th. It was perched

on an iron bolt, on the stern-post of one of the old wrecks which are so numerous on some of the sand-banks at the mouth of the Humber.—G. H. CATON HAIGH (Aber-ia, Penrhyndeudraeth, Merionethshire, N. Wales).

Surrey Rooks in New Zealand. — Some time since I requested Lord Onslow (the Governor of New Zealand) to enquire about our Surrey colonists, the Rooks, in that country, which he has most kindly done; but before I give his report I must observe that this useful and interesting bird is an introduction, and not existing there before Mr. Bartlett, of the Zoological Gardens, and his son, with myself, collected them in this neighbourhood, *viz.*, from the rookeries of Hoe Place and Sand Grove, where every kind assistance was given us by the owners, the late Mr. W. Wainwright and the late Mr. A. P. Onslow. Before giving Lord Onslow's letter, which is very interesting, I must mention a curious fact, which saved no end of trouble as well as expense, which was this:—At first the young Rooks required feeding three or four times a day, having the appetites of all young things, and as there were forty of them, the keepers were engaged all day at this work. However, curiously enough, they were happily released by the elder of the young Rooks taking this upon themselves, in which they appeared to take the greatest delight. They certainly did their work well, for only one died out of the forty. I now give Lord Onslow's account of how they became good and faithful subjects:—"I have enquired about the Rooks, and have rarely been more amused than with the account of their proceedings. It appears that after they were liberated they made a careful tour of both islands, being seen in different localities in succession round the coast. They finally selected two or three spots, which they colonised just like human beings, and where they have quite installed themselves. At one place Mr. Huddleston found they could not build with the twigs of the native trees, because they were so flat they would not hold. Anxious not to lose his Rooks, which he had had in the garden quite tame, he hit on the expedient of notching the twigs and giving them to the Rooks; and he was seen most solemnly cutting notches in the twigs, and *handing* them to the Rooks, who thereupon took them away for building materials. Sir James Hector, the leading naturalist and curator of the museum, who knows your name well, is my authority for this, which I hope will be interesting to you." I am sure those who read this will agree with me that certain parties in Northumberland who have combined to kill off these useful grub-eaters should be thoroughly ashamed of themselves. — F. H. SALVIN (Whitmoor House, Guildford).

Supposed cause of the Migration of Birds. — The migration of birds was no doubt originally caused by temperature, which directly affected the birds, and also acted indirectly by its effects upon the food-supply of insectivorous species. Migration was not caused by the want of food alone,

for although this applies to many of the birds, it does not afford a complete explanation. Many of the birds which migrate to the south in winter are replaced by others from the north which live upon similar food. It may be taken for granted that birds and mammals, like plants, have a minimum and a maximum temperature, below and above which they cannot exist, and an optimum temperature that is most favourable to their existence. The migration of birds would be caused by their efforts to keep in the temperature most suitable to their existence. Considering the great and important effect that the cold temperature of the glacial period had upon the distribution of animals and plants, it was no doubt at that time that the migration of birds first began. During the warm Miocene period there would be little or no migration. When the temperature of Europe was lowering during the glacial period, the animals and plants would either be exterminated by the cold, or become modified to resist it, or escape the cold by migrating southwards. Plants, not possessing any means of locomotion, would be killed as the cold became too severe for them, while their spread southwards would be favoured. The mollusca and their allies, whose powers of locomotion are also limited, would also be affected in the same way. It is for this reason that plants and testacea are more valuable to the geologist as indications of the prevailing climate than are birds and mammals. Many of the latter were exterminated by the cold of the glacial period, others were protected by thicker coatings of fur (as we find *Rhinoceros* with wool and *Mammoth* with fur surviving in Europe after the glacial period), while others were driven southwards. All this shows that the general result was to drive the living things southwards, but birds differed from all other animals generally by returning to the north in spring, and the question is, how did this habit originate? It began, I think, in this way. After the breeding season, the birds would scatter in all directions, keeping in family groups, or joining with others in flocks, as they do now, returning to their breeding places in spring. When the cold of the glacial period first set in, it would be so gradual that it would hardly be noticed that a change was taking place in the temperature. As the cold increased the birds which wandered southwards would find themselves in a temperature more suited to them than those who went in any other direction, and their southern range would be gradually extended as the climate became colder, until there would be a considerable distance between their winter haunts and their breeding place, to which they would return every spring. At first birds would find their way backwards and forwards by memory, the homing pigeon shows that by memory they can return from considerable distances over routes they have previously traversed. The birds which went farthest southwards would return more invigorated and in better plumage than those which were more to the north, and would have a considerable advantage over the latter in the

struggle for existence. The distance between the breeding places and winter resorts of the birds would in time become so great as to necessitate a long flight to pass from one to the other, so that when the cold weather warned them of the approach of winter they would set out southwards, some flying direct, others flying by stages and loitering on their way. In the course of time, through being repeated so long, this habit would become an instinct, inherited by the young birds from their parents. The insectivorous birds would have an additional inducement to fly southwards, as the northern insects would be destroyed by the cold, while there would be an abundance of food in the south. It may be asked, why should the birds return to their breeding places in the summer? why should they not remain in the south? This difficulty is, I think, explained by the birds' habit of building in the same place year after year. There are many instances given of migratory birds returning to the same place to build, the birds being marked for identification. Many birds are extremely local in their distribution, and will return to some particular glen, cliff, or wood year after year, although there are plenty of other places, apparently as eligible. After a year's bird-nesting I was so accustomed to find nests in certain places that I could go to them and feel certain of finding a nest. I could tell within a few yards where Blackcaps, Willow Wrens, Redstarts, Whitethroats, Spotted Flycatchers, and other migratory birds would build. Blackbirds, Thrushes, and other birds will build sometimes in exactly the same place year after year, and in some cases by means of a particular mark, such as a white feather in the tail, I have known it to be the same bird. This habit of building as near as possible in the same place every year was the reason why the birds returned to the north in the spring when the breeding-time approached. It is owing, I think, to the birds being driven southwards by the cold of winter, with their habit of returning to the same breeding-place every year, that the instinct of migration probably originated.—JOSEPH VINE (11 Chester Road, South Highgate).

Little Auk at Scarborough. — During the last two months several examples of the Little Auk, *Mergulus alle*, have been obtained near here. One was captured by placing a basket over it as it was resting on the sea; another taken alive in a garden, in an exhausted state, and soon died; five others were otherwise caught or shot. As I have not heard of the occurrence of this bird near here for three or four years, it perhaps is worth notice.—R. P. HARPER (Scarborough).

Puffin inland in Norfolk. — Is it worth notification in 'The Zoologist' that a young Puffin, *Fratercula arctica*, was picked up exhausted, but not starved, at Tattesford, about ten miles distant from the north coast of Norfolk, on February 28th? The occurrence of this bird so far inland is remarkable, inasmuch as there was not, and had not been for several days,

any gale to drive it out of its course, the force of wind in this district not exceeding 8, *i. e.*, a wholesale breeze. At the same time I should tell you that I hear this morning of "many young Kittiwakes and Razorbills having been found dead or dying on our north coast during the last two weeks of February," which would seem to indicate the presence of severe weather somewhere in the North Sea.—E. W. DOWELL (Dunton Vicarage, Fakenham, Norfolk).

Birds flying against Window-panes. — The circumstance which Mr. Oxenden-Hammond mentions (p. 108) of birds killing themselves against house-windows is of constant occurrence here; during the summer time, I might safely say, of weekly occurrence, and I may add the Bullfinch and the female Sparrowhawk to Mr. Oxenden-Hammond's list, from my personal observation. The windows which are so fatal to birds in this house are the large plate-glass windows of one of the drawing-rooms, with a south aspect. It is only fair to the birds, however, to add that on one occasion a middle-aged gentleman attempted to perform the same feat, with the difference of doing it from within instead of from without, and I am glad to say that the strength of his neck and skull prevented the effects being so fatal, though I have no doubt the experience was sufficiently disagreeable.—E. W. HARCOURT (Nuneham Park, Abingdon).

Eared Grebe in Co. Waterford.—On Feb. 22nd I obtained from a man who had just shot it for me, on Dungarvan Bay, a fine specimen of this very rare species in Ireland, which I have sent to the Museum of Science and Art, Dublin. This, with the Long-tailed Duck (p. 103), and the Redstart (Zool. 1889, p. 455), makes three new species which have been lately added to the Co. Waterford list. The Eared Grebe is very much rarer in Ireland than the Slavonian Grebe, which I have obtained both from the coast and from an inland lake in King's County.—R. J. USSHER (Cappagh, Lismore).

Golden Oriole in Surrey: Honey Buzzard in Sussex.—During the last four years I have repeatedly seen a pair of Golden Orioles about here, and have no doubt they have been breeding. A friend of mine shot a Honey Buzzard close to East Grinstead last year. Nightjars are very common indeed around Bellaggio and East Grinstead, and especially Warlingham.—M. BURR (Bellaggio, Surrey).

Wheatear in North Lincolnshire in March.—On March 23rd I saw a Wheatear, still in winter plumage, in this parish. This is the earliest arrival I have ever noticed. Mr. Cordeaux, in his 'Birds of the Humber District, states that he has only twice observed this bird in March, namely, in 1867 on the 30th, and in 1871 on the 28th of the month. It was flitting about on the Humber "fitties," only a few yards in front of him;

therefore he had a good opportunity of observing it.—J. W. HARRISON (Goxhill, Lincolnshire).

The Birds of Ireland. — In 'The Zoologist' for 1884 (p. 187) an announcement appeared of a proposed Supplement to Thompson's 'Natural History of Ireland,' and contributions of information were invited from all those interested in the subject. Since that time a considerable amount of material has been accumulated by those who issued the above notice, and Mr. More has published a new edition (1890) of his 'List of Irish Birds,' to be obtained at the Museum of Science and Art, Dublin. But as by far the largest part of this material relates to the birds alone, it has been thought desirable, instead of going over the whole ground covered by Thompson's work, to publish in a separate form the information acquired relating only to the birds of Ireland. Previous, however, to putting this into its final shape, an effort is now made to ascertain the names of any other persons who are able to supply notes on Irish birds, and such persons are requested kindly to furnish any information they can on the subject at their earliest convenience to R. J. Ussher, Cappagh, Lismore, or to send their addresses to him for reference. — R. M. BARRINGTON; A. G. MORE; ROBERT WARREN; R. J. USSHER.

CRUSTACEA.

Rare Crabs in Cornwall.—I have to-day recovered from a trawler a specimen of *Inachus dorhynchus*. It is a small specimen, with a carapace just over one inch in length,—a female, with its spawn shed. There is nothing remarkable about it, except that its posterior excrescences resemble spines rather than tubercles; but collectors who have not scrubbed their specimens may well have been misled by the appearance of these spines in the midst of the mass of small fuci breaking up, through which they are first seen. It is a rare Crab in our Western Seas, and therefore I note it. Unfortunately the specimen is so knocked about as to be unfit for preservation. By the favour of Mr. G. T. Tregelles I recovered, on March 15th, from one trawler, which had been fishing in the deep water in the Bristol Channel, between Trevoze Head and Lundy Island, these specimens:—*Galathea strigosa*; *Inachus dorsettensis* (the Scorpion Spider Crab), two, both females, and laden with ripe berry; *Euronyma aspera*; *Stenorhynchus tenuirostris* (the Slender Spider Crab); *Ebalia Bryerii*, male and female. Except the *Galathea*, these are all of decidedly rare occurrence (or rather, it may be, observance) in our Western Seas.—THOMAS CORNISH (Penzance).

MOLLUSCA.

Description of a New Variety of *Limax flavus*, Linn.—Var. *lineolata*. Animal a very light yellow, ashy grey on the keel; tentacles

yellowish; each side of the body striped with a dark brown line, commencing faintly near the tentacles and converging on the keel; foot pale yellow. Locality: Hedge Banks, Nelthorpe, Banbury, Oxon. I am not aware of any previous record of such a variety as the above, banded forms of *flavus* being, I believe, very rare. Mr. T. D. A. Cockerell informs me that *Limax calendymus*, Bourg., from Madeira,—which he thinks is probably a variety of *L. flavus*,—exhibits an arrangement of the markings approaching banding, but is distinct from that for which the name *lineolata* is now proposed. I found the first specimen of it in a hedge bottom, and about a week afterwards I found another in a garden, with the band rather broader but less distinct.—W. E. COLLINGE, Hon. Assist. Curator Conch. Soc. (Springfield Place, Leeds).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

March 6, 1890.—Mr. CARRUTHERS, F.R.S., President, in the chair.

Mr. S. Lithgow was admitted, and Messrs. J. Lowe, E. R. Waite, and G. F. Elliott were elected Fellows of the Society.

Mr. Thomas Christy exhibited a dried specimen of *Picramnia anti-desma*, the plant from the bark of which a medicine known as *Cascara amarga* is believed to be prepared, and which is a useful alterative in diseases of the blood and skin.

Mr. J. E. Harting exhibited a series of horns of the American Prong-buck (*Antilocapra Americana*), to illustrate the mode in which the shedding and new growth of horn is effected in this animal.

A paper was read by Mr. D. Morris, on the production of seed in certain varieties of the sugar-cane, *Saccharum officinarum*. It was pointed out that, although well known as a cultivated plant, the sugar-cane had nowhere been found wild; nor had the seed (*caryopsis*) been figured or described, it being the generally received opinion that having been propagated entirely by slips, or cuttings, it had lost the power of producing seed. Spikelets, however, received at Kew, had been carefully examined and the seed found, which was now for the first time exhibited by Mr. Morris. He anticipated that, by cross-fertilization and selection of seedlings, the sugar-cane might be greatly improved; and much importance was attached to the subject, as it opened up a new field of investigation in regard to sugar-cane cultivation, Mr. J. G. Baker and Mr. T. Christy concurred.

A paper was then read by Mr. Spencer Moore, on the true nature of *Callus*. Part I.—The Vegetable Marrow and *Ballia callitricha*. It was shown that the *callus* of sieve-tubes of the vegetable marrow gives marked

proteid reactions, and, since it is dissolved in a peptonising fluid, there can be no doubt of its being a true proteid, and not a kind of starchy mucilage as is usually supposed. The "stoppers" of *Ballia* also yield proteid reactions; but, inasmuch as they resist gastric digestion, the substance cannot be a true proteid, and may perhaps be allied to lardacein. Mr. Moore maintained the view of Russow, Strassburger, and others (that *callus* is deposited upon the sieve) to be correct in the case of the vegetable marrow, since a peptonising fluid clears the sieve plates and leaves them in their pristine condition, which would not be the case if *callus* were formed by a swelling up of the sieves.

A discussion followed, in which Dr. F. W. Oliver, Dr. D. H. Scott, Prof. Reynolds G. een, and Mr. George Murray took part.

March 20.—Mr. W. CARRUTHERS, F.R.S., President, in the chair.

Mr. G. F. Scott Elliott was admitted, and Mr. H. E. Milner elected a Fellow of the Society.

After reading the Minutes of the last Meeting, the following Resolution was moved from the chair and unanimously adopted:—"On the occasion of a gift, from Mr. Crisp, of a handsome oaken table for the Meeting-room, the Society desires to record its deep sense of the valuable services rendered by that gentleman, not only as Treasurer, but by numerous acts which are not generally appreciated because they are practically unknown to the Fellows."

Prof. P. Martin Duncan, F.R.S., exhibited several specimens of *Desmophyllum cristagalli*, obtained from an electric cable at a depth of 550 fathoms. Though showing great variation in the shape and nature of the wall, the specific characters of the septa were maintained. The core extending as a thin lamina far beyond the peduncle, had no connection with the septa. A section of *Caryophyllia clavus* showed theca between the septa, and a section of *Lophohelia prolifera* exhibited a true theca extending beyond the septa.

Mr. E. B. Poulton exhibited some Lepidopterous larvæ, showing the variation in colour induced by natural surroundings; and some lizards in spirit, from the West Indies, showing the pineal eye very distinctly.

In continuation of a former paper on the external morphology of the Lepidopterous pupa, Mr. Poulton gave a detailed and interesting account of the sexual differences observed in the development of the antennæ and wings.

Prof. G. B. Howes read a paper on the intestinal canal of the Ichthyopsida, with especial reference to its arterial supply. He described certain arteries hitherto unrecorded, and some variations he had found in them in the Frog and Salamander. The artery known in the Elasmobranchii as the inferior mesenteric was shown to belong to the superior mesenteric

series. Discussing the morphology of the intestine and its derivatives in the light of the foregoing, the author defined the large intestine of the Pisces more precisely than had hitherto been done, and showed that the *appendix digitiformis* of the Elasmobranchs must be regarded as homologous with the *appendix vermiformis* of mammals, and that a short *cæcum coli* is present at any rate in the Batoidei. The anatomical relationships of the *appendix digitiformis* were described in certain Elasmobranchs for the first time, and some notes were added upon the *cæcum* and large intestine among Teleosteans.

An interesting paper was then read, by Mr. R. A. Grimshaw, on heredity and sex in the Honey Bee.

ZOOLOGICAL SOCIETY OF LONDON.

March 4, 1890.—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 February.

Mr. F. E. Beddard exhibited and made remarks on some living specimens of an Indian earthworm, *Perichæta indica*, obtained from a greenhouse in Scotland.

Mr. A. Thomson exhibited a series of insects reared in the Insect House in the Society's Gardens during the past year, and read a report on the subject. Particular attention was called to specimens of a South African Mantis, *Harpax ocellata*, and of a Canadian Stick-insect, *Diaphemora femorata*.

Mr. Henry Seebohm read a paper on the classification of birds, being an attempt to diagnose the subclasses, orders, suborders, and some of the families of existing birds. The characters upon which the diagnoses were based were almost entirely derived from points in the osteology, myology, and the pterylosis of the groups diagnosed.

A communication was read from Mr. T. D. A. Cockerell, describing some Galls from Colorado, of which specimens were transmitted for exhibition.

March 18.—Prof. FLOWER, C.B., LL.D., F.R.S., President, in the chair.

The Secretary exhibited (on behalf of the Rev. G. H. R. Fisk) a specimen of a white Bat, obtained at Somerset West, near Cape Town, believed to be an albino variety of *Vesperus capensis*.

Capt. Percy Armitage exhibited and made remarks on two heads of the Panolia Deer, *Cervus eldi*, obtained on the Sittang River, Burmah. One of these was of an abnormal form.

Mr. Sclater exhibited (on behalf of Mr. Robert B. White) examples of four species of Mammals, obtained in the Upper Magdalena Valley, in the department of Tolima, U.S. of Colombia.

Dr. Mivart read a paper on the South American *Canidæ*. The author called attention to the difficulties in the way of the correct discrimination of these animals, and to what appeared to him to be the unsatisfactory character of some of Burmeister's determinations and descriptions. Forms to which the names *fulvipes*, *griseus*, *patagonicus*, *entrerianus*, *gracilis*, *vetulus*, and *fulvicaudus* had been assigned were declared to be quite insufficiently discriminated from *Canis azaræ*. On the other hand, two very marked varieties, or possibly species, were noted and distinguished under the appellations *C. parvidens* and *C. urostictus*, the type of each of which was in the British Museum, both the skin and the skull extracted from it in each case.

Mr. R. I. Pocock read a revision of the genera of Scorpions of the family *Buthidæ*, and gave descriptions of some new South-African species of this family.

Mr. F. E. Beddard read a paper on some points in the anatomy of the Condor, *Sarcorhamphus gryphus*.

A communication was read from Prof. R. Collett, containing the description of a new Monkey from North-East Sumatra, proposed to be called *Semnopithecus thomasi*.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

March 5, 1890.—Capt. HENRY J. ELWES, F.L.S., Vice-President, in the chair.

Mr. G. H. Kenrick, of Edgbaston, Birmingham, and the Rt. Hon. Lord Rendlesham, of Rendlesham Hall, Suffolk, were elected Fellows.

Mr. C. G. Barrett exhibited a number of specimens of *Dianthecia carpophaga*, Bork., bred by Mr. W. F. H. Blandford from larvæ collected near Tenby, Pembrokeshire, on flowers of *Silene maritima*. He remarked that the series included a number of forms intermediate between *D. carpophaga* and *D. capsophila*, and established the fact that the latter is only a local variety of the former. Mr. W. H. B. Fletcher, Mr. Blandford, Mr. M'Lachlan, and the Chairman took part in a discussion as to the identity of the supposed species. Mr. Barrett further exhibited a specimen of *Dianthecia luteago*, var. *Barrettii*, Db., also bred by Mr. Blandford from a larva found at Tenby, and he remarked that the species had not previously been taken in England; also a specimen of *Botys mutualis*, Zell.,—a species widely distributed in Asia and Africa,—taken by Mr. C. S. Gregson near Bolton, Lancashire.

Mr. A. F. Griffith exhibited and made remarks on the following:—two specimens of *Myelois Pryerella*, taken in the London Docks in 1888, and, for comparison, a series of *M. ceratonix*; two specimens of *Penthina grevillana* and a series of *P. pralongana*, taken in Sutherlandshire, and, for comparison, a series of *P. sauciana*, var. *Staintoniana*; also two specimens of a unicolorous variety of *Hypermercia angustana* from Horning, Norfolk.

Mr. H. Goss exhibited several abnormal specimens of *Arctia caja*, bred

last December. The object of the exhibition was to show the effect produced by forcing the larvæ, and subjecting them to unusual conditions. It was stated that the peculiarity of the colour of the hind wings of the female parent had not been transmitted to any of the offspring.

Mr. Blandford referred to two specimens of a species of *Cardiophorus*, from Tenby, which he had exhibited at the August meeting of the Society as *Cardiophorus cinereus*, and stated that subsequent investigation had led him to hand them to Mr. Champion for determination. Mr. Champion was of opinion that they did not belong to the same species; that one of them was *C. asellus*, Er., and the other, probably, *C. equiseti*, Hbst., a species new to this country.

Mr. C. J. Gahan read a paper entitled "New Longicornia from Africa and Madagascar."

Capt. Elwes read a paper entitled "On a new species of *Thymara* and other species allied to *Himantopterus fuscinervis*, Wesmael."

Dr. Sharp read a paper entitled "On some Water Beetles from Ceylon."

Mr. J. J. Walker communicated a paper entitled "Notes on Lepidoptera from the Region of the Straits of Gibraltar." Mr. F. Merrifield, Mr. B. G. Nevinson, Capt. Elwes, and Mr. G. Lewis took part in the discussion which ensued.

It was announced that papers had also been received from Mr. E. Meyrick, Prof. Westwood, and Mynheer P. C. T. Snellen, but in consequence of the lateness of the hour the reading of them was postponed to the next meeting.—H. Goss, *Hon. Sec.*

NOTICES OF NEW BOOKS.

The Fauna of British India, including Ceylon and Burma. Published under the Authority of the Secretary of State for India in Council. Edited by W. T. BLANFORD. BIRDS. Vol. I. By EUGENE W. OATES. London: Taylor and Francis. 1889.

IN the 'Zoologist' for December last (p. 467), we noticed the two volumes on Fishes contributed to the present series, by the late Surgeon Francis Day. We have now to announce the publication of Vol. I. of the Birds of India, the preparation of which has been undertaken by Mr. Eugene W. Oates. His name will be familiar to our readers as that of the author of a very useful handbook in two vols. on the 'Birds of Burma,' and

of numerous papers in the now discontinued but valuable Indian Journal of Ornithology, 'Stray Feathers.'

We learn from the Editor's Preface that the number of species of birds to be described in three volumes, of which this is the first, exceeds those enumerated in Jerdon's 'Birds of India,' by *more than one half*, chiefly because Jerdon omitted the species inhabiting Ceylon, Sind west of the Indus, the Western Punjab, Hazàra, the Upper Indus Valley, north and north-west of Cashmir, Assam, Burma, and the intermediate countries (such as the Gáro, Khasi, and Naga Hills, Chittagong, Sylhet, Cachar, and Manipur), together with Andaman and Nicobar Islands, all of which are comprised within the limits of British India as accepted in the present publication. A large number of additional species have also been recorded, since Jerdon's work was published, from Sind, the Punjab, the North Western Provinces, Rajputana, and the Western Himalayas, the fauna of all of which has become better known within the last twenty-five years. The additional species from the Peninsula are far less numerous.

It would be scarcely possible to have better material than that which now exists for the preparation of a new work on the Birds of British India; for besides the very numerous contributions to Indian Ornithology which have been published since the date of Jerdon's work, the finest collection in the world of Indian Birds is now to be found at the British Museum. Here during the last few years the private collections of Messrs. Hume (60,000 birdskins), Gould, and the late Marquis of Tweeddale, have been added to those of Col. Sykes and Mr. Hodgson, of Nepal; so that in all probability there is not a single species of which there are not some, perhaps several, specimens available for examination. Under these circumstances it was evident that the work now in hand could only be completed in London, and it is fortunate for ornithological science that Mr. Oates has been able to arrange for a prolonged stay in England in order to work uninterruptedly at the British Museum.

Looking at the first instalment of his publication now before us, the first thing that strikes us is an alteration in the scheme of classification to which of late years we have become accustomed, and in which the family *Turdidæ*, in the Order Passeres, has headed the Class Aves. Mr. Oates prefers to commence

with the *Corvidæ*, between which and the Thrushes he interposes the Babblers, Nuthatches, Drongos, Creepers, Warblers, Shrikes, Orioles, Starlings, and Flycatchers, and the Thrushes are not reached in the present volume; the Indian Passerine families which succeed them being the Weavers, Sunbirds, Swallows, Finches, Wagtails, Larks, and Pittas or Ground Thrushes. From this it will be seen that considerable changes have been made in the arrangement of this Order; whether such changes are for the better, we are not, without further consideration, prepared to say. At first sight it is somewhat startling to find the Tits constituted a subfamily (*Parinæ*) of the *Corvidæ*; the Drongos separated from the Shrikes by the Warblers; and the Finches, Wagtails, Larks, and Pittas, interposed with other families between the Swallows and Swifts, which the most recent researches, by Dr. Shufeldt, have shown to be so nearly related.

Vol. I. takes us to the end of the *Sturnidæ*, in which family we find the Mynas; the Grackles being placed in a separate family, *Eulabetidæ*, next to the Orioles. In this volume of 544 pages, no less than 556 species of birds are dealt with, from which it will be seen that they are very briefly treated, the more so because in the same number of pages, 163 text cuts (chiefly the heads of birds) have been introduced, and these of course still further reduce the space at disposal.

The plan adopted by Mr. Oates is to give the scientific name of the species in clarendon type, followed by the English name in italic; a brief synonymy, with the native names if known. Next the coloration and dimensions, distribution and habits, the remarks under the latter head seldom occupying more than half a dozen lines, often much less.

One of the most useful features in the volume is the "Key to the Species," which in most cases follows the diagnosis of each genus, unless, as in the case of the genus *Regulus*, there is but one species to be noticed. Of this genus our familiar Goldcrest is the sole representative to be found in British India. We should have expected to find it placed much nearer to the genus *Phylloscopus*, considering its resemblance to such species as *P. proregulus*, and *superciliosus*; but Mr. Oates separates them by interposing the Reed and Bush Warblers, Tailor-birds and Fantails, whose relationship, both as regards structure and habits, strikes us as being much more distant.

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[No. 161.

ENGLISH DEER PARKS.

BY THE EDITOR.

MORE than twenty years have elapsed since the late Mr. Evelyn Philip Shirley published his 'Account of English Deer Parks.'

This book, of which only a small edition was issued, has long been out of print, and is now so scarce that it is priced in second-hand booksellers' catalogues at two and even three guineas. The time seems to have arrived, therefore, for the preparation of a new edition, if anyone could be found to undertake it.

From even a cursory glance at what Mr. Shirley has written on this subject, it is evident that such a task would be by no means a light one. So far as his materials permitted, the book is a very good one, especially when we consider that it was the first, and is still the only one existing on the subject; but it is by no means exhaustive, and in several respects might be materially improved.

In the first place, it would be of interest to give some account of the former haunts of the wild Red-deer in England, adding, if possible, the date of its extinction as a wild animal in different parts of the country.

Wallis, writing in 1769 (Nat. Hist. Northumb. vol. i. p. 408), says that at that date the wild Red-deer had become very scarce by the eager pursuit of them by sportsmen and others, and were seldom seen except in the forest of Knaresdale, where he himself had seen five or six in company, never more. He specifies the forests of ancient date in this county, as Cheviot, Rothbury,

Reedsdale, Eresdon near Long Horsley, Lowes (anciently Loughs, from the number of lakes in it), Allendale, and Knaresdale. These forests, he says, were all anciently stored with Red-deer. There were near 6000 head of deer, Red, Roe, and Fallow, in the forests and parks of the Earl of Northumberland in the northern counties, temp. 4 Hen. VIII (1512), according to an account given by his Majesty's Commissioners, and at the same time there were Red-deer in his lordship's forest of Rothbury (*op. cit.* pp. 409, 410).

On Martindale Fells, in Westmoreland, a few Red-deer still linger in a state of semi-domestication, and being strictly preserved by Mr. Hassell, of Dalemain, form a pleasing link of association with the past. They are no longer to be found on Whinfall, a former haunt in the same county.

In Lancashire, in the great forests of Bowland and Blackburnshire, there were Red-deer until the commencement of the present century. We learn from Whitaker ('History of Whalley,' vol. i. p. 205) that the last herd was destroyed there in 1805. In Yorkshire the Red-deer now at Bolton Abbey in a state of semi-domestication are regarded as lineal descendants of the ancient wild stock (Clarke and Roebuck, 'Handbook Yorks. Vertebrates,' p. 11). In the time of James I. herds of Red-deer roamed over Hatfield levels and the adjacent wastes of Lindholme. From the Inquisition of 1607 it appears that they then numbered about 1000 head, but that the herds were much impaired by the depredations of the borderers. Mr. Cordeaux is of opinion, from an entry in the parish register of Finningly made in 1737, that a few probably survived until about that date ('Naturalist,' 1886, p. 11). One was seen in Upper Wensleydale in Feb. 1885 ('Naturalist,' 1885, p. 288), but this may have escaped from some park, as it is not likely to have wandered thither from the Westmoreland fells.

In the royal forest of Needwood, in Staffordshire, Red-deer roamed wild until the commencement of the present century, when the forest was enclosed. Garner states (Nat. Hist. Stafford. p. 249) that a few survived for some years later in the woods of Foremark, where they had taken refuge. In Worcestershire the Red-stag was probably exterminated when Malvern Chase was disafforested in 1631, temp. Charles I.

"When I first remember the Forest of Dean," says Machen (MS. notes, quoted by Nicholls in his 'Historical and Descriptive Account' of this Forest, pp. 201, 202), "now sixty-five years since

(1790), the deer were very numerous. I recollect my father taking me up to the Buckholt in an evening for the purpose of shewing them to me, and we never failed of seeing several. From that time for twenty years, in consequence of the decrease of the covert, and the increase of poachers, they rapidly diminished, until in 1810, when I do not believe there were ten in the whole forest. At this period the enclosures were made for the preservation of timber, and woodmen appointed to the care of them; the few deer that were left were protected, and as the young trees grew up so as to afford them shelter, they rapidly increased, and in thirty years, *viz.* in 1840, I should think there were not less than 800 or 1000 deer in this forest."

These, however, were wild Fallow-deer. The Red-deer were introduced in 1842 by Mr. Herring, who brought down on Feb. 24th, from Woburn, two stags and four hinds. They were in fine condition, and were turned loose in Russell's Enclosure, one mile from the Speech-house. Here they roamed for some years, and increased in number until 1848. In that year, according to Machen, "on October 6th, the *last* stag returned to the forest, after having been in the woods near Chepstow almost a year. He was found in Oaken Hill, and killed, after a run of three hours, in Sallow Vallets. His haunches weighed 51 lbs., and the whole weight 307 lbs. The Fallow-deer of the forest were reduced in number after the year 1850 by killing a large number of does. They were all fine animals, and when the enclosures protected them they got very fat and the venison of fine flavour. They were generally hunted."

At the time of Lord Duncan's Committee, in 1849, continues Nicholls (p. 203), a general feeling prevailed against the deer, on the ground of their demoralizing influence as an inducement to poaching, and all were ordered to be destroyed, there being at that time perhaps 150 bucks and 300 does. . . . Ornamental to a forest as deer undoubtedly are, and disappointing as it may be to the stranger to find none in the Forest of Dean, we cannot but regret that in 1855, according to Machen, there was not a deer left in the forest, and only a few stragglers in the High Meadow Woods.

A hundred years ago there were Red-deer in Cornwall. When Borlase published his Natural History of that county, he wrote:—
"Red-deer are seldom seen in this county; some, however, make

their appearance for a time on the hilly downs about Bodmin, whence they haunt the woods upon the moors. They are found in greater plenty in the north, betwixt Launceston and Stratton, as if they were apprehensive of wanting room to range if they advanced into the narrow western parts."

Carew, who published his 'Survey of Cornwall' in 1602, regarded the Red-deer then in Cornwall as stragglers from the adjoining county of Devon, and no doubt many of them were stragglers; but Tonkin, in his edition of this 'Survey' published in 1811, observes:—"We have some Red-deer that breed in the inland and eastern parts of the county, though not very many."

The fact of their breeding, however, in Cornwall at that date is significant, showing that there must have been a good deal of wild ground well suited to their habits, as there still is in the adjoining county of Devon, where they are strictly preserved for the purpose of being hunted with the well-known Devon and Somerset Stag-hounds.

Referring to the former existence of Red-deer in Dorsetshire, Coker states, in his folio Survey of that county, 1732:—"At the first entrance into the island [Purbeck] lieth a large flatte of barren heathie ground, yet well replenished with Red-deere, severed from the rest with almost a continual ridge of very high hills." When the Red-deer ceased to exist in Dorsetshire is not quite certain, but they have long been supplemented in that county by the Roe, which was re-introduced in the year 1800 in the woods around Milton Abbey and Whatcombe, and still flourishes there in some numbers.

Gilbert White's account of the Red-deer in Wolmer Forest, Hampshire, is, of course, familiar to every naturalist. In Queen Anne's time, he says, they numbered about 500 head, but some years before he wrote they had dwindled down to about fifty, and he himself saw one of the last that was taken, the survivors of the herd being captured alive by royal command and removed to Windsor.

In Epping Forest a few Red-deer lingered down to the first quarter of the present century. See an article on the Deer of Epping Forest in 'The Essex Naturalist,' vol. i. pp. 46—62.

In connection with such details (and many more might be furnished) of the former haunts of deer in England, it would be of interest to give some account of the former method of

hunting them, and of the sport enjoyed by our kings and their retainers in by-gone days.

The records of the reigns of Elizabeth and James I. furnish many illustrations of the kind, from which a judicious selection might be made.

To the information which Mr. Shirley has collected in regard to the deer parks of England many additions might be made. To take an example, it will be found that his description of the parks in Hertfordshire occupies two and a half pages (pp. 79—81), in which he enumerates but *six* existing parks and *twenty-six* which have been disparked. When preparing some years ago an account of the Hertfordshire Deer Parks, which has been since printed in the 'Transactions of the Hertfordshire Nat. Hist. Soc.' (vol. ii. pp. 97—110), I was enabled to give particulars of *ten* existing parks and *thirty-four* disparked ones,—no inconsiderable addition for one county, to say nothing of the historical details furnished in each case. This is only mentioned here for the purpose of showing that if time were not wanting for the careful examination of county histories, court rolls, surveys, and other documentary evidence, Mr. Shirley's work might be considerably improved.

In many places some interesting additions might be made. I do not find any mention of Whitfield Park on the borders of Cumberland, where they used to show a hawthorn tree against which the heads of a stag and hound were formerly nailed up in memory of a famous chase. It seems that the hound singly chased a stag from this park, as far as the Red Kirk in Scotland, which is said to be sixty miles distant, and back again to the same place; where, being both spent, the stag, making his last effort, leaped the park pales and died on the inside: the hound, attempting to leap after him, had not strength enough to get over, but fell back and died on the outside just opposite. The heads of both were nailed upon the tree, and underneath this distich:—

“ Hercules killed Hart o' Grease,
And Hart o' Grease killed Hercules.”

It is somewhat remarkable that in his notice (p. 135) of Ditchley Park, near Woodstock in Oxfordshire, Mr. Shirley has made no mention of the ancient deer heads belonging to animals killed by James I., which are still preserved there, each bearing

an inscription indicating the place where it was hunted and slain. They are probably the oldest heads in the country of which the precise history is known. Thomas Hearne, the antiquary has left a pleasing account of a visit which he paid to this house in June, 1718. He was struck with its situation on the side of a hill, within a park two miles in compass, and adorned with marvellous pleasant woods. "This old house," he says ('Reliquæ Hearnianæ,' vol. ii. pp. 68, 69), "is a very notable thing, and I think I was never better pleased with any sight whatsoever than with this house. * * * We passed through the kitchen, and came into the great hall, which is above nine yards in length and is eight yards and a half in breadth. I was mightily delighted with the sight of this old hall, and was pleased the more because it is adorned with old stag's horns, under some of which are the following inscriptions on brass plates, which are the only inscriptions I ever saw of the kind":—

I. 1608. AUGUST 24. SATURSDAY.

*From Foxhole coppice roud, Great Britain's king I fled;
But what? in Kiddington Pond he overtoke me dead.*

II. 1608. AUGUST 26. MUNDAY.

*King James made me to run for life, from Deadman's riding
I ran to Soreil gate, where death for me was bidding.*

III. 1608. AUGUST 27. TUESDAY.

*The king pursude me fast from Grange coppice flying
The king did hunt me living, the queen's parke had me dying.*

IV. 1610. AUGUST 22. WEDNESDAY.

*In Henly knap to hunt me King James, Prince Henry found me,
Cornebury parke river, to end their hunting, drownd me.*

V. 1610. AUGUST 24. FRIDAY.

*The king and prince from Grange made me to make my race
But death neere the queenes parke gave me a resting place.*

VI. 1610. AUGUST 25. SATURSDAY.

*From Foxhole driven, what could I doe, being lame? I fell
Before the king and prince, neere Rosamond her well.*

Hearne adds he was informed that "the present park of Ditchley was made by the late Earl of Litchfield; . . . however this may be, it appears to me that there had been a park before, notwithstanding it might be destroyed. For we have the 'queen's park' mentioned in these verses, and I take this 'queen's park' to have been nothing else but this park of Ditchley.

"Queen Elizabeth had a particular delight in this place; for which reason she used to stay here weeks, nay months, together. Here she used to hunt and to enjoy herself."

Some account might be given of the herd of *white* Deer preserved in the park at Welbeck, that "noble yet melancholy seate," as Evelyn calls it, and of which later I may give some particulars.

Nor is it by additions only that Mr. Shirley's work may be improved: it stands in need of some revision and correction. For example, on p. 5, the old fable about the dark variety of the Fallow-deer having been introduced by James I. from Norway, is repeated, and Bewick is quoted in support; whereas, as I have long since pointed out, this variety was known in England at least as far back as 1465.* Equally erroneous is it to suppose with Pennant, Bewick, and others, that the spotted kind was brought from Bengal, these writers having confused the spotted variety of the Fallow-deer with the Axis-deer of India, which is also spotted, but which belongs to quite a different group of the Cervidæ.

At p. 22 Mr. Shirley refers to Sir Thomas Wortley, who was so fond of hunting that in 1510 he built a lodge in the midst of Wharncliffe Chase, where he used to repair in autumn to listen to the noise (technically termed "belling") made by the stags in the rutting season. This fact is recorded in an inscription (contemporaneously cut in the solid rock), of which Mr. Shirley gives what purports to be a copy (p. 22); but on comparing it recently with a facsimile, carefully made for the present Lord Wharncliffe, and recently exhibited by him in the Exhibition of "Sports and Arts" at the Grosvenor Gallery, I found that, in the ten lines Mr. Shirley transcribed, there are no less than fourteen mistakes. According to the facsimile the inscription runs thus:—

* 'Essays on Sport and Natural History,' p. 13.

Pray for the saule of
 thomas Wryttelay knyght
 for the kyngys bode to edward
 the forth rycharde therd hare the vii & hare viii
 hows faults god perdon wyche
 thomas cawsyd a loge to be made
 hon thys crag ne mydys of
 Wancliff for hes plesor to her the
 hartes bel in the yere of owr
 lord a thousand cccccx.

A more extraordinary blunder occurs in the chapter on parks in Oxfordshire, under the head of "Cornbury," an ancient royal park long alienated from the Crown, and lying to the west of Woodstock. After stating that it is recognized as a park as early as the 13th Edward III. (1339), when John de Solers was appointed keeper of the king's horses in his park at Cornbury during pleasure, Mr. Shirley proceeds:—"At the same period Joan, widow of Thomas de Musgrave, held certain lands in Blechingdon by the service of carrying one shield of brawn (*sic*) price twopence halfpenny to the King whenever he should hunt in the park of Cornbury, it being understood that one shield of brawn so carried to the King on the first day of hunting should suffice during the whole of his stay at his manor of Woodstock." This statement on the face of it is so ridiculous as at once to provoke criticism.

The words of the original tenure are not given; but a reference is furnished to Kennett's 'Parochial Antiquities,' where they will be found, as well as in Blount's 'Ancient Tenures.' From these authorities we learn that the land at "Blechesdon" was held "per servitium deferendi domino Regi unam hastam porci, pret. ii d.;" that is, by the service of carrying to the King one boar spear, price twopence, whenever he should hunt in the park at Cornbury. By a mistranslation, adopted by all the above-mentioned authorities, nonsense has been made of what is otherwise a perfectly intelligible and reasonable tenure.

Other passages might be indicated which seem to stand in need of revision; but enough has been said to show that while a new edition of this very useful book would doubtless be acceptable to many, a mere reprint would not satisfy present requirements.

NOTES ON WOODCOCK AND SNIPE.*

BY W. R. OGILVIE GRANT.

THERE is a general impression, especially among sportsmen, that two kinds of Woodcock are found in this country,—a larger, light-coloured bird, and a smaller dark one. In Germany these forms have received distinguishing names, and the larger is popularly known among sportsmen as *Waldschnepfe*, while the other is called *Steinschnepfe* and *Dornschnepfe*.

Some have given it as their opinion that these forms represent the different sexes; but it is evident that this is a mere supposition, and it will be found that just as many of the smaller, dark-coloured birds are males as females. Again, it has been asserted by many that the larger form is our resident bird and the other is an autumn migrant from North Europe; but this is entirely erroneous, as wherever the Woodcock is found both forms occur.

Having made a careful inquiry into the question, and had the opportunity of examining a large series of specimens from the different countries where the Woodcock is found, it appears to me a fact, of which there can be no doubt whatever, that the smaller dark birds are the young of the year,—that is to say, that the dark birds, which came to this country last October and will come this spring, are last year's birds. Every evidence seems to support this theory. It is very easy to distinguish a bird of the year from the old bird; the back and wing-coverts in the former are much more rufous, and are entirely devoid of the bold, pale grey spots which characterize the adult and form a distinct pattern on the back; the grey ends of the tail-feathers, too, have buff bases on the upper surface, whereas in the mature birds they are uniform grey right up to the back cross-bar.

With regard to being able to tell the sex of a Woodcock or Snipe by its plumage, it is absolutely impossible. There is no variation of colour to be found in male birds which cannot be matched in birds of the other sex.

Yarrell says that the "males have the forehead more inclined to grey, with the chin white, and the space above and below the decided dark brown mark from the beak to the eye is much

* Reprinted from 'Land and Water.' Communicated by the Author.

lighter in colour, almost white, with the small dark triangular speck at the end of these light-coloured feathers better defined; the back has more of the pale brown and grey, and the rump less of the red than the females;" but none of these characters are of any value, and are found equally in birds of both sexes, when adult. The triangular marks on the outer web of the first quill-feathers are certainly indications of youth and not of sex, "and are obliterated by degrees, and in succession, from the base to the end of the feather." Gould was of opinion that there are two distinct races of Woodcock, one large and grey, and the other small and red; and that they generally keep separate from each other on migration. It is highly probable that the old and young birds keep more or less separate when migrating.

Thanks to the splendid gift of Mr. A. O. Hume, there is a fine series of Indian examples of the Woodcock in the Natural History Museum, and it would appear, from the details which he has published regarding these, that, on the whole, Indian birds average lighter and measure less than European, but I cannot find any constant difference in the measurements, and the Indian birds, as a whole, have quite as large a wing measurement as specimens from China, Japan, Europe, and Great Britain.

It is quite possible that our resident Woodcock which have bred in this country may, on the whole, be somewhat larger and heavier than the Scandinavian immigrants. We find this to be the case with the Ringed Plover (*Ægialitis hiaticula*), and on this account the resident British birds have been called *Ægialitis major* by some ornithologists.

Of the Indian Woodcock Mr. Hume writes, "I have the exact measurements recorded in the flesh of over fifty Indian-killed specimens, . . . and these, I think, show our birds to be smaller than the European ones, and they show absolutely no constant difference in the size of the sexes." The following is an abstract of all these measurements:—

Length, 13·0 to 15·0 in.; expanse, 23·0 to 25·5; wing, 7·2 to 8·0; tail, from vent, 3·0 to 3·85; tarsus, 1·35 to 1·57; bill, from gape, 2·8 to 3·3; weight, 7 oz. to 12·5 oz. In not one out of fifty-three birds has the wing exceeded 8 inches. In my only Yárkand specimen it is 8·5, and it exceeds 8 inches in every one of five English specimens. In only five out of fifty-three birds has the weight exceeded 10 oz., and in these five the weights

were 10·5, 11·5, 12·0, 12·0, and 12·5 oz. Out of fifty-three and a half couple shot during three days at the late Mr. O'Leary's place, at Cool Mountain, near Inchigula Lakes, between Macroom and Bantry (south-west Ireland), twenty-seven weighed between 12 oz. and 14 oz., six weighed between 14 oz. and 15 oz., and one between 15 oz. and 16 oz.

Yarrell mentions an undoubted instance of a gigantic Woodcock killed about the year 1775 or 1776, at Uggeshall, Sir Henry Peyton's country seat, which weighed no less than 27 oz., and of another shot at Hadleigh, in Suffolk, of which the weight was 24 ounces.

From these facts it is clear that Woodcock are subject to immense individual variation in weight, which is probably largely due to age.

The Woodcock is a resident in India, inhabiting the wooded ranges of the Himalayas during the summer months and retreating in autumn to the lower valleys, where some spend the winter, while many migrate further south, as far as Ceylon or Tenasserim.

It would be interesting to ascertain whether any of the birds which have bred in this country do really migrate south in the autumn. St. John says, talking of Morayshire, that, although the woods abound with Woodcock in the spring and summer, during September scarcely one remains. The next flights appear towards the end of, or the third week of, October, and at every full moon fresh flights appear to come. For some time, till the frosts of winter begin to set in, Woodcock are often found on the open hill, sometimes in turnip fields, rushes, &c. But as winter advances they take to the woods during the day time, flying to the swamps at night with a sharp, rapid flight resembling that of the Snipe. They are not fat till the nights are sufficiently long to afford them plenty of time to feed. Their food consists of worms, of which they eat immense numbers.

Three other species of Woodcock are known besides the common bird, *Scolopax rusticola*. The Moluccan Woodcock (*S. rochusseni*), of which only a few examples have been obtained, has the upper parts black and golden buff, and the breast uniform buff devoid of cross markings. Another equally rare species is Horsfield's Woodcock (*S. saturata*), a darker-coloured bird than *S. rusticola*, known from Java; while the third is the American

Woodcock (*S. minor*), which differs from the others in having the first three quill-feathers attenuated, and resembles the Moluccan bird in having the breast unbarred.

It has been said that one "can tell from outside appearance if a Snipe is a home bird or a foreigner," and moreover that "a home Snipe has a lot of white on its belly, and, consequently, is more easily shot than its foreign relations. . . . The foreign bird has very little white about it, except under the wings," &c. I beg to differ in this opinion, and think, if the question be examined a little more closely, it will be found that, allowing a certain margin for individual variety, the birds with very little white about the belly, and with the sides and flanks barred with brown, are young birds of the year, and that this barring disappears more or less with age. Both forms are found wherever the Snipe occurs, and, if any half-grown young bird be examined, it will be seen that the sides and flanks and a great part of the belly are barred with brown. As is the case in the majority of birds, we meet with melanistic varieties among Snipe, when the whole plumage is suffused with a dusky tint, and these exaggerated birds represent what is commonly known as Sabine's Snipe (*Scolopax Sabinii*); but in a large series one can find intermediate forms, and I think there can be no doubt that this darkness of plumage is largely caused by the nature of the ground these birds inhabit.

THE EXTERMINATION OF THE AMERICAN BISON.

IN a 'Report of the United States National Museum,' of which separately printed copies have been lately issued (8vo, Washington, 1889, pp. 369—548, plates 1—22 and map), Mr. W. T. Hornaday has given a very complete account of the past and present status of the American Bison. The subject is divided into three parts:—(1), *the life history*, which includes an account of the discovery of the species, its geographical distribution, habits, food, &c.; (2), *the extermination*, embracing the causes, methods of slaughter, progress of destruction, and legislation to prevent it; and (3), *the result of the Smithsonian Expedition for specimens*, with numerous illustrations from photographs.

Mr. J. A. Allen's larger work on the American Bisons living and extinct, which was published in 1876, will of course be fresh in the recollection of all who are interested in this subject, and must be referred to for fuller details of the natural history of this fine animal than are to be found in Mr. Hornaday's Report. As this, however, contains the latest information, and has been issued in a smaller and more portable form, it will doubtless command a wider circulation than the heavier quarto.

Writing on May 1st, 1889, on the completeness of the extermination, Mr. Hornaday says:—

“Although the existence of a few widely-scattered individuals enables us to say that the Bison is not yet absolutely extinct in a wild state, there is no reason to hope that a single wild and unprotected individual will remain alive ten years hence. The nearer the species approaches to complete extermination, the more eagerly are the wretched fugitives pursued to the death whenever found. Western hunters are striving for the honour (?) of killing the last Buffalo, which, it is to be noted, has already been slain about a score of times by that number of hunters.

The Buffaloes still alive in a wild state are so very few, and have been so carefully ‘marked down’ by hunters, that it is possible to make a very close estimate of the total number remaining. In this enumeration the small herd in the Yellowstone National Park is classed with other herds in captivity and under protection, for the reason that, had it not been for the protection afforded by the law and the officers of the Park, not one of these Buffaloes would be living to-day. Were the restrictions of the law removed now, every one of those animals would be killed within three months. Their heads alone are worth from 25 to 50 dollars each to taxidermists, and for this reason every Buffalo is a prize worth the hunter's winning. Had it not been for stringent laws, and a rigid enforcement of them by Captain Harris, the last of the Park Buffaloes would have been shot years ago by Vic. Smith, the Rea Brothers, and other hunters, of whom there is always an able contingent around the Park.

In the United States the death of a Buffalo is now such an event that it is immediately chronicled by the Associated Press and telegraphed all over the country. By reason of this, and from information already in hand, we are able to arrive at a very

fair understanding of the present condition of the species in a wild state.

In December, 1886, the Smithsonian Expedition left about fifteen Buffaloes alive in the bad lands of the Missouri-Yellowstone divide, at the head of Big Porcupine Creek. In 1887 three of these were killed by cowboys, and in 1888 two more; the last death recorded being that of an old bull killed near Billings. There are probably eight or ten stragglers still remaining in that region, hiding in the wildest and most broken tracts of the bad lands, as far as possible from the cattle ranches, and where even cowboys seldom go, save on a round up. From the fact that no other Buffaloes, at least so far as can be learned, have been killed in Montana during the last two years, I am convinced that the bunch referred to are the last representatives of the species remaining in Montana.

In the spring of 1886 Mr. B. C. Winston, while on a hunting trip about 75 miles west of Grand Rapids, Dakota, saw seven Buffaloes,—five adult animals and two calves,—of which he killed one, a large bull, and caught a calf alive.

On September 11th, 1888, a solitary bull was killed three miles from the town of Oates, in Dickey County. There are still three individuals in the unsettled country lying between that point and the Missouri, which are undoubtedly the only wild representatives of the race east of the Missouri River.

On April 28th, 1887, Dr. William Stephenson, of the United States Army, wrote me as follows from Pilot Butte, about thirty miles north of Rock Springs, Wyoming:—

‘There are undoubtedly Buffalo within 50 or 60 miles of here, two having been killed out of a band of eighteen some ten days since by cowboys, and another band of four seen near there. I hear from cattlemen of their being seen every year north and north-east of here.’

This band was seen once in 1888. In February, 1889, Hon. Joseph M. Carey, member of Congress from Wyoming, received a letter informing him that this band of Buffaloes, consisting of twenty-six head, had been seen grazing in the Red Desert of Wyoming, and that the Indians were preparing to attack it. At Judge Carey's request the Indian Bureau issued orders which it was hoped would prevent the slaughter. So, until further developments, we have the pleasure of recording the presence of twenty-six wild Buffaloes in Southern Wyoming.

There are no Buffaloes whatever in the vicinity of the Yellowstone Park, either in Wyoming, Montana, or Idaho, save what wander out of that reservation, and when any do they are speedily killed.

There is a rumour that there are ten or twelve mountain Buffaloes still on foot in Colorado, in a region called Lost Park, and, while it lacks confirmation, we gladly accept it as a fact. In 1888 Mr. C. B. Cory, of Boston, saw in Denver, Colorado, eight fresh Buffalo skins, which it was said had come from the region named above. In 1885 there was a herd of about forty mountain Buffalo near South Park, and, although some of the number may still survive, the indications are that the total number of wild Buffaloes in Colorado does not exceed twenty individuals.

In Texas a miserable remnant of the great southern herd still remains in the 'Pan-handle country,' between the two forks of the Canadian River. In 1886 about two hundred head survived, which number by the summer of 1887 had been reduced to one hundred, or less. In the hunting season of 1887-88 a ranchman, named Lee Howard, fitted out and led a strong party into the haunts of the survivors, and killed fifty-two of them. In May, 1888, Mr. C. J. Jones again visited this region for the purpose of capturing Buffaloes alive. His party found, from first to last, thirty-seven Buffaloes, of which they captured eighteen head,—eleven adult cows and seven calves,—the greatest feat ever accomplished in Buffalo-hunting. It is highly probable that Mr. Jones and his men saw about all the Buffaloes now living in the Pan-handle country. and it therefore seems quite certain that not over twenty-five individuals remain. These are so few, so remote, and so difficult to reach, it is to be hoped no one will consider them worth going after, and that they will be left to take care of themselves. It is greatly to be regretted that the State of Texas does not feel disposed to make a special effort for their protection and preservation.

In regard to the existence of wild Buffaloes in the British Possessions, the statements of different authorities are at variance, by far the larger number holding the opinion that there are in all the North-west Territory only a few almost solitary stragglers. But there is still good reason for the hope, and also the belief, that there still remain in Athabasca, between the Athabasca and Peace Rivers, at least a few hundred wood Buffalo.

In a very interesting and well-considered article in 'The Field,' of November 10th, 1888, Mr. Miller Christy quotes all the available positive evidence bearing on this point, and I gladly avail myself of the opportunity to reproduce it here:—

'The Hon. Dr. Schulz, in the recent debate on the Mackenzie River Basin, in the Canadian Senate, quoted Senator Hardisty, of Edmonton, of the Hudson's Bay Company, to the effect that the wood Buffalo still existed in the region in question. "It was," he said, "difficult to estimate how many, but probably five or six hundred still remain in scattered bands." There had been no appreciable difference in their numbers, he thought, during the last fifteen years, as they could not be hunted on horseback, on account of the wooded character of the country, and were, therefore, very little molested. They are larger than the Buffalo of the great plains, weighing at least 150 pounds more. They are also coarser haired and straighter horned.

'The doctor also quoted Mr. Frank Oliver, of Edmonton, to the effect that the wood Buffalo still exists in small numbers between the Lower Peace and Great Slave Rivers, extending westward from the latter to the Salt River a latitude 60 degrees, and also between the Peace and Athabasca Rivers. He states that "they are larger than the prairie Buffalo, and the fur is darker, but practically they are the same animal." . . . Some Buffalo meat is brought in every winter to the Hudson's Bay Company's posts nearest the Buffalo ranges.

'Dr. Schulz further stated that he had received the following testimony from Mr. Donald Ross, of Edmonton:—The wood Buffalo still exists in the localities named. About 1870 one was killed as far west on Peace River as Fort Dunvegan. They are quite different from the prairie Buffalo, being nearly double the size, as they will dress fully 700 pounds.'

It will be apparent to most observers, I think, that Mr. Ross's statement in regard to the size of the wood Buffalo is a random shot.

In a private letter to the writer, under date of October 22nd, 1887, Mr. Harrison S. Young, of the Hudson's Bay Company's post at Edmonton, writes as follows:—

'The Buffalo are not yet extinct in the north-west. There are still some stray ones on the prairies away to the south of this, but they must be very few. I am unable to find anyone who has

personal knowledge of the killing of one during the last two years, though I have since the receipt of your letter questioned a good many half-breeds on the subject. In our district of Athabasca, along the Salt River, there are still a few wood Buffalo killed every year, but they are fast diminishing in numbers and are also becoming very shy.'

In his 'Manitoba and the Great North-west,' Prof. John Macoun has this to say regarding the presence of the wood Buffalo in the region referred to.

'The wood Buffalo, when I was on the Peace River in 1875, were confined to the country lying between the Athabasca and Peace Rivers, north of latitude $57^{\circ} 30'$, or chiefly in the Birch Hills. They were also said to be in some abundance on the Salt and Hay Rivers, running into the Slave River, north of Peace River. The herds, thirteen years ago (now nineteen), were supposed to number one thousand, all told. I believe many still exist, as the Indians of that region eat fish, which are much easier procured than either Buffalo or Moose; and the country is much too difficult for white men.'

All this evidence, when carefully considered, resolves itself into simply this, and no more. The only evidence in favour of the existence of any live Buffaloes between Athabasca and Peace Rivers is in the form of very old rumours, most of them nearly fifteen years old; time enough for the Indians to have procured fire-arms in abundance, and killed all these Buffaloes two or three times over.

Mr. Miller Christy takes 'the mean of the estimates,' and assumes that there are now about five hundred and fifty Buffaloes in the region named. If we are to believe in the existence there of any stragglers, his estimate is a fair one, and we will gladly accept it. The total is, therefore, as follows. Number of American Bison running wild and unprotected on January 1st, 1889:—

In the Pan-handle of Texas	25
In Colorado	20
In Southern Wyoming.....	26
In the Musselshell country, Montana	10
In Western Dakota	4
	<hr/>
Total number in the United States	85
In Athabasca, North-west Territory (estimated)	550
	<hr/>
Total in all North America	635

Add to the foregoing the total number already recorded in captivity (256) and those under government protection in the Yellowstone Park (200), and the whole number of individuals of *Bison americanus* now living is 1091.

From this time it is probable that many rumours of the sudden appearance of herds of Buffaloes will become current. Already there have been three or four that almost deserve special mention. The first appeared in March, 1887, when various Western newspapers published a circumstantial account of how a herd of about three hundred Buffaloes swam the Missouri River, about ten miles above Bismarck, near the town of Painted Woods, and ran on in a south-westerly direction. A letter of inquiry, addressed to Mr. S. A. Peterson, postmaster at Painted Woods, elicited the following reply:—‘The whole rumour is false, and without any foundation. I saw it first in the —— newspaper, where I believe it originated.’

In these days of railroads and numberless hunting parties, there is not the remotest possibility of there being anywhere in the United States a herd of a hundred, or even fifty, Buffaloes which has escaped observation. Of the eighty-five head still existing in a wild state, it may safely be predicted that not even one will remain alive five years hence. A Buffalo is now so great a prize, and by the ignorant it is considered so great an honour(?) to kill one, that extraordinary exertions will be made to find and shoot down without mercy the ‘last Buffalo.’ There is no possible chance for the race to be perpetuated in a wild state, and in a few years more hardly a bone will remain above ground to mark the existence of the most prolific mammalian species that ever existed, so far as we know.”

THE EFFECTS OF MUSICAL SOUNDS UPON ANIMALS.*

BY ROBERT E. C. STEARNS.

(Continued from p. 91.)

AN anecdote relating to Pigeons and Music is recorded by Goodrich [‘Anecdotes of the Animal Kingdom,’ Boston, 1848]:—“Bertoni, a famous instructor in music, while residing in Venice, took a Pigeon for his companion, and, being very fond

* From the ‘American Naturalist,’ 1890, pp. 236—242.

of birds, made a great pet of it. The Pigeon, by being constantly in its master's company, obtained so perfect an ear for music that no one who saw his behaviour could doubt for a moment the pleasure it took in hearing its master play and sing."

The Rev. Mr. James also furnished us [in 1884] with the following:—"I have a Canary of the feminine persuasion who is particularly fond of music. Immediately I begin to play upon the flute she chirps about as if enjoying the music. If I open the cage-door and leave her she will come as near to me as possible, but not attempt to fly to the music; but if I put her upon my desk, and lay the flute down, she will perch upon the end, and allow me to raise the instrument and play. I often take her into the church and play there upon the organ, and she will perch upon my fingers, notwithstanding the inconvenience of the motion of the hands, and chirp in evident delight at the sweet sounds."

Hares.—Following in the train of the domestic animals, the Hare furnishes an intermediate link between the same and the true *feræ naturæ*. One Sunday evening five choristers were walking on the banks of the River Mersey, in England. Being somewhat tired, they sat down and began to sing an anthem. The field where they sat had a wood at its termination. While they were singing a Hare issued from this wood, came with rapidity toward the place where they were sitting, and made a dead stand in the open field. She seemed to enjoy the harmony of the music and turned her head frequently, as if listening. When they stopped she turned slowly toward the wood. When she had nearly reached the end of the field they again commenced an anthem, at which the Hare turned around and ran swiftly back to within the same distance as before, where she listened with apparent rapture till they had finished. She then bent her way toward the forest with a slow pace, and disappeared." [The authority for this story is not given.]

Seals.—Mr. Laing, in his 'Account of a Voyage to Spitzbergen' [8vo, 1815], mentions that the son of the master of the vessel in which he sailed, who was fond of playing on the violin, never failed to have a numerous auditory when in the seas frequented by Seals, and they have been seen to follow a ship for miles when any person was playing on deck.

Hyenas.—Sparrman ['Voyage to the Cape of Good Hope,' 4to, 1786] furnishes the following story:—"One night, at a feast near the Cape, a trumpeter, who had got himself well filled with liquor, was carried out of doors in order to cool and sober him. The scent of him soon attracted a Spotted Hyena, which threw him on his back and carried him away to Table Mountain, thinking him a corpse, and consequently a fair prize. In the meantime our drunken musician awoke, sufficiently sensible to know the danger of his situation and to sound his alarm with his trumpet, which he carried at his side. The beast, as it may be imagined, was greatly frightened in its turn, and immediately ran away."

Wolf.—A story is told of a Scotch bagpiper, who was travelling in Ireland one evening, when he suddenly encountered a wolf that seemed to be very ravenous. The poor man could think of no other expedient to save his life than to open his wallet and try the effect of hospitality. He did so, and the savage beast swallowed all that was thrown to him with such voracity that it seemed as if his appetite was not in the least degree satisfied. The whole stock of provisions was, of course, soon spent, and now the man's only resource was in the virtues of his bagpipe. This the monster no sooner heard than he took to the mountains with the same precipitation with which he had left them. The poor piper did not wholly enjoy his deliverance, for, looking ruefully at his empty wallet, he shook his fist at the departing animal, saying, "Ay! are these your tricks? Had I known your humour, you should have had your music before your supper." The flight of the wolf before "the virtues" of a bagpipe may be interpreted as evidence of highly æsthetic sound sense in the said animal.*

Hippopotami.—The enterprising and lamented Clapperton†

* This story, of which only the purport is here given, and not the original words, is told, on the authority of Sir Thomas Fairfax, in a letter to Sir James Crofts, Sept. 6th, 1624, in Howell's 'Familiar Letters.' There is no mention of "mountains" in the letter; the incident is said to have occurred "in a wood."—ED.

† We presume that reference is here made to Capt. Clapperton, who accompanied Major Denham and Dr. Oudney in an expedition to Northern and Central Africa, in the years 1822, '23 and '24. The narrative of their travels was published in 4to in 1826.—ED.

informs us that, when he was departing on a warlike expedition from Lake Muggaby, he had convincing proofs that the Hippopotami are sensibly affected by musical sound:—"As the expedition passed along the banks of the lake at sunrise," says he, "these uncouth and stupendous animals followed the drums the whole length of the water, sometimes approaching so close to the shore that the spray they spouted from their mouths reached the persons who were passing along the banks. I counted fifteen, at one time, sporting on the surface of the water."

Alligator.—"When the late Dr. Stimpson and I were in Florida in 1869, some person gave him a young Alligator. The specimen was about two and a half feet from tip of snout to tip of tail. To secure the beast we made a halter of a piece of bed-cord, say three feet long, tying one end around its neck and the other to the leg of the table in the room we slept in. While sitting before a pitch-pine fire in the evening, discussing the events of the day, by way of variety we serenaded that Alligator with vocal performances of a high order. Our musical efforts produced, so far as we could perceive, not the slightest effect; the poor brute knew that he was tied, and that it would be useless to try and get away."

From the gigantic and uncouth let us return to the more attractive and familiar animals belonging to certain groups of the Rodentia, some of which are almost domestic through the proximity of their habitat to that of man.

Squirrels.—In Dr. Merriam's charming volume ['The Mammals of the Adirondack Region,' 1884], in treating of the Grey squirrels, *Sciurus carolinensis leucotis*, he says:—"They were extremely fond of music (in the most comprehensive sense of the term), and it affected them in a peculiar manner. Some were not only fascinated, but actually spellbound by the music-box or guitar. And one particularly weak-minded individual was so unrefined in his taste that if I advanced slowly, whistling 'Just before the Battle, Mother,' in as pathetic tones as I could muster for the occasion, he would permit me even to stroke his back, sometimes expressing his pleasure by making a low purring sound. This was a Grey, and I several times approached and stroked him as above described. I once succeeded in getting near enough to a Black to touch him, whereupon he instantly came to his senses and fled. When listening to music they all

acted much in the same way. They always sat bolt upright, inclining a little forward (and if eating a nut were sure to drop it), letting the fore paws hang listlessly over the breast, and, turning the head to one side in a bewildered sort of way, assumed a most idiotic expression.

Mice.—In 1804 Dr. Samuel Cramer, of Virginia, communicated to Dr. Barton the following very curious account of the influence of music upon the common House Mouse. He said:—“One evening in the month of December, as a few officers on a British man-of-war in the harbour of Portsmouth were seated around the fire, one of them began to play a plaintive air on the violin. He had scarcely performed ten minutes when a Mouse, apparently frantic, made its appearance in the centre of the floor, near the large table which usually stands in the ward-room, the residence of the lieutenants in ships of the line. The strange gestures of the little animal strongly excited the attention of the officers, who, with one consent, resolved to suffer it to continue its singular actions unmolested. Its exertions now appeared to be greater every moment. It shook its head, leaped about the table, and exhibited signs of the most ecstatic delight. It was observed that in proportion to the gradation of the tones of the soft point the ecstasy of the animal appeared to be increased, and *vice versâ*. After performing actions which an animal so diminutive would at first sight seem incapable of, the little creature, to the astonishment of the delighted spectators, suddenly ceased to move; fell down and expired without evincing any symptoms of pain.*

The anecdotes herein submitted are more entertaining than important; they contribute but little to our enlightenment on the main point. As a totality they are sufficient to show that an interesting field of inquiry is offered to us, that experiments are worth the making, and that only by carefully devised experiments can satisfactory data be obtained.

In reviewing the examples here brought together, those which relate to the effect of flute notes on sheep and pigeons are usefully suggestive, as furnishing a hint,—*first*, as to an instrument, and *second*, indicating a class of sounds worth experimenting with.

* Philad. Med. and Phys. Journ., vol. i. 1804, quoted by Dr. Merriam.

The interest exhibited by pigs, oxen, and cows in the more complex musical sounds, or combinations of sounds, such as would be classed under the second definition, is shown by some of the examples. We have no information as to the character of the instruments, or the tunes, or sounds. The simple fact is proven that these animals were attracted by instrumental music, and the inference is that the sensations produced were pleasurable.

As to how far the behaviour of the dogs, in some of the cases given, may be attributed to or regarded as the effect of music, or considered as nothing more than a manifestation of impulse or spontaneous activity which takes a hand in whatever is going on at the time, it is evident that this is a question for future determination.

We have all noticed the pleasure exhibited by these animals when the master puts on his hat and goes out for a walk, a drive, or a hunt. We have seen them racing with each other, with horses in the field, when both horses and dogs seem to derive pleasure [from the performance, and to be acting under the impulse which finds birth in exuberant vitality, or simple, healthful life. It would seem that the example of motion excites to action, and the sight of a swiftly moving railway train or a locomotive tempts and stimulates them to trials of speed.

In the Lake Superior region, where I lived thirty years ago, in the winter season,—which meant, at that time, five months' isolation from the rest of mankind,—the mail-bags were carried once a fortnight by dog-trains in charge of three or four Indians or half-breeds. There were generally three or four sleds, with as many dogs to each. The dogs were gaily decorated with bits of bright-coloured flannel and ribbons, and bells were added for sound and show. Upon arriving at the summit of a hill about half a mile from the centre of the camp, they halted for a breathing spell. I shall never forget the lively scenes that always followed these brief halts, when men and dogs started down the slope towards my office, at full speed; the Indians whooping at the top of their voices, and the dogs adding to the tumult by their vociferous and joyful barking, and the merry jingle of the bells.

Here man and beast were moved by a common impulse, which found relief, expression, and pleasure in intense activity and noise. They had shared together, as companions and friends, the fatigue and dangers and monotony of a long journey over

dreary reaches and wastes of snow, and through the gloom of silent forests, and now had reached the end which gave them rest, food, and security.

It is hardly worth the time to further consider the illustrations here brought together, as they are for the greater part not sufficiently circumstantial to furnish a deduction of any real value; they are rather like straws in the air which indicate the course of the wind, or blaze-marks on the trees that indicate a path to be followed.

NOTES AND QUERIES.

Death of Mr. J. H. Gurney.—Just as these pages are going to press, we hear with very great regret of the death of our old friend and valued correspondent, Mr. John Henry Gurney, of Northrepps Hall, Norwich, an excellent naturalist, and contributor to this Journal from its commencement. He died at Northrepps on Sunday, April 20th, having nearly reached his seventy-first year. In our next number we hope to give a short memoir of his life and labours in the cause of Zoology.

MAMMALIA.

The Wild Cat in Yorkshire.—The most recent authorities on the subject,—namely, Messrs. Clarke and Roebuck, in their ‘*Handbook of Yorkshire Vertebrata*’ (1881),—writing of the Wild Cat, describe it as “extinct, the Hambleton Hills having been its final refuge in Yorkshire. The last specimen there was trapped by Mr. John Harrison on his farm at Muston, near Hawnby, in the winter about 1840.” They add that “there is no proof that it ever inhabited the Fells of the north-west, though in all probability it once existed there. The evidence of its former existence in South Yorkshire is confined to entries in the Churchwardens’ accounts at Ecclesfield of sums paid in 1589 and 1626 for the destruction of ‘wylde catts,’ and to a legend of doubtful origin, of an encounter fatal to both between a wild cat and a man of the family of Cresacre at Barnborough.” I have lately come across a detailed account of this encounter, and as it contains a statement which is still capable of being verified, I quote it in full in the hope that it may lead to the publication of further information. In an octavo volume entitled ‘*English Forests and Forest Trees, historical, legendary and descriptive,*’ without author’s name, but published by Ingram, Cooke & Co., London, 1853, the writer remarks (p. 288):—“The Wild Cat is sometimes taken in traps, and sometimes by shooting; in the latter mode it is dangerous to merely wound them, for they have frequently been known

to attack the person who injured them, and their strength is so great as to render them no despicable enemy. As an illustration of this fact, we mention the following instance. At Barnborough, a village between Doncaster and Barnsley, in Yorkshire, there is a tradition extant of a serious conflict that once took place between a man and one of these animals. The inhabitants say that the fight commenced in an adjacent wood, and that it was continued from thence into the porch of the church. It ended fatally to both combatants, for each died of the wounds received. *A rude painting in the church commemorates the event*, and (as in many similar traditions) the accidentally natural red tinge of the stones has been construed into bloody stains which all the properties of soap and water have not been able to efface." I have italicized the statement to which I have referred as still admitting of verification, and I should be glad to know whether the painting referred to is still to be seen in the church or is preserved elsewhere; for if it is the fact that the combat in question attracted so much notice at the time that a local artist depicted it on canvas, and the painting is still to be seen, this circumstance goes far to confirm the truth of the story. Perhaps some correspondent who has visited Barnborough will enlighten us on the subject, or the Vicar may be able to say whether such a painting ever hung in the church, and has been removed to a place better suited for the display of such an unecclesiastical subject.—J. E. HARTING.

Beavers on the Rhone and on the Elbe.—It may interest your readers to know that the Beaver still exists in Western Europe. Some fifteen years ago I saw a very large white Beaver in the Museum at Bayonne, in France, which I was told was the last of its race found in Europe, and which had been killed on the Rhone. But this year, being at Hyères, where there is a Museum with a very fine collection of indigenous birds and quadrupeds, I found another fine specimen, colour light brown, measuring three feet from snout to end of tail. This was obtained about four or five years ago, and is one of several that were sent to M. Fiépi, a naturalist and taxidermist of Marseilles, and which were taken in the Rhone at St. Meree, in the neighbourhood of Arles. I obtained the following information from M. Catal, the naturalist of the Hyères Museum:—The Beaver was more numerous formerly on the Rhone, but the great floods of 1846 destroyed a large number, and made them more easily captured, and subsequent inundations have made them much rarer. They are still to be found in the Rhone and its affluents, the Gardon, the Durance and Isère below Valence, also lower down the Rhone at Arles, Beaucaire and Taralcon. They seem to have abandoned their custom of building huts and dams; the race no longer being sufficiently numerous to live in communities, they now live in deep burrows. In 1827 a number of the huts of the Beaver were found on the Elbe at its meeting with the Nuthe near Magdebourg, the spot still bearing

the name of La Mare aux Castors. Would it not be possible to induce scientific men in France to influence their Government to take measures for the preservation of these interesting animals? The French peasantry are not so destructive as the English, and if these animals were put under the protection of the Gardes Champêtres, orders issued against their destruction would be respected, and reserved places might be set apart on the banks of the Rhone where they could breed unmolested, and thus prevent the extinction of a harmless and interesting family of animals in Europe. The French naturalists show by their fine Museums and their Jardins d'Acclimatation their zeal for Natural History, and I am sure would take a national pride in saving this ornament of their country. I only hope it may not be now too late.—E. L. MITFORD (Venice, April 18).

Musk-oxen on the East Coast of Greenland.—Mr. Southwell, in his "Notes on the Seal and Whale Fishery of 1889" (p. 83), mentions that "the Norwegian sealer 'Hecla' is said to have turned the south end of the Greenland ice (which usually extends as far south as Cape Farewell), in lat. 70°, and reaching the coast killed 300 Walruses and forty Musk-oxen." I wrote to Prof. Robert Collett, of Christiania, for fuller details, and he very kindly gave me the following information. Prof. Collett is acquainted with Capt. Knüdsen, commander of the 'Hecla,' who related to him his experiences of last year's voyage, and further has had access to Capt. Knüdsen's journal. The 'Hecla' reached the East Greenland coast on the 16th July, 1889, at or near Cape Braer Ruys, about lat. 73° 26' N., which is apparently identical with Cape Hold-with-Hope, of the famous navigator, Henry Hudson, which Cape (3000 ft. high) Hudson sighted on the 21st of June, 1607, and fixed its latitude by an observation. At or near this point Capt. Knüdsen met with Musk-oxen, but none appear to have been killed there by the crew of the 'Hecla,' as they were intent on capturing Walrus. On the 27th July, 1889, on Clavinging Island, a little south of Tyroler Fiord, approximately in 74° 20' N., Musk-oxen were met with in considerable numbers, and twenty-four, not forty, were killed. Capt. Knüdsen was not aware of the interest taken in the animal, and therefore only four specimens were preserved; of these four the Museum of Christiania obtained a cow and a calf, that of Bergen a cow, and that of Tromsø a cow. The other specimens were simply skinned, and the heads, feet and carcasses thrown into the sea. Prof. Collett adds, "I am very sorry to say that not a single observation more is made. Capt. Knüdsen himself can tell nothing about them, as he was on a tour further in the fiord when his crew killed the Musk-oxen."—H. W. FEILDEN.

Polecat in Buckinghamshire.—It may be of interest to some of the readers of 'The Zoologist' to know that I have received three Polecats caught in Bucks. The first, a female, caught near Berton, in January,

1887, which died soon afterwards from injury in trapping her. The second, a male, dug out of a drain on Baron Rothschild's estate at Wadesden, on March 9th, 1888. The third, a young male, caught at Stoke Mandeville, July 13th, 1889. The last two are still alive in my possession, and tame enough to handle. The older of the two has paired with the Ferret, and bred a number of young ones, which are very good workers at rats, especially in stacks where activeness is required. I should very much like to know whether you have ever met with an authenticated cross between a Stoat and a Ferret, also a Weasel and Ferret, which I have been trying for some time to obtain. I hear of several cases, but upon investigation, and after seeing the animals, I can see no signs of such a cross. In the case of a Stoat being the father, would you expect to see any indication of the black up to the tail, or the colour of the coat showing any of the Stoat "ruddiness" about it? Also, in the case of the cross being obtained, would it breed again or be a mule and unproductive? Should anyone like to see these Polecats, I shall be pleased to show them. I have heard of others being shot and trapped in Bucks within the last two years, proving that this animal, in some parts of England at least, is by no means extinct.—J. H. B. COWLEY (Callipers, Rickmansworth).

Albino Water Vole.—As albinism and other abnormal variations in colour, although not uncommon in another member of the genus *Arvicola* (viz. *A. agrestis*), seem to be rather rare in *A. amphibia*, it may be worth while recording that in August, 1888, I examined a pure white Water Vole which had been killed on the banks of the Kennet near Newbury, Berks, a short time previously. It had bright pink eyes, and was therefore a true albino, and not merely a white variety. The taxidermist who preserved it told me that he saw another white Vole near the same place shortly afterwards. Lord Clermont, in his 'Guide to the Quadrupeds and Reptiles of Europe' (p. 84), mentions a variety "white with red eyes (albino)"; and Macgillivray ('British Quadrupeds,' p. 264) says he has seen "an albino with yellowish white hair and pink eyes." I have never handled one of the black Water Voles found commonly in the north of Scotland, and also in Cambridgeshire, but I imagine that they should not be considered as melanisms, but rather as examples of a local race of an uncommon but normal colour liable to appear at any time; like the black Rabbits, which are often found when there has been no admixture of domesticated blood. Examples intermediate in colour between the black and brown Water Voles are found where both forms occur. Macgillivray, it is true, says that the black kind is generally much smaller than the brown; but he also says, "Some individuals are pure black, but others are blackish brown, and all intermediate tints are observed until we come to the ordinary colour." The Rev. L. Jenyns describes the colours of examples found in the fen ditches of Cambridgeshire, where they were not infrequent, as "sometimes of as deep and velvety 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" ('Observations in Natural History,' p. 76). I have once or twice seen very dark-looking Voles on the banks of our North Oxfordshire streams, but I am not aware that the black variety has ever been actually obtained in this county. Mr. C. M. Prior, however, informed me some years ago that he saw a black Vole on the banks of the Sorbrook near Bodicote in August, 1875. The Water Vole always looks lighter coloured and redder in summer than in winter; this difference is owing to the absence in the former season of the long dark-tipped hairs which give a deep brown cast to the fur in winter. It would be interesting to ascertain the exact distribution of the black race in Great Britain. A somewhat analogous variety of *A. agrestis* is on record (Zool. 1886, p. 332).—O. V. APLIN (Bloxham, Oxon).

CETACEA.

White-beaked Dolphin on the Norfolk Coast.—On October 7th, 1887, when shooting in the harbour near Cley, Norfolk, I came across a Porpoise stranded on the mud near the mouth of Morston Creek. It was rather "high," and the head, which I cut off, smelt so horribly that I had to tow it behind the boat and leave it near the harbour-mouth for the night. However, it was brought safely up to Cley the next morning. As it was not clean when I came away I left it there, and found the next year that only the lower jaw and apart of the upper had been saved. A man who saw the carcass five days before I found it described the colours as dark blackish grey above and white beneath; it was about three or four feet long. As my acquaintance with cetaceans is very limited, I was unable to determine the species satisfactorily from the books I could refer to. I have therefore recently submitted the remains to Mr. T. Southwell, of Norwich, who kindly writes that they "unquestionably belonged to a White-beaked Dolphin, *Delphinus (Lagenorhynchus) albirostris*." Mr. Southwell has recorded several occurrences of this Dolphin on the Norfolk coast (Trans. Norf. Nat. Soc. vol. iv. p. 120), and remarks in his letter, "This species seems very partial to the east coast in its spring and autumn migrations." On Sept. 24th, 1888, I found a Common Porpoise, *Phocæna communis*, stranded on Cley beach, and the same day, when out in a boat about a mile and a half off shore, saw a small school of them plunging along and occasionally tossing themselves half out of water.—O. V. APLIN (Bloxham, Oxon).

BIRDS.

The Breeding of Pallas's Sand Grouse in Moray.—It will be in the recollection of readers of this Journal that at the last meeting of the British Association held at Newcastle-upon-Tyne in September, 1889, Prof. Newton exhibited a newly-hatched chick of Pallas's Sand Grouse,

which had been found last summer at Binsness among the sand-hills of Moray, where the birds were breeding. In the current number of 'The Ibis' (for April) Prof. Newton has printed a most interesting account of this discovery, accompanied by a coloured figure of the chick, faithfully drawn from nature by Mr. Frohawk. To this article we refer such of our readers as may not have seen it already; and we may take the opportunity of directing attention to two other important articles on the subject of the occurrence of *Syrhaptus paradoxus* in Scotland: one by Mr. William Evans, printed in the 'Proceedings of the Royal Physical Society of Edinburgh,' 1889 (pp. 106—126); the other by the Rev. H. A. Macpherson, published in a small octavo pamphlet by R. H. Porter, 18, Princes Street, Cavendish Square. Those who are collecting the literature relating to this bird, and it has now attained considerable importance, would do well to possess themselves of copies of the above-mentioned contributions before they are out of print.

Ardea virescens in Cornwall.—In 'The Zoologist' for March last (p. 105) Mr. Murray Mathew reported that he had seen a small Heron, which he believed to be *Ardea virescens* of the United States, in the shop of Mr. Foot, taxidermist, of Bath, who informed him that it had been shot in Cornwall during the autumn of last year. Within the last few days the owner of the bird in question, Sir Charles Sawle, Bart., has been good enough to bring it for my inspection, and at my suggestion it was exhibited by him at the last meeting of the Linnean Society on April 17th. His account of it is that on the 27th October last his keeper, William Abbott, was trying for the proverbial "early Woodcock" on some low-lying ground known as Hay Bottom, at Penrice, St. Austell, when the bird was flushed by a spaniel which almost succeeded in catching it. The keeper shot it, and, seeing that it was a bird with which he was quite unacquainted, sensibly kept it to show his master, who forwarded it for preservation to Foot, of Bath, as already stated. There it got labelled by some one who ought to have known better, "Nankin Night Heron," which it does not in the least resemble. On seeing it I had no hesitation in pronouncing it to be *Ardea virescens*, as suggested by Mr. Mathew, although not a *young* bird, as he supposed, but a fairly adult one. Possibly he may have regarded it as immature because it does not present the brighter green colour and long dorsal plumes which characterize the breeding plumage. In order to be quite certain of the species, in company with Dr. Sclater and Mr. Sharpe, I compared it with a number of skins of *A. virescens* at the Natural History Museum, when it was apparent that Mr. Murray Mathew's identification was quite correct. As to how this wanderer from the United States of America found its way to Cornwall, I can only hazard the conjecture that it may have come off from the shore at twilight (Bitterns like Herons are very crepuscular in their habits), and may have perched on the rigging of

some vessel which may have shortly weighed anchor and carried it out of sight of the coast. On nearing land again after crossing the Atlantic, it may have taken wing as soon as it perceived the shore, and have gradually moved to the place where it was found and shot. An obvious objection to this theory is that it could have eaten nothing under the circumstances for eight days. But Bitterns like Herons may have great powers of fasting. The latter when captured alive and kept in confinement, have been known to refuse all food (even fish), when offered to them, for many days. On the other hand, this is not the only way in which the occurrence of *A. virescens* may be accounted for. It may have been purposely imported by some one and made its escape; or as Bitterns like Herons can swim well, although not web-footed, it may have crossed the ocean, resting at intervals on the surface in a calm. Many instances are known of Sandpipers, Plovers, Pigeons, and other birds not web-footed, resting temporarily on the water. (See 'The Field,' July 3rd, 1875.) Again, the appearance of an American Bittern in this country is not only not unprecedented, but has been reported some five-and-twenty times, and it is a singular fact that the so-called "American Bittern," *Ardea lentiginosa* of Montagu, was first described and named in 1813 by that distinguished ornithologist from a specimen killed in Dorsetshire a year before it was recognized as a North-American species by Wilson in 1814. If its larger relative then has experienced no insuperable difficulty in finding its way to this country, there is no *à priori* objection to a visit under similar conditions, whatever they may be, of *A. virescens*. I have only to add that, in the opinion of Dr. Sclater, this bird should be referred to the genus *Butorides*, the species of which possess characters that naturally place them between the true Herons (*Ardea*) and the Little Bitterns (*Ardetta*), and in this opinion Mr. Sharpe concurs.—J. E. HARTING.

Hawfinch in Glamorganshire.—I have lately obtained a fine male Hawfinch, *Coccothraustes vulgaris*, which was picked up dead in the Rectory garden of a neighbouring village, and was in a very emaciated condition. 'The Hawfinch is a very scarce bird in this county.—DIGBY S. W. NICHOLL (The Ham, Cowbridge).

Pied Variety of the Red Grouse.—Early in September, 1888, I examined a recently-preserved pied variety of the Red Grouse, a bird of the year. A large irregular patch on the breast, two primaries in one wing, and one primary and three secondaries in the other were pure white. It was shot somewhere in Scotland, but in what part I did not hear.—O. V. APLIN (Bloxham, Oxon).

Dipper in Gloucestershire.—A Dipper was shot at Bourton-on-the-Water, in the latter half of September, 1888; it was of the ordinary British type. I do not know if the Dipper ever breeds in Gloucestershire, but it

is quite possible that it may do so. The upper Windrush at Bourton is a broad, shallow river, rippling over its stony bed, and a mile or two above this, where it winds away among the Cotswold Hills, I have seen spots which are very suggestive of Dippers.—O. V. APLIN (Bloxham, Oxon).

Bustards at the Zoological Gardens.—The Zoological Society has just obtained four specimens of the Great Bustard, which have been placed in the Eastern Aviary, where it is some time since any were exhibited. The interest attaching to this species is mainly a sentimental one; it was once a common bird in Great Britain, but the spread of agricultural industry—which has improved away so many of our indigenous animals—has converted the Bustard into an occasional visitant only. So recently as 1838, and perhaps even later, the Great Bustard as a resident species finally abandoned this country, the county of Norfolk being its last breeding ground. As in all probability one at least of the four birds at the Zoological Gardens will prove to be a male, visitors to the Gardens may have an opportunity of witnessing a remarkable phenomenon which accompanies its courtship. Many birds comport themselves in a singular fashion at this interesting epoch, and the Bustard expresses its passion in a way which is peculiar to itself. The mouth is furnished with a long pouch, extending some way down the neck; this is inflated by the bird during its “amatory antics.” It is curious and somewhat unexpected to find that the Australian Bustard (*Eupodotis*) goes through the same performance, but by the help of a different apparatus. There is here no special pouch, but the commencement of the gullet is widened, and appears also to be capable of inflation when the bird is engaged in love-making.—F. E. BEDDARD.

Reputed Occurrence of the Pine Grosbeak in Devonshire.—In the last number of ‘The Zoologist’ (p. 128) Mr. J. H. Gurney, Jun., has again referred to the red male specimen of the Pine Grosbeak in the collection of birds formed by the late Mr. Byne, of Miligan Hall, near Taunton, and which passed into the possession of the late Mr. Marsh-Dunn, of Teignmouth. It is unfortunate that so much attention has been bestowed on this specimen, which has, I think, no real claim to be regarded as a British-killed specimen. So far from being amongst the four or five instances worthy of serious attention, as Prof. Newton considers it (4th ed. Yarrell’s ‘British Birds,’ vol. ii. 177, 178), to my mind it is one of the most unsatisfactory of all. I do not believe that it was obtained near Exeter, for at the time it is said to have been shot (1854-5) I was living within three miles of that city, and, as I was then quite absorbed in the pursuit of Ornithology, I paid frequent visits to the shop of the bird-stuffer (Mr. James Truscott), who often mounted specimens for me, and always showed me any uncommon bird he had received. Truscott never said anything to me about a Pine Grosbeak having been killed near Exeter,

nor did he make any announcement of the fact in the Exeter newspapers, as he was in the habit of doing, by way of advertisement, whenever he had any remarkable bird in his shop. If such a rare species had occurred it would have made a lasting impression on my memory, and I should have made a note of it, as I always did whenever I saw or heard of anything relating to the Ornithology of Devon, and I recorded in 'The Zoologist' the occurrence of several of the rare birds which form part of Mr. Byne's collection. Truscott was also constantly employed by the late Mr. F. W. L. Ross, of Topsham, who would have paid him highly for such a prize. None of the other Exeter collectors, so far as I know, ever heard of the existence of such a specimen. The late Mr. W. Tombs, who also employed Truscott, frequently sent notices of unusual birds shot near Exeter to the 'Naturalist' and 'Zoologist,' but I can find no record of this bird in the volumes for 1854 or 1855. In 1869 Mr. Truscott's account of it was that "he knew the specimen in Mr. Byne's collection to be British, as he skinned it himself; that it was shot in company with some Crossbills, about nine or ten years since, by a gentleman in the army by the name of Hooper." He also said he had a Pine Grosbeak which was shot and stuffed by a gardener at Powderham (this I believe to have been a Hawfinch, Truscott often confusing the two species when speaking of them, as many persons do). I think Mr. Gurney has mixed these two reputed occurrences together. About that time Truscott seems to have had a Pine Grosbeak in his shop, but he told the late Mr. Brodrick that it was *not* the bird shot at Powderham. Some few years before the supposed date of the occurrence of Mr. Byne's specimen Truscott had returned from Canada, where Pine Grosbeaks are sometimes seen in large flocks in winter, and where I have myself shot beautiful red specimens feeding on the berries of the mountain ash. He brought home many skins of Canadian birds with him, some of which I saw in his possession, and he may have had Canadian-killed Pine Grosbeaks. It would be well if some competent person were to compare Mr. Byne's specimen with American examples. My belief is that the supposed occurrence near Exeter originated in a mistake.—W. S. M. D'URBAN (10, Claremont Terrace, Exmouth).

The Pine Grosbeak as a British Bird.—There can, I think, be no doubt about the origin of the four Pine Grosbeaks received by the bird-stuffer at Great Yarmouth on or about March 1st, 1889, and stated to have been shot in Wolmer Forest (No. 33 in Mr. J. H. Gurney, Jun., supplementary list, Zool. 1890, p. 128). On the 7th of that same month I received two specimens from Leadenhall Market, where they had been sent in a frozen condition from Northern Europe. Norway was given as the locality, but it is very possible that they came from Russia, as Mr. Gurney suggests. Although these Grosbeaks were rather dry when thawed, especially about the head and feet, they were fresh enough to make me a couple

of very fair skins. I may add that it is possible to make beautiful skins of the frozen (and thawed) Willow and Black Grouse, &c., purchased in the markets and shops, and I feel sure that these specimens could be set up months after they were killed in such a manner that it would be impossible to tell that they were not mounted from perfectly fresh specimens. Many of the game birds, having been snared, have no blood marks, and are often not soiled in the least, as each bird is sent over in a separate paper bag; this, at least, is the case with Willow Grouse from Norway. So there is now an additional reason for suspecting the origin of Pine Grosbeaks and other northern birds said to have been killed in this country. In the early spring of 1886 the Rev. H. A. Macpherson obtained some examples of the Northern Bullfinch (*Pyrrhula major*) in one of the London markets, the skin of one of which is, through his kindness, now in my possession. A celebrated naturalist once told me that some years ago a Great Black Woodpecker was received in the flesh at Oxford, with a statement to the effect that it had been killed in some well-known Berkshire woods close to the city. The food found inside it caused some excitement among entomologists, for the stomach was found to be crammed with large ants of a species the existence of which in Great Britain had long been suspected, but up to that time had never been proved. Many of the insects were therefore mounted. Fortunately, however, for Natural History, the real truth was soon discovered. *Picus martius* had picked up those ants in a Norwegian forest, and had not left that country alive. — O. V. APLIN (Bloxham).

Bittern in Devon.—I think a mistake was made about the Bittern recorded as a Little Bittern in 'The Zoologist' for March (p. 105); on account of my referring to it as a Bittern 10 or 12 inches high, and not naming the particular species. On looking at the plates in Morris's 'British Birds,' I find that it is undoubtedly a Common Bittern and not a Little Bittern. Moreover, Mr. Pidsley, who is writing a book on the Birds of Devonshire, sent me some measurements of the Common Bittern, to which this bird corresponded. — H. WOOLLCOMBE (North Grange, Exbourne, N. Devon).

Peregrine and Moorhen in Devon.—About a fortnight ago a female Peregrine Falcon, in moult, was killed, with a full-grown Moorhen in its claws, at Ash, near Monk Okehampton, Devon.—H. WOOLLCOMBE.

[The Peregrine and Moorhen were kindly sent for our inspection by Mr. Rowland Ward, to whom they were forwarded for preservation.—ED.]

Wheatear in North Lincolnshire in March.—With reference to Mr. J. W. Harrison's note on the Wheatear in Lincolnshire in March (p. 144),—namely, on the 23rd,—the earliest occurrence I have been able to record subsequent to 1871 was on March 19th, 1879,—a single bird

on the high wolds (Zool. 1879, p. 372). The earliest records for the east coast recorded in the Migration Reports are:—

1882. Farne Inner Lighthouse. March 22nd, 3 p.m., two.
 1884. Farne Inner Lighthouse. March 19th.
 1885. Yarmouth *February 24th*, one shot on denes.
 „ Hunstanton Lighthouse. March 15th, one.
 1886. Farne Inner Lighthouse. *February 22nd*, two, 5 p.m., on island.
 „ Farne Inner Lighthouse. March 25th, two.
 „ North Northumberland . March 26th, one caught in rabbit-trap and sent to me.
 „ Great Cotes March 29th, two on Humber Bank.

In the 1886 occurrences see Mig. Report, 1885, p. 40, footnote.

The spring fly-line of the Wheatear to the east coast of England appears to be from S.E. to N.W.—JOHN CORDEAUX (Great Cotes, Ulceby).

Birds flying against Windows.—As two correspondents have written lately on the subject of birds flying against windows, it may be worth mentioning that the first summer migrant noticed here this year was a female Blackcap, which flew against the windows of a house in this parish on Sunday, April 13th, and was picked up dead. It was given to me shortly afterwards.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

Eared Grebe in Merionethshire.—The Eared Grebe has appeared so rarely on the Merionethshire coast that the following notes of its occurrence seem worth recording:—On February 1st I saw two of these small Grebes on a tidal pool not far from Port Madoc, both of which I obtained. On the 3rd another came up the Traeth with the tide, and I killed it at a distance of about 60 yards,—a long shot for a Grebe,—with a 2-bore goose gun. On the 4th I obtained two more specimens. The weather during the latter part of January had been wet and stormy, with several severe gales from the south, but became fine and calm about Feb. 2nd. These birds were examined by my friend Mr. J. Cordeaux, who pronounced one to be an old bird in winter plumage, the others young birds of last year. I saw nothing more of this species until March 13th,—a wet day, with a strong S.W. wind,—when I obtained one at the same place where the others had been killed. This bird was far advanced towards the summer plumage, having the orange ear-tufts fully developed. The black of the neck, however, was somewhat interrupted with grey feathers, and the chin was white. The Eared Grebe is much easier to shoot than any of the other species, from its habit of diving with a spring, like a Cormorant or Merganser. If shot at unsuccessfully, it will frequently rise and fly for a short distance after the first dive. It is also much less shy than the Slavonian or Little Grebes. On March 23rd I observed two beautiful Eared Grebes, in full summer plumage, just inside the bar at the mouth of the Estuary. I again saw them on the 29th near the same spot, where

one remained till the 31st, since which date I have not seen them. The Slavonian Grebes up to March 25th showed no other sign of summer plumage than a slight elongation of the black feathers of the crown, giving the head a triangular appearance. Last year, however, I noticed one far up the Traeth back, in full breeding dress, on April 21st. — G. H. CATON HAIGH (Aber-Ia, Penrhyndeudraeth, Merionethshire, N. Wales).

Wheatear in North Lincolnshire in March. — At page 144 Mr. Harrison records the appearance in March of a Wheatear “still in winter plumage.” If no mistake has been made, this must have been an unusual circumstance. I have often seen the Wheatear in North Wales about the date mentioned, but specimens obtained rarely showed more than a very slight trace of the brown plumage assumed in autumn. If Mr. Harrison’s bird was not obtained, how did he ascertain that it was not a female the plumage of which would differ very little with the season. — G. H. CATON HAIGH.

Ornithological Notes from Redcar.—In the notes last sent I made an error (p. 137) in referring to the Skuas. I wrote, “The Skua tribe was well represented in September, chiefly *S. parasiticus*.” This should be *S. crepidatus*. Will you see that this is corrected? And I omitted (p. 138) the date of the finding of a Little Auk washed up on the shore here; it should be February 1st.—T. H. NELSON (Apsley House, Redcar).

The Rock Thrush in Cheshire.—On April 4th last I saw a specimen of the Rock Thrush, *Turdus saxatilis*, on the Overton Hills, near Frodsham, Cheshire. The bird did not appear to be very shy, and I was able to watch it for fully five minutes; the head, neck, and upper part of the back were light grey, the wings and greater wing-coverts dark brown; the lower part of the back nearly white, and speckled with grey; the tail very light brownish grey, with two or three dark grey feathers in the centre; the whole of the under side appeared to be a pale chestnut. From Yarrell’s description of *T. saxatilis* I believe the bird I saw to be a male specimen. Has this rare bird been recorded in England recently?—ALFRED FRYER, JUN. (23, Stanley Street, Warrington).

[The last we heard of was reported to have been seen at Freshwater, Isle of Wight (Zool. 1867, pp. 823, 913); but the late Mr. Frederick Bond, who investigated the matter, pronounced it to be a mistake.—ED.]

The late Mr. Bond’s Collection of Birds.—Ornithologists will be interested to hear that the fine collection of British Birds formed by the late Mr. F. Bond, the work of a lifetime, has been purchased by Mr. J. Whitaker, of Rainworth Lodge, Mansfield, Notts. Mr. Whitaker informs us that he has secured this collection chiefly with the object of obtaining the extraordinary series of varieties which it contains, and that, as a great number of other specimens are already represented in his own collection,

he proposes to offer the duplicates for sale by auction at Messrs. Stevens's, 38, King Street, Covent Garden, on May 22nd next. As a large number of these were shot by Mr. Bond himself, and are all in fine condition, collectors will have an opportunity afforded them of acquiring some very uncommon and well-preserved British birds.

INSECTS.

Do Humble Bees swarm?—There seems to be in Humble Bees something analogous to swarming, for several years ago I discovered, on Oliver's Mount, Scarborough, a nest of, I think, *Bombus terrestris*, and on attempting to take the nest, which was situated, as usual, underground, I heard a buzzing proceeding a little distance below. On searching among the grass from whence the sound proceeded, I found a comb with about twenty or thirty bees of the same species as those above; and when they were disturbed some of them flew into the top nest, as though they were quite familiar with it, and had proceeded from it as a swarm. If the nest above had been previously dug up, I should have at once concluded that a part of the comb had fallen amongst the grass below, whither, very naturally, some of the bees had followed, of course knowing their way back to their old quarters; but the upper nest had not been disturbed in the slightest before I found it, so that the nest in the grass must have been made by a part of the other colony. The swarm (?) contained many perfect females. It is curious also that they had not built below the ground, as is usually the case with *B. terrestris*, but simply in a cavity amongst the grass, as with *B. muscorum*. This I consider another proof that it was a swarm. The bees were very fierce, and stung a child at some distance from the spot.—G. W. BLYTHE (43, Woodchurch Road, Oxtou, near Birkenhead).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

April 3.—Mr. W. CARRUTHERS, F.R.S., President, in the chair.

Mr. John Lowe was admitted, and Rev. J. T. Scott elected a Fellow of the Society.

Prof. P. Martin Duncan exhibited a transverse section of a coral *Caryophyllia clavus*, showing septa and irregular theca between them.

Mr. B. D. Jackson exhibited some seeds of *Mystacidium filicornu*, an epiphytic orchid forwarded from South Africa by Mr. Henry Hutton, of Kimberley.

A paper by Prof. W. H. Parker on the morphology of the *Gallinaceæ*, in the unavoidable absence of the author, was read by Mr. W. P. Sladen,

and a discussion followed, in which Dr. St. George Mivart, Prof. Duncan, and Mr. J. E. Harting took part.

The meeting adjourned to April 17th.

April 17.—Mr. CARRUTHERS, F.R.S., President, in the chair.

Messrs. E. C. Galpin, T. Johnson, W. F. Kirby, J. B. Carruthers, and J. S. Turner were elected Fellows.

Lord Arthur Russell, on behalf of the subscribers to a portrait of Sir Joseph Dalton Hooker, which had been painted at their request by Mr. Hubert Herkomer, R.A., formally presented the portrait to the Society, and in a few words expressed the satisfaction which he was sure would be felt at the acquisition of the likeness of so distinguished a botanist. It was announced that a photo-gravure of the portrait was in preparation, of which a copy would be presented when ready to every subscriber to the portrait fund.

Prof. P. M. Duncan, F.R.S., exhibited a vertical section through a large coral *Fungia echinata*, cutting through and across the septa and synapticulæ and the so-called base. The union of the sides of contiguous septa at the base is either incomplete or by means of synapticulæ.

Dr. Edward Fischer, of Zurich, exhibited and made remarks on certain species of *Polyporus* bearing a sclerotium possessing the structure of *Pachyma cocos*, but it was doubtful whether the *Polyporus* represented the fructification of the *Pachyma*, or was merely parasitic on it. Mr. George Murray expressed himself in favour of the latter view.

Mr. J. E. Harting exhibited alive a so-called "singing-mouse," which had been captured at Maidenhead a week previously, and which uttered sounds like the subdued warbling of a Linnet. He desired to be informed whether the cause usually assigned for the phenomenon was correct—namely, some obstruction or malformation of the trachea. Prof. Stewart stated that he had observed alive, and dissected when dead, a similar specimen, and had found no trace of any organic disease or malformation.

Sir Charles Sawle, Bart., exhibited a specimen of the Little Green Heron, *Butorides virescens*, of North America, which had been shot by his keeper at Penrice, St. Austell, Cornwall, in October last, and which he had sent for preservation to a taxidermist at Bath. Mr. J. E. Harting offered some remarks on the occurrence, and suggested various ways in which the bird might have reached England. He observed that the larger American Bittern, *Botaurus lentiginosus*, had been met with some five-and-twenty or thirty times in the British Islands, and, strange to say, had been described and named by an English naturalist, and a Fellow of this Society, Colonel George Montagu (who obtained a specimen of the bird in Dorsetshire) a year before it was described by Wilson as a native of the United States.

A paper was then read by Mr. Spencer Moore on some micro-chemical reactions of Tannin. In this an account was given of the behaviour of Nessler's test for ammonia upon tannin, which it usually colours almost immediately some shade of brown or reddish brown. The great value of the reagent is held to reside in the rapidity of its action; moreover, in none of the many experiments did it fail. Reference was also made to some other new tannin tests, especially to some in which, as in Nessler's fluid, caustic potash furnishes the basis, and which, like that fluid, are very rapid in their action.

A paper by Mr. E. Saunders, "On the tongue of the British Hymenoptera Anthophila," in the absence of the author, was read by Mr. W. Percy Sladen, and was illustrated by excellent drawings.

ZOOLOGICAL SOCIETY OF LONDON.

April 1, 1890. — Dr. A. GÜNTHER, 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 March, and called special attention to a fine example of a rare passerine bird, *Hypocolius ampelinus*, from Karachi, presented to the Society by Mr. W. D. Cumming, Curator of the Museum, Karachi; and to two Manchurian Cranes, *Grus viridirostris*, presented to the Society by Mr. C. W. Campbell, of H.B.M.'s Consular Service, Corea.

Mr. J. H. Gurney, Jun., exhibited and made remarks on an hybrid between the Tree Sparrow, *Passer montanus*, and the House Sparrow, *P. domesticus*, bred in captivity at Norwich.

Mr. W. B. Tegetmeier exhibited a specimen of a Greek Partridge, *Perdix saxatilis*, shot in the Rhone Valley, and of an abnormal Viper.

Mr. A. Smith-Woodward exhibited and made remarks on a specimen of a mesozoic Palæoniscid Fish from New South Wales, and pointed out that the structure of its pelvic fins seemed to confirm the recent opinion that the *Palæoniscidæ* are related to the *Acipenseridæ*, and not to the *Lepidosteidæ*. The author believed the specimen exhibited to be the only one of the kind in existence.

Mr. C. M. Woodford made some remarks on the fauna of the Solomon Islands, and exhibited a large number of photographs in illustration of his remarks and of his recent explorations in these islands.

A communication was read from Dr. R. W. Shufeldt, entitled "Contributions to the Study of *Heloderma suspectum*," containing a complete account of the osteology and anatomy of this venomous Lizard. A list of the literature on the subject was added.

Dr. A. Günther read the description of a new species of deep-sea fish

from the Cape, *Lophotes fiski*, based on a specimen sent to the British Museum by the Rev. G. H. R. Fisk.

Mr. Edgar A. Smith read a report on the Marine Molluscan Fauna of the Island of St. Helena, based principally on a large series of specimens collected by Capt. Turton, R.E., and presented to the British Museum.

A second paper by Mr. Edgar A. Smith contained a report on the Marine Mollusca of Ascension Island.†

April 15.—Mr. G. A. BOULENGER, F.Z.S., in the chair.

Mr. A. Smith-Woodward read a paper on some new fishes from the English Wealden and Purbeck Beds, referable to the genera *Oligopleurus*, *Strobilodus*, and *Mesodon*. Detailed descriptions of several fossils of these genera, now in the British Museum, were given. *Oligopleurus* was stated to be represented by a single species in the Wealden of the Isle of Wight, occurring also in the Purbeck of Dorsetshire; and the latter formation had yielded at least one species both of *Strobilodus* and *Mesodon*. Previous researches had already indicated a close connexion between the fish-fauna of the English Purbeck Beds and that of the Upper Jurassic Lithographic Stones of France, Bavaria, and Würtemberg; and the new forms now described tended to demonstrate that alliance even more clearly.

Mr. G. A. Boulenger read the second of a series of reports on the additions to the Batrachian Collection in the Natural-History Museum. Since 1886, when the first report was made on this subject, examples of seventy-four additional species of Batrachians had been acquired. Amongst these was a remarkable new form allied to the family *Engystomatidæ*, proposed to be called *Genyophryne thomsoni*, based on a single specimen obtained by Mr. Basil Thomson on Sudest Island, near South-east New Guinea. The form was stated to be unique in having teeth in the lower, but none in the upper jaw.

Mr. Frank E. Beddard read a paper on the structure of *Psophia*, and on its relations to other birds. The author was inclined to consider *Psophia* most nearly allied to *Cariama* and *Chunga*, and more distinctly to *Rhinochetus*, but entitled to stand as a distinct family in the group of Cranes and their allies.

Mr. Henry Seebohm gave an account of a collection of birds from the northern part of the province of Fokien, South-eastern China. Several interesting species were represented in the series, amongst which was a new *Hemixos*, proposed to be called *H. canipennis*.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

April 2, 1890.—Mr. FREDERICK DUCANE GODMAN, M.A., F.R.S., Vice-President, in the chair.

Messrs. G. Bryant, of Chelsea, S.W.; A. E. Hall, of Sheffield;

J. F. X. King, of Glasgow; H. C. Oakshott, of Falmouth; A. E. Stearns, of Upper Halliford, Walton-on-Thames; and G. Vigers, of Hersham, Surrey, were elected Fellows: and Mr. A. B. Farn was admitted into the Society.

Mr. Godman announced the death of Mr. Joseph S. Baly, of Warwick, the well-known Coleopterist, who had been a member of the Society for the last forty years.

Dr. Sharp exhibited and made remarks on a female specimen of a coleopterous insect—*Temnochila quadricollis*, Reitt.—which was the subject of a very unusual malformation of the nature termed “ectromélie” by Lacordaire.

Mr. R. W. Lloyd exhibited three specimens of *Elatер pomonæ*, taken at Brockenhurst, in the New Forest, about the middle of March last.

Colonel Swinhoe exhibited, and read notes on, a number of butterflies of the genus *Euthalia*. He pointed out that the specimens described as a species by the name of *Euthalia sedeva* were only the females of *E. balarama*.

Mr. T. R. Billups exhibited male and female specimens of *Cecidomyia salicis-siliqua*, Walsh, which had just emerged from galls received from Mr. Cockerell, who had collected them on a species of willow in Colorado. He also exhibited three species of Ichneumonidæ new to Britain, viz., *Ichneumon haglundi*, Holmgr., bred by Messrs. Adkin and Barker from *Arctia fuliginosa*; *Phygadeuon rufo-niger*, Bridg., taken in Ashdown Forest in November, 1885; and *Phygadeuon sodalis*, Tasch., taken at Dulwich in June, 1889.

Mr. C. G. Barrett exhibited specimens of *Bryotropha obscurella*, Hein, and *Doryphora elongella*, Hein, two species of Micro-Lepidoptera new to Britain.

Dr. Thallwitz, of Dresden, contributed “Notes on some species of the genus *Hilipus*.” These notes had reference to a paper on the genus *Hilipus*, by Mr. F. P. Pascoe, published in the ‘Transactions’ of the Society for 1889.

Mr. E. Meyrick read a paper entitled “The Classification of the Pyralidinae of the European Fauna.” Mr. Kirby, Mr. M'Lachlan, Mr. Stainton, Capt. Elwes, and Mr. Barrett took part in the discussion which ensued.

Prof. Westwood communicated a paper entitled “Notes on certain species of Cetoniidæ.”

Mynheer P. C. T. Snellen, of Rotterdam, contributed a paper entitled “A Catalogue of the Pyralidæ of Sikkim collected by H. J. Elwes and the late Otto Möller,” and Capt. Elwes read certain notes on the foregoing paper as an Appendix. Mr. W. L. Distant, Colonel Swinhoe, Mr. M'Lachlan, and Mr. Jacoby took part in the discussion which ensued.—H. Goss, *Hon. Sec.*

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MEMOIR OF THE LATE JOHN HENRY GURNEY.

To the great regret of his many friends, this well-known ornithologist, after some months of failing health, passed peacefully away, in his seventy-first year, on the 20th April last, at Northrepps, near Norwich.

To our readers the name of John Henry Gurney is "a household word," for, as many no doubt are aware, he helped to found 'The Zoologist' five-and-forty years ago, and from 1846, when, in conjunction with the late Mr. W. R. Fisher, he published in these pages (pp. 1300, 1324, 1373, 1393), "An Account of the Birds found in Norfolk," he continued to the last to give to this Journal his encouragement and support.

His friend and neighbour, Mr. Thomas Southwell, of Norwich, has obligingly placed at our disposal some biographical notes, of which we are glad to avail ourselves, and which we do not doubt will be acceptable to our readers. From him we learn that Mr. Gurney was born at Earlham Hall in 1819, and married Mary Jary, daughter of Richard Hanbury Gurney, Esq., of Thickthorn, by whom he leaves two sons, Mr. J. H. Gurney, who now succeeds to the family estates, and Mr. Richard H. J. Gurney, of Brighton. In 1854 he entered Parliament as member for King's Lynn, his colleague being Lord Stanley (the present Earl Derby), and sat for that borough till 1865, when he resigned his seat. He was a Justice of the Peace for the county of Norfolk, the senior member of the Norwich Bench, and also a magistrate for the borough of Lynn.

As an ornithologist, Mr. Gurney was a recognised authority, both in Europe and America, more especially on Raptorial birds, and the magnificent collection in the Norfolk and Norwich Museum owes its existence almost entirely to his energy and liberality. We believe we are correct in saying that at a time not long since the collection of Raptorial birds in the Norwich Museum was unequalled, not excepting that of the British Museum, and even now there are many type specimens and some rarities which are not to be found in the national collection, as well as a larger series of several of the species from various localities. To these, by means of collectors abroad, and by his personal influence with other ornithologists, it was Mr. Gurney's constant study to make additions, and the annual reports of the Museum show that, although of late years such additions, owing to the completeness of the collection, were more and more difficult to obtain, scarcely a year passed without his energy being rewarded with some new species. Mr. Gurney was not only a collector, but was from his youth a keen observer of birds, and a naturalist in the truest sense of the word. At one period of his life he carefully studied the Mollusca of the county, and subsequently, during frequent visits to the coast, added largely to the knowledge of the fishes of Norfolk—a subject at that time much neglected, and the Museum contains many interesting specimens contributed by him. His connection with the Museum commenced at a very early age, and an entry in the presentation book of that society shows that on the 25th November, 1828, "Master J. H. Gurney" was the donor of a female Sparrowhawk and a Ring Dove. From that time to the end of his life, Mr. Gurney was a constant contributor to its collections in all departments, and it is probable that nineteen-twentieths of the birds of prey there bear the name of J. H. Gurney as their donor. In this institution Mr. Gurney was associated with Bishop Stanley, the Rev. W. Kirby, Professor Sedgwick, Richard Lubbock, Dawson Turner, and others. In 1849 he was chosen its President in succession to the Hon. and Very Rev. Dean Pellew, and in 1869 was elected permanent President. In November, 1861, his portrait, by Sir Francis Grant, was placed in the British Bird Room at the Museum, in recognition of his great services. In 1852 he delivered a course of lectures on Ornithology, in St. Andrew's Hall, which

were largely attended, and greatly stimulated the study of his favourite science in the county. Mr. Gurney was elected a Fellow of the Zoological Society in the same year, 1852, and was one of the founders, in 1859, of the British Ornithologists' Union, to whose publication, 'The Ibis,' he was a frequent contributor to the last, and upon the formation of a similar society in the United States he was appointed one of the first foreign honorary members. He was elected an honorary member of the Norfolk and Norwich Naturalists' Society, at its formation in 1869, and took a lively interest in its publications, to which he was a frequent contributor.

The most important of his published works is the volume on the 'Birds of Damara Land and the adjacent countries of South-West Africa,' which he prepared and edited, in 1872, from the MS. notes and letters addressed to him by the late Charles John Anderson, and which continues to be the standard work of reference on the Ornithology of that portion of the great African continent.

But prior to the appearance of this volume, Mr. Gurney had published 'A Sketch of the Collection of Raptorial Birds in the Norwich Museum' (12mo, London, no date), and 'A Descriptive Catalogue of the Raptorial Birds in the Norwich Museum. Part I.—Serpentariidæ, Polyboridæ, Vulturidæ' (8vo, London, 1864); while some years later—namely, in 1884—he brought out his very useful 'List of the Diurnal Birds of Prey, with references and annotations,' of which a notice appeared in 'The Zoologist,' 1884, p. 280.

Next in importance are his numerous contributions to the 'Proceedings of the Zoological Society' and to 'The Ibis,' amongst which may be specially noted his papers on the Ornithology of South Africa, and particularly of Natal, founded upon collections made by Mr. E. L. Layard, Mr. Thomas Ayres, and others, and his critical reviews of the volumes of the British Museum Catalogue of Birds, published as these volumes from time to time appeared.

The following list of papers and short communications from his pen, although not complete, will furnish a tolerably accurate view of the nature of his researches.

His earliest printed communication seems to have been published in the first volume of 'The Zoologist,'—*i. e.* in 1843,—

and relates to the occurrence of the Red-winged Starling at Barton Broad, near Norwich (Zool. 1843, p. 317). This was succeeded by a great number of short notes, such as the following:—

On the occurrence of the Red-legged Hobby near Norwich. Zool. 1843, p. 350.

Note on the Honey Buzzard. 1844, p. 491.

Lesser Forked-beard, *Raniceps trifurcatus*, at Cromer. 1844, p. 532.

Red-crested Whistling Duck on Horsea Mere, Norfolk. 1844, p. 576.

Nest of the Long-eared Owl. 1844, p. 655.

The Opah, or King-fish, on coast of Norfolk. 1844, pp. 679, 769.

Red-necked Phalarope in Norfolk. 1846, p. 1552.

Spanish Bream at Sherringham. 1846, p. 1555.

At length we come to—

An Account of Birds found in Norfolk. By J. H. Gurney and W. R. Fisher. Zool. 1846, p. 1300—1324, 1373—1393.

This was the first paper of real importance from his pen, and was an advance upon Messrs. Sheppard and Whitear's "Catalogue of Norfolk and Suffolk Birds," published in the 'Transactions of the Linnean Society,' in 1825 (vol. xv. pp. 1—62). It included 277 species, of which 81 were said to be residents, and 196 either regular or occasional migrants.

The Royal Society's 'Catalogue of Scientific Papers' hardly does justice to Mr. Gurney's industry and acumen as an ornithologist, for in the list there given of his publications, the first ten years of his work are altogether passed over, and the earliest communication of his which is noticed bears date 1853. Now although a great many of the unnoticed communications are brief, and relate chiefly to the appearance of rare birds and fishes in Norfolk, some of them at least are important, as intimating the occurrence of certain species in England for the first time, while others have a value on account of the original observations which they contain. As an example we may instance the "Note on the changes of plumage which occur periodically in the male birds of several different species of Ducks," Zool. 1851, p. 3116. Nine species of ducks were under observation for twelve months, and the list was drawn up with the view of showing the date of the commencement and completion of each moult in each species; the species being arranged in the order of the commencement of the first change.

Following the Royal Society's 'Catalogue' and 'Supplement,' we find a list of forty-four papers by Mr. Gurney printed between 1853 and 1872. These are:—

Anecdote of the power of fascination as exercised by a Fox, with some remarks on the exercise of a similar power by other predacious animals. Zool. 1853, pp. 4049, 4051.

Note on a Bird and on a Quadruped, both found in Natal, and both said to prey upon Serpents. Zool. 1858, pp. 6267, 6268.

List of Birds received from Ibadan, in Western Africa. 'Ibis,' 1859, pp. 152, 153.

List of a collection of Birds from the Colony of Natal, in S.E. Africa. 'Ibis,' 1859, pp. 234—251.

List of Birds of Prey from Beyrout. 'Ibis,' 1859, pp. 389—391.

Note on Pel's Owl, *Scotopelia Peli*. 'Ibis,' 1859, pp. 445, 448.

Note on the Eggs of the Eared Vulture and the Wedge-tailed Eagle. 'Ibis,' 1860, p. 171.

On Birds collected in the Colony of Natal, in S.E. Africa. 'Ibis,' 1860, pp. 203—221.

On some additional species of Birds received in collections from Natal. 'Ibis,' 1861, pp. 128—136.

An additional list of Birds received from Natal. 'Ibis,' 1862, pp. 25—39; 149—158.

Remarks on the Lesser Buzzard of South Africa, and its congeners. 'Ibis,' 1862, pp. 361—363.

Remarks on *Aquila Desmersii*, J. Verreaux. Proc. Zool. Soc. 1862, pp. 145—146.

A list of British Birds found in South Africa. 'Zoologist,' 1863, pp. 8675—8677.

On the Kestrel of Madagascar, *Tinnunculus Newtoni*. 'Ibis,' 1863, pp. 34—37.

A fifth additional list of Birds from Natal. 'Ibis,' 1863, pp. 320—332.

On *Accipiter Stevensoni*, a new species of Hawk from China. 'Ibis,' 1863, pp. 447—450.

Note on *Aquila Barthelemyi*, Joubert. 'Ibis,' 1864, pp. 339—340.

Additional lists of Birds from Natal. 'Ibis,' 1864, pp. 346—361; 1865, pp. 263—276; 1868, pp. 40—52, 460—471.

An additional list of British Birds found in South Africa. 'Zoologist,' 1864, pp. 9247—9248.

A list of Birds collected in Damara Land by Mr. C. J. Andersson. Proc. Zool. Soc. 1864, pp. 1—11.

On a new species of Harrier, *Circus Wolffi*, from New Caledonia. Proc. Zool. Soc. 1865, pp. 823—824.

Note on the voracity of the Bornean Crocodile, *Crocodylus biporcatus*, Cuv. 'Zoologist,' 1867, pp. 878—879.

Notes on Mr. Layard's 'Birds of South Africa.' 'Ibis,' 1868, pp. 135—181, 253—271.

Note on *Circus spilonotus* and *C. melanoleucus*. 'Ibis,' 1868, p. 356.

First arrivals of Spring Visitors observed at or near Minehead, Somersetshire. Zool. 1868, p. 1293.

Departures and arrivals of Migratory Birds observed in Cornwall and Devonshire. Zool. 1868, p. 1454.

On the departure of the Swallow from Devonshire in 1868. Zool. 1868, p. 1479.

Notes on the Birds of Prey of Madagascar and some of the adjacent Islands. 'Ibis,' 1869, pp. 443—454.

On a Raptorial Bird from Damara Land: *Macheirhamphus Anderssoni*. Proc. Zool. Soc. 1869, pp. 117—118.

Stray Notes on Norfolk and Suffolk Mammalia. Trans. Norfolk Nat. Soc. 1869-70, pp. 22—26.

On the southern range of the European Merlin. Zool. 1870, p. 2221.

Note on the eastern range of the European Merlin. Zool. 1870, p. 2304.

Remarks on *Aquila naevioides*. 'Ibis,' 1871, pp. 247—248.

Remarks on certain species of Abyssinian Birds. Proc. Zool. Soc. 1871, pp. 147—149.

On the Sea Lion of Southern California. Zool. 1871, pp. 2493—2494.

Bustards in Northumberland. Zool. 1871, p. 2510.

Ornithological Notes from the vicinity of Torquay during the winter of 1870-71. Zool. 1871, pp. 2629—2631.

Late occurrence of the Tufted Duck in Devonshire. Zool. 1871, p. 2645.

Ornithological Notes from South Devon. Zool. 1871, p. 2679.

Note on the young of the Hermit Crab. Zool. 1871, p. 2685.

Departure of Summer Migrants from the coast of Suffolk. Zool. 1871, p. 2866.

Note on the Indian Adjutant. Zool. 1871, pp. 2871—2872.

Three Birds of Prey from the Island of Formosa: *Æsalon lithofalco*, *Scops Japonicus*, *Brachyotus accipitrinus*. 'Ibis,' 1872, pp. 327—330.

Ornithological occurrences in the neighbourhood of Torquay during the spring of 1872. Zool. 1872, pp. 3134—3136.

This list, although ending with a note published nearly twenty years ago, will serve to show the character of the observations which Mr. Gurney was in the habit of communicating from time to time to 'The Zoologist,' 'The Ibis,' and the 'Proceedings of the Zoological Society.' Since the last-mentioned date numerous

additions have been made to the List above given, besides the publication of the separate works already noticed. A complete Index to the species mentioned or referred to in Mr. Gurney's writings would be very useful, the names of each species being followed by that of its genus, and the locality where observed or procured. His critical papers in 'The Ibis,' are of great value, and show his intimate acquaintance with the class of birds which formed his peculiar study, and on which his authority is universally respected. As might be expected, Mr. Gurney took great interest in the scheme for converting Norwich Castle into a Museum, and entered thoroughly into the arrangements necessary for the eventual transfer of the collections, although declining, from failing health, to take any part in the building operations, and there can be no doubt that his judgment and experience will be greatly missed by those who have to carry into effect the final arrangements for the reception of the various collections.

Of late years Mr. Gurney led a quiet and almost secluded life in the quaint old family mansion of Northrepps Hall, the natural beauty of the wooded slopes and valleys in which it is situated bearing evidence of the care and taste displayed both by himself and the late Miss Anna Gurney, who preceded him there, and who was as keen a naturalist as he who has so lately passed away. Here, in the midst of his books and extensive collections, Mr. Gurney passed most of his time, closing a chequered life in complete peace and tranquillity.

NESTING OF THE CROSSBILL IN THE CO. WATERFORD.

BY RICHARD J. USSHER.

I HAVE had exceptionally good opportunities this spring of observing the breeding habits of these interesting birds, as four of their nests have been found here, three of them within fifteen hundred yards of my house, and have not been disturbed by me, as I wished to watch the birds, and to let them multiply here. Among them there has been another instance of a male breeding in yellow plumage, similar to that of the bird which I presented last year to the British Museum (Zool. 1889, p. 180). The three other males were red, or red interspersed with brown.

Since my last notice of Crossbills (Zool. 1889, p. 454) they have continued to frequent my plantations uninterruptedly, and have been met with through the winter in flocks, in small parties, and in pairs, usually feeding on the cones of fir and larch trees. I saw a flock on November 8th feeding on the unripe ivy-berries on a low tree by the roadside. They have also been seen feeding on beech-mast on the ground, and in February were noticed picking on the ground beneath a willow covered with catkins. A pair used to resort to a stream below this house, and fly back to the woods above. In February they were frequently met with in pairs.

They have been seen most frequently about a hill on which remain, among younger plantings, portions of the older woods of Scotch fir, and a large grove of larch on which they delight to feed. On the summit of this hill, at a place called the Giant's Rock, is an inhabited house, with a garden near it, among the firs and larch. A young man working in the garden observed, on March 10th, a Crossbill carrying twigs to the top of a Scotch fir, in which he discovered the nest. It can only be seen by looking straight up through the tree-top, in which it is placed, against the sky. This tree, the outer one of the group, is bare of living branches to within a short distance of its top, which consists of a mass of green bending over from the west wind, and in the midst of this mass the nest is built among the thick tufts. It has not been touched. The finder saw the Crossbills visit it frequently with building materials during the mornings and forenoons subsequent to March 10th. On the 13th they carried to it material like moss. I have several times seen the birds fly to and from it, and recognized the male by his redness. He was heard singing on a neighbouring tree. This pair have probably reared their young in safety, for on May 10th a pair of Crossbills were seen feeding their young on larch trees in the vicinity of this nest.

On March 20th I saw another pair fly to a group of trees where I suspected they were building, and in which their nest was discovered on the 24th. It was also in the top of a Scotch fir, among the outer row of the group, on the edge of a field beside a footpath, and about 250 yards from the first nest. It was built in the fork formed by several small lateral branches with the leader, which at that point takes a bend; and the nest,

which is small for so large a bird, might easily be mistaken from the ground for a knot or enlargement of the crooked leader. It was placed in a perfect little cluster or bower of smaller branches. Now that the young have left it, I have it before me. It is composed externally of fine dead twigs of larch and Scotch fir, and, within them, of green moss interwoven with a good deal of sheep's wool, a few horse-hairs, and flakes of finer bark. It was easily reached by climbing.

The birds used not to cease their call-notes while flying to a neighbouring tree, and thence into the nesting-tree,—nay, I have heard the call of the female apparently coming from the nest itself. It is like the syllable “yep, yep” or “yup, yup,” while that of the male is much sharper, like “gip, gip.” The female sat on the leader of the nesting-tree for a long time, watching men put up a wire-fence close by, without alarm. She is of a brownish grey, smaller than the male, and her beak less evidently crossed. He is golden yellow both above and below, and has no red visible about him. He has all the appearance of a fully matured bird, being, large, active, vigilant, and his mandibles conspicuously crossed. I have had the best opportunities of gazing at both birds when I climbed to the nest, and they, in anxiety for their young, perched—calling excitedly on adjoining tree-tops—within four feet of me. On April 17th these Crossbills were seen to carry bits of something in their mouths to the nest, as if to feed their young.

The nature of the food has not been ascertained, but is suspected to be largely composed of the green opening buds of the larch, on which I have repeatedly seen the male feeding,—*e. g.*, on April 4th.

On April 21st I took Mr. Seebohm to see this nest. It contained two young in greyish black down, with the olive-coloured feathers beginning to show on the back. On my leaving the tree where the old Crossbills had been watching me at close quarters, they went back at once to the nest.

On April 25th I again ascended the tree, and brought down the one young bird then remaining, for Mr. Seebohm to see, having first caught it on a branch to which it fluttered from the nest with a remarkable power of grasping with its feet. The points of its mandibles were straight, not crossed, but the edges of the upper one overlapped the lower on both sides. The down

was all gone, and the plumage exhibited dark spots on a lighter ground, both on the upper and under surfaces. I replaced it in the tree, from which it must subsequently have fallen, for a nestling was found in the adjoining field on the 28th, and placed in a cage near the nesting-tree, where the old Crossbills—which had other young ones to feed in the trees there—continued to feed it, often in the presence of observers, until the 11th of May. In the meantime it became accustomed to feed on bruised hemp-seed, and was then removed to my premises. It is almost full-grown, and is tame to stupidity, continuing to feed within an inch of one's face, and when taken in the hand it bites.

The notes of the last pair of Crossbills when excited used often to attract another pair—the male a red one—that frequented the neighbouring trees, and which on such occasions would join their neighbours in the excitement. On April 11th their nest was discovered, by the birds being seen carrying building-materials to it. They picked up bits of hay off the ground, not heeding the observer standing near them. This nest is intermediate in position between the other two, and is but fifteen paces from the out-offices at the Giant's Rock, where a cow, a pony, pigs and fowls are kept. It is over the pathway leading from the house to these premises, and people and dogs are frequently passing beneath it. It is near the end of one of the upper branches of a Scotch fir, and can be easily seen from many points. On April 13th Mr. Barrett Hamilton saw the Crossbills fly to it with building-materials. On April 20th, the female having commenced to hatch, Mr. Seebohm climbed up to this nest, when both birds perched on this and the next tree, calling excitedly, and he had a good view of them, the "gip, gip" of the male being in this case also shriller than the note of the female. The female soon returned to the nest, on which she could be seen sitting. A hatching Crossbill was seen to raise itself and wriggle frequently (Zool. 1889, p. 180). This was supposed by Mr. Nicond (mis-spelt Ricond, Zool. 1889, p. 71) to have been done to shake off falling snow; but our Crossbills, which I have repeatedly seen do this, bred long after the snow had disappeared.

On April 25th I again visited this nest with Mr. Seebohm, and found that it contained four eggs, which the female did not leave until I was half-way up the tree, and on my ascending soon crept back to the nest. She was of a brownish grey. I could

see neither yellow nor green about her. Her mate was red. On May 11th I examined this nest again, and found the young birds much grown. Their eyes were open, and their upper mandibles absurdly large. They were not so naked as other young finches, but had a good deal of greyish black down on them,—evidently a provision against the cold of spring in Lapland forests.

Before leaving the Giant's Rock, I may mention that Crossbills have been, for many weeks, seen habitually feeding on the cones of Scotch fir and larch trees close to the house, often within a few yards of it, where one may stand and watch them hang with head downwards, bite off a cone at the end of a swaying spray, fly with it to a steady spot, and, holding it in one foot, open it with their twisted beaks. They neither regard much the talking of people, nor the barking of dogs beneath the trees. On May 18th they had left the nest. It was of similar materials to the others, but was well lined with wool, and a feather or two.

A fourth nest of Crossbills was discovered on March 26th, on the summit of the Black Hill (566 feet), the highest point on my property, exposed to every wind that blows. It was built in the dense top of a thick leader, or upper branch of one of a group of low Scotch firs, about twenty feet from the ground. It was difficult to see from the ground, and was discovered by watching the birds. I ascended to this nest on March 28th, when the female—an olive-coloured bird with a yellow rump—showed the same reluctance to leave, remained watching me from a neighbouring tree, and soon returned. This nest was built of the same materials as that above described, with the addition of some dried grass as lining. It contained four eggs, heavily spotted with rich red-brown, and short and round for the species. They looked clear and fresh. My caretaker had, on March 20th, seen the two Crossbills pick up sheep's wool close to his house, which is not far from the nest. On April 6th he told me that he had frequently seen the male Crossbill, which was red, come and feed the female at the nest. It used to take a circuit round the group of trees, singing on the wing, and then perch on a tree-top continuing its song, or flit through the branches shuffling and flapping his wings with passionate delight.

On April 9th a Magpie was shot on the nesting-tree, and the Crossbills' eggs, which I had abstained from taking for my col-

lection, were gone. The Crossbills have not since been seen about the Black Hill.

In 1888 Mr. W. F. de Vismes Kane, being at Monkstown, Co. Cork, was shown a tree in which Crossbills were said to have nested that season, the first year when they seem to have been commonly seen. Mr. Charles J. Patten, of Bray, informs me that he heard of Crossbills breeding in Co. Wicklow in 1888, and that on July 10th he saw a flock of about twenty-five of them, old and young, in that neighbourhood, while in the following October and November he obtained Crossbills from the Co. Westmeath.

Mr. Kane heard also that a pair of Crossbills had frequented a demesne in Westmeath during the summer of 1888; but his informant, a steward, said that they had haunted the place for four years.

It was on November 13th, 1888, that I first saw Crossbills at Cappagh; but my men, who have since so ably aided my observations, saw Crossbills here on December 26th, 1887; and during January, February, and April, 1888, several of these birds were shot at different places in the Blackwater Valley (Cork and Waterford).

It seems evident that this species is on the increase in Ireland at present. Other young broods in parts of my ground, besides those I have mentioned, are now to be seen among the trees being fed by their parents.

THE RUFF AND REEVE IN LINCOLNSHIRE.

BY JOHN CORDEAUX.*

THE writings of Colonel Montagu and the Rev. Richard Lubbock have made ornithologists familiar with the habits of the Ruff and Reeve in the fens of Lincolnshire and Norfolk at the commencement of the present century. Comparatively abundant as was this singular species in those days in the low-lying districts before drainage and complete cultivation had quite broken up their haunts, they still bore a very small proportion to the immense numbers which at one time visited

* From 'The Field.' Communicated by the author.

these districts within the memory of old fenmen living. This would be from the middle to the end of the 18th century, when the conditions of existence were undoubtedly more favourable to their preservation and regular breeding.

From our somewhat restricted knowledge of those earlier times, we are perhaps apt to connect the former summer haunts of Ruff and Reeve entirely with the unreclaimed fens and marshes of Lincolnshire and Norfolk; yet there is sufficient data to show how abundant at one time was this species over the whole of the low-lying lands of Lincolnshire north of the true fen; in the Humber marshes to the junction of that river with the Trent; the wastes of Axholme, and all the wild heath-clad commons, some thousands of acres, which extended almost unbroken from Mid-Lincolnshire to the extreme north-western boundary of the county.

In later years the spring haunt *par excellence* of the Ruff and Reeve has been that broad belt of grass-lands, better known as the marshes, the great maritime plain of Lincolnshire, between Gibraltar Point and the mouth of the Trent—a lonely district, little disturbed except by the shepherd and his dogs, and the chance visits of some grazier to inspect his flocks and herds in their summer pasture. Here in late spring-time the lush-green pastures, dark under the keen east winds, spread like an ocean, league on league, to a sky horizon, or finally merge into that long irregular line of sand-dunes which fringe the desolate coast.

The Rev. W. B. Stonehouse, in the 'History and Topography of the Isle of Axholme,' published in 1839, speaking of the Ruff, says, "Soon after their arrival in the spring, they take up their abode in such marshy and fenny places as formerly abounded in the commons of the Isle of Axholme; and each of the males, of which there appears to be a greater number than the females, immediately fixes upon a particular dry and grassy spot in the marsh, about which he runs round and round until it is trodden bare. As soon as a single female arrives, her feeble cry rouses all the males to war, for they instantly begin to fight, and she becomes the prize of the victor. An old fowler told me that these birds form themselves into a circle, while two of them fight a pitched battle in the centre. During the engagement the rest keep running round. I went with him in the year 1819 on Burringham Moors to ascertain the fact, but was not able to

approach sufficiently near to them; the birds being alarmed, seemed to rise from a cluster and took wing. I afterwards saw a dozen which the same person had taken in his snares or nets."

Should any of my readers wish to ascertain what a *hill* of Ruffs is like, they should inspect the beautiful case of these birds placed in the Central Hall of the Natural History Museum at South Kensington. The late Capt. Healey, who at one time owned the Ashby decoy, had a case of full-plumaged Ruffs, obtained in the Trent district. There are also examples in the Gainsborough Museum, obtained in that neighbourhood; also in private collections in the county. When I first came to Great Cotes, thirty-eight years ago, I knew an old sportsman who, when a young man, went regularly into the Stallinborough and Immingham Marshes in May to shoot Ruffs and Reeves, and Dotterel. His gun was a long-barrelled flint and steel, and great execution he did at times with it.

The late Mr. Thomas Hopkins, of Limber Grange, told me that he had heard his grandfather, who was a great shooter, talk of seeing the bank between Clee and Tetney Haven, in the spring, covered with Ruffs and Reeves, and so tired with their long flight, that you might almost knock them down with a stick, and that he could soon shoot as many as he could carry.

The Rev. Edward Elmhirst informed me (*in litt.* 1886) that he quite well recollects his father shooting Bustards and Ruffs and Reeves on Thoresby Common, and his sending a Bustard to Sir Joseph Banks (then living) about sixty-eight years ago. The author of 'Notitiæ Ludæ,' published in 1834, mentions the Ruff and Reeve in his very imperfect list of birds found in the neighbourhood of Louth. In the early part of this century the Ruff and Reeve used to arrive regularly in the spring in the Humber district. I was familiar with an old fowler, long since departed, who gave me much interesting information in connection with the former abundance of these and other birds within his own recollection. Ruffs and Reeves came in flocks in May, at the same time as the Dotterel, and frequented the grass marshes near the Humber, being partial to those fields which were rough and uneven with hassocks; he had never known any instance of their remaining to nest, and they left again about the end of the same month. What a crowd of pleasant memories rush in as I write these lines about my old

comrade in many a shooting adventure. He was the type of a class, common enough at the commencement of the century, but now, like the birds they followed, fast disappearing from amongst us. He made bricks in summer, and in winter earned a decent competence by coast shooting. Often when waiting to "stand flight" have I passed an hour in his cottage close to the coast, listening to

"Such tales as old men tell,
When age has frosted, and when toil has numbed them."

Making every allowance for the lapse of time and an old man's memory, those must have been glorious days for the coast shooter; black masses of duck—Mallard, Wigeon, and Pochard—acres in extent on the river; on the muds, Knot, Grey Plover, Redshank, and Godwit innumerable, so that he could go down in the early dawn to low-water mark, and in a few hours shoot sufficient "almost to load a donkey." Then in the latter spring came Dotterel, "Roughs and Rees," Whimbrel, and late Golden Plover with black breasts, into the grass-marshes and coast "fitties," in numbers which to us in these days appear almost incredible. By long habit in trying to circumvent shy creatures, he had contracted always a stooping gait, with his head thrust forward, his keen grey eyes ever ready to take in the smallest sign of bird-life, and he invariably carried his right hand partly closed, as if grasping his favourite fowling-piece. In later years his heavy duck-guns got too much for him; but he carried a handy, far-reaching double, with "Stubbs-twist" barrels to the last. For so it came about one winter night, after a day on the coast, reclining by his own fireside, within hearing of the calls of the shore-birds, when outside the chill air was filled with soft, silent, slow-descending snowflakes—

"Death, like a friend's voice from a distant field
Approaching thro' the darkness, call'd,"

and all that was best in the time-worn frame went out alone into the night.

Messrs. Clarke and Roebuck, in their excellent 'Handbook of Yorkshire Vertebrata,' remark:—"Until about the commencement of the present century this species was abundant, and bred in the carrs of East Yorkshire, on Skipwith Common, near Selby, and also on Hatfield Chase, and the carrs about Doncaster,

where Mr. Hugh Reid—as he informed Mr. More—remembered them breeding quite plentifully. Mr. Arthur Strickland informed Mr. Allis, in 1844, that before the drainage of the carrs they used to be taken in considerable numbers in the breeding season, but that he should doubt if any had bred in the county within the half-century.” In ‘The Zoologist’ for 1864 (p. 9362), Mr. W. W. Boulton mentions facts which are suggestive of their having nested near Beverley during the summer of that year.

There is quite sufficient evidence, however, of their nesting in Lincolnshire long into this century. Between forty and fifty years ago they bred regularly on —— in company with hundreds of Redshank and Snipe. My correspondent, who lives in the neighbourhood, took a nest there in 1873. He also took a nest of the Wood Sandpiper in 1871 with four eggs. A nest also of the Reeve with two eggs was taken in the same locality in 1882, and the female shot. This last probably marks the extinction of the species as a breeder in this county. I have seen eggs which were taken in North Lincolnshire in 1866.

The species occur with tolerable regularity in the coast districts in the autumn, in August and September; perhaps the largest number I have seen together at this season was in 1884—twenty or more in one flock. Considerable numbers were reported during the same autumn.

In 1870, on June 10th, I saw seven Reeves with a Ruff in a large pasture near the Humber, and had the pleasure of examining them through a glass, and was then able to take the following notes of their actions:—Compared with either Golden Plover or Dotterel, they are restless, unquiet feeders, and are frequently shifting their ground, taking little flights of twenty or thirty yards. Considering the length of the tarsi, they are by no means high standing, looking less elevated than the Golden Plover. The body is carried horizontally, the tibio-tarsal joints being much bent, the head, if anything, inclined downwards; they run rapidly, now and then stooping to pick up some small substance, probably an insect, from the grass, and often crossing and re-crossing each other's tracks, not feeding like the Knot, all in the same direction. The Ruff appears both proud and jealous of his several wives, following them up closely, and occasionally, when he thinks they are getting too far away, takes a short flight towards them. He is most watchful, and

ever on the alert, on the slightest appearance of danger invariably taking the initiative, stretching himself to his full extent, and is then a conspicuous and beautiful object, looking nearly twice his natural size. If the alarm is well grounded, he at once rises, his Reeves rising at the same time, and they go off together at a great pace, silently and in close order, skimming the ground, and sometimes will shoot simultaneously upwards to a considerable height, and as rapidly descend. This Ruff was a dark-plumaged variety, showing a considerable amount of deep chestnut and purple. [Zool. 1870, p. 2286.] I again saw a Ruff, then in plain plumage, with seven Reeves, in this pasture on August 29th of the same year.

They seem at all times very silent birds, and I cannot recall at any time, either in the spring or autumn, having heard any resemblance to a cry or note. Mr. Howard Saunders ('Manual of British Birds,' p. 586) describes the note as a low "kack, kick, kack." With us they are far less frequently met with in the spring than in the autumn, and the females appear considerably to exceed the males in number. I have found the stomachs crammed with the remains of small coleopterous insects. On four occasions in recent years the Ruff has been obtained in this district in mid-winter—December and January—and three were also taken in flight-nets on the coast, in October, 1889. I have, however, never seen an example of the Reeve killed in the winter months.

The occasional appearance of Ruffs and Reeves in the future in our coast districts, during the periods of their double passage, may reasonably be expected, but, unless England becomes dispeopled and uncultivated, nothing can ever bring back in numbers or variety the wealth of the ancient avifauna. No Act of Parliament, however stringently framed, would be sufficient in itself to bring about the return and nesting of locally extinct species in the dried-up marshes and fens. It seems, therefore, all the more incumbent on us carefully to preserve each fragment of tradition in connection with past days, not only for our own benefit and instruction, but also for the sake of those who come after us.

ON THE OCCASIONAL APPEARANCE IN ENGLAND OF
THE CRESTED TIT.

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

THE Crested Tit, *Parus cristatus*, Linn., being exclusively a Scotch bird, so far as our isles are concerned, and even there considered very rare or at least extremely local, doubt has been continually thrown, but with some injustice, on the records of its appearance in England.

As it is migratory, there is nothing remarkable in its being found in England or Ireland, and it is not clear why there should still be this doubt about it; but perhaps we have all taken our cue from the late Mr. Gould, who in his 'Birds of Great Britain,' says of this species, that "in England it is never seen." It may be that this dictum, coming from so high an authority, has been accepted without very much enquiry. Another reason is that few are aware, probably, until they read the annexed list, how many times it has occurred in England, or rather is said to have occurred, on what seems respectable authority; and very likely the list does not include every instance of its occurrence, though reference has been made to almost every printed local avifauna.

We have comparatively ancient authority for its being an English bird, for so far back as 1797 that old writer, W. Lewin, remarked that it had been "killed in Scotland, and also in Yorkshire" ('British Birds,' iv. p. 46).

Yorkshire has been especially favoured by its visits, for no less than five are quoted in Messrs. Clarke and Roebuck's 'Yorkshire Vertebrata,' to which a sixth, shot at Keighley in August, 1887, has to be added ('Naturalist,' 1888, p. 15), and a seventh seen at Meersbrook, of which mention will be made further on.

In the county of Durham it has been shot once, on Sunderland Moor, in January, 1850, and the specimen is said (Zool. p. 2766) to be in the possession of a Mr. Calvert, whom I have tried to trace, but in vain. It is also mentioned in the list of birds contributed by William Proctor to the Rev. G. Ornsby's 'Sketches of Durham,' p. 197, as "very rare," the authority being, as appears from Hancock's 'Birds of Northumberland and Durham' (p. 76, note), a Mr. P. Farrow, who saw three or four near Witton Gilbert.

The late Mr. Robson included the Crested Tit in the list of Cumberland birds (Zool. 1854, p. 4167), as having occurred at Gosforth; the statement was challenged at the time (p. 4366), and as Messrs. Macpherson and Duckworth pass it over in their 'Birds of Cumberland,' we may perhaps dismiss it as insufficiently authenticated.

There is no evidence that it has been taken in any other northern county until we come to Derbyshire, where one was seen by Mr. C. Dixon, as stated in 'Our Rarer Birds' (p. 71), in a plantation at Meersbrook, as he informs me, near to Sheffield, and in fact on the Yorkshire side of the boundary.

In 'The Zoologist' for 1887 (p. 250) it is stated that a Crested Tit, or Tits,—for the writer puts it in the plural,—was seen by the late Dr. Leith Adams, at Biddlesden, in Buckinghamshire, and another by Mr. Morgan at the same place in November, 1886. The latter observer may have been in error, but Dr. Leith Adams was a good naturalist, and not very likely to be mistaken, and the communication comes through the hands of Lord Lilford.

Mr. Harting makes out a good case for Middlesex ('Birds of Middlesex,' p. 56), and further adds that one was shot by Mr. Engleheart at Blackheath, in Kent (*l. c.*). Dismissing Norfolk, where one is supposed to have been seen (Trans. Norwich Nat. iv. p. 274), and, turning to Suffolk, we find one seen at close quarters by Dr. N. F. Hele, about which he tells us "there could not possibly have been any mistake" ('Notes about Aldeburgh,' p. 82); another shot at Melton about 1873, afterwards examined by the Rev. Dr. Babington ('Birds of Suffolk,' p. 63), and another about 1840, near Bury (*l. c.*, p. 251), taken by Mr. Cambridge, preserved by Mr. Bilson. I am not satisfied about this last, but consider the occurrence of the other two established.

Mr. H. L. Meyer, in his 'British Birds' (vol. ii. p. 180), states that, in the autumn of 1839, he thought he saw a Crested Tit at Claremont, in Surrey, but expresses some doubt, not being aware that it had been ever met with in England at that time.

In March, 1874, one allowed Baron Hügel to approach it so closely in a Devonshire lane, that he nearly touched it with his walking-stick (Zool. 1874, p. 4065).

Mr. R. Laishley, in his 'British Birds' Eggs,' says (p. 68) he was shown a Crested Tit which was killed at Yarmouth in the Isle of Wight, perhaps the bird alluded to by the Rev. C. A. Bury

in 'The Zoologist' for 1844 (p. 639), and subsequently in Wise's 'New Forest,' and in the Rev. E. Venables' 'Guide to the Isle of Wight,' as obtained by a Mr. Butler. There is no reason to doubt his veracity, and, if it is not the bird alluded to by Laishley, then two have been shot in the Isle of Wight, where they may have come from France; I have seen one which was shot near Boulogne.

Mr. Edward Hart, the possessor of one of the best collections of British birds, has a Crested Tit which was shot in 1846 at Stanpit, near Christchurch, in a belt of fir-trees at the edge of a marsh by a man named Footner: this is the bird mentioned in Wise's 'New Forest,' App. III. Mr. Hart also tells me that the Rev. Mr. Pearce had one shot at or near Morden, in Dorsetshire, and which has not been recorded. There is not the slightest reason to doubt Footner's word; he showed Mr. Hart the place where he shot the bird, and if that is genuine Mr. Pearce's may well be so too.

In Ireland, Mr. Blake-Knox informed Mr. Dresser that he had one, killed in Wicklow in 1869 ('Birds of Europe,' iii. p. 152), and it is not easy to see why any doubt should be cast on so positive a statement, corroborated as it is by so many occurrences of Crested Tits in England.

It will be seen that we have here a list of about twenty-two Crested Tits, seen or killed, of which three rest on birdstuffers' authority, and fifteen on the authority of amateurs. Twelve of these were on the east coast, the county of Yorkshire being especially favoured with no less than seven. These may most likely have been of Norwegian origin: it is fair to assume this, and that they had crossed the sea with some of the great bands of Goldcrests, or, more likely, with smaller parties of the Great Tit, which, as is well known, visit England in that way. Mr. R. Collett has especially remarked on their consorting with other small birds during migration (*c.f.* 'Birds of Europe,' iii. p. 153). Or they may have come from Holland, for Mr. Seebohm tells us, in his 'British Birds,' that the Crested Tit is very abundant at Valkenswaard, which is not two hundred miles from Suffolk. Autumn migration in Suffolk and Norfolk is generally from east to west. It must be admitted that it is a curious fact that in fifty-three years Herr Gätke has only known one to be captured in Heligoland; but then Heligoland is an anomalous little island, and it

has been shown in the Norwich Naturalists' Society's 'Transactions' (vol. iv. p. 60), that in respect of its avian migrations it is totally different from our coast of England.

Mr. Gray thinks the Scotch colony is reinforced from abroad ('Birds of Scotland,' p. 104), for he says the species is much more abundant there in some years than in others.

NOTES AND QUERIES.

The late Mr. Booth's Collection of Birds.—In your memoir of the late Mr. E. T. Booth," which appeared in the March number of 'The Zoologist,' you say, on p. 96, that the groups of British birds in the British Museum "are being mounted in imitation of Mr. Booth's cases." This statement is incorrect; and as I should not like to see it remain uncontradicted in the pages of 'The Zoologist,' I beg to make the following remarks:—The plan of forming an exhibition in the Museum, illustrating the nesting habits of British birds, was entirely, and in its characteristic details, my own idea, and part of a much wider scheme. It was commenced in 1876, long before I knew of the existence of the Dyke Road Museum, or of Mr. Booth himself. When I became acquainted with him, in 1883, our collections bore already a very different character, so that we more than once discussed the merits of our different methods; he selecting the finest and most perfect specimens obtainable, frequently changing them for better ones; I insisting upon obtaining the pair of individual birds which built the nest and were the parents of the young; he maintaining that it was necessary for the conservation of the groups to make the surroundings entirely of artificial materials; I preserving the whole of the natural surroundings, and replacing only the perishable parts of plants by artificial facsimiles. Besides, the Booth Museum is a general collection of all the birds resident in, or visitors to, the British Islands; the series in the British Museum is limited to the species breeding in this country. I must therefore decline to be represented as the imitator of Mr. Booth, although I yield to no one in admiration of his work at the Dyke Road Museum, and only wish I possessed a fraction of his unrivalled experience in British Ornithology. If anything has helped me in conceiving the idea of mounting animals in groups,—and thus forming an exhibition attractive, and at the same time instructive, to the public,—it is a collection of the animals of Würtemberg that was formed under my own eyes by the then best German taxidermist, the late Hr. Plouquet, of Stuttgart. His famous collection may still be remembered by some of your readers, as it was brought to the International Exhibition in London in 1851, and afterwards sold to the Crystal Palace

Company. His method approached more nearly that of Mr. Booth, and specimens of his skill, though much deteriorated by time, are still to be seen in the Museum at Stuttgart.—A. GÜNTHER (British Museum, Natural History).

MAMMALIA.

The Wild Cat in Inverness-shire.—In 'The Zoologist' for April and May are some interesting notes on the Wild Cat in Austria, and its extinction in Yorkshire in 1840. It may be of interest to some of your readers to know that this animal, although now very rare in the Northern Highlands of Scotland, is still met with in some of the forests. On the 28th November, 1889, I received, in the flesh, a magnificent male, which had been caught two days previously in the deer-forest of Invermoriston, in Inverness-shire. This animal, which was in its thick winter coat, measured 3 ft. 4 in. from nose to extremity of tail; 1 ft. 2 in. high at the shoulders; and weighed over 12 lbs. The head was broad and rounded, and the ears set wide apart. The canine teeth were fully half-an-inch in length. The bright greenish-yellow eyes, when I first received it, gave a very fierce expression. The ground-colour of the fur on the body, flanks, and sides is a rich tawny-grey, marked with dark brownish transverse stripes. The face, ears, and feet are tawny-yellow; two dark streaks run from the corners of the eyes on to the cheeks, and five or six dark lines commencing above the eyes are continued to the shoulders, forming a chain of broken streaks to the tail. The legs down to the knees are banded with four dark rings, and the heels of the hind feet are black. Its tawny-grey chest is crossed with two obscure transverse bands, and its chin yellowish-white. The tail, which was comparatively short, was full and annulated with three black rings, and two or three inches of the tip is black. On December 5th, also in 1889, a female Wild Cat was sent me from the same deer-forest. On dissecting these two specimens, I found they had only eighteen caudal vertebræ, while I believe there are about twenty-four in *Felis domestica* and its supposed ancestor, *Felis maniculata*. On the 11th of March of the present year I received yet another male example of this species, taken in Glen Moriston. This fine old tom measured 3 ft. 3 in. in length, and was very stoutly built. The ground-colour of this animal's fur was a much deeper tawny than the fur of the other two specimens, whilst the thick tigrine-like tufts of air on the cheeks formed a slight mane, such as is sometimes seen on the cheeks of an old male Tiger. On April 4th another specimen, a female, arrived from the same forest. Doubtless these four examples belonged to one family. The two females, like other members of the *Felidæ*, are less than the males, although both are large and powerful animals, being slightly over 3 ft. in extreme length. A friend in Sutherland, who is well conversant with the *feræ naturæ* of the Highlands, writes me he believes the Wild Cat is now nearly, if not

already, extinct in the deer-forests of that county, no trace of one having been seen for some years, although twelve or fifteen years ago a season seldom passed without some of these animals being trapped or otherwise captured. It is a melancholy reflection that in a very few years the Wild Cat, like the Wolf and the Wild Boar, will have entirely disappeared from our islands.—WILLIAM YELLOWLY (South Shields).

Wild Cat in Yorkshire.—In Murray's 'Handbook for Yorkshire' (1882, p. 478), there is an account of the Wild Cat legend already referred to (p. 176-7), and a description of Barnborough Church. No mention, however, is made of any picture in the church commemorating the event. The guide-book says:—"The church itself contains the curious monuments of Percival Cresacre (living in 1455) and of his wife Alicia, died 1450. On her gravestone nine strings of beads are so arranged as to form a cross. The tomb of Percival Cresacre is between the chancel and the north chapel. His effigy in oak lies on it; and the front and sides are covered with the rosary, the favourite device of the Cresacres, and with short inscriptions. This is the Cresacre said to have been killed by the Wild Cat, and the lion at the feet of the effigy passes, in local opinion, for that animal. A wild cat was the crest of the Cresacres, whose interest in Barnborough passed by marriage to the family of the great Sir Thomas More."—JOHN CORDEAUX (Great Cotes, Ulceby).

The Polecat in Sutherlandshire.—On the 22nd December, 1889, I received a fresh-killed female Polecat or "Foumart," its fur being in beautiful condition. It was caught in Strathnaver, in the north of Sutherland. The Polecat is now extremely rare in the north of Scotland, especially in Sutherlandshire.—WM. YELLOWLY (South Shields).

Water Shrews in North Ayrshire.—In August, 1885, when botanising on the Glen Burn, between West Kilbride and Fairlie, I had an opportunity of observing, under very favourable circumstances, an apparently full-grown example of this fine species. Nearly a mile above its entrance to the sea, the stream flows over a ledge of sandstone rock, and makes a considerable fall into a deep gorge, the sides of which are picturesquely wooded. Having descended into the bed of the stream immediately below the fall, I was engaged in examining some large moss-grown stones, when I observed the Shrew in the act of emerging from a hole beneath one of the largest. It raised its head, and stood for a few moments sniffing the air and looking towards me, apparently uncertain whether to advance or retire. It then retreated into the hole, and did not again make its appearance. My close proximity, as well as the position assumed by the animal, afforded me a satisfactory opportunity of observing the elongated muzzle so characteristic of the genus, and the conspicuous

white breast, which contrasts very strikingly with the brown fur of the sides and back.—D. A. BOYD (Proc. N. H. Soc. Glasgow, 1890, p. 293).

Varieties of *Arvicola amphibia*.—As Mr. Aplin asks for information with regard to the distribution of the black variety of the Water Vole, he may be interested to know that it is 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 of 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 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." Professor Newton told me that the black-furred was the only form of this animal which he used to meet with at Elvedon, near Thetford. I have seen several white varieties of this animal. In September, 1872, Mr. R. B. Leeds shot a pure white Water Rat with pink eyes at Castle Acre, near Swaffham. Mr. Gunn records the occurrence of another in 'The Zoologist' for 1866 (p. 152), also an example killed at Cossey, near Norwich, on July 16th, 1880, in 'Land and Water' for Nov. 13th of that year; and I saw a pure white Water Rat at Mr. Roberts' of Norwich, killed near this city, in October, 1880. 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.—THOMAS SOUTHWELL (Norwich).

Lepus variabilis in North Wales.—On April 6th last I was surprised at seeing two Mountain Hares on the top of a hill near Snowdon, at a height of somewhere about 2500 feet. Both were apparently quite white, although the winter in that district had been unusually mild. Messrs. Harvie-Brown and Buckley, however, say that some they saw in Harris were "as pure white as they well could be at the end of April" ('Fauna Outer Hebrides,' p. 39). There were probably a good many more than the couple I saw, for some gentlemen who climbed the mountain on the same day stated that on the summit they had seen "some white things running about;" but I did not observe them on any of the neighbouring hills, and was unable to get any further information regarding them. Is it known whether the species has been introduced into this district? And if so,

when, and by whom?—ARTHUR H. MACPHERSON (51, Gloucester Place, Hyde Park).

[The white Hares seen on Snowdon are no doubt descendants of those turned out some years ago by Mr. Assheton Smith, of Vaynol Park, near Bangor, from whose windows the snow-capped Snowdon may be seen. Our note-book reminds us that, in the course of a week's shooting which we enjoyed on this estate in January, 1888, the number of Hares bagged from day to day, in addition to a variety of other game and wildfowl, was 62, 81, 78, 48, and 45, or a total of 314. Of these fully two-thirds were *Lepus variabilis*.—ED.]

Habits of the Great Noctule Bat.—Last year (Zool. 1889, p. 258), I sent you an account of the first flight of the Noctule Bats after their winter hybernation, or at least the first evening when they were observed to issue from the top gable of my house, when I counted fifty-seven of them: this happened on May 17th, 1889, at 8 p.m. On the 21st of this present month of May I again counted seventy-eight of them emerge from the same spot at 8 p.m. exactly, though I was informed they had appeared a few days previously. It is curious that they should observe such regular seasons and hours. When they come out they fly away immediately at a great height and to a considerable distance into the marshes, so that they all disappear in a very few minutes. After a flight of an hour or two they return to the house, but after some weeks they entirely disappear. I presume they take shelter in lofty trees elsewhere, and it is not till about the following September that they return to the houses. In April, 1884, I took some hybernating from a large willow tree; and with the exception of the months of May and June, I have not noticed them till Sept. 3rd (1882), Sept. 5th (1886), and Sept. 15th (1887). On these occasions specimens were shot and identified. We have several other bats in this neighbourhood that observe different seasons, and perhaps later on I may be able to send you further particulars of them, but I thought you might like to record these notes now.—GEORGE DOWKER (Stourmouth House, Wingham, Kent).

CETACEA.

White-beaked Dolphin on the Norfolk Coast.—On the 16th of April I saw at Yarmouth a very handsome specimen of this Dolphin, which had been stranded alive the previous evening on the beach, at the entrance to the river Yare at Gorleston. It was an adult female, 6 ft. 3½ in. in a straight line from the tip of the beak to the medial notch of the caudal fin. I believe it was sent for exhibition somewhere in the Midland Counties.—T. SOUTHWELL (Norwich).

BIRDS.

Small Birds and the Fruit Crops.—The following letters, addressed to the Editor of 'The Standard,' appeared in that journal on April 14th:—

"Allow me to give a head gardener's experience of small birds in fruit gardens. Taking charge here twelve years ago, orders were given that no birds' nests were to be taken, nor the eggs destroyed, and no birds to be killed except the Bullfinch. Consequently I began to provide protecting materials, such as wire pea-guards, and fish-netting. The pea-guards, purchased twelve years ago, are as sound now as when bought, and likely to wear a lifetime. The first cost seems rather a drawback; but they are essential to the kitchen-garden crops, to protect the peas, and also the cabbage-lettuce, radishes, and a host of small seeds. These wire-guards are constantly in use during the spring and summer months for the protection of all seeds against the small birds, and I am happy to say they answer the purpose well. Garden-netting is used for strawberries and currants (red and white), also for ripe gooseberries. The buds of these small fruits are protected by dusting the small or large bushes with lime and soot, when the trees are damp enough to allow it to stick to the branches, just before or after Christmas, or during the month of January. Large standard plum trees should have powdered lime thrown over the heads on a foggy morning every year, either in December or January. It is a mistake to think the first rain will wash the lime off the trees. I do not observe any increase of our feathered songsters here with all our protection. Nature seems to provide her own way of limiting the numbers of small birds. I may say we have a man on Sunday duty. During the nesting season we take the precaution not to have the birds' nests interfered with, if possible. We are surrounded by large forest trees, and also woods here and there round the park, and have many small birds' nests in the fruit trees in the kitchen garden. Yet we have had an abundance of hardy fruit every year, and have escaped, or nearly so, from the attacks of caterpillars, and also the maggots in the apple trees, these last few years—scourges which have been so prevalent all over the country. I attribute this to keeping the orchard apple trees clean by liming,—both old and young are kept clean,—and we must not forget the help we receive from the small birds. We have a great wealth of blossom at the present time on the wall trees, and a great promise of apple and cherry to come in the orchard.—ROBERT SMITH, one of the Committee of the British Fruit Growers' Association (Yalding, Kent)."

"I have read with much interest the very conflicting opinions of your correspondents on the subject of the destructiveness of small birds. My father, the late Mr. Alfred Ellis, was a friend and contemporary of the late Charles Waterton, and, like that eminent naturalist, he was a great protector and observer of all our British birds, and yet his gardens, both

flower and vegetable, were very much above the average both in beauty and productiveness, though the surrounding district was swarming with all descriptions of birds. The Kestrel and White or Barn Owl were specially encouraged to breed in the vicinity, and it was to their relentless pursuit of the mouse tribe by day and night that his garden escaped the depredations of these unnoticed pests. The ordinary keeper always shoots these interesting creatures, though they seldom or never touch young birds, and invariably prefer mice and beetles to any other diet. I do not believe any wild bird destroys buds, or anything else, for the mere love of destruction, as some of your correspondents seem to imply, and if they now and then nip off a bud for the sake of an insect that would not perhaps injure the fruit, this is more than counterbalanced by the numbers of destructive insects they consume. A good many of our small birds will eat ripe fruit when they get the chance, but a little protection will prevent this, and, after all, they have a right to a little, as by their consumption of millions of grubs they have helped to produce the crop.—GEOFFREY ELLIS (Leicester)."

[Mr. Ellis is not quite correct in stating that the Kestrel and Barn Owl seldom or never touch young birds. On examining the pellets cast up by them, which furnish the best evidence in regard to the nature of their food, we have repeatedly found the skulls and other bones of Sparrows and Greenfinches, in addition to the remains of mice, voles, and shrews.—ED.]

Former Occurrence of the Collared Pratincole in Essex.—I have just investigated the history of an Essex specimen of this rare bird, which seems to have been completely overlooked by ornithologists, though it was briefly recorded at the time of its occurrence in 'The Field' (August 31st, 1861), by Mr. Henry Shaw, taxidermist, of High Street, Shrewsbury, who states that it "was shot by Capt. the Hon. G. R. C. Hill, about a fortnight back, in Essex, whilst out duck-shooting; it is a fine bird, and had much the appearance of having recently sat upon eggs. The stomach was full of small beetles. Its appearance on the wing was much like that of the genus *Hirundo*. It is now with me for preservation, and will in due course be placed in the collection of the Viscount Hill at Hawkstone." Lord Hill has been good enough to inform me that the specimen, an adult female, is still in his possession, while his brother, the Hon. Geoffrey R. C. Hill, writes me that he cannot now remember the name of the parish wherein he shot the bird, but that at the time he "was shooting 'flappers' on the Kelvedon Marshes with Mr. Philip Bennett (who was in the Blues with me at that time), and I rather fancy the marshes belonged to, or were leased by, his father, of Rougham Hall, Bury St. Edmunds. There was a decoy there in those days, and very close to that, as we were walking up the side of the ditches after ducks, I saw a single bird coming over my head. Not knowing what it was, I shot at it, and not being any the wiser after I had

got it in my hand, I asked leave to send it to Mr. H. Shaw, of 45, High Street, Shrewsbury, for preservation for my brother's museum. I may have stated to him at that time more particulars than I am now able to give you." From the above it seems probable that the bird was shot close to the decoy on the Old Hall Marshes, Tollesbury.—MILLER CHRISTY (Chignal St. James, Chelmsford).

Reported Nesting of the Black Redstart in Dumfriesshire.—I believe that no well authenticated instance of the breeding of the Black Redstart in Great Britain has hitherto been recorded. A lady, a near neighbour of mine, who is fond of observing birds, tells me that about the 12th of June, last year, she found a nest of the Black Redstart about half a mile from Maxwelton, in Dumfriesshire. The nest was in a stone "dyke" (wall), by the side of a road on a high hill, called "Crossford." The young were hatched. She tells me that she often went to watch the birds, both with a field-glass and without one; that they let her get very near, that she is certain of their identity, and that they were Black, and not Common, Redstarts. I think that this may be accepted as an undoubted instance of the breeding of this species in this country.—W. OXENDEN HAMMOND.

Have we two sorts of Woodcock?—Mr. Grant's paper, "Notes on Woodcock and Snipe," in the last issue of 'The Zoologist,' raises a question of considerable interest to naturalists and sportsmen, whether we have two sorts of Woodcock visiting this country,—a large light coloured bird, and a smaller dark one? The result arrived at by Mr. Grant, after an examination of a large series of specimens from various countries, is that the so-called small rufous race represent the young of the year, and the larger and greyer birds are adults. Without wishing to give any decided opinion, which might imply an absolute subspecific difference between the two, I think there are some facts in connection with local evidence which appear to stand opposed to Mr. Grant's theory. That there are, apparently, two sorts or races of Woodcock, recognised as such by sportsmen, past and present, which arrive periodically in the autumn in flights on the sea-coast, is a fact which cannot be disputed; also, that they are distinguishable, as stated above, by their size and colour. The records of the migrations of Woodcocks in connection with the east coast, which I have kept since 1866, indicate that, as a rule, the bulk of immigrant cocks coming to us in October and November, are recognised as belonging to the so-called small dark, and presumably Scandinavian, race, and that they arrive with N. and N.E. winds. Old east-coast sportsmen, who are, perhaps, best qualified to give an opinion, say that the large grey birds may only be expected with winds from points south of east, and that they do not arrive in flights, except under these conditions. I quite agree with Mr. Grant, "that the triangular marks on the outer web of the first quill-feather are certainly

indications of youth, and not of sex." On the presumption, then, that the dark birds, which comprise our ordinary autumn flights, are all birds of the year, these markings should be very distinct and uniform. I have not found this to be the case. In some, the quill-markings are clear and perfect enough, but they appear to run through various stages to complete obliteration, the outer web of the feather becoming at last light coloured and uniform in old birds. At what period the final stage is reached, nobody can say. It is sufficient for our purpose to know that, tested by the notch-markings on the first primary, the birds shot from our big autumn flights, with the same character of plumage, are certainly not all of the same age. Another fact, which militates against Mr. Grant's theory, is that during their stay with us they do not appear to lose racial distinction: rufous they come, and rufous they depart, and are readily distinguishable as such. Only on March 26th last I flushed a little red cock from under a laurel in the garden, evidently a pilgrim on his return journey. There is certainly no reason why examples of both races, supposing such exist, should not be obtained in widely separate countries. It is not improbable that their nesting-quarters may considerably overlap; both certainly are notoriously birds of passage, and might turn up anywhere.—JOHN CORDEAUX (Great Cotes, Ulceby).

Attacks by Owls.—A few days ago I had a novel and somewhat unpleasant experience of the way in which the Tawny Owl resents an approach to its nest. About three weeks ago I found in an old dead elm a nest containing three young and two eggs, which we much hoped would not be disturbed, as till last year this bird was not known to breed here. One bright moonlight night I was standing close to the trunk of the tree, watching for the return of the birds with food for the young. Presently one of the parents perched on a tree a few yards away, uttering a peculiar whining cry, and in a minute or two dashed straight at my head. The blow inflicted was very like that of a moderately hard snowball, and putting up my hand I found my forehead bleeding freely from several places, while my cap (a soft grey woollen one) was carried off as a trophy, and found the next morning under a tree about seventy or eighty yards away. Since then I have given my *protégés* a wide berth after sunset. A similar instance is recorded in 'The Zoologist' for 1888, p. 351.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

Notes on Birds' Nests.—On April 26th I found a Pied Wagtail's nest with one egg in an ivy wall in our garden, and visiting it on May 1st was surprised to find nine eggs, evidently the produce of two birds. The nest now contains ten eggs. Last winter I had an old beech stump, about eight feet long, sawn off, in which there was a Woodpecker's hole, occupied last year by Starlings. This has been planted in the ground near the

house, with the hole reduced in size so as to exclude the Starlings. One day a Lesser Spotted Woodpecker was hard at work at the hole, but since then a pair of Wrynecks seem to have taken possession. Some Nuthatches are occupying a nesting-box nailed to the trunk of a Scotch fir, close to the window where I write; they hatched off in the same place last year; the nest, so far as it is visible, is entirely made of thin flakes of the bark of the tree. We have also three Tits' nests in boxes: one in an inverted flower-pot placed on a wall; one in a drain-pipe, with the ends blocked up and a hole bored in the side, laid in ivy on a wall; and one in a hollow block of elm, taken from a fernery and placed on end, with a flat stone laid on the top, and an entrance hole cut in the side. A pair of Redstarts are nesting in one of the boxes. Probably more birds would breed in the artificial nesting-places were it not for the number of old decayed beech trees around the house, which contain any amount of suitable holes. It would be a pleasure to me to show the nests above mentioned to any of the readers of 'The Zoologist' who may be in this neighbourhood, and would like to see them.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

Food of the Pine Grosbeak.—It is generally supposed that the Pine Grosbeak feeds on the seeds of Coniferæ, apparently because it inhabits pine forests, but I do not think its bill is adapted for opening fir-cones, or for extracting the seeds from them. Bullfinches eat the buds of the larch in spring, and perhaps the Pine Grosbeak may eat the buds of the pine at one season of the year. In the winter of 1856-7 I was residing in Montreal, Canada, and observed large flocks of Pine Grosbeaks and Bohemian Waxwings, which frequented the gardens around that beautiful city. The winter was very severe, the thermometer falling as low as -31° . The birds were feeding on the berries of the mountain ash, *Pyrus americana*, and high cranberry bush, *Viburnum opulus*. I shot many specimens of both species that winter, and of the Pine Grosbeak in the following one. It was interesting to notice the difference in the mode of feeding of the two birds; the Grosbeak, having a strong bill, crushed the frozen berries of the mountain ash, rejecting the skins, which were scattered in great quantities over the snow beneath the trees they frequented, and swallowed only the pulp and pips or seeds, the latter to be comminuted by the action of the hard muscular gizzard aided by the small stones that were always present. The pips thus ground up communicated a strong odour of prussic acid to the whole body. The Waxwings having a weak bill, capacious œsophagus, and soft membranous stomach, swallowed the berries whole and unbroken, and when they thawed the pips passed out of the body without having undergone any change by the process of digestion, and imparted no smell to the flesh, the fruity portion alone being retained for the nourishment of the bird. There was a considerable amount of orange-coloured fat on the bodies

of the Grosbeaks. It had a very pretty effect, the two hardy species feeding together, picking off the bright red berries—the Grosbeaks clinging to the branches back downwards like Parrots. The flocks of Grosbeaks consisted almost entirely of dull-coloured individuals, females or young birds, and there were only two or three old males in their handsome red plumage. They were so tame that it was sometimes difficult to avoid blowing them to pieces by discharging the gun too close to them. They disappeared about the middle of March. The Waxwings remained until the end of April, and when other food was exhausted they fed on the berries of the cockspur thorn. They were much more wary than the Grosbeaks and more difficult to approach. It appears to me to add greatly to the improbability of a "fine red male Pine Grosbeak" having occurred in Devonshire, that so few individuals are met with in red plumage, it being old cock birds that assume the finest plumage. It is also more likely that young birds would visit England than old ones.—W. S. M. D'URBAN (10, Claremont Terrace, Exmouth).

Nesting Habits of the Sky Lark.—I send you a query, and shall be much obliged to you if you will insert it in 'The Zoologist.' I have noticed this season a rather singular thing with regard to the nesting of the Sky Lark, *Alauda arvensis*, which may or may not be confined to this district; all the Sky Larks' nests which have come under my notice this year have had but three eggs. I have only seen some four or five myself, but several of my friends who take an interest in Ornithology have remarked the same peculiarity to me. From a rough calculation I find that out of about eighteen nests that have come under my notice, only two have had four eggs, and one nest two eggs; the rest have all contained but three, and not one have I heard of that contained five. Now, so far as my experience goes, the Sky Lark generally lays five eggs, sometimes but four, and only exceptionally ceases laying at three. I should much like to know if any other readers of 'The Zoologist' have remarked a similar anomaly in the nidification of the Sky Lark. While out for a walk with a friend this season, on April 20th, I found a Sky Lark's nest with one egg in it: thirteen days after I happened to be close to the spot with the same friend, so we thought we would go to see if the nest was all right. I was much surprised to find that the nest—unmistakably the same—contained three young birds, which had apparently been hatched about twenty-four hours. Now allowing that the bird laid one egg per day, and had not laid upon the day on which I found the nest (about 2.30 p.m.), the period of incubation could not possibly have been more than eleven days, which seemed to me a remarkably short time; so on arriving home I looked up the length of the period of incubation for the Sky Lark in the first edition of Yarrell's 'British Birds,' and found that he gave it as fifteen days. Mr. Howard

Saunders, in his 'Manual of British Birds,' also gives it as fifteen days. Now I should think that the period of incubation could hardly vary so much as four days in any one species. This being so, either this Lark must have played me a trick, or else Messrs. Yarrell and Saunders have erred in their statement. Perhaps some reader of 'The Zoologist' can enlighten me as regards the variation in the period of incubation in the Sky Lark.—A. M. LAWS (Thetford).

Shore Lark in Lincolnshire.—A fine specimen of the Shore Lark was shot at a marsh village, North Somercotes, on the 11th of February last. It was preserved by Mr. Kew, of Louth, and is now in my possession. Has it been before recorded from Lincolnshire? Mr. Cordeaux does not mention one in his 'Birds of the Humber District' (1872).—HENRY F. ALLISON (Beckingham, Newark).

[Yes; Mr. Cordeaux mentions several instances of its occurrence in Lincolnshire in winter and spring in the work referred to (p. 45), and believes that it occurs more frequently on the east coast than is generally suspected.—ED.]

Red-necked Grebe in Surrey.—A Red-necked Grebe, *Podiceps rubricollis*, was picked up dead in this neighbourhood in April last. It was a male in good plumage, and appeared to have been badly shot in both wings.—E. P. LARKEN (Gatton Tower, Reigate).

Increase of Jack Snipe in North Lincolnshire.—The Jack Snipe was fairly plentiful in this parish during last winter, 1889-90,—more so, I am inclined to think, than its larger relative the Common Snipe. In this district it is now considered by old gunners to be a rare bird, and one that is gradually getting scarcer every year. Compared with what it was twenty or thirty years ago, no doubt this is true, but after four or five seasons' shooting I am led to the conclusion that it is not so scarce as supposed (its habit of lying close no doubt often stands it in good stead), but, on the contrary, is gradually increasing. I have frequently flushed two and three couple of "Jacks" from one small reed-bed in this parish,—a favourite haunt of Snipe. There are certain localities—such as a patch of reeds or a particular tuft of rushes—that always hold a "long bill" or two, no matter, shoot them as you will. Whether this apparent increase of the "Jack" is owing to the decrease of the Common Snipe I am unable to say. Has any other reader noticed a similar increase in the Humber district?—J. W. HARRISON (Goshill, Lincolnshire).

Thick-knee in Hertfordshire.—Our local birdstuffer, Mr. Reeves, showed me a Thick-knee which had been picked up dead in Hertfordshire in April, and forwarded to him in the flesh. It appears to have come to its death by flying against some telegraph-wires.—E. P. LARKEN (Gatton Tower, Reigate).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

May 1, 1890.—Mr. J. G. BAKER, F.R.S., Vice-President, in the chair. The Rev. J. Tait Scott was admitted; and Messrs. J. H. Garrett and John Young were elected Fellows; Dr. E. von Regel, of St. Petersburg, and Mr. Sereno Watson, of Harvard University, Cambridge, Mass., being elected Foreign Members.

Mr. Miller Christy exhibited and made remarks on specimens of the so-called Bardfield oxlip, which he had found growing abundantly not only in the neighbourhood of Bardfield, Essex, but over a considerable area to the north and west of it.

Mr. Buffham exhibited under the microscope specimens of *Myristrichia claviformis* with plurilocular sporangia, and conjugation of *Rhabdomena arcuatum*, found upon *Zostera marina*.

The Rev. Prof. Henslow exhibited a collection of edible Mollusca, which he had recently brought from Malta, and described the native methods of collecting and cooking them.

Prof. Stewart exhibited some spirit specimens of a Lizard, in which the pineal eye was clearly apparent.

Mr. Sherring exhibited a series of excellent photographs, which he had taken near Falmouth, and which showed the effects of climatic influence on the growth of several subtropical and rare plants cultivated in the open air.

A paper was then read by Prof. W. Fream, "On a quantitative examination of Water-meadow Herbage." This was followed by a paper from Mr. R. I. Pocock, "On some Old World species of Scorpions."

ZOOLOGICAL SOCIETY OF LONDON.

May 6, 1890.—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, and called special attention to two examples of Simony's Lizard, *Lacerta simonyi*, from the rock of Zalmo, Canaries, obtained by Canon Tristram, and presented to the Society by Lord Lilford.

Mr. Sclater exhibited and made remarks upon the stuffed head of an Antelope, shot by Commander R. A. J. Montgomerie, R.N., of H.M.S. 'Boadicea,' in June, 1889, near Malimdi, on the East-African coast, north

of Zanzibar. Mr. Sclater referred this head to what is commonly called the Korrigum Antelope, *Damalis senegalensis*.

Prof. Howes made remarks on a dissection of the cephalic skeleton of *Hatteria*, and pointed out some features of special interest exhibited by this specimen. These were the presence of a pro-atlas and the existence of vomerine teeth, as in *Palæohatteria*.

Two letters were read from Dr. Emin Pasha, C.M.Z.S., dated Bagamoyo, March, 1890, and announcing that he had forwarded certain zoological specimens for the Society's acceptance.

Mr. H. Seebohm exhibited and made remarks on a specimen of the Eastern Turtle, *Turtur orientalis*, killed near Scarborough, in Yorkshire, in October, 1889.

Prof. F. Jeffrey Bell read the first of a series of contributions to our knowledge of the Antipatharian Corals. The present communication contained the description of a particularly fine example of the Black Coral of the Mediterranean, and an account of a very remarkable Antipathid from the neighbourhood of the island of Mauritius.

A communication was read from Mr. E. N. Buxton, containing notes on the Wild Sheep and Mountain-Antelope of the Algerian Atlas, taken during a recent excursion into that country. These notes were illustrated by the exhibition of fine mounted specimens of the heads of these animals.

Mr. R. Lydekker read a note on a remarkable specimen of an antler of a large deer from Asia Minor, which he was inclined to refer to an abnormal form of the Red-deer, *Cervus elaphus*.

Mr. F. E. Beddard read a paper on the minute structure of the eye in some shallow-water and deep-sea species of the Isopod genus *Arcturus*. He pointed out that in all the deep-sea forms there was some change in the visual elements which indicated degeneration.

Mr. E. T. Newton gave an account of the bones of some small birds obtained by Prof. Nation from beneath the nitrate beds of Peru. These bones seemed to occur in considerable abundance, and nearly all appeared to belong to one small species of Petrel, which it was thought most nearly resembled *Cymochorea leucorrhœa* or *C. markhami*, the latter of these being now found living on the coast of Chili.

A communication was read from Dr. Mivart, containing notes on some singular Canine dental abnormalities.

Mr. H. Elwes read descriptions of some new Indian Moths.

May 20.—Prof. W. H. FLOWER, C.B., LL.D., F.R.S., President, in the chair.

Mr. Gambier Bolton exhibited a series of photographs, principally of animals living in the Society's Gardens and in Mr. W. Rothschild's Menagerie.

Prof. Flower exhibited a photograph of a nest of a Hornbill (*Toccos*

melanoleucos), taken from a specimen in the Albany Museum, Grahamstown, in which the female was shown "walled in."

A communication was read from Sir Edward Newton relating to the reported discovery of Dodo's bones in Mauritius in 1885, by the late Mr. Caldwell. It appeared that there had been some error in the matter, and that the bones discovered were not those of the Dodo.

Mr. Sclater pointed out the characters of a new Toucan of the genus *Pteroglossus* from the Upper Amazons, proposed to be called *P. didymus*.

Mr. R. Lydekker read a paper describing some bird-remains from the cavern-deposits of Malta. These remains indicated a Vulture larger than any existing species, which, from the characters of the cervical vertebræ, he referred to the genus *Gyps*, under the name of *G. melitensis*. They also comprised some bones of a Crane, ♂ of the size of *Grus antigone*, for which the name *Grus melitensis* was proposed.

Dr. Hans Gadow gave an account of some cases of the modification of certain organs in mammals and birds which seemed to be illustrations of the inheritance of acquired characters.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

May 7, 1890. — Capt. HENRY J. ELWES, F.L.S., Vice-President, in the chair.

Messrs. W. G. Blatch, F. J. S. Chatterton, Charles Fenn, and George B. Routledge were elected Fellows; and Mr. A. E. Stearns was admitted into the Society.

The Secretary read a letter from the Vicar of Arundel, asking for advice as to the course to be taken to get rid of the larvæ of a beetle which were destroying the beams of the Parish Church. Mr. C. O. Waterhouse said he had already been consulted on the question, and had advised that the beams should be soaked with paraffin oil.

Dr. Sharp exhibited specimens of *Caryoborus lacerdæ*, a species of *Bruchidæ*, and the nuts from which they had been reared. He stated that three of these nuts had been sent him from Bahia by the late Senor Lacerda, about six years ago; that one of the beetles had effected its exit from the nut during the voyage; a second had recently emerged, after the nuts had been in this country for five years; and that a third had undergone its metamorphosis and died within the nut. Dr. Sharp also exhibited several specimens of Diptera collected by Mr. Herbert Smith in St. Vincent, and read a letter from him to Mr. Godman on the subject of the vast number of species of this order which he had recently collected in that island. Mr. M'Lachlan, Dr. Mason, Mr. Waterhouse, and Capt. Elwes took part in the discussion which ensued.

Mr. R. F. Lewis, on behalf of Mr. W. M. Maskell, of Wellington, New Zealand, exhibited and read notes on about twenty-five species of *Coccidæ* from that colony. He also exhibited some specimens of the larvæ and imagos of *Icerya Purchasi*, Maskell, obtained from Natal, where the species had proved very destructive to orange, lemon, and other fruit trees. He also showed specimens of the larvæ of an allied species from Natal, originally assigned by Mr. Douglas to the genus *Ortonia*, but which Mr. Maskell was inclined to regard as a new species of *Icerya*. Mr. M'Lachlan and the Chairman commented on the interesting nature of the exhibition, and the importance of a knowledge of the parasites of injurious insects, in connection with which special mention was made of the researches and discoveries of Prof. Riley.

The Secretary exhibited, on behalf of Mr. T. D. A. Cockerell, of Colorado, a large collection of insect-galls, and read a letter from Mr. Cockerell on the subject. Dr. Mason said he should be happy to take charge of these galls, with a view of rearing the insects and reporting the results.

Mr. H. W. Bates communicated a paper entitled "On new Species of *Cicindelidæ*."—H. Goss, *Hon. Sec.*

NOTICES OF NEW BOOKS.

Our Cats: and all about them. Their Varieties, Habits, and Management, and, for show, the standard of excellence and beauty described and pictured. By HARRISON WEIR, President of the National Cat Club. Post 8vo, pp. 248. Tunbridge Wells: Clements & Co.

MR. WEIR is an enthusiast, and as President of the National Cat Club (which in conjunction with Messrs. Wilkinson and Wilson, of the Crystal Palace, he originated twenty years ago) knows more than most people on the subject of the domestic Cat and its varieties. The result of his experience is embodied in the present volume, and although the materials which he has collected are perhaps not so skilfully arranged as they might have been, his book is, nevertheless, very pleasant reading. On the question of origin (which we should have expected to see dealt with on page 1 instead of on page 164), we are disappointed at not having a definite expression of Mr. Weir's own opinion, instead of a statement of the views of others, although we infer from the extracts quoted, that he endorses the notion that the

domestic Cat is not descended from any one wild species, but from several in different countries, and at different periods of the world's history.

Commencing with an account of the first Cat Show, and a chapter on the habits generally of the feline race, Mr. Weir discusses *seriatim* the various breeds of the domestic Cat, with characteristic figures of each drawn by himself.

The most curious of these are, the so-called *Archangel Blue Cat*, in Mr. Weir's opinion not a distinct breed, but a light coloured form of the black Cat, with the fur of a bluish lilac tint, with no sootiness or black about it, the nose and paws dark, and the eyes orange-yellow; the *Siamese Cat*, white, with the ears and lower part of face black; another variety, having the body of a dun colour, nose, part of the face, ears, feet, and tail, of a very dark chocolate-brown, nearly black; eyes of a beautiful blue by day, and of a red colour by night! and the *Manx Cat*, whose chief characteristic is that it is tail-less. It is popularly believed that all Cats in the Isle of Man are tail-less, but this, it appears, is not so. Mr. Weir says that there, as elsewhere, tails of all lengths may be seen "from nothing up to ten inches." Twenty-four pages are occupied with an enumeration of the points by which Cats are judged, and by breeders and exhibitors this portion of the book will probably be regarded as the most useful. This is succeeded by half-a-dozen pages on the diseases of Cats, and their remedies, and the volume concludes with a collection of scraps relating to Cats, from various sources, some of which we should have thought too trivial to be worth notice. "Cat Proverbs," the "Cat of Shakespeare," "Superstition and Witchcraft," "Weather Notions," and "Inn Signs," are some of the titles to the chapters.

Mr. Harrison Weir has certainly displayed much industry in collecting every scrap of information he could find relating to the domestic Cat, and whether the reader be an intending exhibitor, anxious to know the points of a particular breed which he possesses, or merely the contented owner of an ordinary mouser, he will find in this little volume something to interest and amuse him. Let him by no means omit to read (p. 18) the story of the Deaf Cat, a capital story which has the additional merit of being true.

Classification of Birds: an Attempt to diagnose the Subclasses, Orders, Suborders, and some of the Families of existing Birds.
By HENRY SEEBOHM. 8vo, pp. 53. London: R. H. Porter.
1890.

THIS is an attempt to classify existing Birds in groups which are capable of being diagnosed, and represents an enormous amount of labour. In little more than fifty pages Mr. Seebohm has set down the well-considered results of his examination of the Osteology, Myology, and Pterylography of as many forms as it was possible to examine, bearing in mind that many species are known only from skins forwarded by collectors, and their affinities consequently can be only surmised from external characters.

We infer, however, from his diagnoses, that he has been able to see either freshly killed or spirit specimens representative of every one of the suborders named by him, and probably representatives of most of the families belonging to these suborders which are thirty-six in number.

In selecting characters he has been careful, as he states in his Introduction, to choose those which are supposed to denote affinity,—in other words to be due to inheritance from common ancestors; and so far as possible to avoid such as only denote analogy, that is to say such as are only instances where like causes have produced like effects.

It is, however, very difficult to tell which characters have been inherited and which have been independently acquired. In many cases it is only possible to guess, in others it is absolutely impossible to form any opinion at all. It may, perhaps, be fairly assumed that the more complicated a character is, the less chance is there that it can have been independently acquired by two groups. It may also be taken for granted that it is very much more difficult even for a simple character to be independently acquired than to be independently lost.

To ascertain then whether a given character denotes affinity, or even analogy, is the first difficulty of classification; the second being to ascertain the relative value of the different characters.

On this point, unfortunately, no rule can be laid down, though, as Mr. Seebohm remarks, there are certain laws which govern

the operation of classification by diagnosis. It is in the application of these principles that the value of Mr. Seebohm's work lies.

In each group as diagnosed by him we find a combination of characters not to be found in any other group; in other words, characters which are diagnostic of that group alone. The linear arrangement, therefore, which he has adopted in setting down the names of these groups (beginning with the *Passeres* and ending with the *Struthiones*) is of secondary importance, because the order in which they are named may be altered in accordance with the views of the reader without affecting the constitution of the groups themselves.

The great point is to be able to write down an unfailing diagnosis for each so-called "Suborder," and then to group these in a smaller number of "Orders;" the larger division of "Sub-classes" (such as *Passeriformes*, *Falconiformes*, *Anseriformes*, &c.) we are inclined to regard as unnecessary. Indeed we would go a step further, and for the sake of simplicity abandon the names of Mr. Seebohm's "Orders," and apply that classificatory term to his "Suborders." With the "Class" Aves divided into thirty-six "Orders" (Mr. Seebohm's "Suborders"), each having its component "Families," comprising allied "genera," or groups of "species," we should have a sufficiently detailed classification, and get rid of such practically superfluous terms as "Sub-class," "Sub-order," "Sub-genus," and "Sub-species."

The traveller who has a few broad landmarks to guide him in the exploration of a country hitherto untraversed by him, stands less chance of losing his way than if he attempts to carry out a multiplicity of minute directions which can only tend to confuse him. So it must be with the student of Zoological Classification. For teaching purposes the simpler the scheme of classification the better. Details may be filled in afterwards.

A Handbook of European Birds, for the use of Field Naturalists and Collectors. By JAMES BACKHOUSE, Junior. Small 8vo, pp. 334. London: Gurney & Jackson. 1890.

It was a happy thought on the part of Mr. Backhouse to plan a Handbook of European Birds in one volume. There was a distinct opening for such a work, and English visitors to the Continent would be especially grateful for a good guide on this subject. But the book which Mr. Backhouse has written is not,

we fear, the sort of book which they require, or at least, which is likely to be most useful to them.

The very first information which the travelling Ornithologist will need if he does not already possess it, is the name by which a bird is known in the country visited. Without this knowledge he cannot begin to make enquiry concerning it with any chance of being understood. Mr. Backhouse should certainly have given us the French, German, Spanish, and Italian names for all the commoner kinds of birds, and these might have been easily ascertained on reference to Schlegel's 'Révue Critique,' Col. Irby's 'Ornithology of the Straits of Gibraltar,' and Prof. Giglioli's 'Avifauna Italica.'

Having learnt the local name of a species, the next thing to be ascertained is where to look for it with some chance of success. This information also is not supplied by Mr. Backhouse; that is to say, his definition of a birds' "distribution" is so wide as to be practically useless to the inexperienced reader for whom his book is intended.

Let us suppose, for example, that the collector is in France, or Switzerland, for a summer vacation, and anxious to see some particular species which is rarely met with in the British Islands, though, perhaps, common enough in summer in many parts of the Continent. Looking to this pocket-guide for some hint as to its distribution, he finds the statement that it "breeds in Central and Southern Europe, wintering in Africa," a generalization with which he is probably already familiar.

Again, to take the case of a traveller seeing for the first time a bird with which he is unacquainted. On enquiry he learns the local name, and if that were given in the 'Handbook,' he would have no difficulty in finding a description of it; but in the absence of such a clue, how many descriptions must be read through before the bird seen can be identified and named, perhaps, even then with some feeling of doubt.

Mr. Backhouse's descriptions of the species, however, are good so far as they go; the adult in summer, adult in winter, and the young bird being described; the difference, if any, between the sexes being also noted, and approximate measurements given.

The book is printed in good clear type, and should the reader be unfamiliar with the classification, he may easily find on reference to the Index any species of which he may be in search.

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THE EVOLUTION OF BIRD-SONG.

By CHARLES A. WITCHELL.

FOR some years I have studied the voices of British wild birds, and in pursuing my investigations have become acquainted with several interesting facts which seem to indicate how bird-song has been evolved. As the notes collected relate to the songs of several hundreds of individual birds, it is impossible in these pages to give more than a general summary, together with the conclusions arrived at. Any more elaborate analysis must be deferred to a future occasion.

In the arrangement of these notes I have received much aid from Prof. Harker, F.L.S., and Mr. S. S. Buckman, F.G.S., has suggested several useful alterations in the MS.

All birds possess the power to emit a cry of distress—that is, an exclamation caused by bodily pain, or by fear, and this cry seems to be the first utterance of the young of most species. It is presumed that a cry of distress was the earliest vocal utterance within the ability of the bird or its progenitors; and it may have been originally produced accidentally by contortion of the body during combat, in which event it might have tended towards the preservation of the individuals by which it was uttered. If an outcry increased the chance of victory in combat, the inclination and ability to exclaim would become permanent, and the cry would be habitually uttered in the tone most easily produced, or most effectual in its result. It would thus become a definitely formed cry, and would soon be uttered in circumstances of danger

as well as in combat. In most birds of limited vocal compass the distress-cry is merely an exaggeration of the ordinary call-note or signal of assembly, as, for example, in the Mallard, Crow, and Rook; but fear may induce in the call-note inflections unappreciated by the human ear.

It is a curious fact that among birds of limited vocal power the call-note resembles the danger-cry (or alarm) much more than in birds of varied song. The Mallard, Crow, Rook, and Bullfinch may be mentioned as typical of the former class; and the Blackbird, Starling, Redbreast, and Nightingale as typical of the latter. This tends to prove that the call-note and the danger-cry had a common origin, namely (as before suggested), the cry of distress. This distress-cry became modified in different species and for different occasions, and developed into a cry of dismissal as well as into a call of assembly. The House Sparrow utters a characteristic note to indicate the arrival of a hawk, at the sound of which House Sparrows within hearing secrete themselves. This bird has another danger-signal, which is employed as a call-note to the young. Several species silence their young by a note of warning. I have known a Blackbird utter different notes to announce the presence of a cat or a human being. The common fowl (whose notes generally have withstood the influence of artificial selection) utters different alarm-cries to signal the approach of a dog or cat, or that of a hawk.

It may be fairly suggested that certain alarm-notes are onomatopœic, and are intended to suggest the presence of the seemingly most dreaded enemies of the bird. Such alarm-notes are the "oof" of the common pigeon,—a cry which closely resembles the sounds made by the wings of this bird when it is swooping rapidly in play, or in its efforts to avoid the pursuit of a hawk,—and the hissing sounds made by some birds of the genera *Picus* and *Parus* when nesting, and which sounds are like the hiss of that dreaded enemy of the nest, the snake. The hisses of these birds may be employed for protective purposes; but, on the other hand, they may be merely the spontaneous expressions of hatred which have been inherited from a remote ancestry.

The distress-note was probably uttered by the males of some species as a defiance-cry, and as such it would be, like the "crow" of the cock, addressed to other males rather than to females. Rival males of certain species, such as the Willow

Warbler, Chiffchaff, Redbreast, and Thrush, sing when about to fight together, and often during a combat, upon which occasions their songs are clearly intended as defiances.

Increase of fear induces a proportionately rapid and vehement repetition of the alarm-note. I have heard a Blackcap repeat his alarm-note, "tack," so rapidly as to produce a shake, like the shaking alarm-notes of the Magpie and Great Titmouse. The Blackbird's rattling alarm is simply the quick reiteration of one sharp note. The alarms of the Magpie, Missel Thrush, and male House Sparrow were probably, with those of several other birds, originated by single cries. The first alarms or danger-calls would be uttered, not only when the birds themselves were in danger, but also when their young were threatened. The first cry of the nestling young marked the commencement of a new era in bird-utterance. This cry was probably an imitation of that of parent birds uttered near their nest, and, being induced by hunger, was used as a demand for food from them. The cries of the parents near the nest would generally be alarms. A bird does not often sing in close proximity to its nest (though the popular idea is to the contrary), but exclaims in alarm when its nest is threatened. The most impatient and vehement of the young probably obtained the most food, and consequently they enjoyed the greatest chance of survival. The cries of the young would be in effect call-notes, and as such would be useful to them, and therefore would be retained after they had left the nest, especially in gregarious species, which, in a greater degree than solitary kinds, would develop these notes. In this case we should find gregarious birds garrulous,* and solitary species generally silent, and this is actually the case. Examples of the former kind are the Mallard, Starling, Siskin, Linnet, Goldfinch, and the Great, Blue, Coal, and Long-tailed Titmice; and among the latter are the *Raptors* and *Picidæ* generally, and the Redbreast, Hedge Accentor, and Wren.

The call-note, being more or less the result of imitation, would be influenced by other sounds familiar to the bird; and of these the most pleasant would be those resulting from or

* Gregariousness was probably not induced by garrulity, but by the local distribution of food, or by fear, and as a means to protection against enemies; or possibly, in birds that sleep in company, for the sake of mutual warmth.

associated with the act of feeding or of obtaining food. The sounds produced by eating would probably seem loud to the birds making them, just as with us the noise made by masticating dry toast is more noticeable to the eater of it than to his neighbour at table.

In the course of time persistent sounds might, in consequence of the involuntary or voluntary imitativeness of a bird, modify its call-note, in the same way as they have undoubtedly affected the character of the song of at least one individual wild song-bird, subsequently mentioned. It is also possible that certain call-notes may have been intentionally modified to a resemblance of the sounds made in obtaining food, and for the purpose of suggesting those sounds to other birds;* but often there is certainly, from whatever cause arising, a great similarity between the call-notes of birds, and the sounds which are occasioned by their obtaining food or eating it. Instances of this may be found in the hawks, whose call-notes are screams, like those of their victims; in the Common Butcher-bird, which has a note resembling the distress-cry of the frog, on which it preys; in the Blackbird and Thrush, which at times make a clicking sound that is the foundation of the reiterated alarm-notes of the former bird. This is an imitation of the "clicking" sound produced when a snail is broken against a stone, the snail, as is well known, being a favourite food of these birds, and its shell is generally fractured in this way. The Blackbird, Thrush, and Missel Thrush frequently end their phrases in some bubbling, uncertain, high notes, which are sometimes exactly like the noises made by a bruised snail when retreating into his shell. The Spotted Flycatcher utters short, harsh, grating cries: the crushing of flies or bees and lesser insects between two thin pieces of wood causes somewhat similar sounds. The Swallow's call-note, "clit," reminds one of the breaking of the wing-case of a small beetle. The Sedge Warbler and Blackcap have each a harsh, short note, not unlike the snapping sounds made by their bills in seizing insects. The call-note of the Wren, uttered most frequently during autumn, is closely like the chirp of the common hedge-cricket, an insect that abounds at that season, and is probably

* The behaviour of the barn-door cock, which when calling his hens pretends to be picking food, warrants the suggestion.

eaten by the Wren.* The jarring sound produced by the Night-jar is only the repetition of a single note, a sort of "click" (like the noise of breaking the wing-case of a large beetle), and this note, rapidly repeated, reproduces the "blurring" of the wings of a beetle, as they vibrate against the beak of a bird seizing it in flight. The "tell-tell" cries of the Greenfinch, House Sparrow, and some other finches seem to have been derived, like the "pink, pink" of the Chaffinch, from the sounds made by these birds in cracking cases of hard seeds, such as hemp. The "did-it" cries of the Greenfinch, Chaffinch, Goldfinch, Linnet, Yellow Bunting, and Cirl Bunting may have similarly originated in the noises made in the breaking or moving of food within the beak. Both of these cries—"tell, tell" and "did-it"—are always call-notes, except sometimes in the House Sparrow, when the "tell, tell" is used as an alarm. The hard cry, "clit," of the Hawfinch is distinctly a brittle sound. This bird is a berry-breaker. The notes of the Green Woodpecker are distantly like the sounds produced by the strokes of his bill on dry, hollow wood. The harsh tones of the Rails suggest the crashing of the tender shells of the mollusks upon which they partly subsist. In the song of the Starling are some "whirring" sounds (generally uttered near the beginning of a phrase); which resemble the noise made in pulling a large worm from his hole. The "cup, cup" calls of the common fowl are not unlike the sounds made by it in eating grain, which rattles within the beak of the bird.

Males wishing to attract the females during the season of courtship would make great use of the call-note. Some males would certainly be able to utter this note in louder tones than others, and would possibly on this account be more pleasing to the other sex. It is also possible that in the rivalry between the males various modifications would be introduced, and that those uttering the most pleasing call-notes and variations would be preferred by the females. Of these modifications those that most closely resemble the noises made in eating or obtaining food would very probably have been most pleasing to the females. A male bird having only one note, or character-sound, in his voice

* This is very doubtful, the insect prey of the Wren being much more minute.—ED.

(*e. g.* Mallard, Crow, Tree Creeper) would address his mate in that one note, and, under the influence of sexual ardour, would repeat that note many times in succession. The number of repetitions uttered at one time would probably depend upon the amount of breath expended in uttering each note; thus, if an inspiration were taken for each note, the utterance might be extended, as it is in the case of the Grasshopper Warbler,* but if one breath were employed for several cries the number of these could not be great. Such repetitions would be frequently uttered in the same successive intervals of pitch, in the same way as the cries of our railway porters and street hawkers are gradually regulated to unvarying repetitions.

It may be asked why, if this occurs, do we hear so many birds, like the Crow and Duck, which, having limited voices, utter no defined phrase? The answer is that their general mode of life, or the brevity of their courtship, has been unfavourable to vocal development. It is certain that the young of many song-birds (*e. g.* Lark, Chaffinch, Yellow Bunting, Cirl Bunting, and Greenfinch) develop their first songs and phrases from mere repetitions of their call-notes, as may be observed in autumn or early spring; and the suggestion that the remote progenitors of these birds acquired during the lapse of generations what their descendants can gain in a month, is supported by physiological analogies. The most familiar instance of the construction of a phrase by means of repetitions is found in the common barn-door cock, which, when first attempting to "crow," utters merely an ordinary alarm-cry (which is also the "crow" of the broody hen), and repeats this several times in rapid succession. Improving with practice, he is soon able to blend the notes together, and form the complete "crow."

We now arrive at the consideration of restricted bird-song, which consists of vocal sounds, neither call-notes nor danger-cries, uttered by birds. The first songs seem to have been, as above suggested, arbitrary phrases composed of repetitions of call-notes. The songs of the Nuthatch, Green Woodpecker, Tree Creeper, Bullfinch, and Cirl Bunting (and Ortolan Bunting, so far as I have heard in two individuals), are nothing more than

* Many extended bird-phrases seem to be accompanied by a rapid movement of the lungs similar to that which occurs during human laughter.

such repetitions slightly varied in pitch. The songs of the Chaffinch, Greenfinch, Goldfinch, House Sparrow, Linnet, Blue Titmouse, Great Titmouse, Coal Titmouse, Yellow Bunting, Swallow, and Jackdaw contain little more than such repetitions; and the Starling, Wren, Meadow Pipit, and Sky Lark frequently introduce into their songs their respective call-notes. In the songs of the Grasshopper Warbler, Willow Warbler, Wood Warbler, Redstart, and Nightingale also there are traces of the construction of phrases by repetition of single cries. The arbitrary phrases were probably further developed by the imitativeness of the birds which attempted to reproduce surrounding noises with which they were familiar; and we can find evidence of this modulation in the present songs of many birds. The prevalent long, hooting cries of the *Strigidæ* are like the howls of wolves, and also resemble the moaning and whistling of wind in holes in trees or rocks, the favourite nesting-places of these birds. The shrieking cry of the Swift suggests the "swish" of its wings in swooping, or eager pursuit of its fellows: the Swallow and Martin do not scream, nor have they the pursuing habit of the Swift. The Dipper sings, like his solitary companion, the Wren (Yarrell's 'British Birds,' 4th edit. vol. i. pp. 174—176). The call of the latter, as already stated, resembles the note of the hedge-cricket. The song of the Redbreast seems to be, in its general character, an imitation of the gurgling of water: in summer the bird is very often near water. The "crake" of the Landrail is in time and tone closely like the noise made by the grazing of a cow.* The sibilant phrase of the Wood Warbler reminds us of the frictional sounds made by branches that rub against each other. The Grasshopper Warbler has modified and extended the same phrase to a resemblance of the cry of the field-cricket. The "quack" of the Mallard is like the croak of frogs. Many

* Cattle when grazing protrude the tongue from each side of the mouth alternately, each time round a bunch of grass, which is torn off. A pause then occurs during the act of swallowing, after which the tearing is resumed. The consequence is a sound which may be thus expressed, "rasp rasp—rasp rasp—rasp rasp." Cattle graze more at night than in the daytime; and the Landrail is to a great extent nocturnal, and although the feeding-grounds of cattle are not the nesting-places of this bird, it is frequently within ear-shot of grazing, the sound of which is particularly noticeable at night.

birds reproduce less persistent sounds, which will be subsequently mentioned.*

It seems that certain species never advanced beyond the cry of distress; while others have acquired one or two unvarying, or as we call them, "arbitrary phrases," which are respectively employed under definite circumstances, such as the presence of an enemy or of a bird of the opposite sex. Others, again, may display a voice of great range in pitch, and variety of tone.

The songs of birds are not immediately acquired, but are developed in each individual by practice and cultivation; and the more frequent the practice the more elaborate the song. In autumn the young male Sky Larks, Thrushes, and Blackbirds begin to sing; and their first efforts result in objectless variations of tone, which, however, soon betoken traces of imitation. Their songs are generally lost during winter, but are regained, and with increased power, at the approach of spring.

Among birds, as among men, leisure is necessary to the development of song, and may to some extent induce it. The cause of the frequent imitativeness of captive birds† may perhaps be found in their security and idleness. It is not contended that leisure would make a bird of harsh voice musical; but none will dispute that if a song-bird be constantly harassed it will not sing. The constant employment of the brain in detecting and avoiding danger, or in the occupation of getting food, hinders any tendency to develop song. It is possible that want of leisure, and a feeling of insecurity, may have prevented the elaboration of song amongst birds of torrid regions, where they are continually pursued by enemies, engaged in battle among themselves, or are labouring to obtain food, and where their increase is checked by violence rather than by the climatic influences that in temperate zones periodically lessen their numbers. If the suggestion that leisure is necessary to song be correct, we should find limited voices in birds that are much occupied either in obtaining food or avoiding enemies. Such is the fact. Of the former class are the *Raptores* and *Picidæ*, of the latter the *Rasores*. The *Anatidæ* may belong to both.

* The Squirrel and the Snake reproduce in their respective alarm-cries the sounds made by these animals during rapid retreat; the former making a snapping and swishing noise, and the latter a hissing, rustling sound.

† This paper does not otherwise refer to the notes of birds in captivity.

It is to be observed that, besides leisure, meditation is necessary to song, and that lethargy militates against the development of the voice. Birds whose food is precarious (*e. g.* the *Raptors* and *Colymbidæ*) are generally either hungry or gorged, and consequently vigilant or lethargic; hence they have but little inclination to vocal exercise. It is probable that characteristic peculiarities of movement during song (such as flight, which seems to be, then, an exaggeration of the fluttering of the wings that is frequently a call-action in young, and sometimes in adult birds) have been developed contemporaneously with variations in the voice.

Certain birds (*e. g.* the Redbreast, Wren, Accentor, Blackbird, and Blackcap) imitated mellow tones, and intervals of pitch, rather than other characters of sounds; and the music thus reproduced might have been heard in the murmurs of streams, or in other naturally or artificially produced noises. It also appears that intervals of pitch in human music are sometimes imitated and clearly reproduced by birds. I have recorded a great number of such instances. At Stroud the Thrushes often utter a phrase which I have heard for nearly twenty years whistled, as a call, by the boys of that neighbourhood. At Frocester, in Gloucestershire, near the church, I have heard at least two Blackbirds and two Thrushes sing, fairly correctly, two distinct musical phrases. In the construction of arbitrary phrases combativeness may have had some influence, for certain parts of the songs of the Greenfinch, Goldfinch, and Starling are never sung to the female, but are uttered defiantly. The same ardour which has induced the development of the arbitrary phrase has caused its variation. In this, as in the production of many arbitrary phrases, variation has been guided by imitation; but not invariably so, for some individual birds (*e. g.* Greenfinches, Chaffinches, and Wrens) vary the pitch and the number and quality of the "character-sounds" in their phrases in a way that suggests no attempt at mimicry. On the other hand, certain birds (*e. g.* the Blackbird, Missel Thrush, and Redstart) continue their songs, after the utterance of ordinary or arbitrary phrases, in imitations. The Blackcap often sings in this way, but is noticeable as sometimes precluding its mellow phrases with softer imitations.

Many birds reproduce in song the notes of others. So far as

I know, the best British mimics are the Sedge Warbler, Starling, Thrush, Sky Lark, Redbreast, Blackbird, Missel Thrush, Blackcap, Redstart, Whitethroat, and Nightingale; the better mimics being here mentioned first. I have not heard the song of the Wood Lark. The mimicry is not immediately acquired, but is the result of practice. The first autumnal songs of the Starling and Redbreast, heard in August, are scarcely imitative, for the birds have then been silent for a time, and have forgotten most of their imitations. The Starling sings well in autumn, but is most imitative and vehement in spring. In autumn young Thrushes and Blackbirds practise *sotto voce* imitations of the songs of other birds; but these imitations are lost in winter, and are slowly resumed during spring; consequently the summer songs of these birds are richer in imitations than are those uttered in early spring. It is natural that birds should imitate only those notes that are frequently heard in their haunts; and their songs are, in fact, in a great measure restricted to such sounds. At Weston-super-Mare the Thrushes imitate frequently the cry of the Dunlin, a common and noisy bird there; and in April, 1889, a Thrush that lived in a shrubbery close to the beach uttered little more than this cry, which he varied so often that I at first mistook his song for the notes of a flock of Dunlins, but was undeceived when I saw the singer at the distance of only a few yards. A similar cry was uttered by Thrushes near Clifton Bridge. At Stroud these birds sometimes utter a note like that of the Dunlin, but also like that of the female and young of the Tawny Owl; and the utterance is induced, as I believe, by the cries of the latter birds, for Dunlins are never found near Stroud, where this Owl is common. The Thrushes at this town are very partial to a cry which has been named "be quick," and this they insensibly blend into imitations of the cry "tewit" of the Nuthatch, from which it was probably derived. The first spring or winter songs of the Thrushes at Stroud are little more than repetitions of this exclamation. The songs of the Starling and Sky Lark also betray the influence of the respective surroundings of individual birds. I have tabulated some of my records of the imitations sung by a few of the best mimics. These tabulated records of each species were made within the space of a year, and they include in the aggregate about 3000 phrases. In all my records, immediately consecutive repetitions

of a note were counted as one phrase. I have a large number of untabulated records of bird-song, made in several districts, including Gloucester, Clifton, Bournemouth, Malmesbury, Cirencester, Bath, Weston-super-Mare, and Stroud, and from them my inferences have been principally deduced. The tables relate only to songs heard within eight miles of Stroud, including an area of much geographical diversity. The tables are far too bulky for insertion in these pages, and only a few extracts from them need now be produced. They show that the Thrushes (about fifty) sang 1120 phrases, each of which comprised one or more notes resembling the sounds made by other species, and 450 other phrases that had not a like recognisable similarity.

The following table shows the numbers of the phrases in which the six subjects most frequently imitated were mimicked by, and by how many of, these Thrushes:—

Bird imitated.	Phrases including imitation.	Number of imitative Thrushes.
Nuthatch* ...	136	37
Wood Warbler ...	133	37
House Sparrow ...	103	36
Blackbird's alarm ...	78	31
Blue Tit ...	57	24
Great Tit ...	47	24

The Redbreasts (about sixty-five) sang 1316 tabulated phrases, 905 of which were recognised as containing an imitation. The following table shows the same particulars as those contained in that above given:—

Bird imitated.	Phrases including imitation.	Number of imitative Redbreasts.
Blackbird ...	132	47
Coal Tit ...	89	44
Accentor ...	75	42
Greenfinch ...	79	39
Lark ...	99	36
Blackcap ...	57	23

The Larks (about thirty-one) sang 345 imitations, the most frequent of which may be set out as follows:—

* The tables do not record a sufficient number of imitations of notes of the Nuthatch. In early spring I often passed, as not worth notice, Thrushes whose notes then consisted almost entirely of modifications of the cries of this bird.

Bird imitated.	Number of imitations.	Number of imitative Larks.
Cirl Bunting, or Yellow Bunting	53	31
Swallow	30	21
Meadow Pipit	29	19
Blackbird's alarm	21	15
House Sparrow	23	14
Peewit	21	13

The Starlings (eighteen) sang 275 imitations, which were related principally to the subjects, and in the proportion set out in the following table:—

Bird imitated.	Number of imitations.	Number of imitative Starlings.
House Sparrow	36	14
Greenfinch	22	10
Yellow Bunting's or Cirl Bunting's } song	15	10
Partridge	29	9
Green Woodpecker	16	9
Jackdaw	22	8

Nine Sedge Warblers sang altogether 281 imitations, a few of which are contained in the next table. The birds were heard near human habitations:—

Bird imitated.	Number of imitations.	Number of imitative Sedge-birds.
House Sparrow	42	9
Chaffinch	24	8
Starling	20	8
Blackbird's alarm	19	7
Wagtail's cry	18	6
Swallow	21	5

The total number of different imitations sung by the Thrush seems to be about forty, while the Redbreast, Sky Lark, Starling, and Sedge Warbler have thirty each.

The more imitative song-birds appear to be readily influenced by changes in the more persistent sounds that are frequent around them. I give here an extract from one of my tables, showing the changes induced in the song of the Redbreast by the songs of some of the summer visitors to Britain:—

FROM SEPT. 1887, TO 1ST APRIL, 1888.

Number of Redbreasts . . . 50
 Total of phrases . . . 890

FROM 1ST APRIL, 1888, TO AUGUST, 1888.

Number of Redbreasts . . . 16
 Total of phrases . . . 426

Birds imitated.	Percentage of imitations in total of phrases.	Percentage of imitations in total of phrases.	Amount of change per cent.
Chaffinch* ...	4	1.1	2.9 decrease.
Lark ...	7.9	5.3	2.6 ,,
Accentor ...	6	4.9	1.1 ,,
Wood Warbler ...	2.9	4.9	2 increase.
Blackcap ...	3.3	6.3	3 ,,
Willow Warbler...	.6	5.8	5.2 ,,

In comparing the phrases of the Thrush heard in the first months of the year with those heard in May and June, a change of song, similar to that shown in the first table is noticed; and we find that in the latter period the Blackbird's alarm is, proportionately with the other imitations, much less often uttered; while the reproduced notes of the Cuckoo, Wood Warbler, and Butcher-bird (or Wryneck†) then become much more frequent. In order to avoid a possible wish to discover certain notes in the songs of birds, that might have biased my judgment, I did not until a few months since make any numerical calculation about my records.

In recording imitations I used phonography, in which the names of birds imitated were at once written, and often the names also of some of their cries, such as the House Sparrow's "tell-tell" or "philip," or the Warblers' "tewy," which, like many other notes, are invariable and easily recognised. Some imitations are more easily recognised than others, either on account of the character of the voice of the singer or that of the note reproduced. Full voices cannot easily produce harsh notes; and the cries of certain widely distinct species are so much alike as to defy accurate recognition when mimicked. On the other hand, a small percentage of the imitations recorded by me were exact reproductions.

Birds that sing long imitative phrases (*e.g.* Starling, Sky Lark, Sedge Warbler) often utter in one phrase a succession

* "Chaffinch" here denotes all the cries of the Chaffinch, most of which are uttered during winter.

† The call-notes of the Butcher-bird and Wryneck are similar.

of different imitations. This habit has not been accounted for in my tables, and therefore the actual proportions of imitative to unimitative phrases were less than those stated. Some of the imitations were particularly interesting. I have heard Starlings reproduce the sounds made by the woodman's axe; and in two instances the singer paused between each of these imitations, as if to attain correctness of mimicry in point of time as well as in tone. This was the more noticeable since the Starling rarely pauses in the utterance of a phrase. A Sedge Warbler singing at ten o'clock at night reproduced exactly the fast-fading cries of a Chaffinch flying away. This warbler then repeated in succession all the vehement alarm-cries which announce the arrival of a hawk, and continued his song with the single "tell" cries with which the male House Sparrow, watching as a sentinel, warns his neighbourhood that the hawk is very near. Then these sounds ceased. Suddenly the usual song of the Sedge Warbler was resumed. The song of this bird was, in any event, evidence of his acute memory; but might it not have been an intentional picture, in sound, of an incident of bird-life? I submit that there are grounds for supposing the latter view to be correct; and if it should be so, may not all bird-song be to a variable extent intended to suggest pleasing impressions of surroundings to the objects of the song? Human songs are full of suggestions of surroundings, in which the sounds uttered by creatures are often imitated in the names of those creatures; and in the songs of birds we find an analogous reproduction of the notes of surrounding animals. May not the purpose of this mimicry be in both cases the same?

CONCLUSION.—From this paper, the following conclusions may be drawn:—Bird-song originated in a cry produced by bodily contortion. This cry was developed by use in times of danger. It then became a warning-note that was elaborated into a call-note. This note was repeated by males in varied tone and pitch; and several influences tended to make it a reproduction of surrounding persistent sounds. The call-notes were repeated by the males to the females; and in this manner arbitrary phrases were constructed. Further efforts on the part of the males induced greater variety, which took the form of imitation of other sounds.

A CATALOGUE OF LOCAL LISTS OF BRITISH BIRDS.

BY MILLER CHRISTY.

LISTS of the Wild Birds frequenting particular counties or districts are now generally acknowledged to be of considerable value as contributions towards a complete knowledge of the Birds of Great Britain and Ireland. These lists have now become so numerous that it is time some attempt were made to compile a systematic catalogue or bibliography of them, especially as many of them are difficult of access, through their having been published either in the Transactions or Journals of local Societies, or in pamphlet form, or are almost unknown, because hidden away in County Histories, local Topographies or Guide-books. The following is, I believe, a first attempt in this direction; and, as such, it is necessarily far from complete. I trust, however, that it will be found to contain the more important local lists, and in any case it will serve as a basis on which to erect a more satisfactory structure.

With scarcely an exception, I have excluded all volumes or articles which do not aim at giving a *tolerably complete list* of the Birds inhabiting the districts of which they treat. Mere notes or observations on a few species only are, therefore, entirely omitted, even although they may be purely local. Similarly, I have not thought it needful to include any general works on the Birds of Great Britain and Ireland as a whole, though those on the Birds of England only, or on those of Scotland, Wales or Ireland only, have, of course, been inserted, because they may be fairly regarded as "local."

In every case, the titles of the volumes or articles entered in my bibliography have been taken by me direct from the works themselves, and have not been obtained second-hand, except in those few instances in which I clearly state that I have not myself seen the works in question.

I must apologize for a slight want of uniformity in the arrangement and wording of the details of the various entries, which is due to their having been noted down at many different times and places, as I happened to come upon the works in question. I believe, however, it will be found that the information given is sufficient for all practical purposes.

The system on which I have worked may require a few words of explanation. The titles of the works catalogued are arranged chronologically under counties, the latter being divided under England, Scotland, Wales and Ireland. The details are entered in the following order:—Surname of author, Christian name (in parentheses), as much of the title as is necessary for identification, the name of the magazine or volume in which the article or list in question appeared (if not separately published), place of publication, shape, and date, followed in many cases by a few brief remarks on the work catalogued. The date of publication has, contrary to custom, been placed after the size and shape, for convenience of reference. In the case of magazine articles or of lists which form portions only of larger works, the title of the magazine or work of which they form part has been given *in italics*, for the sake of distinction.

The catalogue will, of course, indicate at a glance those counties whose avi-fauna has received most attention; but it may be as well to point out those which have received least, and which, therefore, chiefly require that some local observer should undertake the work of setting forth the main peculiarities of their avi-fauna. Taking England first, the list shows that not a single contribution has yet (so far as I know) appeared in relation to the counties of Monmouth or Warwick, which are, therefore, obviously in want of some attention from local ornithologists. The following counties, though they have not altogether escaped attention, have had their ornithological features most inadequately treated:—Bedfordshire, Cheshire, Derbyshire, Huntingdonshire, and Surrey; while Hampshire, Hertfordshire, Lincolnshire, Staffordshire, and Westmoreland, without being quite so badly off, still stand in need of more attention than they have yet received. Turning to Scotland, one may note that the birds of many districts have been very carefully studied by several different observers, while Gray's *Birds of the West of Scotland*, the works of Messrs. Harvie Brown, Buckley, and of some others, are models of their kind. Nevertheless, there are comparatively few Scotch counties which have received the attention in the way of separate and often bulky works on their birds which many English counties have received, and a good deal of local work still remains to be done. The twelve Welsh counties have scarcely received any attention at all, only two having been anything like adequately treated,

namely, Breconshire and Pembrokeshire. Ireland as a whole has been thoroughly treated in Thompson's well-known work, there being in addition several good lists of Irish birds; but in the way of local lists, very little indeed has as yet appeared, there not being a single county which has had its birds described in a separate volume entirely devoted to the subject, as in the case of many English and some Scotch counties. It appears, therefore, that there still remains much to be done, especially in Wales and Ireland, before we can claim to have anything like a complete and detailed knowledge of the distribution of the Birds of the British Islands.

As I have doubtless overlooked some local lists which should have been included, I shall feel much obliged to readers who will call my attention to such omissions, as it is intended to strike off separate copies of the list, and the type will be kept standing for one month in order to include additions and corrections in the reprint.

I have to acknowledge the kind assistance which I have received during the compilation of this list from Mr. J. H. Gurney, and Mr. J. E. Harting, who rendered me valuable help while the catalogue was in the press.

ENGLAND.

BEDFORDSHIRE.

Miller (S. H.) and Skertchley (S. B. J.)—Birds of the Fen-land. *The Fen-land: Past and Present*, pp. 362-388. London, 8vo, 1878. (Enumerates 244 species.)

BERKSHIRE.

Kennedy (A. W. M. Clark)—The Birds of Berkshire and Buckinghamshire. Eton and London, 8vo, 1868. (Enumerates 225 species.)

Lamb (Dr. T.)—Ornithologia Bercheria. *Zoologist*, 3rd series, vol. iv., pp. 313-325. London, 8vo, 1880. (Prepared about 1814 for the *Trans. Linn. Soc.*, but not published by the Society.)

BUCKINGHAMSHIRE.

Kennedy (A. W. M. Clark)—The Birds of Berkshire and Buckinghamshire. Eton and London, 8vo, 1868. (Enumerates 225 species.)

CAMBRIDGESHIRE.

Jenyns [afterwards Blomefield] (Rev. Leonard)—Observations on the Ornithology of Cambridgeshire. *Trans. Camb. Philos. Soc.*, vol. ii., pp. 287-324. Cambridge, 4to, 1827. (An admirable list, enumerating 158 species.)

Jenyns [afterwards **Blomefield**] (**REV. LEONARD**)—The Ornithology of Cambridgeshire. *The Naturalist* (Neville Wood's), vol. iii., p. 89. London, 4to, 1838.

———The Fauna of Cambridgeshire. London? 8vo, 1846. (Not seen.)

Miller (S. H.) and **Skertchley (S. B. J.)**—Birds of the Fen-land. *The Fen-land: Past and Present*, pp. 362-388. London, 8vo, 1878. (Enumerates 244 species.)

CHANNEL ISLANDS.

Ansted (D. T.) and **Latham (R. G.)**—The Channel Islands. London, 8vo, 1862. (Enumerates 198 species; a second edition appeared in 1865.)

Smith (Cecil)—The Birds of Guernsey and the Neighbouring Islands, [&c.] London, 8vo, 1879. (Enumerates 176 species.)

CHESHIRE.

Leigh (Chas., M.D.)—The Natural History of Lancashire, Cheshire, and The Peak in Derbyshire [&c.]. Oxford, fol., 1700.

Brockholes (J. F.)—On Birds observed in Whirral, Cheshire. *Proc. Chester Soc. Nat. Sci.*, No. 1, 16 pp. Chester, 8vo, 1874. (Enumerates 168 species.)

CORNWALL.

Borlase (Rev. Wm., F.R.S.)—The Natural History of Cornwall, [&c.] Oxford, fol., 1758.

[**Anon.**]—A List of the Quadrupeds, Birds and Fish of the Counties of Cornwall and Devon. *The Monthly Magazine*, vol. xxvi., pp. 433 and 527. London, 8vo, 1808.

Couch (J.)—A Cornish Fauna: Being a Compendium of the Natural History of the County, [&c.]. Truro, 8vo, 1838. (2nd edition, Truro, 8vo, 1878.)

Cocks (W.P.)—Contributions to the Fauna of Falmouth. *The Naturalist* (Morris's), vol. i., pp. 37, 63, &c. London, 8vo, 1851.

Rodd (Ed. Hearle)—A List of British Birds, as a Guide to the Ornithology of Cornwall, especially in the Land's End District. London and Penzance, 8vo, 1864. (Second edition in 1869.)

Bullmore (W. K., M.D.)—Cornish Fauna: a Short Account of all the Animals found in the County, (Birds, pp. 7-45.) Truro, 8vo, 1867.

Hill (F. V.)—Catalogue of Birds observed in the Lizard District. In Rev. C. A. Johns' *Week at the Lizard*, pp. 257-266. London, 8vo, 1874. (A previous edition in 1848.)

Rodd (Edward Hearle)—The Birds of Cornwall and the Scilly Islands. Edited, with an Introduction, by J. E. Harting. London, 8vo, 1880. (Enumerates 290 species.)

CUMBERLAND.

Heysham (Dr. John)—List of Cumberland Birds. In Hutchinson's *History of Cumberland*, vol. i., pp. 4-23. Carlisle, 4to, 1794. (Enumerates 169 species.)

Stanley (J., M.D.)—Birds in the Neighbourhood of Whitehaven, Cumberland. *Loudon's Mag. Nat. Hist.*, vol. ii., pp. 275-276, and vol. iii., pp. 171-172. London, 8vo, 1829-1830. (Not of much importance.)

Macpherson (REV. H. A.) and Duckworth (W.)—The Birds of Cumberland, including notes on the Birds of Westmoreland. London and Carlisle, 8vo, 1885. (Enumerates 250 species; see additions in *Zoologist*, 3rd series, vol. xii., p. 328, 1888)

DERBYSHIRE.

Leigh (Chas., M.D.)—The Natural History of Lancashire, Cheshire and the Peak in Derbyshire, [&c.]. Oxford, fol, 1700.

DEVONSHIRE.

[**Anon.**]—A List of the Quadrupeds, Birds and Fish of the Counties of Cornwall and Devon. *The Monthly Magazine*, vol. xxvi., pp. 443 and 527. London, 8vo, 1808.

Turton (W.) and Kingston (J. F.)—Natural History of the District of Teignmouth. Birds, 34 pp., unpagged. Teignmouth, 12mo, n.d. (c. 1810).

Moore (Ed., M.D.)—On the Ornithology of the South of Devon. *Trans. Plymouth Institution*, pp. 289-352. Plymouth, 8vo, 1830. (Enumerates 232 species.)

———The Birds of Devonshire. *Mag. Nat. Hist.*, n.s. vol. i., pp. 113, &c. London, 8vo, 1837.

Bellamy (J. C.)—The Natural History of South Devon. Plymouth and London, 8vo, 1839. (Enumerates 247 species.)

Rowe (J.)—A Perambulation of Dartmoor. Plymouth, 8vo, 1848. (Ornithology occupies pp. 227-234.)

Rowe (J. Brooking)—A Catalogue of the Mammals, Birds, Reptiles, and Amphibians of Devon. London and Plymouth, 8vo, 1863. (Enumerates 268 species; birds occupy pp. 13-46.)

Chanter (John R.)—A History of Lundy Island. Birds, pp. 48-53. Exeter, 8vo, 1871. (Reprinted from *Trans. Devon. Assoc. Sci. Lit. & Art*, 1871; enumerates 137 species.)

D'Urban (W.S.M.)—A Sketch of the Natural History of South Devon [including a list of Birds]. *The Handbook of Exeter*, App., pp. xxvii-xxxvi. Exeter, 8vo, 1875. (Enumerates 276 species.)

———The Birds of Devonshire. (In preparation.)

Parfitt (E.)—The Fauna of Devon. Part xiv. Birds. *Trans. Devon. Assoc. Sci. Lit. & Art*, 1876, pp. 245-310. Exeter, 8vo, 1876.

Pidsley (W. E. H.)—The Birds of Devonshire. (In the press.)

DORSETSHIRE.

Pulteney (Richd., M.D., F.R.S.)—Catalogues of the Birds, Shells, and some of the more rare Plants of Dorsetshire, from the new and enlarged edition of Mr. Hutchins's *History* of that County. London, folio, 1779. (Birds occupy pp. 1-22; an enlarged edition in 1813).

Dale (J. C.)—Catalogue of the Mammalia, Birds, Reptiles, and Amphibians found in Dorsetshire. *The Naturalist* (Neville Wood's), vol. ii., pp. 171-183. London, 8vo, 1837.

Mansel-Pleydell (J. C.)—List of the Rarer Birds of the County [of Dorsetshire]. In Hutchins's *History and Antiquities of the County of Dorset*, [&c., &c.], 3rd ed., vol. i., pp. cxv.-cxxx. Westminster, fol., 1861-74. (An extensive and considerable list.)

Harting (J. E.)—Birds breeding on the Dorsetshire Coast. *Zoologist*, vol. xxiii, pp. 9665-9678. London, 8vo, 1865.

Mansel-Pleydell (J. C.)—Ornithology and Conchology of the County of Dorset. London and Blandford, 8vo, 1873. (Ornithology occupies pp. 1-58.)

Dale (C. W.)—The History of Glanville's Wootton in the County of Dorset, including its Geology and Botany. London, 8vo, 1878. (Contains a List of Birds, which enumerates 92 species.)

Mansel-Pleydell (J. C.)—The Birds of Dorset, with Illustrations by G. E. Lodge. London, 8vo, 1888.

DURHAM.

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MEMOIR OF THE LATE W. S. DALLAS, F.L.S.

THE news of the unexpected death of William Sweetland Dallas has caused a pang of wide-spread regret far beyond the pale of the Society in which he was best known, and in which, for two-and-twenty years, he ably discharged the duties of Assistant Secretary. Not only has the Geological Society lost the valued services of one whom it will be very difficult to replace, but very many workers in Zoology as well as Geology who have been accustomed to seek his aid and advice, will feel that in him they have lost a good friend. His attainments were of no mean order. His knowledge of modern languages was considerable, and his acquaintance with the general literature of the subjects to which he was especially devoted, coupled with the experience which he had acquired as Editor of two important periodicals, caused him to be regarded with respect and esteem by all who knew him.

Mr. Dallas had not yet reached the allotted age of three-score-years-and-ten when death overtook him. He was born in 1824, and was the youngest son of Mr. William Dallas, of Lloyd's, who died in 1836. Educated at University College School, he evinced from the first a taste for Natural History, and spent much of his early life in the Insect Room of the British Museum, where he received much encouragement in his studies from the late Dr. J. E. Gray, who was then the Keeper of the Zoological Department. Entomology was his favourite science, and his zeal in pursuit of it may be judged from the fact that he took the trouble, when a young man, to transcribe the whole of the 'Entomologia Systematica' of Fabricius (a work in four vols. of between two and three thousand octavo pages), to which he added a coloured figure of the type-species in each genus, either from nature or from some approved authority.

So early as 1847 he began to contribute papers to the 'Transactions of the Entomological Society of London,' and in 1851 commenced the preparation of a 'List of the Hemipterous Insects in the Collection of the British Museum,' which he completed the following year. In 1854-55, he published in Orr's 'Circle of the Sciences' a series of articles on the habits, structure, and classification of animals, which he afterwards

collected in one volume entitled 'A Natural History of the Animal Kingdom,' and published in 1856.

His 'Elements of Entomology,' published by Van Voorst in 1857, an octavo volume of more than 400 pages, was a work of considerable utility at the date of its appearance, and showed how untiring was the author's zeal in pursuit of his hobby.

As a translator he was equally industrious, and English zoologists are indebted to him for the following useful translations:—Von Siebold's work on 'Parthenogenesis in Moths and Bees,' 1857; vol. v. of Humboldt's 'Cosmos,' for Bohn's Scientific Series, 1858; Nitzsch's 'Pterylography,' for the Ray Society, 1867; Fritz Müller's 'Facts and Arguments for Darwin,' 1869; Prof. Heer's 'Primeval World of Switzerland,' 1876; and Buchner's 'Man, Past and Present.' In addition, he translated numerous foreign articles for the 'Annals and Magazine of Natural History,' the 'Chemical Gazette,' 'Philosophical Magazine,' and other periodicals, to which he also occasionally found time to contribute original papers of his own.

His early work at the British Museum helped to qualify him for the Curatorship of the Yorkshire Philosophical Society's Museum, in York, to which post he was appointed in 1858, on the resignation of Mr. Edward Charlesworth. Here he remained until 1868, when, on the retirement of Mr. H. M. Jenkins, he succeeded him as Assistant Secretary and Librarian to the Geological Society of London, a position which he held with great credit to himself and advantage to the Society until his death. From the date of his appointment he appeared to work harder than ever, having to edit the Quarterly Journal of the Geological Society, and his leisure hours, after the official work of the day was ended, were fully occupied. Between the years 1877 and 1883, he materially assisted Prof. Martin Duncan in editing Cassell's 'Natural History' (six vols. 4to), to which he contributed the articles Chiroptera, Insectivora, Rodentia, Hymenoptera, Neuroptera, Diptera, Aphaniptera, Rhynchota, Orthoptera, Thysanura, Myriopoda, and Arachnida. He was one of the Editors of the 'Annals and Magazine of Natural History' from 1868 to 1890, and from 1877 to 1880 edited the 'Popular Science Review.'

He was elected a Fellow of the Linnean Society in 1849, and for a long time took an active interest in its proceedings, serving

on the Council, and on the Library Committee, attending the meetings, and taking part in the discussions. But of late signs were not wanting of a lack of the old energy. Premonitory symptoms of paralysis unfortunately appeared, and fatally brought to a close, on the 28th May last, a long and most useful scientific career.

Mr. Dallas married, in 1850, a daughter of Mr. Liscombe Price, of Abergavenny, by whom he has left two daughters and four sons, one of whom is worthily following in his father's footsteps as a naturalist in the Albert Memorial Museum at Exeter.

NOTES AND QUERIES.

BIRDS.

Erroneous Record of the Gull-billed Tern in Ireland.—Mr. Robert Patterson, of Belfast, has forwarded for my inspection an immature specimen of the Arctic Tern, *Sterna macrura*, Naum., which is, as he informs me, the identical bird which was recorded by Prof. Cunningham as a Gull-billed Tern (*S. anglica*, Mont.), in 'The Zoologist' for 1887, p. 433. Inasmuch as, trusting to Prof. Cunningham's determination, I inserted this record in my 'Manual of British Birds,' p. 623, I shall be obliged by the publication of this correction.—HOWARD SAUNDERS.

Nesting Habits of the Sky Lark.—Though I cannot profess to offer a complete answer to Mr. Laws' inquiries (Zool. 223), yet a few observations of mine may perhaps throw some light on the subject. I have from time to time found some dozen nests of the Sky Lark, and yet in no case have I seen five eggs, four being the most usual number, and three quite common. Probably with the Sky Lark, as well as with other birds, the number of eggs varies slightly according to locality and season. The period of incubation may very well be shorter than is generally supposed, and the matter is worth looking into. Most small birds sit for about a fortnight, but, from a large number of observations, I am convinced that the Chaffinch for one only broods for eleven days, and it may well be that the period in the case of others is equally short. The Thrush and Blackbird, I find, incubate for exactly fourteen days. Other instances, also, of variation in number may be quoted. Yarrell, Seebohm, and all other writers on Ornithology whom I have consulted, give the Yellow Bunting credit for laying five eggs; but certainly in the Co. Wicklow, where my experience mostly lies, it does not. Probably I have examined hundreds of Yellow-

hammers' nests in different years, and yet I have only once seen a nest containing five eggs; very rarely have I seen clutches of four, three being usual, and two quite as common. The same writers assign five as the usual number of eggs for the Chaffinch. Seebohm says four to six. Now in Wicklow the Chaffinch very rarely lays five eggs; four is the usual clutch, and three often occurs, and there is generally but one brood. The Chaffinch and Yellowhammer are perhaps our two commonest birds; conditions must therefore be very favourable for their increase. In such specially favourable districts it may possibly be that Nature maintains the balance by diminishing the number of eggs. It would certainly be absurd to suppose that the best writers have all erred on a simple matter of field observation. On a point such as the duration of the period of incubation, it is quite possible that good authorities may fall into mistakes by copying the mis-statements of their forerunners, as it requires repeated and tedious observations before any certain conclusion can be independently arrived at in this matter.—ALLAN ELLISON (Trinity College, Dublin).

Nesting Habits of the Sky Lark.—The communication under this heading, in 'The Zoologist' for June, was of considerable interest to me, as I had a similar experience in the spring of 1889. I was then in a district of Peeblesshire where Sky Larks are numerous, and had an opportunity of examining a good many of their nests—eight or nine in all. Like your correspondent Mr. Laws, I always considered five to be the normal number of eggs laid by the Sky Lark, and was therefore somewhat surprised to find three eggs only in each of the nests that came under my notice. In order to test whether three was to be the full complement of eggs laid at that time, I marked a few of the nests, and visited them occasionally until the young were hatched out, and in no case were any additional eggs laid. In the same district, in previous years, four or five eggs were usually to be found in the nests, and I could find no reason for the difference in the number laid in the season referred to. I hope some one else may be able to give an explanation.—T. G. LAIDLAW (9, South St. Andrew Street, Edinburgh).

Cirl Bunting nesting near Brecon.—On June 4th I took a Cirl Bunting's nest and four eggs on a hill-side close to Brecon. I had a good view of the female sitting on the nest, on three separate occasions, and was able to identify her positively as a Cirl Bunting. The nest was in a gorse bush, about a foot from the ground, and the eggs are handsomely and boldly marked with nearly black streaks on a greenish white ground. I was desirous of obtaining one of the birds to add to the interest attached to the eggs, and succeeded in shooting a male Cirl Bunting a few days later near the site of the nest. Having become acquainted with the song of this bird, I have been able to identify another male of this species near the same place. It seems to me its song is so like that of the Lesser White-

throat that it might be easily overlooked. The fact of the nesting of the Cirl Bunting in Wales has not, I believe, been before recorded, therefore these particulars may be of interest.—E. A. SWAINSON (Woodlands, Brecon).

Hermaphrodite Finch.—At a recent meeting of the Royal Academy of Sciences, Amsterdam, Herr Max Weber exhibited a hermaphrodite Chaffinch, *Fringilla caelebs*, which had been caught in the neighbourhood of Amsterdam. The right side of the bird had the plumage of the adult male, the left side that of the adult female, and this striking difference in the external coloration of the two sides was found to correspond with the internal structure, there being an ovary on the female side and a testis on that of the male; thus illustrating the dependence of sexual colouring upon the nature of the sexual gland.—J. E. HARTING.

Wood Wren in Co. Wicklow.—On May 31st, when in company with Mr. A. Friel and Mr. Anton (Lord Powerscourt's head keeper), I had the pleasure of seeing and hearing this little bird. We found it in the deer-park, Powerscourt, very near the spot where two years ago Mr. Anton, at my request, shot the specimen now in the Dublin Museum. On June 5th I heard two other Wood Wrens singing in Derrybawn Wood, near the Seven Churches. These are the only instances I know of its occurrence in Ireland lately. Mr. Allan Ellison and Mr. J. Johnston are indefatigable in their quest of birds in Co. Wicklow, and Mr. Patten in preserving any specimens obtained. A number of young and ardent ornithologists are now investigating the avifauna of this county, where Mr. R. M. Barrington has laboured so long and so successfully.—CHARLES W. BENSON (Elm Park, Ranelagh, Dublin).

Wood Wren in Co. Mayo.—I have just received from Mr. Richard Widdicombe, Lightkeeper at Blackrock, Co. Mayo, a Wood Wren, shot there on May 27th. Blackrock is situated about six miles N.W. of Achill Head, and is a small island, with very scanty vegetation, over which the spray dashes in stormy weather. This is the first occurrence which has been reported of the Wood Wren on migration at any Irish lighthouse, and extends the range of this very rare visitor to the extreme west.—RICHARD M. BARRINGTON (Fassaroe, Bray).

Note on the American Killdeer Plover shot at Christchurch, Hants.—The late Mr. Wise, in his 'History of the New Forest,' has stated that a Killdeer Plover, *Ægialitis vocifera*, was shot at Knapp Mills, Christchurch, in April, 1859. Mr. Howard Saunders, in his 'Illustrated Manual of British Birds' (p. 529), by some occult reasoning, doubts the accuracy of this statement, and gives the date April, 1857. Had he made proper enquiry, however, he would have found not only that Tom Dowden (not "Dowding," as printed by Mr. Wise) killed the bird at the place

stated, but also that there were witnesses to the fact. Dowden and three other keepers were fishing the weir pool, when the bird in question attracted their attention. Dowden pushed across to the Fish-House for his gun, and shot it from that place. No one here could name the bird, although it was shown to many persons, and private libraries were searched in vain for some figure or description. Owing, however, to the interest taken in the matter by the late Earl of Malmesbury, it was ultimately correctly identified. It was purchased at the time by Mr. Tanner, who rented part of the water here, and who had every opportunity to hear from the keepers the facts of the occurrence. In January, 1884, Mr. Saunders wrote me, "About the Killdeer Plover I have no personal doubt whatever but that it was a genuine Hants-killed specimen, but the chain of evidence was not sufficiently perfect to justify its insertion in the British list." This was of the least importance, whether a single straggler to this country should be included in this list. I could have sent Mr. Saunders a letter that would have removed any doubt, had I known sooner that such existed in his mind. I have sought out all the persons now living who either saw the bird (as I did) in the flesh, or who could have given evidence respecting its capture; but not one single enquiry at any time has been made of them, thus placing at its true value Mr. Saunders' "later investigation." His reflection upon those chiefly concerned, in a matter of local history, I cannot let pass without a protest, considering that no author should publish a statement without being able to produce some evidence to substantiate it.—EDWARD HART (Christchurch, Hants).

[As we understand the case, Mr. Saunders abstained from endorsing the statement that the bird in question was killed near Christchurch, being unable to produce evidence to substantiate it, although, as Mr. Hart now remarks, a little further enquiry might have elicited all the facts. This is not the only instance in which this American Plover has occurred in England. A second specimen was procured by Mr. Jenkinson, as our readers may recollect, at Trescoe, in the Scilly Islands, in January, 1885. See 'Zoologist,' 1885, p. 113.—ED.]

Ornithological Notes from Mayo and Sligo.—As usual the Sandwich Terns, *Sterna cantiaca*, were the first of our summer visitors to arrive. One was observed on March 15th, but the main flight were not seen until the 24th and 25th of that month. These birds, I am glad to say, are steadily increasing in numbers, owing to their breeding-ground on Rath-rooyeen Lough being strictly preserved by the owner, Sir C. Knox-Gore, who does not allow them to be disturbed by visitors, or any eggs taken. The next species to appear was the Willow Wren, on April 19th; then a Swallow was seen on the 22nd, and some Whimbrels, *Numenius phæopus*, on the 30th. A Common Tern was seen on May 1st, and the Cuckoo and Corn Crake heard on the 5th, Whitethroats on the 12th, and the Spotted

Flycatcher on the 23rd. Although we had such very fine weather during the migratory season, so favourable for the passage of the smaller birds, yet most of them are scarcer than I ever remember in this neighbourhood. Willow Wrens and Whitethroats, usually so common in all our plantations and hedgerows, are very few indeed; and this is the second season that I have missed the cheerful notes of the Chiffchaff from the trees around. I have seen only one pair of Spotted Flycatchers, although in other seasons I used to observe four or five pairs near the house and garden. On May 1st I went down the river to Bartragh, seeing very few waders. Small parties of Godwits (all in winter dress) and Curlews were on the sands, and I noticed about thirty pairs of Sandwich Terns, but only one Common Tern was in sight. Eight Red-throated Divers, *Colymbus septentrionalis*, were in the Channel near the Bar, only five birds exhibiting summer plumage; they were very wild, and on the approach of my punt all went outside into the broken water of the bay. On May 18th I observed a Richardson's Skua chasing the Terns on the river: this bird was in the black plumage, and was evidently resting here on its way to the northern breeding-grounds. Generally during May a pair of these Skuas are seen about, but only remain for ten or twelve days. I went with some friends, on June 6th to visit Lough Talt,—a little lake in the heart of the Ox Mountains, Co. Sligo, about twelve miles from the sea,—and I was surprised to see a pair of Ringed Plovers with a young bird just able to fly, on the gravelly shores of the lake. A pair of Dunlins, in full summer plumage, were also on the shore, and, after remaining for some time, one bird flew off to a small boggy flat on the side of the mountain, where I have no doubt it had its nest. There were three pairs of the Common Sandpiper about, but we were unable to find their nests or young ones. Wheatears were very numerous about the stony shore, and we found a young one under a large rock, and the nest of a Twite with five eggs on a heathy bank, well sheltered by a bunch of heather. Ring Ouzels also frequent the rocky parts of the mountain surrounding the lake. Some years ago I discovered the Common Gull, *Larus canus*, nesting on a small rocky island in this lake; but although I was too late for the eggs, I found young birds fully fledged, and an addled egg in a nest on the island; but unfortunately the Gulls have long since deserted this breeding-haunt, in consequence of the number of boats placed on the lake for the trout-fishing in May, thereby disturbing the birds just when they are settling down to their nests.—ROBERT WARREN (Moy View, Ballina).

The Siskin breeding in Ireland.—As I believe that some have doubted the fact that the Siskin breeds in Ireland, I wish to mention that on Saturday, May 24th, on the invitation of Mr. James Johnston, I went with him and some other friends to the Deer Park, near Powerscourt Waterfall. There we heard several Siskins, and, on arriving at the tree

where Mr. Johnston had observed the nest, one of our party climbed the larch, the hen bird remaining on the nest almost till he reached it, when she flew off to a tree hard by. Four young were in the nest, but, as we were anxious that they should not be disturbed, our friend quickly descended. No sooner had he left the tree than I saw the female return, and again sit upon the young; and shortly after I heard the plaintive call-note of the cock bird, and saw him very distinctly as he approached the nest, and evidently fed the female as she sat upon the young. Not far distant we found a pair of Stock Doves, which I believe are breeding near the Castle Rock; and above them saw a Kestrel closely pursued by a Ring Ousel, which dashed at him whenever he ventured to alight near the summit. These woods afford opportunities to ornithologists almost unrivalled in Ireland,—Crossbills, Redstarts, and Wood Warblers having been found in the neighbourhood,—and no one is, I think, more competent to show would-be observers all that is to be seen than my friend Mr. James Johnston, of Novara, Bray, a most ardent ornithologist, who spends the greater part of his time in these cool and delightful summer retreats.—CHARLES W. BENSON (Rathmines School, Dublin).

Montagu's Harrier in Wexford.—An adult male of this species was shot on May 14th at Balafad, near Croaghan Mountain. This is, I believe, the first occurrence of this bird in mature plumage in Ireland, the three previous examples obtained having been all in the immature brown plumage. The stomach of this specimen was filled with the remains of a Sky Lark.—EDWARD WILLIAMS (Dame Street, Dublin).

Manx Shearwater on the Saltee Islands.—On May 18th, 1889, I visited the Saltee Islands, Co. Wexford, in company with Lieut. J. G. Millais, and we discovered a small colony of Manx Shearwaters breeding on the South Island. Two eggs were taken. As many have searched in vain for this species breeding on the Saltees, it may be worth mentioning. On the North Island I believe the Shearwater also breeds, and probably in larger numbers, but not having been on it after nightfall I could not ascertain this with certainty. My first visit to the Saltees was in May, 1885, and at that time the Puffins were extremely numerous. In 1889 they had greatly decreased, there being scarcely a third of the number, while other species were about the same.—RICHARD M. BARRINGTON.

Black Terns in Co. Wicklow.—On May 24th last I saw a little flock of eight or ten Black Terns, *Sterna nigra*, on the Britlas Ponds, about six miles from Blessington, Co. Wicklow.—E. WILLIAMS (Dame St., Dublin).

Note on the Turnstone.—The Turnstone (*Streptilas interpres*) may be said to be the last of the shore-birds to depart, and the first to return. Its

name is derived from its well-known habit of displacing small stones and *débris* that shelter sand-hoppers and other Crustaceans. This is accomplished with its beak, which is of great strength and of a conical form, pointing upward rather than downward. The narration of a circumstance, witnessed by Mr. James Mitchell and myself, will serve to illustrate the extraordinary strength of the Turnstone's mandibles, and to show that several birds, working in concert, and with a common aim, can accomplish feats which would be beyond the strength of an unaided individual. The scene occurred on the sandy shore opposite the "Black Dog," on the north side of Don-mouth, when Mr. Mitchell and I were returning from the River Ythan, where we had gone in quest of a *rara avis* that had been reported the previous day. It was one of those sunny noons in August that make existence itself a luxury,—everything around us seemed bathed in delight,—and our thoughts were so elevated that nothing short of the great object of our excursion would have tempted us to fire a shot. The sky was at its unclouded best; the sun was clear and hot; and the whitish breakers that fringed the sea danced miniature rainbows of opalescent hues. The tide had begun to ebb, and we concealed ourselves among the bents, expecting that our prey might turn up with the return of the birds that had been driven from their feeding-ground by the flow. We had not long enjoyed our sun-bath, when a flock of Turnstones alighted so near us that, even without the aid of a binocular-glass, we could distinctly see their movements. The birds gradually focussed themselves upon a dead salmon that was partially embedded in the sand. They speedily removed the sand from the fish, until the tail only remained covered, and those upon the lower side continued digging under the fish, while those upon the upper side kept pressing it upward, till they succeeded in overturning it. The fish fell upon some of the birds that were undermining it. Two, in a rather excited manner, managed to free themselves and escape; and my dog, "Clyde," one of the gentlest creatures that ever carried a bird, ran in and caught another that was all but concealed by the fish. "Clyde" was in a playful mood; and having of her own accord secured the bird, she was hardly in a humour to give it up.—W. C. ANGUS ('Proc. N. H. Soc. Glasgow,' 1890, p. 180).

[This account reminds us of an observation made on the actions of a pair of Turnstones, by the late Thomas Edward, of Banff, published in Smiles' 'Life of a Scotch Naturalist,' p. 243, which is worth reading.—ED.]

MOLLUSCA.

On the Position of the Dart-sac in *Helix rufescens*.—*Helix rufescens* possesses a double bilobed sac, two lobes on each side of the vagina. The

upper ones are empty, the darts being situated in the lower and larger lobes. These lobes are pyriform and nearly transparent, the upper ones being often ringed with minute spots of a chocolate-brown colour. The situation of the sac is such as does not occur in any other species of dart-bearing snail, being in some cases quite 5 mm. from the genital orifice. Now the dart of this species is about 1.25 mm. in length, and presuming that the dart-sac, when inverted, together with the dart, measures 4 mm., it will be seen that it is quite impossible for this mollusk to use its weapon. I have dissected them at all times of the year, but have never met with a specimen in which the darts were absent. I have also carefully watched them uniting, but have never witnessed the use of the darts. I am aware that owing to the small size of the organ it is quite possible that it might be overlooked; but from the numerous experiments I have made, extending as they do over three years, I feel sure I should have seen it, at one time or another, had it been used. It would appear then that this species of *Helix*, although possessing the darts, is incapable of using them. If this be so, it is, I think, a strong point in favour of the theory I advanced some three years ago as to their use—*viz.*, that they are degenerate weapons of defence, and that in the past they were much stronger and oftener-used organs. It would be interesting to know whether species possessing two darts—*viz.*, *H. ericetorum*, *H. hispida*, and *H. concinna*—ever use both in one encounter. I have never seen both used, but it is very likely that this happens in prolonged encounters.—W. E. COLLINGE (Hon. Assistant Curator, Conchological Soc. Gt. Brit., Leeds).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

May 24, 1890, *Anniversary Meeting*.—Mr. W. CARRUTHERS, F.R.S., President, in the chair.

Messrs. W. West, J. B. Carruthers, and J. Sidney Turner were admitted Fellows.

The Treasurer presented his Annual Report, duly audited; and the Secretary having announced the elections and deaths of Fellows during the past year, the President proceeded to deliver his Annual Address. In this he dealt with the distribution of British plants both before and after the Glacial Period (making special allusion to the discoveries of Mr. Clement Reid amongst the vegetation of the Cromer Forest Bed), and showed that the forms which have come down to us at the present

day do not differ in any respect from the same species found in the Glacial beds.

A vote of thanks was moved by Sir Joseph Hooker, and seconded by Mr. Stainton, to the President for his excellent Address, with a request that he would allow it to be printed, and was carried unanimously.

On a ballot taking place for new Members of Council, the following were declared to be elected:—Dr. P. H. Carpenter, Dr. J. W. Meiklejohn, Mr. E. B. Poulton, Dr. D. Sharp, and Prof. C. Stewart.

On a ballot taking place for President and Officers, the following were declared to be elected:—President, Prof. Charles Stewart; Secretaries, B. D. Jackson and W. P. Sladen; and Treasurer, Frank Crisp.

The Linnean Society's Gold Medal for the year 1890 was then formally awarded, and presented to Prof. Huxley for his researches in Zoology.

June 5.—Prof. CHARLES STEWART, President, in the chair.

Messrs. Harvey Gibson and W. F. Kirby were admitted, and Messrs. W. H. Beeby and S. Gasking were elected Fellows of the Society.

The President then nominated as Vice-Presidents for the year, Messrs. W. Carruthers, P. Martin Duncan, J. G. Baker, and F. Crisp.

Mr. H. Little exhibited and made some remarks upon a photograph of a remarkable Aroid, *Amorphophallus titanum*, which had flowered for the first time in this country.

Mr. James Groves exhibited a specimen of an *Orobanche* parasitic upon a *Pelargonium*.

The following papers were then read and discussed:—(1) Mr. G. F. Scott Elliott, On a collection of plants made by him in Madagascar; (2) Rev. G. Henslow, On Weismann's theory of heredity applied to plants; (3) Prof. Windle, Teratological evidence as to heredity of acquired conditions; (4) Mr. Harvey Gibson, On the development of the tetrasporangia in *Rhabdochorton Rothii*, Naegeli; (5) On the position of *Chantransia*, with a description of a new species, by Mr. George Murray and Miss E. Barton; (6) Miss A. L. Smith, On the development of the cystocarp in *Callophyllis laciniata*; and (7) Mr. J. B. Carruthers, On the cystocarps of some genera of Floridææ.

ZOOLOGICAL SOCIETY OF LONDON.

June 3, 1890.—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, 1890, and called special attention to a pair of Hartebeests, *Alcelaphus caama*, and a pair of Swainson's Long-tailed Jays, *Calocitta formosa*, acquired by purchase; and

to a pair of Beatrix Antelopes, *Oryx beatrix*, presented by Col. E. C. Ross, Consul-General for the Persian Gulf.

Mr. Sclater exhibited and made remarks on two young specimens of Darwin's Rhea, *Rhea darwini*, obtained by Mr. A. A. Lane in the province of Tarapacà, Northern Chili, and forwarded to Mr. H. H. James.

Mr. Sclater exhibited and made remarks on a flat skin of a Zebra, received from Northern Somaliland, which appeared to be referable to Grévy's Zebra, *Equus grevyi*.

Mr. A. D. Michael read a paper on a collection of non-parasitic *Acarina* lately made in Algeria, where he had found the *Acarina* less abundant than in England, and, indeed, almost absent from the true southern vegetation. The species met with were not of larger size than the British. The collection consisted almost entirely of Oribatidæ, and contained examples of 46 species belonging to 15 genera. Amongst them were 8 species new to science, 27 were British, and the rest South European. Amongst the new species were a remarkable new *Caculus*, there being previously only one known species of this curious genus, which forms a separate family. There was also a new *Notaspis*, which had not been found in Europe, but had been received from the shores of Lake Winnipeg, in Canada. There were likewise some very singular new species of the genus *Damæus*, and a triple-clawed form of *Nothrus anauniensis*.

Mr. Frank E. Beddard read a paper on the anatomy of the Fin-foot, *Podica senegalensis*. The paper dealt chiefly with the myology and osteology of this doubtful form. The conclusion arrived at was that it showed most resemblance to the Rails, but that in its muscular anatomy it agreed in many particulars with the Grebes and Divers.

Mr. O. Thomas read some notes on the specimens of Mammals obtained by Dr. Emin Pasha, C.M.Z.S., during his recent journey through Eastern Africa, as exemplified in the specimens contained in two collections presented to the British Museum and the Zoological Society respectively.

Mr. G. A. Boulenger read a paper containing the descriptions of two new species of the Siluroid genus *Arges*, from South America.

A communication was read from Mr. James Yate Johnson, containing descriptions of five new species of fishes from Madeira.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

June 4, 1890.—The Right Hon. Lord WALSINGHAM, M.A., F.R.S., President, in the chair.

Mr. George William Carter, M.A., F.L.S., of Lime Grove, Knottingley, Yorkshire; and Mr. R. Newstead, of The Museum, Chester, were elected

Fellows; and Mr. Oliver Goldthwait and Mr. John W. Downing were admitted into the Society.

The Secretary exhibited, on behalf of Mr. J. Edwards, Norwich, two specimens of *Ilybius subæneus*, Er., and a single specimen of *Bidessus unistriatus*, Schr. Mr. Champion alluded to the fact that the only recorded British specimens of the first-mentioned beetle had been taken many years ago at Peckham. The species is very closely allied to *I. fenestratus*, F., but the posterior tarsi of the male have the joints externally margined at their lower edge, whereas in the male of the last-mentioned species they are not margined; this character was very plain in the male specimen sent by Mr. Edwards. Lord Walsingham, in alluding to the exhibit, referred to the list of Norfolk Coleoptera compiled some years ago by Mr. Crotch, which appears to have been lost sight of.

Mr. Verrall exhibited a specimen of a fly in amber, belonging to a genus allied to the genus *Psychoda*.

Mr. M'Lachlan alluded to the damage done by insects to orange-trees in Malta, and stated that the Rev. G. Henslow had lately been studying the question; one of the chief depredators was the widely-spread "fly," *Ceratitis citriperda*, well known as devastating the orange. He found, however, that another and more serious enemy was the larva of a large Longicorn beetle (*Cerambyx miles*, Bon.), which bores into the lower part of the stem and down into the roots, making large galleries; in all probability the larva, or that of an allied species, is the true *Cossus* of the ancients. Lord Walsingham stated that a species of *Prays* allied to *P. oleellus* and our common *P. curtisellus* was known to feed in the buds of the orange and lemon in Southern Europe. Mr. Pascoe, Mr. Champion, and others, took part in the discussion which followed.

The Secretary, on behalf of Miss Carr, exhibited a portfolio of drawings of Indian Lepidoptera and their food-plants.

The following papers were communicated, and were read by the Secretary:—"Notes on the species of the families *Lycidæ* and *Lampyridæ* contained in the Imperial Museum of Calcutta, with descriptions of new species, and a list of the species at present described from India," by the Rev. H. S. Gorham; and "A Catalogue of the Rhopalocerous Lepidoptera collected in the Shan States, with notes on the country and climate," by Mr. N. Manders, Surgeon, Medical Staff. The latter paper contained a very interesting description of the chief physical features of the Shan States and neighbouring parts of Burmah.—H. GOSS & W. W. FOWLER, *Hon. Secs.*

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AN OBSERVATION UPON THE TOXIC PROPERTIES OF THE AMPHIBIAN INTEGUMENT.

BY PROFESSOR G. B. HOWES, F.L.S.

My friend Mr. E. B. Poulton, in his new and interesting work entitled 'The Colours of Animals,' while treating of warning colours in Amphibia, writes (p. 165):—"It is extremely probable that the well-known European Salamander (*Salamandra maculosa*) possesses some unpleasant attribute. I do not think, however, that there is any direct evidence for this." Having recently made an observation which bears upon the question, I submit it for what it may be worth; and I am the more encouraged to do so, as it involves the older topic of the poisonous property of the Anuran integument, and that as concerning the rare *Xenopus* (*Dactylethra*) *lævis*. The animal in question (a young female of 30 millim. from snout to vent) was generously given me by the Zoological Society of London in February last; and since that date it has been living in a fern-case, in amicable relationship with a *Bombinator*, a dozen Salamanders, and a Slow-worm. The Anura have been regularly fed on "blood-worms," the Urodeles on *Lumbricidæ*. My *Xenopus*, as is its wont, but very rarely leaves the water, and, during the five months which it has passed in my possession, the occasional visit of one or more Salamanders to the glass dish in which it lives has been a matter of little or no consequence. Upon one occasion I had the pleasure of seeing the Slow-worm drink of the water while it

contained two Salamanders and the two Anura referred to. On the morning of June 10th, however, my *Xenopus* was found lying in the dish motionless and apparently dead, side by side with a dead Salamander (*S. maculosa*), whose contorted body betokened intense excitement. The Anuran, on being handled, was roused to tetanic movements of the distal parts of its hind limbs; respiration had well nigh ceased; and its fore limbs, which were thrust backwards to their utmost, so that they lay almost parallel with the long axis of the body, were, together with its head and trunk, rigid and benumbed. The little creature's eyes, which were starting from its head, were blinded as if in epilepsy, and its body was thickly clad in a profusion of mucus. Upon removing the last named and placing the animal in shallow water with its head above the surface resuscitation was induced, and in twenty-four hours it fully revived, except for a timorousness which it has since retained.

I had every reason to believe that my animals had not been tampered with; and, as there were no signs of general disturbance, disorder and death from mutual poisoning naturally suggested itself. The body of the Anuran showed no perceptible sign of injury, such as might have been inflicted by the bite of the Salamander; but the mouth of the latter, which was full of mucus, contained a number of abraded epidermic cells, which, upon examination, proved to be those of the Frog. That the former animal had been endeavouring to swallow the latter would thus appear clear; that the mucus with which the Frog was besmeared had been secreted by its own skin was certain, from the glassy transparency and general aspects of the same; and the extraordinary backward thrust of its fore limbs already alluded to appear to me to point most naturally to an accommodating displacement within the jaws of its enemy.

The above facts, while they do not furnish the "direct evidence" sought by Mr. Poulton, show the mouth of the Salamander to have in all probability contained a toxic secretion. They speak most forcibly, however, for the "unpleasant attribute" of the skin of the Anuran. M. Paul Bert has shown, as is well known, that the "venom" of a toad, if administered to a fowl subcutaneously, will cause death, and the observation herein recorded points to the possession of a similar power by the skin of the rarer *Xenopus*.

The skin of the *Xenopus* was, as already stated, rendered glassy and transparent under the sudden drain upon its resources; and I was struck with the fact that certain dark blotches conspicuous upon it at other times were little perceptible, owing no doubt to the over-contraction of the chromatophores composing them. Concerning these darker areas of the Amphibian integument Mr. Poulton records some interesting observations, and while he concludes (p. 85) that a "connection between the nerves and the pigment-cells in the skin . . . appears to be rendered certain by the fact that light falling on the eye modifies the distribution of the pigment granules," he states that "the highest powers of the microscope, assisted by all the varied methods of histology, have failed to detect" it. There is, however, no reason for conjecture; for, while Leydig has seen and described the connection in Lizards, Ehrmann (Stzb. Wien Akad. Math. Nat. Cl. Bd. 84, Abth. 3, p. 165, 1881), and Haller (Zoolog. Anz. 1885, p. 611), have independently observed and figured it in the Common Frog.

SUPPLEMENTARY NOTES ON THE EVOLUTION OF BIRD-SONG.*

BY CHARLES A. WITCHELL.

THE imitative tendency of many species of wild birds is indicated by the mimicry of captive individuals, which is often very apparent, but is limited to imitations of noises with which they are familiar. Ornithological works generally do not distinguish with sufficient accuracy the songs of captive and wild individuals, which are not usually the same. It will be observed that the rearing of the young influences song; for, when this is about, some species, such as the Nightingale, Redstart, Willow Warbler, Chiffchaff, Wood Warbler, Blackbird, and Missel Thrush, utter very frequently their alarm-cries, and neglect their songs; while the Sky Lark and Tree Pipit fly less often during song, and in a great measure abandon those long-drawn notes (closely like the call-note of the young Sky Lark) which form in early spring the endings of their phrases. At the same time the

* See anteà, p. 233.

Starling also omits from his song the love-calls which in spring concluded his phrases, and were accompanied by a fluttering or flapping of the wings—a movement then indicative of ardent overtures to his mate. On the other hand, the Redstart and Common Flycatcher acquire a note, “chick” or “chick-ik,” probably an alarm, uttered, as a rule, immediately after their short cries.

The similarity of certain cries of unimitative species may be of value as indicating a survival or modification from common originals; and a like resemblance is almost equally noteworthy when occurring in unvarying cries, such as alarms or call-notes, amongst species of extended song and mimicry; notwithstanding its occasional existence between the notes of birds widely distinct (*e.g.* Dunlin and Tawny Owl, Wryneck and Butcher-bird, Kittiwake and Peregrine Falcon), when it may possibly be due to the companionship of the birds in a remote period. Darwin mentions a Woodpecker of the plains that retains the note of its woodland congeners (*‘Origin of Species,’* 6th ed., 142), and this bird, one of an unimitative race, contrasts in habit with the Dipper, a member of a family in which mimicry is prevalent.

The similar cries of certain nearly allied species seem generic, and appear to have descended in a pedigree of imitation, and in association with definite physical characteristics, from a common ancestor of the species; but there are instances in which similarity of voice is the closest bond between species of different genera. Among the raptorial birds, the notes of foreign and British Falcons and Hawks are generally described as shrill cries, screams, or shrieks; and those of foreign and British Owls are generally represented in words which imply long, hollow sounds. The shriek of the young Kestrel appears to be modified a little in the cries of the young and adult Butcher-bird; and the same character-sound, varied in pitch, constitutes the song of the Wryneck. The Butcher-bird’s cry is strangely repeated by the young of the Great Titmouse, but is changed as the birds attain maturity. The song of the Wryneck is fairly like those of the Green Woodpecker and Tree Creeper, and the long notes of the Nuthatch. The call-notes of the Great Titmouse are heard in the Cole Titmouse, but the latter has a somewhat different, and, of course, much less powerful song. The song of the Blue Titmouse varies further from that of the Great Titmouse; but

the three species have a common characteristic in the soft squeak which is their call-note, and, curiously, is sometimes repeated as a call-note by the Nuthatch, their frequent companion. The Long-tailed Titmouse, notwithstanding a close association with the others, has not acquired one of their notes, but has cries which are noticeably like those of the Squirrel.*

In the *Corvidæ* we have the croak of the Raven modified to "corr" in the Crow; "caw" in the Rook; and "jack," and otherwise varied, in the Jackdaw. The same character-cry, "cah," is uttered by the Jay as a frequent alarm, and it occurs in the Starling as an alarm to the young, and at other times to indicate extreme terror. The construction of the Magpie's alarm by a repetition of "cah" has been suggested. I have heard a Missel Thrush utter "cah" when carrying food, apparently to its young. It is a question whether the single note of which the rattling alarms of the Missel Thrush, Blackbird, and Ring Ouzel, and the "took-took" of the Fieldfare are composed, is not, with the soft "click" of the Thrush, an abbreviation of the same broad sound.

The cries of the nestling young of the Starling and Rook are much alike. In spring the male Starling calls the female by repeating a loud, long-drawn, squealing note, uttered in moments of the greatest vehemence, and when the female approaches. This note is common to every male, and is quite distinct from the general character of the song. It is closely like the migratory cries of the Thrush, Redwing, and Blackbird (which cries are much the same, but distinguishable), and the cry of the young Thrush, and that of the nestling Blackbird. This long, plaintive note is uttered by the male Blackbird when the nest or young have been disturbed, and sometimes before rain in autumn, and during prolonged frost. A note almost identical, seeming to differ only in its lack of force, is uttered by the Redbreast upon exactly the same occasions, and, in addition, sometimes before song on very damp autumn days. The Redbreast appears to often abbreviate this note to a short squeak, very like the squeak of the Flycatcher. The rattling alarm of the Blackbird is reproduced on a smaller scale (if we may so employ the

* The retention of these cries, uninfluenced by others, may be due to the gregarious habits of each family of this species.

term), and on the same occasions, by the Redbreast; but the former bird varies the pitch of it in a much greater degree than the latter. In both it is often accompanied by a flirt of the tail. In the Redstart the extent of the repetition of this alarm is generally limited to one or two, or perhaps three or four, short notes; while these occur singly and are slightly modified in the "chick" of the Flycatcher.

One of the most noticeable cries of the Redstart is "tewy," preceding its "tit" or "chick" alarm, just noticed. This "tewy" is reproduced, almost exactly, as one of the alarms of the Whitethroat; as an alarm and call-note by the Chiffchaff and Willow Warbler; and is uttered in the songs of the Nightingale (frequently its first note), Redstart, Blackcap, Whitethroat, and Sedge Warbler. I have heard a Nightingale prolong this cry, in a succession of rapid repetitions, into the well-known long notes of the species. The long notes of the Wood Warbler, and the whole song of the Willow Warbler seem to have originated, like the note of the Nightingale, in mere prolongations of this cry; and the effect of vocal cultivation among captive birds (and human beings) gives colour to the surmise that the repetition of this mellow note may have tended to produce the fine tones of the Nightingale and Wood Warbler. The cricket-like chirp which is uttered after the usual notes of the Chiffchaff is somewhat like the single cries that form, rapidly repeated, the sibilant phrases of the Wood Warbler and Grasshopper Warbler. The croak of the Nightingale seems to be abbreviated in the "quare" alarm of the Whitethroat, and the Blackcap's "tack": forming an analogue to the croak, "caw," and "jack" of the Raven, Rook, and Jackdaw (*antea*).

The coarse "jig-jig" notes in which the Swallow ends its phrases are heard much more frequently in those of the Martin and Sand Martin, but are never uttered by the Swift.

The Finches have many similar cries; and those of the Greenfinch may be considered as typical. These are: "did-it, it-it" and "tell-tell" in the young, and in addition "tewy" and "zshwéo" in the adult male. The "did-it" is the common call of the adult male and female, and of the Goldfinch and Siskin. It is seemingly modified in the loud and frequent "philip" call-note of the young and the adult male House Sparrow, and in that often exact but softer reproduction of the House Sparrow's note

by the young and adult male and female Chaffinch; the last employing it in spring both as a call for each other and for their young. The "did-it" of the Greenfinch seems to be contracted by the Yellow Bunting and Cirl Bunting into two very rapid notes which are uttered almost at once, as a common call.

"Tell-tell" is heard in the young and adult Linnet; and is, with them, always a call-note. It is much varied by the male House Sparrow, and is uttered by this bird both in song and as a warning, sometimes being very rapidly repeated. It is also heard in the songs of the Goldfinch and Siskin, and appears to be modified in the "pink" of the Chaffinch. The "tewy" of the adult Greenfinch is very closely repeated as a love-call by the female House Sparrow, and is employed by her, in a modified tone, as an alarm-call-note.

The strange note "zshwéo" is uttered by the adult male Greenfinch alone or at the end of a phrase; it seems to be never addressed to the female; but the rattling together of the mandibles during combat produces a similar sound. It is absent from the voice of the House Sparrow, but is heard in the songs of the Linnet, Goldfinch, and Siskin; and is employed by the Goldfinch during combat. The penultimate syllable (to borrow a term) of the song of the Chaffinch is generally, but not always, a hard note, higher than the concluding notes, and apparently it is an abbreviation of "zshwéo." The "zurse" common note of the Yellow Bunting may have had the same origin. One of the notes of the Reed Bunting is very like the "pink" of the Chaffinch. A brown migratory finch, larger than the Goldfinch, and very wild, feeding in March on the larches near Stroud, has all the above cries of the Greenfinch, but a coarser "zshwéo." I have been unable to identify this bird.

The "coos" of the Stock Dove, Cushat, Turtle Dove, and Collared Turtle Dove betray a family resemblance, but it will be noticed that the short, jerky notes of the Stock Dove are not unlike the cries which form "cuckoo." The note of the Hoopoe may have the same character.

It appears that many of the *Anatidæ* are described as uttering whistling cries, and I have noticed that the cry of the Common Sheldrake is closely like the cries of the young of the Common Duck and Mute Swan. I have heard few of the *Rasores*, but may remark that the "crow" of the Pheasant, of a persistent character,

resembles that of the common cock; that the alarm-yell of the latter is closely like the pæan of the Peacock; and that the chicken, young pheasant and partridge have a similar note.

The main purpose of this supplement is to show that there are certain apparently unvaried cries common to several species of wild birds; that the most prevalent note of a species may be modified in its congeners, or supplanted by other cries which then predominate, and are in their turn abandoned by other birds. I am not in a position to trace structural development in analogy or contradiction to the suggestions of vocal resemblance; but some evident outward features of similarity between birds with similar cries, as the speckled breast of the young of the Redbreast, Redstart, Thrush, and Blackbird must be familiar to all my readers.

I am conscious that my work in Bird-song is very imperfect, but shall hope for ability and opportunity to render it more complete.

NATURAL HISTORY NOTES FROM SUFFOLK.

BY G. T. ROPE.

THE following fragmentary Natural History jottings were principally made during a stay of some three months at Iken, on the River Alde, Suffolk, during the spring of 1888, and mostly relate to that place and its immediate neighbourhood. They contain, I fear, little of interest, and those only who can derive as much pleasure from watching the ways of the commoner animals as from the acquisition (and consequent destruction) of rarities will care to glance at them.

The parish of Iken is situated at the widest part of the river, which becomes here, at high tide, a fine sheet of water, extensive mud-flats being left exposed as the tide recedes. There is a decoy for wildfowl in the parish, which is still worked, and the winter of 1887-8, just previous to my visit, was a fairly successful one. At Black Heath, Friston, on the opposite side of the river, is a large heronry. A considerable proportion of the parish of Iken is heath land, forming part of that irregular belt of heath which runs parallel to the coast-line of Suffolk, with occasional interruptions from the Orwell to Breydon Water. About the heath are scattered a few small fir plantations. Iken Wood, situated on

low ground where the heath and marshes join, contains some fine old hollies; but the majority of the trees (oaks) are small and stunted in growth, probably from poverty of soil and exposure to the full power of the biting east winds of early spring. Part of a much larger wood (Sudbourne great wood) lies, I believe, within the Iken boundary, or at any rate approaches it very closely. About the meadows, near the decoy, are some alder "cars," as well as a few large single alders scattered here and there. There is still a fair amount of hedge-row timber, though it has been sadly thinned of late years; yet this parish has suffered less from "improvements" than many in the neighbourhood. There is a good deal of marsh land alongside the river, protected in most places by artificial banks or "walls," but at Iken Cliff the heath comes right down to the water, ending in low sandy cliffs. Here a colony of Sand Martins has been established for years; a few pairs of Starlings occupy some of their holes during the breeding season, and Kingfishers occasionally make use of one as a nesting-place. The opposite bank of the river is of similar character, but generally flatter. On the heath at Iken, near the water's edge, grow two clumps of oaks, and at this spot a sandy beach is left bare at low water; but in most places a fringe of saltings, of varying width, extends along the river, and is much frequented by Redshanks and their young. Peewits used to breed in great numbers about the marshes and on bare parts of the heath, but, having been robbed year after year of their eggs, they have been gradually driven away from their old haunts, till there are only a few pairs left.

On the whole this spot seems admirably suited to the requirements of birds of many kinds, differing widely in habits; but to such a pitch has game preserving been brought in this part of the county, that most rapacious birds and mammals have been almost exterminated. Some idea of the scarcity of hawks of all kinds may be gathered from the fact that, during the three months I remained at Iken, I only saw two,—a Kestrel, and, I think, a Sparrowhawk,—yet only a few years back Kestrels were common enough, and several might often be seen simultaneously poised aloft over the marshes, on the look-out for Moles, Field Voles, &c. Stoats, Weasels, Hedgehogs, and Jays, we rarely, if ever, get sight of now; and as to Magpies, one would almost as soon expect to stumble upon a specimen of the Dodo as to meet with

one of these beautiful, but zealously persecuted, birds. Yet so lately as twenty or thirty years ago a few Magpies were not unfrequently seen about the heath, while Jays were fairly numerous. For miles around, large game-preserving estates extend; and the havoc wrought by keepers among such creatures as the above would hardly be believed by those who have not been obliged to witness it.

MARCH, 1888.

16th. Wind north, with sleet and snow. While feeding some ducks this morning, two Great Tits, two Blue Tits, a Coal Tit, and a Marsh Tit attended to receive their share of maize; the last-named little bird being decidedly the boldest, and the first to seize and carry off a grain. A Robin and a Hedgesparrow also came; the former went so far as to pick up a small grain of maize, but dropped it directly. Tits of some of the above species come regularly every morning, evidently looking upon the call intended for the ducks as a summons to their own breakfast. A pair of Marsh Tits are the most constant attendants, and, as I have always found to be the case, are particularly bold and fearless, even surpassing in that respect the fussy Blue Tit. The Great Tit is the most wary and distrustful of all, and cares less for maize than the rest. The manner of proceeding with all four species is to hang about the neighbouring trees and bushes, gradually working their way towards the feeding-ground; then, watching for a favourable opportunity, they drop down, snatch up a grain, and fly off to some bush close by, where they quickly peck out and devour the middle part, and, letting fall the rest, return for another grain.

28th. Frog's spawn seen to-day for the first time. After the long, cold winter, the Frogs here were very late in spawning, and the same may be said of last season, when I first noticed spawn in the ditches on the 22nd. The earliest date on which I have seen *Rana temporaria* in the water is February 23rd, having found one in a pond at Blaxhall on that day, in the year 1882. In very early seasons, when a continuance of warm sunshine tempts the frogs into the water before their usual time, it sometimes happens that a severe frost sets in after they have spawned, and the shallow pools and ditches chosen for this purpose become frozen completely through. On the other hand, in warm dry seasons

we sometimes see the water all dried up before the tadpoles are hatched; but so enormous is the fecundity of these animals that such accidents do not probably (except in extreme cases) affect to any great extent the general frog population. Possibly the gelatinous substance enclosing the embryo may have some power of protecting it from the frost.

29th. Both Frogs and Toads were heard croaking this evening in the ditches for the first time, though both had been in the water some while. Frog's spawn now abundant.

31st. Saw two Wheatears near Iken Wood. Later on a good many pairs frequented the heath, and were often to be found feeding at the water's edge, among sea-weed cast up by the tide. The earliest arrival of this bird I have a note of is March 2nd, in the year 1871, when I saw a solitary Wheatear at Leiston. In this part of Suffolk this is one of the very first to arrive of our spring migrants.

APRIL.

4th. Wind north, with snow. Saw a Wheatear on the mud at the water's edge, and a number of Redshanks about the saltings. Heard some Curlews calling down the river. Notwithstanding the coldness of the weather, a Yellowhammer was singing on the heath.

5th. Wind east, very cold, but bright. My dog found two Lizards (*Zootoca vivipara*) on the river "wall" between Snape and Iken. They both snapped their tails off, and escaped before I came up; and, but for the lively movements of those appendages, which remained jumping merrily about, I should not have known what the dog had found. Considering the coldness of the season it is unusual, according to my experience, to find Lizards abroad so early in the year. In the present instance both were found on the leeward side of the wall, which just here sloped directly towards the sun. Lizards were formerly very abundant about the heath near Blaxhall, but now one rarely sees them. It is difficult to account for their disappearance, unless it be that the Pheasants, which are very numerous, have cleared them off. Vipers too were, I feel sure, commoner twenty or thirty years back. These latter reptiles are sometimes carried during the winter into farmyards, secreted among the whin, heather, brakes, &c., which are brought in large quantities from the heath, to

serve as litter, firing, &c. The common Ringed Snake is quite a rarity in this part of the county, though not uncommon in the neighbourhood of Ipswich.

6th. Saw a male Redstart this morning, sitting on the door of a shed, the earliest arrival of this species of which I have any note.

10th. Wind N.E., with snow, very cold. A Lark was running about just under my window, with feathers puffed out from cold, and looking very feeble. A pair of Starlings, too, seemed much pinched by the severity of the weather, and were unusually tame. A few Yellowhammers were daily to be seen about some old threshing-machines, searching for stray grains of corn; at present they are much commoner here than Sparrows. A Grey Crow flew along the river this morning, cawing in a peculiar chattering manner. Compared with the Rook, some at least of these Crows must be late breeders. I have known them to remain here as late as April 14th.

12th. A single Grey Crow seen again to-day. In Suffolk, especially about the heaths and marshes near the coast, this bold but wary marauder (locally known as the "Dun Crow") is generally abundant during the winter. To some extent he takes the place filled in warmer latitudes by the Vulture, and many a wounded hare or pheasant ultimately falls to his lot. In some districts if a duck be killed during the evening flight, and not retrieved, it is pretty sure to be found early the following morning completely picked by the "Dun Crows," the bare skeleton, with a few scattered feathers, alone remaining to mark the spot where it fell. Fresh-water mussels, *Anodonta cygnea*, are largely eaten by these Crows, and not long ago I watched a party of them engaged in searching for these molluscs, at low water, in the bed of the river at Blaxhall. To guard against a surprise, each bird took the precaution of flying with its prize to an open part of the adjoining meadow, before breaking the shell,—just as Rooks, in robbing a field of ripe wheat, carry off the ears to some bare spot, well away from the standing corn and all other cover, before eating them.

15th. Warm and showery. Saw one large and two small Tortoiseshell Butterflies. Frogs in full chorus to-night in a pond at Farnham.

17th. A specimen of *Helix nemoralis* abroad to-day, the first

seen. When first noticed it was partly buried at the edge of a cottage door-step, under which it had perhaps hibernated. A few hours later it had crawled out on the grass some twelve inches or so.

18th. Wind west, very stormy. *Helix nemoralis* has been all day half buried against the wall of the cottage, but at half-past ten at night was crawling up the wall, and had reached a distance of about twelve inches above the ground. Half an hour later he was on his return journey, and within three inches of the sod.

19th. Heard the Wryneck for the first time. Saw some small Warbler, either a Chiffchaff or a Willow Wren, chased and bullied by a Sparrow. This morning a small hawk (I believe a male Sparrowhawk) made several ineffectual stoops at some little bird, which, after skilfully dodging its persecutor for some time, came straight towards me, and took refuge in a cottage garden. It proved to be a Blue Tit, and the bounding flight of the little fellow seemed plainly to express exultation and self-congratulation at having succeeded in baffling his enemy.

20th. Saw the first Yellow Wagtail, a beautiful male and very tame. Unlike some of our brighter-plumaged birds, this species is of a tame and confiding disposition, allowing one to observe its beauty, and the peculiar grace of movement common to all our British Wagtails, without the aid of a glass. The glowing yellow of the male, as he runs nimbly about the meadows in pursuit of insects, gives one the impression of an animated buttercup. Wagtails seem to have been particular favourites with that most gifted of animal painters, Rosa Bonheur; and in some of her beautiful cattle pictures these little birds are seen, running about among the drowsy bees, in chase of their insect tormentors.

21st. First heard the Cuckoo. This, according to my notes, seems to be about the average date of arrival for this bird. A few days ago I met with a Grebe of some kind in the river, just above Langham Bridge; it was very tame, and allowed me to get pretty close before it took wing. After flying a little way it again pitched in the river. The seeking of safety in flight, rather than by diving, struck me as an un-Grebe-like proceeding. In size it seemed about intermediate between the Great Crested Grebe and Dabchick, and it may perhaps have been a specimen of *P.*

cornutus, Yarrell, but I was unable to identify it with any certainty.

24th. Heard a Green Woodpecker. Had a good view this morning of a Ring Ouzel. When first noticed it was on a piece of open ground sloping to the river, and surrounded by whin bushes. It afterwards flew up into some trees close to a farmhouse, where it was joined by two other birds, thrushes of some kind, but whether of the same species or not I was too far off to determine.

25th. Noticed a pair of Bullfinches. These birds are, I fancy, commoner here than they were. It is a cheering sight, when passing along the country lanes in winter, to see a small family party of these little beauties flitting on in front, their bright colour sparkling like gems among the sober greys of the hedges. Owing to the arrangement of the hues, few in number and strongly contrasted, few birds show to greater advantage on the wing.

26th. Seven or eight Curlews on the mud-flats near the church to-day.

27th. First heard the Nightingale in Iken Wood. During a space of sixteen years I have found the average date of arrival of this bird, about here, to be April 18th. In only one instance, excepting this year, has it appeared later than the 24th; this was in 1884, when I first heard it on the same day as in the present year, *viz.*, the 27th. The earliest arrival noted is April 10th, in the year 1877.

28th. Noticed a pair of Common Whitethroats at Blaxhall. Humble Bees abroad in numbers. Among a number of young Moles which had been recently taken from their nests, some, equal in size to a full-grown Field Vole, were as yet without a vestige of hair. On others, rather older, it was just beginning to grow, and the skin had begun to assume a silvery grey look. Saw a male Whinchat close to the water's edge, and near it a Wheatear. The former, when in perfect plumage, is, I think, one of our prettiest small birds, but to fully appreciate its beauty a close view is necessary. The sober, but delicate and pleasing, tints of its plumage harmonize particularly well, and are rendered the more attractive by the arrangement of its markings. The flush of rosy fawn on the breast, fading gradually to the palest buff, has a beautiful effect when seen against a background of dark

green furze, as the little fellow perches for an instant on the topmost twig of some bush close to the spectator. The more striking and conspicuous colouring of the pretty little Stonechat is sure to attract attention, even from a distance; but the exquisite colouring of the adult male Whinchat in spring is, I think, more apt to escape notice.

30th. Two Swallows were flying about this morning at Blaxhall. Taking an average of eleven years, I have found April 18th to be the time they usually arrive here. While in a plantation at Blaxhall I saw a pair of Rooks alight on the top of an oak; they then scrambled down lower, and began apparently to examine several twigs with their beaks, but in a particularly leisurely way. They remained on the tree about five minutes, and then flew to another oak. After a time one of them broke off a twig, and flew away, with its companion, in the direction of a neighbouring rookery. This is late for Rooks to be building, unless, as is probably the case, their first nest had been destroyed. In the above-mentioned plantation Bank Voles are now very numerous; though the cats kill a great many they do not seem to decrease in number, but rather the reverse. Last winter some of these little animals found their way into a small thatched building among the trees, used for storing apples and pears. A good deal of the fruit having been found partly eaten, and marked by the incisors of a small rodent, *Mus sylvaticus* was suspected, and traps set, with the result that several Bank Voles were caught. I found one this winter in a tool-house in a walled-in garden at Blaxhall. A box of hay had been placed there as a bed for a Hedgehog, which animal had, however, escaped from the garden. On removing this, some small animal jumped out, which I caught, and found to be a Bank Vole. Saw to-day a Starling, at Blaxhall, enter one of the nest-boxes placed under the eaves of the house, carrying in its beak what I feel sure was a "lamb's tail," or hazel catkin. Soon afterwards it brought in a bunch of moss,—rather unusual building material with the Starling.

MAY.

1st. Sand Martins have arrived at Iken Cliff. This morning I heard a Thrush utter its alarm note, having at the time a large worm in its beak. There is just now a nest of this bird at

Blaxhall, which is suspended, like that of a Goldcrest, on the under side of a spruce-fir bough.

2nd. Heard Norfolk Plovers calling this evening at about a quarter past eight. There seemed to be several, judging by the noise they made.

3rd. Saw three Starlings come out of Sand Martin's holes in the cliff. *Ædicnemus* very "crepitant" again to-night. First heard at about five minutes past eight.

5th. Saw this evening, at about eight o'clock, a single Norfolk Plover flying towards a bare part of the heath, much frequented by these birds. Two more afterwards passed me, going in the same direction and flying very low. They came from the Friston side of the river. There is, I think, a certain duck-like character about the flight of this interesting, but very local, bird.

6th. First heard the Turtle Dove. During a period of sixteen years the earliest arrival of this bird in East Suffolk, which I have a note of, was on April 20th, in the year 1876; the latest, May 22nd, in 1879. For ten years out of the sixteen it has made its appearance during the first week of May, and three times in the second week. This beautiful bird is generally abundant with us, and does good service by devouring the seeds of innumerable weeds. Like most pigeons it drinks very often. Many Turtle Doves come for this purpose to the sloping drinking-places made for the benefit of cattle in the marshes.

7th. Heard a Starling imitate the Curlew's whistle very perfectly. The notes of the Curlew, Heron, and Peewit are all constantly mimicked by Starlings here,—being perhaps the bird-sounds oftenest heard by them while seeking their food about the marshes and by the river. I have also heard this delightful bird reproduce the croak of the Mallard, the distant chattering quack of ducks on the wing, and the cheerful note of the Jackdaw. No Norfolk Plovers heard to-night.

8th. Saw to-day, at a distance, a large duck-like bird, apparently nearly all white, which puzzled me a good deal at the time. It was flying over the river, the flight being more like that of a goose than a duck. Heard a Corn Crake to-night not far from Snape Bridge: this by no means a common bird in this district.

9th. Again saw the bird noticed yesterday, in company

with another like it, on the Friston saltings. Went to try and borrow a telescope, but without success. On returning, however, both birds got up and came across the river, passing me quite closely. I then saw that they were Shellducks. One alighted on the saltings on my side of the river; the other I lost sight of. Twice during the day I saw one bird alone, and hope by this that they may be nesting close by.

(To be concluded.)

THE GREAT SKUA (*LESTRIS CATARRHACTES*) IN FOULA.

BY RICHARD M. BARRINGTON, LL.B., F.L.S.

YARRELL states that, "as regards the British Islands, the only breeding-places of the Great Skua are in the Shetland group. One of these is in Unst, where the bird is carefully protected by Mr. Edmondston; and another is on the outlying island of Foula, the property of the Scotts of Melby, who do all in their power to maintain the scanty race."* Having recently visited the last-mentioned island, it may be of interest to the readers of 'The Zoologist' to have the latest report concerning one of the rarest of the sea-fowl which now breed in the British Islands.

We landed on Foula at midnight on June 22nd last, and were eight hours crossing in a fishing-smack from the mainland of Shetland, from which Foula is distant about eighteen miles. To the west of the island the cliffs are bold and striking, and form a jagged outline, which for imposing grandeur is hardly to be surpassed. On the east and north-east the island is comparatively low, with cliffs varying from 50 to 150 feet, but there is no strand or stony beach anywhere, save where a mountain stream enters the ocean at a little creek in the rocks, and this strip of beach is only ten yards across. Having hailed the natives by whistling and shouting, we ultimately aroused them by firing shots, and they put off a boat to the smack and rowed us ashore. At 1 a.m. our tent was up, and we turned into our blanket-sacks and lay down on somewhat uneven ground.

No Gaelic is spoken in Shetland, and, not as in the Outer Hebrides, one can converse easily with the natives on that

* 'History of British Birds,' 4th ed. vol. iii. p. 663.

account. Foula is about three miles long and two broad, and its highest point is the Sneug, 1372 feet. The highest cliff is the Kame, 1220 ft. There is an excellent 6-in.-to-the-mile Ordnance map of Foula. There are about 200 inhabitants. The old houses are all thatched; five or six modern ones are slated and have chimneys.

The island is not only bleak and exposed, but subject to sudden squalls of exceptional violence from the steep face of the storm-swept Sneug, the home of the Great Skua, towards which we went. Ascending the steepest face of Hamnafeld (1126 ft.), over the little village of Ham, we went very slowly, botanizing all the way, and now and then looking round for birds. A single plant of *Listera cordata* was noticed, and towards the summit *Salix herbacea* occurred plentifully. Just then the first pair of Great Skuas appeared circling over the hillside at a height of about twenty yards. It was at once noticed that one bird was darker than the other. They were passing somewhat below us, and as they flew past the difference in the colour of the backs of the two birds was very evident. Soon three or four other pairs were seen, sometimes sitting on the soft mossy slope, side by side, or flying to and fro over certain parts of the hill. The northern face of the Sneug and of the two ridges which run to the east and west of it is very steep, with rocks and boulders and stones occasionally cropping out. The vegetation is short and closely cropped by sheep. The southern face has a gradual descent, and the surface is undulating, turfy and soft, consisting of moss, *Juncus squarrosus*, *Eriophorum angustifolium*, with straggling roots of *Calluna* and *Vaccinium uliginosum*. With one or two exceptions the Great Skuas all breed on the southern face. The nest is merely a depression on the surface. They seem to scratch a little at first, and then smooth the place with their breasts. In one or two cases some withered leaves of *Eriophorum* were round the edge, apparently broken off because they were in the way. Having heard and read so much about the boldness of the Great Skua in attacking intruders during the breeding season, there was at first some disappointment at their apparent want of courage. There were no eggs or young in any of the four or five nests; this might account for it. Away down the slope, about half a mile away, Richardson's Skuas were seen, and a nest found with two eggs.

Walking on towards the depression between the Hamnafeld and the Sneug, Great Skuas appeared more numerous, about ten pairs being observed within a radius of 200 yards. Many nests were met with, but not a single egg. Up to this the birds had not come nearer than ten to twenty yards, flying past and across us, now and then uttering a croaking noise, "ag—ag," and sometimes alighting within thirty yards. Presently a pair became very bold, and when passing would swoop towards us. Thinking eggs or young must be close by, a delay was made to search carefully, and both Skuas then attacked us vigorously, so that our sticks were involuntarily raised to prevent them striking our heads. The *modus operandi* was this:—the Skua would start about sixty yards off, on the same level as our heads, and fly straight at us, not deviating an inch, and increasing in speed, then, when within a yard or two of our heads, the feet were lowered, claws extended, and with a terrific "swish" and deep rushing noise of the wings, it would swerve upwards in a graceful curve, wheel then either to left or right, descend again to the level of our heads, and repeat the performance with greater or less vigour, according as we approached or receded from the nest. The nests were sometimes within ten yards of each other, but more frequently thirty to forty yards asunder. I must have seen over sixty, but all had been robbed save one, and this one contained a single egg. It was the only nest seen at a lower level than 800 ft., and probably escaped the searching eyes of the native egg merchant. W. was more fortunate, and found in one spot a few nests with one to two eggs and one young bird. The general impression left was that the Great Skuas were flying round their robbed nests, intending either to make new ones close by, or lay a second time in the old nests. Three times only was I attacked in that extraordinary vigorous manner which has made the Great Skua so noted for its boldness; but, were the nests not robbed, and three or four pairs of Skuas defending their young at the same time, few visitors would have the courage to face them without a stick. The natives told me that in some instances the Skuas knock off their hats, and have broken their wings against a stick suddenly held up as they swooped at the head of the intruder. No serious injury seems at any time to have been inflicted on a human being by a Skua. The birds probably

weigh four or five pounds, and this weight striking a man on the head, and coming at such a velocity, would certainly kill him.

In every case in which a pair of Great Skuas were seen together, as if nesting, one bird was dark and the other light coloured, and the inference was that the colours might be sexual. For three days I was frequently among them, and having consulted the few books at hand, and finding no mention of this easily-observed difference in colouring, a dark bird was shot on a portion of Foula remote from the breeding grounds, and next day a light one was procured in another part of the island also at a distance from the breeding grounds. The dark bird turned out to be a male and the light one a female. The dark one was rather smaller, with bill and claws not so stout as in the light bird. Whether the colouring is associated with age or sex, or merely a phase which both sexes may present, as in Richardson's Skua, I cannot say. The fact that the dark bird is smaller may have been accidental, for the difference in size was not detected when the birds were sitting or flying past; but if not accidental, and constant, the stouter and older-looking bill and claws in the light Skua is in favour of the age theory. Then the fact that a dark bird *seemed* always *paired* with a light one, and that they were about equally numerous, is in favour of the sex theory; and lastly, the fact that in one or two cases the distinction in colour was not so decided is in favour of the phase theory. When the Skuas were sitting on the ground, side by side, the difference in coloration was in every instance noticed.

When on the steamer going to Shetland, a gentleman, who said he knew it well, told us that there were only two pairs of Skuas now left on Foula. We heard later, however, that eighty-four pairs bred there last year, and this year we ourselves saw between seventy and eighty pairs. By three different old men on the island I was informed that when they were boys the "bonxies" were not nearly so numerous as at present; that the proprietor, Mr. Scott, of Melby, protected them, and they increased greatly, but that for the last four years they have been diminishing in numbers. This is no doubt due to the fact that the Foula men themselves have become egg-dealers, and have been supplied with egg-drills, &c., for blowing, and that they take all the first batch of eggs laid and most of the second. Last year the "bonxies" did not get away with their young until August, and then only a few. Besides this persecution, I was informed that an excursion

steamer came there, and that the excursionists shot numbers of "bonxies," and thirteen dead ones were picked up on the hill after they left. It may be that some readers of 'The Zoologist' will add my name to the list of those who have contributed to exterminate the Great Skua from its remaining haunts in Great Britain, but it should be observed that not a single egg was purchased or taken by me, and it was only after great hesitation that I could summon courage to shoot one at a distance from the breeding place. My friend shot another, against my wish, but he has thereby enabled me to exhibit to others a well-marked variation in colour, not referred to in any book on British birds to which I have access.

In 'The Ibis' for 1883 (p. 230), Mr. Howard Saunders refers to a *dark*-coloured Great Skua in the Bayonne Museum, with large, coarse feet; but no book at hand refers to dark and light forms easily distinguishable and equal in number at the breeding station. Near the Kame my friend noticed a patch of the Shetland rarity, *Trientalis europæa*. A beautiful little plant this is, and, as it was the first time I had ever gathered it, it will always be associated in my memory with the Great Skua.

Richardson's Skua does not breed on the top of Sneug, nor anywhere near the top; the Great Skuas reserve this for themselves, and if a Richardson's Skua happens to fly near the big fellows above, he is immediately attacked and driven down. Richardson's Skua breeds on harder ground, with less vegetation, than the Great Skua. The Great Skua nests on the mossy turf on the southern slope of the Sneug and its two ridges. Richardson's Skua breeds in several places in small numbers. The lowest half of the steep northern face of the Sneug, and two places low down on the southern face, as well as here and there on the less frequented parts of the moorland, may be mentioned. On the whole Richardson's Skua is not so numerous as the Great Skua, and there are at most not more than sixty pairs scattered over the island. We observed about three dark Richardson's Skuas to one white-breasted one; the coloration is not sexual but the light birds uttered occasionally a low, subdued cry, which I never heard from the dark bird. Both forms were desperately noisy compared to the Great Skua, and they reminded one, by their cries, of a colony of Kittiwakes. Like the Great Skua they attacked us when approaching the nests, and showed even greater audacity.

MEMOIR OF THE LATE W. K. PARKER, F.R.S.

THE saddest task which can fall to the lot of an editor is that of chronicling, from time to time, the loss of a valued friend and contributor; and when, as in the present case, the hand of death has been laid upon one who shone conspicuously amongst his fellow-men, the task is indeed a heavy one.

It would be difficult to overrate the loss which zoological science has sustained by the death of William Kitchen Parker, which occurred suddenly, at Cardiff, on the 3rd of July last; for, as an exceptionally skilled anatomist and a most original worker, he held, in his own particular line of research, an almost unique position—a circumstance the more remarkable by his being in a great measure a self-taught man.

Deprived of the advantages of a University education, and without any of those aids to learning which are afforded by the Science Schools of the present day, he owed all the knowledge which he acquired to an intense love of Nature prompting and developing a taste for original research, which, in spite of many obstacles, he assiduously cultivated to the last. Few men probably have commenced a scientific career under greater difficulties than he must have experienced; but his indomitable energy and perseverance, combined with natural talent, eventually placed him in the foremost rank of modern scientists.

Born in 1823, the son of a farmer, at Dogsthorpe, near Peterborough, his early days were spent first at a school at Werrington, and subsequently at Peterborough Grammar School, under the head-mastership of the Rev. W. Cape. While still a youth he was apprenticed to Mr. Woodroffe, a chemist at Stamford, with whom he remained for three years, and it was here that he enjoyed opportunities for studying the varied fauna and flora of some of the then undrained fen-lands. We have heard him descant with rapture on the insects, birds, and plants which were to be found in Borough Fen, Thorpe Fen, and Whittlesea, Deeping and Crowland; and it is curious to note that, in the prosecution of a taste for Natural History, he began work as a botanist. Although engaged all day in business, he would rise in summer at 4 a.m., and, with a fellow-apprentice, would spend three or

four hours daily in investigating the flora of the district. In two years he had collected and named more than 500 species of plants, and was often quite exhausted when he returned home to breakfast and to the less congenial work of the day.

On leaving Stamford he became apprentice to Mr. Costal, a medical practitioner at Market Overton, in Rutlandshire, where he acquired the rudiments of surgery and human anatomy, which eventually determined his choice of a profession. In December, 1844, he proceeded to London, and became a medical student at Charing Cross Hospital, and subsequently Demonstrator of Physiology to Mr. (now Sir William) Bowman and Dr. Todd at King's College. During this time he resided with the family of a Mr. Booth, a general practitioner, in Little Queen Street, Westminster,—eventually, in 1849, settling down in practice on his own account, in Tachbrook Street, Pimlico, where he married, and resided for many years.

While at King's College he made many beautiful injected preparations of organs, and laid the foundation for his later microscopical work on the Foraminifera. It was as a student of these minute organisms that he first came before the scientific public, in 1857, when he began to publish, in conjunction with his friend Prof. Rupert Jones, a series of valuable papers in the 'Annals and Magazine of Natural History' (1857—65), in the 'Quarterly Journal of the Geological Society' (1860), and in the 'Philosophical Transactions' (1864). The important share which he took in the preparation of Dr. Carpenter's 'Introduction to the study of the Foraminifera,' published in 1862, by the Ray Society, in a quarto volume of more than 300 pages, with twenty-two beautiful plates and numerous woodcuts, has been fully and freely acknowledged by Dr. Carpenter in his Preface to that volume. Under the auspices of the same Society he produced, in 1868, his Monograph on the structure and development of the shoulder-girdle and sternum in Vertebrata. As a draughtsman he particularly excelled, and much of the value attaching to the numerous memoirs published by him was due to the excellence of the plates which he himself prepared.

No man could have worked harder at science, in the intervals of professional duties, than he did, and it is scarcely surprising that the very short intervals which he allowed himself for rest eventually told upon his health and compelled him for a time to

give up some of his practice. But, like a true naturalist as he was, he allowed his love of science to triumph over a desire for worldly gain, and it was well known to his friends that some of his best scientific work was accomplished during actual physical suffering, furnishing him, as he said, with a pleasant distraction from his ailments. One after another he completed most valuable papers on the morphology of the skull, dealing in turn with the *Ostrich* (Proc. Roy. Soc. 1865, and Phil. Trans. 1866), *Parrot* (Proc. Zool. Soc. 1865), *Common Fowl* (Phil. Trans. 1869), *Frog* (*ib.* 1871), *Eel* ('Nature,' 1871), *Crow*, *Tit*, *Sparrowhawk*, and *Thrush* (Monthly Microscopical Journal, 1872-73), *Salmon* (Phil. Trans. 1873), *Pig* (*ib.* 1874), *Woodpecker* (Trans. Linn. Soc. 1875), *Passeres* (Trans. Zool. Soc. 1875), *Batrachia* (*ib.* 1876), *Salamanders* (*ib.* 1877), *Sharks and Skates* (*ib.* 1877), *Snakes* (Phil. Trans. 1878), *Lizards* (*ib.* 1879), *Chamæleons* (Trans. Zool. Soc. 1880), *Crocodyles* (*ib.* 1883), and *Green Turtle* ('Challenger Reports,' Zoology, vol. i.), *Sturgeon* and *Lepidosteus* (Phil. Trans. 1882), *Edentata* and *Insectivora* (*ib.* 1886), and the development of the wing of the *Common Fowl* (*ib.* 1888). A portion of the above work was summarised in 1877, with the aid of his friend Mr. Bettany, and, under the title of the 'Morphology of the Skull,' was published in a single volume.

Meantime, in 1864, he had joined the Zoological Society, when the Council paid him the high compliment of remitting the usual composition fee, an example which was followed by the Council of the Linnean Society a few years later. In 1865 he was elected a Fellow of the Royal Society, receiving soon afterwards the Royal Medal, and in 1871 became President of the Royal Microscopical Society, to whose 'Transactions' he had already communicated important papers.* In 1874 he was appointed Hunterian Professor of Comparative Anatomy at the Royal College of Surgeons, where he lectured for ten years, giving, in his own quaint and discursive way, the results of much original research. His Hunterian Lectures for 1884, on "Mammalian Descent," were published in book-form the following year.

This by no means exhausts the summary of work done by him. Ornithologists especially owe him a debt of gratitude for

* For his presidential addresses to this Society see the 'Monthly Microscopical Journal,' 1872, pp. 89—97, and 1873, pp. 97—102.

the valuable help given them in many other papers published by him besides those above noticed, and in particular we may mention his article on the Anatomy of Birds, contributed to the last edition of the 'Encyclopædia Britannica.'

Besides this, and in addition to the various papers on the Avian skull above referred to, the following may be specially noted:—

On the osteology of *Balaniceps rex*. Proc. Zool. Soc. 1860, pp. 324—330, and Trans. Zool. Soc. 1862, pp. 269—351.

On the osteology of the genera *Pterocles*, *Syrnhaptēs*, *Hemipodius*, and *Tinamus*. Proc. Zool. Soc. 1862, pp. 253—260.

On the systematic position of the Crested Screamer (*Palamedia chavaria*). Proc. Zool. Soc. 1863, pp. 511—518, and Ann. Mag. Nat. Hist. 1864, pp. 144—150.

On the skeleton of the *Archæopteryx*, and on the relations of the Bird to the Reptile. Geol. Mag. 1864, pp. 55—57.

On the osteology of the Kagu (*Rhinochetus jubatus*). Proc. Zool. Soc. 1864, pp. 70—72; Ann. Mag. Nat. Hist. 1864, pp. 385—387; Proc. Zool. Soc. 1868, p. 2; and Trans. Zool. Soc. 1869, pp. 501—521.

On the sternal apparatus of Birds and other Vertebrata. Proc. Zool. Soc. 1864, pp. 339—341.

On the osteology of *Microglossa alecto*. Proc. Zool. Soc. 1865, pp. 235—238, and Ann. Mag. Nat. Hist. 1865, pp. 134—138.

On the osteology of Gallinaceous Birds and Tinamous. Trans. Zool. Soc. 1866, pp. 149—241.

Preliminary Notes on some Fossil Birds from the Zebbug Cave, Malta. Proc. Zool. Soc. 1865, pp. 752, 753, and Trans. Zool. Soc. 1869, pp. 119—124.

Memoir on Ægithognathous Birds. Part I. Trans. Zool. Soc. 1873, pp. 289—352; Part II. 1876, pp. 251—314.

On the systematic position of the Swifts (*Cypselidæ*). Zoologist, 1889, pp. 91—95.

At the time of his death he had in hand a memoir on the Morphology of the *Anatidæ* and the *Alcidæ*, designed to form one of the 'Cunningham Memoirs' published by the Royal Irish Academy; and an important paper on the Morphology of the Gallinaceous Birds, accepted for publication by the Linnean Society, the plates for which had fortunately been drawn by him and lithographed under his direction by his son, Mr. M. P. Parker. It is much to be regretted that he has not lived to revise the proof-sheets of this his last contribution to Zoology.

No man ever laboured from a purer love of Science. In his devotion to the study of Embryology and primitive types, he seemed to personify "the philosophic naturalist" depicted by the late Dr. W. B. Carpenter in the Preface to his work on the Foraminifera.*

He was a large-hearted and generous-minded man, without one particle of jealousy in his composition; and though, as an anatomist and physiologist, he was possessed of knowledge which many a one might envy, he never in the least degree seemed conscious of it. On the contrary, he seldom lost an opportunity of expressing his obligations to other people. It was a pleasure to ask him for information, for he gave it so fully and so freely.

Those who had the privilege of listening to his lectures will not easily forget the enthusiasm with which he would descant on the discovery of some beautiful adaptation of structure to habit, or the reverent admiration with which he always referred to the wisdom of the Creator as displayed in the creation.

NOTES AND QUERIES.

MAMMALIA.

The Irish Wolf-dog in Spain.—In some interesting notes communicated to the Royal Irish Society in January last (Proc. R. I. Acad. 3rd ser. i. pp. 333—339), Prof. J. P. O'Reilly gives some extracts from Bowles' 'Introduccion á la Historia Natural y á Geografia fisica de Espana,' 1775, showing that the so-called wolf-hound was at that date distinguished from the greyhound, and that the former was introduced into Spain from Ireland. The Spaniards call the greyhound *galgo*, as having obtained it first from Gaul; the wolf-hound they call *perro lebel*, and

* "As it is the aim of the physical philosopher to determine what are the fewest and simplest assumptions, which being granted the whole existing order of Nature would result; so the aim of the philosophic naturalist should be to determine how small a number of primitive types may be reasonably supposed to have given origin by the ordinary course of 'descent with modification' to the vast multitude of diversified forms that have peopled the globe during the long succession of geological ages, and constitute its present Fauna and Flora."—Carpenter, 'Introd. to the Study of the Foraminifera,' 1862; Preface, p. xii.

several of the older dictionaries, as those of Delpino (1763), Pinedos (1740), and Stevens (1724), expressly explain *lebrél* to be "An Irish greyhound, though some will use it for a common greyhound, which is not proper, these being called *galgos*." Commenting upon the derivation of the word *loup-garou* (were-wolf) given by the Abbé Espagnolle, in his remarkable work 'L'Origine du Français,' 1888, vol. ii. p. 292, Prof. O'Reilly remarks:—"Comparing the form *loup-brou* = *leu-brou* with the Portuguese *lebreo* = *lebre* = Spanish *lebrél*, it may be taken that the word *lebrél* originally meant a lynx, or *loup-cervier*. Hence the *perro lebrél* mentioned by Bowles would really mean a wolf-dog." The pith of his communication is to be found in the following quotation from Bowles, who, an Irishman by birth, spent many years in Spain, and died in Madrid at an advanced age in 1780;—"The ordinary wolves (*lobos comunes*) are rare, either because there are but few small cattle, or because—the whole country being covered with farms (*caserías*)—should one be seen he is at once hunted and killed, for which work are excellent the greyhounds which they have brought here from Ireland—*para lo qual son excellentes los perros lebreles que hay alli trahidos de Irlanda*." Prof. O'Reilly concludes:—"Taking for granted that there was an importation of Irish wolf-dogs in Spain during the seventeenth and commencement of the eighteenth centuries, it would be reasonable to presume that the race of these dogs may still be surviving in Biscay, or other parts of the Pyrennees where wolves still exist, and the climate of this mountainous district would not materially tend to the degeneration of the race." I may add that there is evidence of Irish wolf-hounds having been sent to Spain prior to the seventeenth century. In 1545, as I have pointed out in an article on the subject (*Essays and Reviews*, p. 62), Henry VIII., at the request of the Spanish Duke of Alburquerque on behalf of the Marquis Desarya and his son, ordered the delivery to them out of Ireland of two goshawks and four greyhounds yearly, the cost of which was to be defrayed by the Treasury.—J. E. HARTING.

Destruction of Otters in the Thames.—Some correspondence on this subject has been printed lately in the 'South Bucks Standard,' and a letter from our contributor, Mr. A. H. Cocks, which appeared in the issue for June 20th, is so much to the point that we are glad to give it a wider circulation by reprinting it here. Mr. Cocks writes:—"In common, no doubt, with a large number of your readers, I was very glad to see the letter in your last issue, signed 'Another Marlow Sportsman,' protesting against the senseless persecution of the Otters. As one who has kept live Otters, tame and wild, for more than twenty-one years—without a break for the last seventeen and a quarter—sometimes having several specimens in my possession at once, and who has observed their habits pretty closely in a wild state as well, I may claim to speak with a certain amount of authority about them; and I assert with confidence that they do very little harm to

the fishing—quite an inappreciable amount, in fact. Of course they feed principally on fish; but I think the keenest angler must be very small-minded indeed who believes that there are not plenty of coarse fish for all the two-legged and four-legged anglers as well, without their interfering with each other's sport. A more serious charge, however, and the only one, I fancy, that real sportsmen prefer against them, is that they have been known to take large trout off the spawning-beds. This charge has been unquestionably much exaggerated; the few instances where a trout has been found partly eaten by an Otter have been so continually talked of that everyone has come unconsciously to consider it as almost a common occurrence. The remains of a large trout, partially eaten by an Otter, were brought to me here some few years ago. It was a foul, lanky old kelt—that is, a spent fish, with a hide like boot-leather, and if not already dead, was probably *in extremis* when the Otter took it from the water. No doubt a few other persons could tell us of similar instances. In all probability all, or nearly all, of these few trout so captured by Otters were spent fish—old kelts (kippers or baggits), who had safely stowed some 10,000 or more eggs on the river's bottom, and would in many cases have died even if an Otter had not 'saved them the trouble.' The Otters probably did actual good in removing them, for it is difficult to conceive how many thousands of the embryo trout would have been poisoned by the decayed matter exuding from the decomposing body of even one big fish dying right on the spawning-bed. Again, probably very few of your readers are aware how prevalent the Salmon-disease is in the Thames, although, owing to Barking Creek and other pollutions, there are now no Salmon to be affected by it. I have a return, given me some years ago by the late Frank Buckland, showing the number of Salmon caught hereabouts during the last twenty years in which any found their way up, which I will gladly publish in a future number, if of general interest. The Salmon-disease is caused by, and consists in, a fungus, called *Saprolegnia ferax*, and in the spring months of some years—possibly every year—some species of the coarse fish die in large numbers from its attacks. This fungus spreads with marvellous ease (I learnt a little about it by keeping and observing fish in aquaria); and until that happy day arrives—it seems far enough off at present—when Thames water shall again be as pure, and as free from all pollutions, as it was in primeval times, I can think of no means so effectual for checking the spread of this most fatal fungus as to encourage, by every possible means, the few Otters remaining along the river side, who unquestionably remove a large number of these diseased (and highly contagious) fish from the river on account of their being so easy of capture. As an ounce of fact is worth pounds of theory, I may mention that I have never found an Otter make any objection to eating a fish affected with the disease, nor have I ever found one any the worse for doing so. But, after all, anglers are

not the only class of persons for whom the river exists, although I do not mean to say one word against them, for there was no one in Marlow who fished as regularly as I did when at home, from the time I was a very small boy, until during these latter years I have been choked off by the steamers and multitude of boats, which quite put an end to sport. If the boating fashion were to come to an end again, I should again go fishing; so that I do not intend to say anything against anglers; but there are other classes of persons who enjoy the river, who have as good a right to have their interests respected, even if they should seem at first sight in any way antagonistic to those of the anglers. Among these are naturalists, or lovers of nature; and if I cannot any longer (in the Thames) be a fisherman, I cannot help remaining (at least) a lover of nature; and it is a very great pleasure to me—and doubtless to many others—when I go on the river, or along its banks, to observe where the Otters have been. A family—as just now is the case above Temple Lock—will sometimes occupy a reach for some time, and it is then extremely interesting to visit the locality frequently, and read, almost as a book, what the Otters have been about since one's last visit. I could have shot four Otters in the Thames near Marlow; on each occasion I had my gun with me. On one of these occasions I actually had the gun pointed at the Otter,—thinking it was a water rat,—but, finding out what it was just before I pressed the trigger, I at once lowered the gun, and was rewarded for my forbearance by catching the Otter by hand. I kept her alive for years afterwards, when she was killed by another Otter biting her in the head. Besides fish, Otters eat frogs, mussels, worms, &c., and as a very large majority of people have a horror of snakes, they may like to know that an Otter very much appreciates a snake as an article of diet. After all, Otters are not numerous; on many rivers they are now almost unknown. A very few more years of this unmeaning persecution, and goodbye to one of the most interesting, and certainly the most intelligent, of our few remaining wild animals. I wonder no one, before your correspondent of last week, has objected publicly to the awful trap that is employed to catch the unfortunate Otters by the Temple lock-keeper. One of the Otters he captured, which was brought to me, was a strong, full-grown male animal (his dimensions and weight were given in the columns of a contemporary, but the figures would have to be discounted by about 20 per cent. before they agreed with mine), but the trap had almost cut his leg off; the tough skin and the powerful muscles were divided, and the bones were broken, so that the foot simply hung by the ligaments. Such a trap is big enough and strong enough to hold a leopard!—much more a small animal like an Otter. It would break the leg of any dog that happened to stray into it, and woe to any child on whose ankle the trap were to close. It would be agony even to the toughest adult person. Not only does it strike high from its great size, but it is closed by two very powerful springs,

and besides the cutting caused by the jaws, there are the formidable cross spikes to which your correspondent calls attention; they would penetrate anyone's ankle on each side (speaking from memory) to a depth of over an inch.—A. H. Cocks (Thames Bank, Great Marlow).

BIRDS.

Barred Warbler in Ireland.—On his return from Belmullet, a few weeks ago, my friend Mr. R. J. Ussher sent me, for determination, a warbler, which turns out to be a female Barred Warbler, *Sylvia nisoria*, now to be for the first time recorded as an Irish bird; and I am glad to say that Prof. Newton, who has very kindly examined the specimen, confirms my identification. Mr. Ussher informs me that the present example was obtained, by the venerable ornithologist Dr. Robert J. Burkitt, at Belmullet, in the remote north-west of Mayo, on the 24th September, 1884, about the same date when several others were captured in England. To Dr. Burkitt Irish Ornithology is already indebted for the record of the Great Auk, the Gold-vented Thrush, and the Spotted Eagle Owl, all of which he obtained in the vicinity of his former residence at Waterford; and it is interesting to find one who commenced collecting birds in 1839, and is now eighty-four years of age, adding one more rarity, *Sylvia nisoria*, to the Irish avifauna.—A. G. MORE (Science and Art Museum, Dublin).

Protective Colour of Birds' Eggs.—On July 7th, while walking with a friend on the Wicklow coast, near Kilcoole, I found a nest of the Ringed Plover, with three eggs, after a long and careful search, having seen the bird near the spot running along the shore. I drew my companion's attention to the admirable manner in which these eggs, laid without shelter on the open shore, were protected from discovery by their resemblance to surrounding objects, and, for our amusement and instruction, I made the following experiments:—Walking backwards and keeping my eyes fixed on the nest, I found that the eggs ceased to be visible at about fifteen yards; at ten yards they were conspicuous as long as the eye was fixed on them, but on my turning my back to the nest for an instant it was some minutes before I could see the eggs again. This for myself, who am well accustomed to finding nests such as this. My companion found that while there was no difficulty in seeing the eggs at ten yards as long as the eye was fixed on them, yet on looking away for a moment he could not find them again, and even when I walked to within three paces of the nest, and pointed at it with my walking-stick, it was still several minutes before he again caught sight of the eggs. Once seen they were quite conspicuous. Near the same place we found some nests of the Lesser Tern after a very long search, having seen the birds rise from the shore. From the foot-marks, it was evident that, while searching, one of us had actually stepped over a clutch of three eggs lying in the sand, without seeing them. In a

neighbouring field, among the shingle and *débris* on the edge of a tidal creek we found a Lapwing's nest with three eggs, having seen the bird leaving them. So closely did these eggs resemble their surroundings that at five yards they were practically invisible, though there was absolutely nothing to interrupt the view, and neither of us could discern the eggs again, having once lost sight of them, without walking back right up to the spot where we knew the nest to be.—ALLAN ELLISON (Trinity College, Dublin).

Occurrence of *Ægialitis asiatica* (Pallas) in Norfolk.* — The true home of this beautiful Plover appears to be Western Asia, more especially the shores of the Caspian Sea, whence in winter it passes by the Red Sea shore and Abyssinia, to South and South-west Africa. In the western palæarctic region Mr. Dresser speaks of it as a rare straggler, but it has occurred twice in Heligoland, and strange to say at very opposite periods of the year, namely, a young bird in November, 1850, and an adult male, in full summer plumage, on the 19th May, 1859. These, until the occurrence of which I am about to speak, are the most westerly examples recorded; but Mr. Harting, in an excellent article "On rare and little-known *Limicolæ*," contributed to 'The Ibis' in 1870 (2nd series, vi. pp. 201—213), concludes some remarks on the distribution and routes of migration of this species with the observation that it is quite possible, on some future occasion, the bird may occur in England. It was with no little pleasure, therefore, that on the evening of the 23rd of May, 1890, I received from Mr. Lowne, of Yarmouth, the fresh skin of a handsome full-plumaged male of this species which he sent for determination, as the bird was unknown to him. I subsequently learnt the following particulars with regard to this interesting occurrence. During the morning of the 22nd of May, a date very nearly coinciding with the second appearance of the Caspian Plover in Heligoland, two strange birds were seen in a large market-garden, known as Sacret's Piece, bordering on the North Denes, at Yarmouth, which attracted the attention of a man named Samuel Smith, who works the garden for a Mr. Bracey, but he had no opportunity of a shot. About 5.30 p.m., when they were on the golf ground, which forms a portion of the denes, Smith's step-son, Arthur Bensley, saw them, and having a gun with him tried to get both birds in line for a double shot, but being unsuccessful selected the brighter of the two, its companion being at the time about six yards distant from it; when he fired the paler bird, presumably the female, flew off in a westerly direction, and was no more seen. Very shortly after, the bird was purchased of Smith by Mr. H. C. Knights, by whom it was shown in the flesh to Mr. G. F. D. Preston, and

* Extract from 'The Birds of Norfolk,' vol. iii. (now in the press).

taken the next morning to Mr. Lowne for preservation; he, as before stated, forwarded the skin to me the same evening. The weather being very warm at the time, Mr. Lowne would not risk sending the bird in the flesh; hence it was that I saw only the skin, but I may mention that it had all the appearance of having been very recently removed, and that there were still many living parasites remaining on the feathers. Mr. Gurney also saw the skin while it was in my possession. The sternum Mr. Lowne sent to Professor Newton. The total length of the bird when in the flesh, Mr. Lowne tells me, was eight inches, and its weight two and a quarter ounces [?]. Mr. Knights was good enough to give me the first offer of the bird, and through the liberality of some friends of the Norwich Museum I was enabled to purchase it for that institution, and to send this first British example for exhibition at the meeting of the Zoological Society, on the 17th of June last. In Mr. Dresser's figure of this species the tints of the plumage are not quite so bright as in the freshly killed bird before me, and the conspicuous black border below the chestnut pectoral band is wanting, although it is mentioned in the verbal description; the legs also are coloured, and described as "ochreous-yellow"; but in the Yarmouth bird they were, when fresh, undoubtedly "greenish ochreous," as described in the 'Ibis' by Mr. Harting, a hue which Mr. Dresser states "is certainly an error," but which in this case I can confirm. Mr. Harting's otherwise excellent figure is much darker in colour than the Yarmouth specimen. In neither of the figures referred to has the bird the appearance of standing so high on the legs as in the example now recorded. I submitted the parasites before mentioned to Dr. E. Piaget, who was kind enough to inform me that they are a new species, for which he proposed the name of *Nirmus assimilis*.—T. SOUTHWELL (Norwich).

Breeding of the Woodcock in Ireland.—On July 14th I was informed that there was a Nightjar's nest in the neighbourhood containing *four* eggs! As I was curious to see a Nightjar's nest with that number of eggs, I determined to visit the place. My informant showed me the way, and, arriving near it, pointed out the exact spot. I soon caught sight of the large black eyes, not of a Nightjar, but of a Woodcock, crouching low under a frond of bracken. Allowing me to approach within only a few feet of it, it suddenly rose with a loud flutter, and disappeared with a rapid zigzag flight. The nest contained four eggs. I send this note because in all the text-books on British birds which I have, only incidental mention is made of a second brood being reared, and, strange to say, all the instances mentioned are recorded as having occurred in Ireland. Mr. Butler ('British Birds' Eggs,' p. 143) mentions, under "Time of nidification," the month of March only. Mr. Harting, in his most interesting article "On some little-known habits of the Woodcock" (Zool. 1879, p. 439), mentions the case of a bird carrying its young on the 2nd of August, 1871, at

Rostrevor, Co. Down. Several instances of a second brood having been reared are given in Thompson's 'Natural History of Ireland,' vol. ii. p. 247. It is curious to read the account of this bird's first nesting in Ireland, given in the last-mentioned work. It appears that the earliest record is fifty-six years ago, when a pair bred in the Co. Antrim in 1834. Since then there are records of its having done so in Armagh, Carlow, Down, Queen's County, Sligo, Tipperary, Waterford, Wexford, and Wicklow. No doubt it has nested in other counties also. The Woodcock is common in this neighbourhood throughout the year: an evening is an exceptional one when I do not see one or more birds on the wing. I always know when one is coming by its peculiar clicking note, which once heard can never be forgotten. — WILLIAM W. FLEMYNG (Clonegam Rectory, Portlaw, Co. Waterford).

Dunlin breeding in Co. Wicklow.—It may perhaps be worth recording that on May 27th I found the nest of the Dunlin on the Wicklow Mountains near the source of the Liffey. Here is a vast extent of wild, swampy moor, perhaps, on an average, 1700 feet above the level of the sea, and surrounded by the highest summits of the North Wicklow Mountains. The bog is studded with small ponds of peaty water, and is mostly covered with moss, mixed with stunted heather and patches of cotton-grass or rushes. The Golden Plover and Curlew breed on these moors, and not far off are precipices containing eyries of the Peregrine and Raven. While crossing the bog, threading my way with some difficulty among the marsh-pools, I saw a Dunlin perched on a moss-tussock. After searching the spot for some minutes, I almost trod on the sitting female, who fluttered away just at my feet, leaving her nest, with three eggs a good deal incubated. The nest was merely a hollow in the moss, surrounded by a few bents and lined with scraps of grey moss and little bits of heather-stems. Mr. More, in his 'List of Irish Birds,' only mentions the Dunlin as breeding in the West and North of Ireland.—ALLAN ELLISON (Trinity College, Dublin).

Wood Pigeons in the London Parks.—Since I wrote you two years ago respecting the Wood Pigeons in Hyde Park (Zool. 1888, p. 389) their numbers have so increased that I have given up all idea of counting them. I notice, however, this year, that a good many more of the fancy Pigeons come to feed with them on the lawn; and as a result of this, apparently, there is a young hybrid bird to be seen, evidently a cross between a Wood Pigeon and a fancy one. This bird, which is very tame, and which—with one or two other wild birds—will come and take white peas out of my hand, retains the sedate walk of the Wood Pigeon, but the plumage is very peculiar, especially on the back, rump, and upper tail-coverts. The tail is black and rather squared, and the head and beak light and rather small. To-day, after the rain, I counted a dozen Rabbits at feed in the dell; also

a brood of young Waterhens, and several Blackbirds, Thrushes, and Starlings. Two of the Peahens also have broods of four and two each, which, mingled with all the varied life to be seen there, made it quite a red-letter day for this charming spot.—W. H. TUCK (47, Cathcart Road, South Kensington).

Nesting Habits of the Dipper.—There are probably few places in the British Islands where the Dipper is so abundant or so widely distributed as in the Co. Wicklow. Along the steep, rushing mountain torrents, as well as the larger and quieter streams of the lowland districts, it is alike everywhere present. Among the numerous Dippers' nests which I have examined, there are a few whose peculiarity may perhaps entitle them to a notice in 'The Zoologist.' The nest is usually placed in some crevice in the rocks or masonry over the stream, a niche in an overhanging river-bank, or a hole in the stonework of a bridge,—never in a tree.* The River Derry, in the south of Co. Wicklow, is a sluggish and weedy stream, the abode of pike and minnows, but it is quite as much favoured by these birds as its small rapid tributaries. The banks are for the most part low and grassy, and do not offer many suitable nesting sites; but I do not think there is a single bridge along its whole course that is not resorted to annually by a pair of Dippers. Under the arch is the most favourite spot for the nest, as the Dipper likes to have its domicile completely sheltered from above. Any accidental crevice or hole left in the stonework serves to receive the nest, which is occasionally built far in out of sight, but usually projects from the mouth of the hole, so as to be conspicuous to anyone looking through the arch. When the nest is at a distance from the entrance of the hole, it is generally a very imperfect structure, like that of a Wren or Sparrow under similar circumstances, the dome being almost completely absent; but such cases are, I think, rare, the nest being usually wedged, so to speak, in the entrance. But holes in the masonry are by no means indispensable for the Dipper's nesting purposes. I know of two bridges on the River Derry where a Dipper's nest is constructed almost every year on a flat stone projecting from the wall of the arch, less than three feet above the average level of the water. In one of these places the nest has a partial concealment, from some ferns and mosses growing from the stonework around the nest-shelf, the mossy nest being of the same hue as the surrounding objects. In the other place the stones around the nest-shelf are quite bare, and the nest is very conspicuous for some hundred yards along the river to anyone looking through the arch of the bridge, but by a casual observer would probably be taken for a sod or lump of river *débris* caught on the projecting stone. This nest was carried away

* Three instances of Dippers' nests in trees will be found mentioned in 'The Zoologist' for 1888, pp. 309, 351, 392.—ED.

by a flood last year before the young were flown, a thing which perhaps not unfrequently happens in wet seasons. About a mile down the river from these is a third bridge, where a nest was for many years constructed on the point of the buttress, partly concealed by grass and overhanging ferns, and about seven feet above the water. This nesting-place has been deserted, because the nest was invariably discovered by idlers leaning over the parapet (the bridge being near a village), and destroyed by dropping stones on it. There is another bridge about two miles below this, which is also frequented by a pair of Dippers. Here, however, the stonework being very perfect and devoid of crevices, does not offer any place where a Dipper's nest could possibly be fastened. Consequently this pair of birds are compelled to place their nest in the most extraordinary situations, and are, as far as I know, unique in their nesting habits. Under the middle arch of the bridge there is a stout post driven into the river bed, standing about three feet above the water. On top of this the nest was placed, being partly supported by a piece of paling-wire, which was lapped round the post, fastening to it a wooden rail, which was suspended by chains across the arch for the purpose of preventing cattle passing under the bridge. This nesting-place was resorted to for several years, a new nest being always constructed on the ruins of the old one, until a mass of materials had been accumulated sufficient to fill a good-sized wheelbarrow. It was visible for a long distance both up and down the river, but if discovered would certainly have been mistaken for a tuft of river *débris* entangled in the top of the post. A few years ago the cross-rail with the paling-wire, nest and all, were carried away in the winter floods by an alder tree which was swept down the river, and remained entangled in the post for a long time, until again swept away by a subsequent flood. Nothing now remains but the upright post, which is no longer able to support a nest. Last year, although the Dippers were constantly about the bridge, the nest was not discovered, and I am of opinion that they did not breed at all, for want of an available nesting-place. This year, however, I have again discovered their nest, and its position is, if possible, more curious than ever. On the lower side of the bridge, between two of the arches, there grows—partly out of the masonry of the bridge and partly on the stones in the bed of the river—a tussock of rushes, water-parsnip, and other weeds. In the centre of this the birds have constructed their nest. It is practically on the ground in the bed of the river, built in the tuft of weeds, just as a Willow Warbler's nest is built in a tuft of moss or grass. Viewed from the bank, or from over the parapet of the bridge, it looks just like a sod in the middle of the tuft. The current of the river dashes, rapid and foaming, through the arches on either side, and the nest—which is little more than a foot above the water—is constantly wet with the spray. When discovered, on April 11th, it was just completed, and ready

for eggs. At the same time I knew of another Dipper's nest containing young ones, so that the structure of this one had probably been delayed owing to the flooded state of the river, the tuft of weeds in which it was placed having been but a fortnight previously submerged under two feet of water. Probably for this reason most of the Dippers' nests I observed this year were much later than usual. The earliest contained eggs much incubated on March 30th, but this was in a situation quite out of reach of even the highest floods. Generally these birds build very early. I saw a nest complete and ready for eggs on March 6th, 1886; but a few days after we had the heaviest snow-storm ever remembered in the district. The snow lay drifted in many places over ten feet deep during the whole of that month, accompanied by intense frosts. On the morning of March 3rd the thermometer at Shillalagh had registered 8° Fahr., and on the ground,—or rather the snow,—while the rivers were partly frozen, had fallen some degrees below zero. In spite of this severity the Dippers were able to carry on their nesting operations. Young Dippers frequently leave the nest before the second week of April, and the nests are sometimes commenced in February, but they may probably be later in some districts. I have frequently heard the Dipper singing on the wing in very early spring-time, while in amorous pursuit of his mate over the river.—ALLAN ELLISON (Trinity College, Dublin).

Birds killed by Electric Lights at Girard College, Philadelphia.—During the spring and fall migrations of birds many dead ones are seen near the electric towers in the grounds. Last autumn quite a number were found, though not so many as the previous year, when a whole flock struck the electric tower at Ridge and South College avenue, in their migration to their winter quarters to the south. It is now an established fact that most birds migrate at night, and during a dark stormy one they are more likely to be attracted by the electric light. Among those dead or crippled were the Whip-poor-Will, *Caprimulgus vociferus* (a very rare bird with us), Peewee Flycatcher, *Sayornis fuscus*, American Robin, *Turdus migratorius*, Maryland Yellow-throat, Ground Warbler, *Trichus marylandica*, Brown Tree-creeper, *Certhia familiaris*, Wood Thrush, *Turdus mustelinus*, White-breasted Nuthatch, *Sitta carolinensis*, Hermit Thrush, *Turdus solitarius*, Song Finch, *Melospiza melodia*, sometimes called Song Sparrow. Many Woodpeckers and Tree Creepers were in the grounds, more than were ever noted before, the Downy Woodpecker busy at work making his ring of holes around the red elm, *Ulmus rubra*. The Tree Creepers have been his faithful assistants, though not having the power to make the holes he does. Both, no doubt, have done much good in ridding the grounds of the eggs and larva of worms that feed on the trees. The Barn Owl, *Strix americana*, put in an appearance last fall (a whole family of them: they are rare in Girard College grounds. Quite a number of Kinglets and

Viroes, or Greenlets, were seen, but they were too shy to be approached, so they could not be named. The Towhe Ground Finch, *Pipilo erythrophthalmus*, also paid us his visit and departed; by the length of his name he might have paid us a longer one. The Fox-coloured Finch, *Passerella iliaca*, and many other birds of all the species above spoken of as killed, were also seen flying around, except the Whip-poor-Will.—F. H. DANEN-HOUR—'American Naturalist.'

MOLLUSCA.

Mollusca additional to the British List.—The following two varieties seem to be unrecorded by name as British, although possibly they exist in various collections:—*Defrancia purpurea* var. *bicolor*, Risso: a deep chocolate-brown specimen, variegated with white, was found by the Rev. A. H. Delap at Valentia Harbour, Ireland, and sent by him to me. *Phasianella pullus* forma *lineata* Monterosato: a specimen referable to this, from Darrynane Strand, Ireland (Delap), is minutely spotted, and has two darker bands composed of united triangular patches, so that the outline of the band is zigzag: this is not identical with the variety from Margate and Guernsey, which I called *lineata* in 1885.—T. D. A. COCKERELL (3, Fairfax Road, Bedford Park, Chiswick).

INSECTS.

Caterpillars destructive to Oaks.—All the oak trees in this part of North Wales (Dolgelly) have this spring been entirely denuded of their leaves, giving the woods the appearance of winter. This devastation appears to have been caused by the caterpillar of a small green moth (specimens enclosed). Earlier in the season the caterpillars were raining from the trees, now they are swarming with these moths. I have not noticed them in former years.—E. L. MITFORD (Dolgelly).

[The insect sent is *Tortrix viridana*.—ED.]

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

June 19, 1890.—Prof. CHARLES STEWART, President, in the chair.

Messrs. W. H. Beeby and H. E. Milner were admitted and Messrs. W. Cross and S. Schonland were elected Fellows of the Society.

Mr. W. H. Beeby exhibited a specimen of *Rumex propinquus* new to Britain, and procured in Shetland.

Mr. Thomas Christy exhibited and made remarks upon a specimen of *Callistemon rigidum*.

Mr. E. M. Holmes exhibited some marine Algæ new to Britain, including *Ascocyclus reptans*, *Halothrix lumbricalis*, *Harveyella mirabilis*, *Sorocarpus uviformis*, and *Vaucheria litorea*. Also specimens of *Rhodymenia palmata* with antheridia, and *Punctaria tenuissima* in fructification, the last two not having been previously recorded to occur in this state in Great Britain.

The following papers were then read:—"Observations on the protection of Buds in the Tropics," by M. C. Potter; "On the distribution of the South American Bell-birds belonging to the genus *Chasmorhynchus*," by J. E. Harting; "On the vertical distribution of Plants in the Caucasus," by Dr. Gustav Radde; and "Notes on the *Forficulidæ*, with descriptions of new genera and species," by W. F. Kirby.

This meeting terminated the Session of 1889-90.

ZOOLOGICAL SOCIETY OF LONDON.

June 17, 1890.—W. T. BLANFORD, F.R.S., in the chair.

Mr. Sclater exhibited and made remarks on a mounted head of a Pallah Antelope, obtained by Capt. F. Cookson, on the Cunene River, in South-western Africa, which was distinguished by its black face from the ordinary form of the Cape Colony.

Mr. Sclater also exhibited a large photograph of Grévy's Zebra, *Equus grevyi*, taken from the specimen in the Natural-History Museum at Paris by Mr. Gambier Bolton.

A specimen of Pallas's Plover, *Ægialitis asiatica*, obtained in May last near Great Yarmouth, and now in the Norwich Museum, was exhibited; and a note upon its occurrence by Mr. T. Southwell was read to the meeting.

A communication was read from Prof. F. Jeffrey Bell, containing some notes received from Mr. Edgar Thurston, of the Madras Museum, on the habits of the Pennatulids of the genus *Virgularia*.

A communication was read from Mons. P. A. Pichot, containing exact particulars of the locality on the Lower Rhone in which the Beaver is still found in its native state.

Mr. W. Bateson read a paper on some cases of repetition of parts in animals, and exhibited a series of specimens illustrative of this subject.

Mr. Henley Grose Smith gave an account of the Diurnal Lepidoptera collected by Mr. W. Bonny, of the Emin Relief Expedition, on the River Aruwimi, Central Africa.

A communication was read from Mr. W. L. Distant, containing descriptions of some Hemiptera collected by Mr. W. Bonny during the same expedition.

A communication was read from Mr. H. W. Bates, on some of the Coleoptera collected by Mr. W. Bonny during the same expedition.

Mr. Herbert Druce read the descriptions of ninety-five new species of Lepidoptera-Heterocera from Central and South America.

Mr. G. A. Boulenger pointed out the secondary sexual characters in the South African Tortoises of the genus *Homopus*.

A communication was read from Mr. W. L. Sclater, containing a series of critical notes on the Indian species of the family *Muridæ*.

A communication was read from Mr. J. T. Cunningham, containing some notes on the secondary sexual characters of the genus *Arnoglossus*. The author showed that the so-called *Arnoglossus laterna* is only the female of *A. lophotes*.

Mr. R. Bowdler Sharpe read the sixth part of his series of notes on the Hume Collection of Birds. The present communication treated of the *Coraciidæ* of the Indian region, and contained descriptions of three new species.

A communication was read from Miss E. M. Sharpe, containing an account of a collection of Lepidoptera made by Mr. Edmund Reynolds on the rivers Tocantins and Araguaya, and in the province of Goyaz, Brazil.

Mr. Edmund S. Hall gave an account of the occurrence of a persistent right posterior cardinal vein in a Rabbit.

This meeting closed the Session 1889-90.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

July 2, 1890. — Prof. J. O. WESTWOOD, M.A., F.L.S., Hon. Life-President, in the chair.

Mr. J. B. Hodgkinson (Ashton-on-Ribble, Preston, Lancashire), and Mrs. Basett (Springfield, Reading) were elected Fellows.

Lord Walsingham exhibited some rare Micro-Lepidoptera collected by himself at Cannes, including *Eudemis helichrysa*, *Conchylis rubricana*, Millière; a new *Depressaria* from *Opoponax cheironium*, which is about to be described by M. A. Constant, and *Bucculatrix helichrysellæ*; and also a volume of drawings of larvæ of the genus *Eupithecia*, by Mr. Buckler, which formerly belonged to the late Rev. H. Harpur Crewe.

Mr. M'Lachlan exhibited larvæ and cocoons of *Mecyna deprivalis*, Walk., sent by Mr. W. W. Smith, of Ashburton, New Zealand; the species feeds commonly on *Genista capensis*, an introduced plant. Mr. M'Lachlan remarked on the curious nature of the larva, and suggested that as the species was so closely allied to *M. polygonalis*, so extremely rare in this country, they might be interesting to British lepidopterists.

Mr. Jacoby exhibited abnormal specimens of a phytophagous beetle, *Metaxonycha tridentata*, Jac., in which one side of the thorax was furnished with teeth as in the type, whereas the other side was quite simple, and presented no trace of teeth.

The Secretary, on behalf of Mr. J. Edwards, exhibited specimens of *Gyrinus colymbus*, Er., with specimens of *G. elongatus*, Aubé, for comparison; he also exhibited drawings of the cœdeagus of both species proving their distinctness.

Mr. Bower exhibited *Phoxopteryx upupana*, bred from larvæ feeding between united birch-leaves at Chiselhurst, Sept. 1889; and *Scardia picarella*, bred from fungus collected in Durham in May, 1870.

Mr. S. Stevens, in speaking of a tour which he had lately made in Devonshire, remarked on the extreme scarcity of insects on the coast of that county as compared with the coasts of Kent and Sussex; there were very few larvæ, and the vegetation was very luxuriant and very little eaten: he thought it possible that the reason of the scarcity was the heavy rainfall of South Devon, which washed off and destroyed the young larvæ. Mr. Barrett said that his experience had been the same, and that he put it down to the violence of the winds which beat the insects from the trees. Mr. Blandford remarked that he had found Coleoptera abundant on Braunton Burrows, near Barnstaple, but very scarce in other localities. Mr. Mason and others took part in the discussion which followed.

Mr. Stevens further said that when at Exeter he visited the Museum, and was pleased to see the original specimen of *Plusia ni* in the late Mr. H. Dorville's collection, taken at Alphington, near Exeter, in August, 1868, and a specimen of *Callimorpha hera*, taken also at Alphington in August, 1871, which is about six miles from the locality in which the latter insect is now said to occur; both the specimens are in fine condition.

Prof. Westwood read a paper on a species of *Aphis* affecting the bread-fruit tree, which he had named *Siphonophora artocarpis*, received from Mr. E. Ernest Green, of Ceylon: at the conclusion of his paper he alluded to the use of Paris-green as a destructive agent for insects. Mr. Blandford then made some remarks as to the use of London-purple (another arsenic compound) as an insecticide in the place of Paris-green; he stated that the compound was a waste product and one-tenth the cost of Paris-green, and further that it was more soluble and more easily applied; he was also of opinion that arsenic compounds do not greatly affect sucking insects, such as Aphides, the ordinary kerosene preparations being more suitable for their destruction. Several Fellows took part in the discussion that followed.—W. W. FOWLER, Hon. Sec.

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THE FINWHALE FISHERY OFF THE LAPLAND COAST IN 1889.

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

THOUGH the returns for the Finwhaling in 1889 are again not so perfect as one could wish, they are yet sufficiently so to show that the falling off from year to year, in the number of whales, steadily and even rapidly continues. I have heard nothing from my friend Capt. Berg; and as there is also no mention of him in the list Capt. Sörensen again, as usual, kindly sent me, I suppose he was not whaling last season. Capt. H. Ellevsen, instead of working at Vardö, has been trying his luck off Iceland, taking his factory, and all his plant, to that country, where I understand he has been very successful, but I have heard no details. Capt. Selliken virtually retired in 1888. This leaves a total of thirty-one whaling vessels, against thirty-five in 1888. I have no information concerning Kommandör S. Foyen or Herr Gjæver; but, as on previous occasions, I have made bold to guess at their numbers, so as to arrive at an *approximate* total, and have, in the table at the end, printed these guesses in Roman figures, so as to distinguish them from the certainties. Upon these premises, I find that while the take in 1888 amounted to at least $20\frac{1}{2}$ whales (of the four species) per ship, in 1889 the take only reached about $14\frac{2}{3}$. The principal falling off was in Blue Whales, of which only about 20 were taken in 1889, against at least 75 in 1888; and Humpbacks, about 8 only, instead of about six times that number.

Capt. Sörensen attributes this falling off partly to storms and bad weather which the whalers met with in June and July, but also to the fact "that whales are becoming more and more scarce. What is the reason of this is not easy to say—whether it is owing to persecution or other causes. For my own part, I believe that the action of the current in the water may have a great influence. There have, for instance, been seen this year great quantities of whales in the tract between Bear Island and Spitzbergen, and this has led me to the belief that the Gulf-stream, which carries with it the whales' 'Aat,' or food,—'Kril' (= *Thysanopoda inermis*), has taken a new northerly course. I also ground this conclusion on the range of temperature of the water off the coast of Finmarken, together also with the fact that the Blue Whales' food—the 'Kril'—does not seem to be in the same quantity, by a long way, as formerly."

Capt. Horn (Yeretiki) also refers to the bad weather:—"The season was very bad; we had mostly E. and N.E. wind, cold and foggy even to the last." Of the sixteen Common Rorquals captured by his vessels, he says, "All were of the variety known as 'Langrör,'* not one real Fin. From the first two Langrör I had 144 petroleum barrels oil." His total amount (883 barrels) gave an average of 42 barrels per whale. He has started the manufacture of glue, the produce of which, he reports, is excellent.

Capt. Hoff (Jarfjord) writes:—"The whaling for the year 1889 has, in the whole result, been bad. The Common Rorquals, to the eastward of the North Cape, kept for the most part far off to sea, and much scattered, and only during the space of a fortnight, about midsummer, were there taken a certain number of Common Rorquals round Vardö and to the eastwards: during all the rest of the season the whaling, in the main, passed by from North Cape eastwards beyond Tanafjord for the boats stationed in East Finmarken. The Blue Whales began to show themselves in June, but only singly, and were difficult to approach. Later, sundry Blue Whales journeyed along the Russian coast, to the eastward of Kildin, but bad weather and fog almost entirely put a stop to all whaling. Most of the whalers turned homewards earlier than usual; we returned from Jarfjord the 30th August."

* Literally, long reed; just as the English word Rorqual is simply *Rör-kval*, Finmarken for *Rör-hval* = Reed Whale.

Capt. Hoff captured eleven male Common Rorquals; lengths in Norwegian feet (= 1 ft. 0½ in. English):—63, 62, 63, 62, 55, 45 (young), 56, 56, 57, 66, 64: average 59 ft. Fifteen females; lengths:—67, 67, 64, 62, 68, 67, 63*, 67, 63, 67*, 64, 64, 64*, 66, 68: average 65½ ft. The three marked * contained foetuses. I am not sure that the above are in their right order, but that is unimportant. On May 23rd a foetus was found of 50 centimètres in length; it was sent, preserved in salt, to Professors Walter and Kuchenthal, of Jena, who were then at Vardö; on July 5th, a foetus, 4 ft. Norw.; and on August 8th, a foetus 10 ft. long. The Common Rorquals were obtained between April 3rd and August 22nd. Capt. Hoff's only Blue Whale during the season was a female, killed August 20th, 74 Norw. ft. long, and containing a foetus 15 ft. long, nearly fully developed, with about two inches of blubber on its body, but without the least trace of oil. Three Rudolphi's Rorquals, killed August 5th and 6th, were females of 49 and 44 Norw. ft., and a male of 49 ft. The only Humpback, a female of 40 ft., was killed August 14th. On his passage north, Capt. Hoff noted three medium-sized examples of this species inside Magerö sound, on March 24th; and on the 25th two small examples, about an English mile off the land by Sletnæs (near the Nord-Kyn). He saw no large number of whales together during the whole season.

Two other companies are proposing to try Iceland next year, and Capt. Grön (with the 'Skjöld' and 'Væрге') is removing his factory from Busse Sund, Vardö, to Ingö, near Hammerfest.

At the Paris Exhibition, Kommandör Svend Foyn took three gold medals, and the Finmarken Co. a silver medal, for their whale products, as I am informed by Capt. Sörensen, but I know no further details. Capt. M. C. Bull, of Sörvær, has manufactured extract of meat from whale-flesh, which is said to be equal in quality to "Liebig."

Capt. Castberg, of the Christiania Co., manufactured 1853 sacks of guano, and Capt. C. Sörensen, of the 'Falken' Co., 2400. I do not know the produce of the other guano factories.

I did not go to the northern part of Norway last year, and saw no Cetacean life in my passages across the North Sea.

LIST OF WHALES KILLED, 1889.

COMPANY.	MANAGER.	PORT OF REGISTER.	WHALEERS.	BLUE WHALES.	COMMON RORQUALS.	RUDOLPH'S RORQUALS.	HUMBACKS.	TOTAL.	PETROLEUM CASKS OIL, ALL QUALITIES.
<i>Murmanski Coast</i> :—									
Yeretiki	P. A. Horn	Petersburg.....	2	4	16	0	0	20	888
<i>East Finmarken</i> :—									
Stokke, Pasvig	A. Ellefsen	Tönsberg	2	3	38	0	1	42	1350
Jarfjord	Hoff	Do.	2	1	26	3	1	31	998
Do., Madvig	Foden	Do. ?	2	3	20	0	0	23	761
Busse Sund—Christiania Co.	Castberg	Christiania ...	2	0	16	0	1	17	1012
Do., Laurvig Co.	Berntsen	Laurvig	2	1	16	1	0	18	650
Do., "Thekla"	I. Bryde	Sandefjord.....	1	0	11	0	0	11	300
Do., Bugten	A. Grön.....	Do.	2	0	14	2	0	16	370
Do., "Tanahorn"	Do.	Do.	1	3	11	2	0	16	540
Do., "Falken"	Chr. Sörensen ..	Do.	1	2	5	0	0	7	1050
Do., "Haabet"	Evensen	Do.	1	0	10	0	0	10	280
Baadsfjord.....	O. B. Sörensen...	Arendal	2	0	11	3	1	15	330
Do.	C. Bruun	Tönsberg	1	0	6	1	0	7	270
Mehavn	S. Foyu.....	Do.	2						
				I.	xxxv.	xxv.	ii.	lxiii.	
<i>West Finmarken</i> :—									
Böle, on Söröen.....	Do.	Do.	2	0	29	55	0	84	
Sorvæar, do.....	M. C. Bull.....	Do.	2	1	28	11	1	41	
Tufjord	T. H. Andresen...	Do.	2	I.	xxv.	x.	I.	xxxvii.	
Skaarö	J. Gjæver	Tromsö	2						
			31	20	317	113	8	458	

NATURAL HISTORY NOTES FROM SUFFOLK.*

BY G. T. ROPE.

MAY (*continued*).

10th. Saw both Shellducks several times during the day. Norfolk Plovers screeching to-night.

11th. One Shellduck (or drake probably) about the river. A Nightingale was this morning skulking about a thick clump of whin bushes on the heath, near a farmhouse. Its manner led me to suppose it had a nest close at hand. I am not sure whether this bird has ever been known to build among the roots of whin or furze.

12th. Saw a few Common Terns this morning. Some Lesser Terns have been frequenting this part of the river several days. Though perhaps it was the long pointed wings, forked tail, and general form of this elegant little bird which first suggested the name of Sea Swallow, there is also, I think, a decidedly Swallow-like tone about the voice. Saw three Whinchats drinking at a pond near a farmhouse.

13th. Noticed at Blaxhall two Blackcaps together, to all appearance a pair, though both had chestnut crowns.

14th. Saw both Shellducks to-day. When first noticed they were on the Friston saltings, but after a time they rose, and came close over me. While flying they kept uttering a soft, low, descending whistle. One disappeared behind a clump of oaks, mentioned above as growing close to the river; the other (doubtless the drake), after taking a sweep round the trees, came back and alighted on the saltings. I afterwards searched the spot where the duck so mysteriously disappeared, and soon found a rabbits' hole, the appearance of which plainly indicated a nest within. The entrance was partly concealed by brambles; about the mouth of the hole were a few bits of white down, and, a little way in, a single feather. I also fancied I could make out foot-prints in the loose sand. Many pairs of these handsome birds formerly nested annually in rabbits' holes about Iken Heath. They used also to breed at Sudbourne, near the ferry, and at Gedgrave; but, like most birds in this country that have the

* Concluded from p. 297.

misfortune to be either at all rare or possessed of unusual beauty, they have been gradually driven, by continual persecution, from their old haunts, and now only an occasional pair makes an attempt to rear a brood in the neighbourhood. The locality seems so admirably suited to their wants and habits that it is a great pity they are not more strictly protected. On both banks of the river, but particularly the right bank, there is a good deal of broken and uncultivated ground,—mostly sand, covered more or less with whin bushes and brakes, and abounding in rabbits' holes; while the saltings and mud-flats afford an inexhaustible supply of food in the shape of small Mollusca, such as *Hydrobia ulvæ*, *Conovulus denticulatus*, *Littorinæ*, &c., as well as innumerable small Crustacea, and other minute forms of animal life. Saw to day three large Gulls (Herring or Black-backed), circling for some time above a farmhouse near the river; some small chickens, in coops, had I believe attracted their attention. An instance of a captive Herring Gull devouring chickens occurs in 'The Zoologist' for May, 1888, p. 186, the recorder of which also mentions a case where a Gull of this species was seen at a stack, feeding on mice. While on the subject of the rapacious habits of this group of Gulls, the following may be worth mentioning:—The stomach of a fine old male Great Black-backed Gull, shot a few years back at Leiston, contained the body of a very large rat. During and after floods a few of these big Gulls used to frequent the Leiston marshes, keeping to the higher ground, which remained uncovered by the surrounding waste of waters, where Moles, Field Voles and Shrews were of necessity congregated in some numbers. The many castings left on the spot were composed principally of the bones and fur of these animals, those of the Mole being particularly abundant.

15th. Saw both the Shellducks this morning gradually working their way towards the nest, at about the same time of day as before (between half-past nine and ten). To anyone not in their secret they would merely appear to be lazily feeding, or paddling about at the edge of the saltings,—in fact taking it easy. When they had, in this manner, arrived at a point opposite the nest, but on the further side of the river, both birds got up and took a sweep round the nest as before; one only reappearing, and remaining about the saltings for the rest of the day. This clever little piece of acting I saw repeated on several subsequent

occasions, at about the same time of day; the same leisurely and *apparently* haphazard manner being invariably adopted. I was able to watch the drake this morning from my window.

16th. A beautiful rain. First noticed the young fronds of the brake fern above ground. Found a young Redshank on the saltings, cold and weak. The two Shellducks were together to-night at about seven o'clock. Foot-prints plainly visible at the entrance of their nesting-hole, the sand being wet from the rain. A few Frogs abroad to-night after the rain. Among them I noticed one example of a variety not uncommon about here, the colouring of which is strikingly brilliant and attractive. Writing from memory I should describe it as follows:—Upper parts of a rich, shining, chestnut-red; throat and under parts lemon-yellow, profusely blotched and sprinkled with blood-red, the markings on the legs and thighs being, I think, of the latter colour. Frogs of very large size occur here, coloured as above; but they appear to acquire this distinct livery at an early age, as I have seen young ones of a year old showing the same peculiarity. Heard some Norfolk Plovers to-night on the heath.

17th. A small Ladybird seen to-day, near the river, of a species new to me, though probably well known to many entomological readers of 'The Zoologist.' Its colouring was so beautiful that I may perhaps be pardoned for attempting a description:—The whole of the thorax and wing-cases intensely deep plum-brown, approaching black, and having a remarkably glossy and polished surface. It had four brilliant red spots, two being large and shaped like a comma; the others small, roundish, and closer together. A pair of Redshanks, very clamorous to-day, at the top of the cliff, having evidently young ones close by; they kept alighting, from time to time, on the top of one of the oaks overhanging the saltings, uttering all the time their loud and impressive alarm notes. It is a common practice with these birds, when they have young about the saltings, to alight on these trees; and should anyone chance to pass nearer than they like to the chicks squatting among the rushes, several pairs of Redshanks may often be seen together, wheeling and screaming about the oaks, and perching from time to time on the upper twigs. Every now and then they dash suddenly to the ground, where, as well as when on the trees, they continually keep up the curious jerking bow so characteristic of this bird. Several pairs breed on a dry

part of the heath, at a considerable distance from the river or marshes. Came upon a Common Whitethroat's nest in a clump of "butcher's broom" on the cliff, a few yards only from that of the Shellducks. Saw both of the latter birds together at about three o'clock this afternoon. Noticed a single Norfolk Plover standing in the middle of a large ploughed field adjoining the heath; it was calling loudly. Heard more of these birds about three hours later on; also a Nightjar.

18th. A Kestrel seen for the first time since coming here. Some Swifts were hawking over the river to-day.

20th. Looked at a "Tit box" fixed last March on a garden-wall at Blaxhall, and found a Blue Tit sitting on eggs.

21st. Went to Leiston. A Jay seen on the way. This, owing to persecution by gamekeepers, is fast becoming a rare bird here. Noticed several pairs of Yellow Wagtails in the Leiston marshes. My brother has seen a male Teal about for some time past: several Wigeon, he told me, remained there during the floods, and among them a few Pintails, as well as a male Scaup, and a small party of Godwits. He has only seen one pair of Shovellers. He also mentioned having met with a small Sandpiper, on the marshes, which he could not make out, it being neither *Totanus ochropus* nor *hypoleucus*,—the note, too, being unlike that of either species.

22nd. A single Dunlin and a Ring Dotterel were feeding this morning on the mud, keeping close together, as if they had been birds of the same species. Counted, with the aid of a telescope, thirty-three Herons at once, standing about the mud and in the water, opposite the heronry. I have no doubt there were more which, owing to the distance, escaped notice, while others kept flying about, and like the Irishman's pig, would not keep still enough to be counted. A pair of Common Sandpipers were running about, near the limekiln, both to-day and yesterday. Watched the Shellducks to their nest. Their proceedings were as usual, excepting that two turns instead of one were taken round the trees, the duck dropping during the second. Probably I was nearer than they thought desirable, and a little extra caution was deemed necessary.

27th. First saw a Spotted Flycatcher at Blaxhall.

28th. Having been away since the 26th, I went this evening to see if the Shellduck's nest was safe, and had the mortification

of finding that some scamp or scamps had been there in my absence, and dug it out. On making enquiries of a man who knew of the nest, I learned that two boys had taken the eggs and caught the duck. There is some satisfaction, however, in being able to state that she afterwards managed to escape from them. The eggs must have been useless, as I believe incubation had been going on some time. I was told to-day that there had been another Shellduck's nest this year at Black Heath, further down the river, and that this also had been destroyed. It seems almost impossible now-a-days for a pair to bring off a brood in safety.* A very large black-backed gull, I think *L. marinus*, was circling overhead this morning close to the house. Every now and then he swept down close to some chicken-coops: his flight was truly majestic. There have been a few Ring Dotterels about the mud-flats for the last few days. Noticed two Black-headed Gulls on the wing, also a Nightjar near the wood.

30th. A cock Blackbird comes down to feed on the mud near the same spot almost daily. To-day he was accompanied by a young one. Both Starlings and Blackbirds seem to find abundance of food there. I have seen both species pull out very big red worms, which I think must have been lug-worms.

31st. Saw a pair of Stock Doves alight on the marshes near Iken Wood. Observed one a few days back near the decoy.

JUNE.

1st. Found a Yellowhammer's nest containing four eggs. Met a young Peewit running "on tip-toes" along the road, and apparently only just hatched. When only a few yards off it saw me and squatted flat, with head and neck stretched out. While in this attitude these little creatures always, I believe, remain silent as well as motionless, but as soon as they are taken in the hand, or indeed know that they have been discovered, they squeal very loudly.

2nd. The Small Heath butterfly first seen.

5th. While watching with a telescope a Heron fishing at low water, I saw him make a violent plunge forward, and

* Why not prosecute the offenders? The Shellduck is included in the Schedule to the "Wild Birds Protection Act, 1880," and may not be killed or taken between March 1st and August 1st under the penalty of a pound.—Ed.

bring out a large flat-fish, far too big to swallow whole. After holding it a short time in his beak, as if considering what steps to take next, he flapped slowly across the river. Several other Herons, however, gave chase, and a regular scrimmage ensued, but at such a distance that I was unable to see how the fish was finally disposed of. Possibly in an instance like the above, where the size or shape of the prey prevents it being swallowed whole, the pectinated claw of the middle toe would prove useful, enabling the bird to get a firmer grip with the feet, while the beak was employed in pecking the fish to pieces.

6th. Found a few specimens of *Planorbis nautilus* in a roadside ditch in this parish (Iken). Heard Norfolk Plovers calling to-night.

7th. The Small Heath butterfly is now abundant. Saw a "Gate-keeper" to-day, for the first time, also a Painted Lady. This evening several Bats of some small species were hunting for food about an oak-tree. They threaded their way in and out of the branches with great rapidity, seeming never to touch a leaf or twig. Nightjars heard now every night about some oaks on the heath near Iken wood. These birds have a particular liking for trees (especially oaks), growing alone or in small clumps, on wide, open heaths or other uncultivated ground.

8th. First noticed the Small Copper butterfly. Saw a single Grey Wagtail near the Cliff, but had unfortunately no glass at the time. It had some dark feathers about the throat, but the markings seemed ill defined. A pair seen by my brother and myself at Mildenhall in the summer of 1865 evidently had a nest close by, though we were unable to find it.

17th. Saw the first Red Admiral. Noticed some toad-tadpoles at Blaxhall feeding in large numbers on cow-dung. Tadpoles are excellent scavengers: I have watched them eating a dead rat, as well as dead sticklebacks, toads, and even their fellow-tadpoles.

22nd. Found a Field Vole on the sand at the water's edge, among some sea-weed cast up by the tide. On seeing me it made straight for the water, and swam out boldly. On several other occasions I have met with these little animals close to the water, and seen them plunge in as a rat would, but they do not often swim far. They will sometimes cross a ditch of no great width,

but in the case of a comparatively wide sheet of water they soon turn round and make for land again.

23rd. Again saw a Painted Lady. A Sky Lark was singing to-night as late as 8.32 p.m.

25th. Until this date I had, since coming here, neither seen nor heard an Owl of any kind; but to-night, at about a quarter past nine, had the good fortune to fall in with a pair of these interesting birds. They were sailing about at the edge of Iken wood, returning every now and then to perch in the trees, and though I watched them for about ten minutes, during which time one of them came several times within a few yards of my head, I could not make out the species with certainty. They always kept above me, shewing dark against the sky; the facial disk, however, was discernible and appeared well developed. Both birds kept uttering a short, squeaking, and slightly ascending note, like the noise made by a wheel-barrow wanting grease. From their actions I am inclined to think they were Long-eared Owls, though I never before heard that species make this squeaking cry. This bird would, I think, be fairly common here if game-preservers would only give it a chance, instead of allowing their keepers, as is too often the case, to harass and destroy Owls of all kinds. I only wish I could have impressed upon these beautiful birds the desirability of moving on. If they stop here their fate is sealed. There is, not far from here, one small estate where game is scarcely preserved at all—would there were more!—here there are a few plantations, chiefly of firs, well suited to the requirements of the Long-eared Owl. Near one of these I lately had the pleasure of watching two of these birds for several nights. I think there can be little doubt that they were a pair, and as this happened during mid-winter, it looks as if this species, like the Bullfinch and some other birds, were accustomed to pair for life. I often see the Stonechat here, in pairs, throughout the winter.

While walking along the "river wall," sometime this spring, I surprised a young Redshank among some rushes at the water's brink, at a place where the saltings are cut off from the wall by a widish channel. The bird, which appeared almost old enough to fly, immediately took to the water and swam out to the saltings. Though this species is well known to be an expert swimmer, I have only once before seen it make use of this accomplishment.

In this instance a winged Redshank fell into the water, dived under a boat, and appeared swimming buoyantly on the other side.

I have often tried to get a sight of the Heron swimming, but have never yet succeeded in doing so. Though he sometimes wades into such deep water that at first sight it appears as if he must be afloat, a careful inspection of his mode of progression has always, in my case, shown that he could still feel the bottom, and was in reality walking. When the mud is all covered with water, and the river appears to the casual observer as one wide, unbroken sheet of water, of unknown depth, it is an interesting sight to see a Heron, after flapping lazily along, suddenly bring up, and without hesitation pitch in the middle of the river. Just before alighting, down go his legs, and in an instant he is standing firmly at a spot where a stranger would perhaps as soon expect to see a loaded barge pass.

ORNITHOLOGICAL NOTES FROM NORFOLK.

BY J. H. GURNEY, F.L.S.

THE winter of 1889-90, and more particularly January, was signalized by the appearance of more Hawfinches than have been seen here for many years. One Norwich birdstuffer, Mr. Cole, had over fifty sent to him. Mr. Gunn had about thirty, including one pied on the head; and Mr. Roberts had fifteen. Seen on the wing they show a good deal of white, and their flight strikes an observer as slow; seen on a lawn they progress by hops, with their clumsy and disproportionate necks stretched out, as different as can be from the short runs which a Thrush takes. A good many remained through February and March, and the last one of which I have any note was on April 9th, by which time the bill—which in the earlier ones was conspicuously white—was changed to dark.

On February 24th I had the pleasure of a walk round Holkam Lake with Colonel Feilden. This fine piece of water is 1056 yards in length; and Lord Leicester, taking a great interest in the wildfowl which go there, has not allowed a gun to be fired for many years. In consequence it is frequented all the winter by two or three thousand ducks, which number is nearly doubled if it is stormy at sea. We saw three Smews, seventeen

Goosanders, three Goldeneyes, one Pintail, four Shovellers, about forty Pochards, about two hundred Tufted Ducks (a species which is increasing), a hundred Teal, and, as near as we could estimate, a thousand Wigeon, and at least fifteen hundred Mallard (including a white one), besides numbers of Coots and a large flock of Blackheaded Gulls, which added to the animation of the scene. As soon as our party appeared this mass of fowl began to stir, flying up and down the lake, and very loath to take their departure. The Smews were old males, and their conspicuous whiteness made them recognizable at a greater distance than any other fowl. They did not avoid the company of strange ducks, and we could observe two of them meet as if in friendly greeting; but they were decidedly distrustful of man, and we never got nearer to them than 300 yards. In flight they stretch their necks out, and go sharp and straight, and not slow either. They prefer the deeper portion of the lake, and very seldom come to the southern end where the house is. There had been five of them the week before, but we could only see three; the last day on which they were seen on the lake was March 21st. The Goosanders were in small parties, and about six out of the seventeen were males: they were also rather shy, with the exception of one old drake, which sat on the opposite bank preening himself, and as the light fell on his buff waistcoat it gave it the appearance of richest salmon-colour.

Mr. Napier has never known a Merganser on Holkam Lake, nor a Shelduck, nor a Wild Swan, which is singular, as the sea is only a mile away. The Wigeon monopolize the south end, and walk out on to the park in quite a herd to eat the grass near the lake, which is very short from their constant nibbling. On a previous visit nearly a thousand of them were on the grass, but on this occasion they were nearly all on the water. Our presence soon put them up; and Mr. Hamond, who happened to be out at sea in a boat, saw a countless multitude of Wigeon, &c., flying out to sea from the lake.

The Heronry at the edge of the Holkam Lake, though strictly preserved by Lord Leicester, is reduced to about seven nests. Mr. Southwell and I counted fourteen there last year, and the year before there were said to be twenty-seven. Its establishment cannot date much further back than 1872, when there were four nests.

A number of dead sea-birds were washed up during the second week of February, and afterwards. On the 16th Mr. A. Paterson found thirty Kittiwake Gulls and twenty-four Razorbills at Yarmouth, in a three-mile walk along the shore; and in the north of Norfolk the mortality was noticed by Mr. E. W. Dowell. Colonel Feilden wrote, on March 1st, that the north winds during the three previous days had brought many dead birds on shore at Wells; and Mr. Pashley reported numbers of Guillemots, Razorbills, and young Puffins, at Cley and Blakeney, scattered along the shore by the tide.

My gardener assures me that on March 5th Great Tits were eating my Morello and gooseberry buds in the most determined manner. It is said they do not take the sound ones, but I think they do.

On May 23rd Mr. Southwell received from Yarmouth a very interesting addition to the British list, in the shape of an Asiatic Plover, *Ægialitis asiatica* (Pall.), recently skinned, which had been shot, by a man named Smith, on the denes a day or two before. [Mr. Southwell has already (p. 311) furnished particulars of this interesting occurrence.]

On June 23rd a fine old Grey Crow was disporting himself outside the town of Cromer, with a Rook with whom he had formed a temporary alliance.

June 30. A pair of Goldfinches have made their nest on a large sycamore tree at Northrepps,—unfortunately quite impregnable, as it is 60 feet from the ground, and on the outside of the tree: they were frequently to be seen gathering materials on the lawn-tennis ground, and picking moss out of the stable-wall. Goldfinches and Bullfinches have become a good deal commoner in the parts of Norfolk with which I am best acquainted, the last five years,—and very pretty they are.

ON AN UNPUBLISHED MS. OF WILLIAM MARKWICK
ON THE BIRDS OF SUSSEX.

BY THE EDITOR.

EVERY reader of White's 'Selborne' is familiar with the name of William Markwick, and every ornithologist is probably aware that, in addition to his 'Naturalist's Calendar,' and his remarks appended to White's "Observations on various parts of Nature," which appear in most editions of the 'Natural History of Selborne,' he also published in the fourth volume of the Linnean Society's 'Transactions,' 1798, a paper entitled 'Aves Sussexienses; or, a Catalogue of Birds found in the County of Sussex, with Remarks.'

But few people, probably, at the present day are aware that at his death in 1813 (the date of the second quarto edition of White's 'Selborne'), Markwick left behind him a volume of MS. Notes supplementary to those in his printed Catalogue; that this volume has been carefully preserved; and that the nature of its contents has not hitherto been made public. Under these circumstances (the volume now lying before me), I believe that some account of it may be acceptable.

But first it will be well to refer to Markwick's connection with the Linnean Society, to whose Library he presented the MS. in question, as the date of it is of importance in relation to his printed Catalogue. William Markwick, of Catsfield, near Battle, in the county of Sussex, was elected a Fellow of the Linnean Society on the 15th May, 1792, and died in 1813. According to Edward Turner Bennett (ed. White's 'Selborne' in a Preface to 'The Naturalist's Calendar,' p. 407), Markwick changed his name to Eversfield. It is not stated at what date this change was made, nor is there any record of it in the register of the Linnean Society, to whose Fellows he was apparently always known as Markwick. This point is not material to the present enquiry; but it may be observed that all the papers communicated by him to the Society between 1789 and 1807 are entered as having been sent by William Markwick, and the name of Eversfield is nowhere to be found in the Society's archives.

The papers referred to are exactly a dozen in number, of which only six were printed as shown in the following table:—

Reg. No.	Title of Paper.	When read.	Where published.
19.	On the migration of certain Birds	3 Feb. 1789 .	Trans. Linn. Soc., vol. i. (1791), pp. 118—130.
20.	On <i>Tringa glareola</i>	1 " " 1791 .	ib. pp. 128—130.
64.	On <i>Musca pumilionis</i> , Gm.		ib. ii. (1794), pp. 76—82.
103.	Additional remarks on <i>T. glareola</i>	4 June, 1793 .	ib. ii. (1794), p. 325.
138.	<i>Aves Sussexienses</i> ; or, a Catalogue of Birds found in Sussex	5 May, 1795 .	ib. iv. (1798), pp. 1—30.
160.	Descriptions of three varieties of the Purre or Stint	7 March, 1797	Not printed.
231.	Observations on the Hoopoe	7 Oct. 1800 .	Not printed.
232.	Account of the Harvest Mouse	" "	Not printed.
241.	Observations on the Clover Weevil, <i>Curculio trifolii</i>	3 Feb. 1801 .	ib. vi. (1802), pp. 142—146.
273.	<i>Plantæ Sussexienses</i>	16 Nov. 1802 .	Not printed.
339.	Descriptions and drawings of a British Fish and some species of <i>Medusæ</i>	16 Dec. 1806 .	Not printed.
340.	An Account of British Fishes	23 Jan. 1807 .	Not printed.

In the first-named paper, the author states (p. 119), that "Catsfield, the place where these observations were made, is situated near Battle, in Sussex, about five miles from the sea-side. The country round it is finely diversified with hill and dale. Though there is no large river near it, yet there is much oozy, springy ground, and many woods, some of a tolerably large extent, in the neighbourhood."

The species to which his observations relate are the Swallow, Martin, Swift, Sand Martin, Wryneck, Cuckoo, Goatsucker, Turtle Dove, Woodcock, Snipe, Jack Snipe, Royston Crow, Fieldfare, Redwing, Landrail, Siskin, Red-backed Shrike, Redstart, Willow Wren, Whitethroat, Wheatear, Nightingale, Flycatcher, Blackcap, Whinchat, Sea Swallow, Stone Curlew, Raven, Golden-crowned Wren, and "Brown-spotted Sandpiper," which he erroneously named *Tringa glareola*.

It may be remarked, by way of comment on his observations on these species, that the Wryneck for sixteen years invariably preceded the Cuckoo by some days in the date of its arrival,

generally appearing about April 13th, whereas the Cuckoo was never earlier than the 17th of that month. Two or three instances are noted (p. 123) of young Woodcocks being shot in the summer time, showing that this species nested in the county in his day; though the Snipe did not, notwithstanding that there was "much oozy, springy ground in the neighbourhood." The Grey Crow appeared about the 17th October, and was not seen after the 14th April. The Siskin, he says, with us is called the Barley-bird, from its appearing about the time of barley (April), and continuing with us no longer than the barley-sowing lasts (April 30th).

Writing of the Terns, he remarks (p. 127):—"The earliest that I have observed the Great Sea Swallow, *Sterna hirundo*, was the 15th April, the Lesser, or *S. minuta*, the 24th April; and the Black Sea Swallow, *S. fassipes*, is so rare that in sixteen years I observed it but once, and that was on the 28th April."

We then come to the description and figure of the so-called *Tringa glareola*, which was "shot by the side of a little fresh-water rivulet in the parish of Battle, and sent him by a friend." It is clear from Markwick's description, particularly of the tail-feathers, that the bird which he got hold of was not *T. glareola*, but *Totanus ochropus*. Of this he himself appears to have been subsequently more or less convinced, as we may infer from his "Additional Remarks on the Wood Sandpiper, *Tringa glareola*" (Trans. Linn. Soc. vol. ii. 1794, p. 325).

And here the unpublished MS. on Birds supplies a note on the subject, to be mentioned later, and affords internal evidence of its having been written after the appearance of the paper just noticed, and also after the publication of the Catalogue of Sussex Birds.

It appears from the General Minute Book of the Society that the MS. in question was presented by the author on the 1st April, 1800, the entry under that date being as follows:—"Donations—A MS. volume of Remarks on Birds, and also a MS. description and figures of Grasses and Rushes by Mr. Markwick, by the Treasurer from Mr. Markwick."*

* The MS. volume on Grasses and Rushes, with figures drawn from nature by Markwick, is also now before me, and shows the author to have been a better draughtsman of plants than he was of animals. Besides these MSS. the Linnean Society's Library contains two others in the handwriting of the same author. The first of these, in one vol. 4to,—of which

The volume is a quarto, measuring about 9 in. by $7\frac{1}{2}$ in., and is partly paged in MS. (to p. 106), the last note in the book on Swallows being dated "March 12th, 1800," only a fortnight before he gave it to the Society. It is inscribed "To the President and Fellows of the Linnean Society, this little Manuscript Volume on Birds is, with the greatest respect, presented by their most obedient humble servant, Wm. Markwick." On the next page comes the title, "Remarks on the first Order of Aquatic Birds, called by Linnæus *Grallæ*, or Waders, being such as are indigenous to Great Britain, and have been particularly noted by William Markwick, F.L.S." A list of twenty-nine species follows, and the remarks on them extend to p. 106 *verso*.

We have then "Remarks on the *Turdus* or Thrush genus, so far as relates to such of the British species as have been particularly noticed by William Markwick, F.L.S." This is succeeded by "Remarks on the British Species of the Swallow-tribe, *Hirundines*, and on the Goatsucker, *Caprimulgus*, by William Markwick, F.L.S." An appendix contains "Additional Remarks on the *Tringa cinclus*," "Note on the *Tringa maritima*," and a "Note on Swallows."

The volume is illustrated throughout with 37 full-page water-colour drawings by the author, divided as follows:—Waders, 25; Thrushes, 6; Swallows and Goatsucker, 5; *Tringa cinclus*, 1; total, 37.

Comparing the MS. notes in this volume, presented in 1800, with the printed statements in the 'Catalogue of Sussex Birds,' published five years earlier, it is clear that the author might have materially improved a second edition of his Catalogue by giving additional information about some of the species, concerning which the reader is left in some obscurity. It is to be observed that where the printed Catalogue merely records the capture of a species, the MS. note-book in some cases supplies locality and

some account may be given later,—is entitled 'British Zoology: containing several species of Fish and Mollusca found on the Sea-coast of Sussex: described and figured, and most respectfully presented to the Linnean Society, by William Markwick, F.L.S.' The other MS. referred to is in three vols., small folio, entitled 'Florula Canadensis; or Figures and Descriptions of North American Plants found in Canada and Gaspé Bay in Nova Scotia [Quebec, ED.], drawn from dried specimens in the possession of Mrs. Prescott, by William Markwick, F.L.S.'

date; and, more important still, the coloured figures drawn by Markwick from nature are sufficiently good to show that he did not in every case correctly identify the species of the birds he obtained.

A few instances are sufficiently interesting to be noted here, and it may not be amiss in running over the printed Catalogue to indicate where useful additions or corrections may be supplied, not only from Markwick's MS. note-book, but also from his remarks appended to Gilbert White's "Observations."

The reader may be reminded that his 'Catalogue' consists of two parts: firstly, a list of species numbering 175, divided into Land Birds and Water Birds (but including also such domestic birds as Peacock, Turkey, Guinea-fowl, Muscovy Duck, Chinese Goose, &c., which would have been properly omitted), and, secondly, "Notes or remarks on the foregoing Catalogue."

The first bird on the list is the Golden Eagle, of which Markwick observes, "several years ago I saw a bird of this species which was killed at Bexhill, in this neighbourhood." It is of course impossible now to determine the accuracy or otherwise of our author's identification, but as he has further on shown that he could not distinguish an eyess Peregrine Falcon from a Buzzard (p. 13), we may be excused perhaps for doubting whether his "Golden Eagle" was not a young Sea Eagle—a species far more likely to have been met with in Sussex.

The two dark brown hawks seen in winter about the high trees in Denn Park in pursuit of the Rooks (Cat. p. 13), were far more likely to have been immature Peregrines than Buzzards, especially as one of them which was taken is described as being "of less dimensions, of a more slender make, and more active than the Moor Buzzard."

It is of interest to note that the "Red-legged Crow, *Corvus graculus*," in Markwick's day, "frequented the South Downs about Beachy Head and East Bourn, where it is called the Red-billed Jackdaw" (Cat. p. 14).

The occurrence of the Roller (pp. 3, 14), Hoopoe (p. 14), and Chatterer, *Ampelis garrulus* (p. 15), are noteworthy. So also is the statement concerning the number of Wheatears which formerly used to be taken in horse-hair nooses by the shepherds on the South Downs about East Bourn, one man taking twenty-seven dozen in two days in August, 1792, and another eighty-four dozen in one day (p. 17).

The Quail used to breed about East Bourn, and Markwick once fell in with three or four brace one morning in the middle of winter (about Christmas) in a field of turnips (p. 19). To the statement (p. 7) that the Bustard "is sometimes seen on our South Downs," we might add "near Bighthelmstone," on the authority of Gilbert White ('Selborne,' p. 156, ed. J. E. H.); and Markwick's statement that he had known one instance of the Thick-knee having been killed in his neighbourhood in winter (p. 20) may be supplemented by inserting the precise date, 31st Jan. 1792, which is mentioned in his note to White's Observation on this bird (Selborne, p. 334, ed. J. E. H.).

It is not until we come to the Water Birds, however, that any important additions or corrections are furnished by the MS. note-book, which is now before me.

The first species mentioned in this MS. is the Heron, concerning which Markwick observes:—

"I have reason to suppose that the Herons, which are frequently seen fishing in the marsh ditches near Pevensy, and all along our sea-coast, convey their prey from thence to the heronry at Penshurst for the support of their young, a distance of, I suppose, thirty miles at least."

But if the heronry at Hurstmonceux then existed, as probably it did, the Bexhill Herons may well have journeyed thither, or even to Parham, without going so far as Penshurst, in the adjoining county of Kent (see 'Zoologist,' 1872, p. 3265).

The story of his shooting a Bittern, which, being only wounded, on the ice, none of his spaniels would retrieve (p. 20), is given in greater detail in the MS. The precise locality is not mentioned, but it is said to have been "near a pond which had formerly been a decoy." The nearest decoy to Markwick's home of which we have any information was Ratton decoy, at Willingdon, three miles N.W. of Eastbourne, on the property of a Mr. Thomas; but as this decoy was only "given up about forty years ago,"* the site of the ancient decoy visited by Markwick remains to be determined.

Of the Woodcock he writes (MS. p. 22):—

"Though there are a few instances of a pair having bred here, owing, I suppose, to accident, they undoubtedly leave us in the spring, and repair

* About 1846, *vide* Sir R. Payne Gallwey, 'Book of Duck Decoys,' 1886, p. 173.

to Sweden and other northern countries to breed, yet they pair before they quit this country, as is well known to every sportsman; and I have myself found two Woodcocks close together in the same bush more than once in the spring of the year, but not at any other season; these most probably were male and female."

The Great Snipe, *Scolopax major*, referred to (Cat. p. 8) as seen by the author, and killed near Horsham, was obtained on the 1st Oct. 1793 (MS. p. 23), and a full description is given of it, together with a water-colour drawing.

"Woodcocks and Snipes," he says (MS. p. 24), "are certainly not so numerous in this neighbourhood as they formerly were in the winter, for which two reasons may be given: 1st, there are a greater number of shooters, and those much better skilled in the use of a gun than was the case formerly; for when I was a boy few persons could shoot flying well, but now almost every one can use a gun with effect, and these poor birds not being protected by the Game Laws, may be destroyed with impunity both by the gun and the snare: 2ndly, another cause of the decrease of their numbers here may be the great improvement in agriculture; for much land which used to be wet and swampy, and was then the favourite resort of these birds, is now laid dry by the beneficial practice of making underground drains" [*i. e.*, before the year 1800].

Markwick did not recognise the fact that his Red Godwit and Common Godwit (Cat. p. 21) were the same species in different phases of plumage. His water-colour drawings (MS. pp. 36, 38) show that both the specimens described by him were referable to the Bar-tailed Godwit, which to the present day is a regular visitor to the Sussex shores and harbours in spring and autumn.

The Grey Plover is stated (Cat. p. 21) to be seen on our sea-coasts only in the winter, and then but seldom. Markwick had only seen one, which was killed on the 13th Jan. 1776 by the seaside at Bexhill. This erroneous view of the status of the Grey Plover in Sussex may be explained by the fact that this bird prefers the mud-flats of the harbours and the mouths of tidal rivers, where during the spring and autumn migrations in May and October, I have repeatedly seen and shot them—in May with jet-black breasts, in October with the same parts white; and the birds of the year, which accompany their parents in autumn, have yellow spots on the back like Golden Plover, from which, however, they may be always distinguished by the presence of a hind-toe, and by their black axillary plumes.

The Greenshank, *Totanus glottis*, is not included by Markwick in his printed Catalogue, but a coloured drawing of it is given in his MS., with the statement that he received the specimen from which he drew the figure on the 9th May, 1786. The drawing shows that the bird was an adult in partial summer plumage. It had probably only just arrived, the 9th May being, as I have observed, the average date of its arrival in spring.

Markwick's statement (MS. p. 43) that the Redshank, *Totanus calidris*, is a solitary bird, being usually seen alone by the sides of marsh ditches, is not correct. In May and June it is to be seen about the marshes in pairs, in autumn in small parties, the old birds accompanied by their young, and in winter often in considerable flocks. The specimen from which Markwick made a drawing was "shot near the seaside on the 29th Dec. 1783."

I have already pointed out that his *Tringa glareola*, of which a figure and description are given (Trans. Linn. Soc. vol. i. pp. 128—130) is not the Wood, but the Green Sandpiper, *T. ochropus*, and it is clear that he himself subsequently became aware of his mistake. Referring to these two species (MS. p. 48) he says:—

"A few are to be found in the summer season, such as the Green Sandpiper (*T. ochropus*), Wood Sandpiper (*T. glareola*), and Common Sandpiper (*T. hypoleucus*), which all frequent our fresh-water streams. Three or four of the first of these species, *T. ochropus*, frequented the river at Horsham, near Cheeseworth, for two years together, and probably bred somewhere in the neighbourhood, though I was not so fortunate as to meet with a proof of it. Their flight was high and swift, very much resembling that of the Common Snipe. The next, or *T. glareola*, was also killed near a fresh-water stream, and is supposed to be only a variety of the foregoing species. See my description in the first volume of the 'Linnean Society's Transactions' (p. 128, tab. ii.)."

Markwick's "Descriptions of three varieties of the Purre or Stint," already referred to as communicated to the Linnean Society on the 7th March, 1797, but not printed, are to be found, with coloured sketches, in his MS. note-book, and it is evident that his observations have reference to three seasonal phases of plumage of the Dunlin, *Tringa alpina*.

One of the most interesting of all Markwick's statements in his printed Catalogue is that which relates to the former breeding of the Avocet in Sussex. He remarks (p. 27):—

“ This bird is not uncommon on our sea-coast in summer ; but whether it is to be found here in winter I cannot tell, as I do not recollect to have ever seen it at that season. That it breeds here I have been an eye-witness, for I remember that several years ago [that is before 1795] I found, in the marshes near Rye, a young one of this species, which appeared to have been just hatched, and I took it up in my hands whilst the old birds kept flying round me. I have also seen it in the summer on the sea-coast at Bexhill.”

Noticing the Sea-pie, or Oystercatcher (Cat. p. 26), he says :—

“ It is here called the Olive. I have frequently seen them in pairs on our sea-coast in the summer, but do not recollect having ever seen them in the winter.”

In his MS. notes (p. 90) he remarks :—

“ It breeds on our sea-coast, where I have frequently seen a pair of old birds flying round me, and have also had their young ones in my possession.”

With reference to the local name “ Olive,” I may remark that twenty years ago, when I was in the habit of visiting Pagham Harbour, and frequently staying at Sidlesham for a week or ten days at a time for the excellent shore-shooting which was then to be had there, I observed that the Oystercatcher was always called Olive by the fishermen and wildfowl shooters.

I suspect the name is of French origin, probably imported by French fishermen visiting Rye and other harbours on the Sussex coast ; for I have met with it in old French books on Falconry, though it was there applied, not to the present species, but if I remember rightly, either to the Thick-knee or to the Little Bustard, both of which species were favourite quarry with French falconers. The application of the same provincial name to more than one species is an event well known to every experienced wildfowler.

Perhaps the most important correction of Markwick's printed Catalogue supplied by his MS. is that which has reference to his “ Spotted Gallinule, *Gallinula porzana*” (Cat. p. 9). “ This bird,” he says, “ was once shot by the side of a mill-pond in this neighbourhood.” The MS. supplies the date (pp. 100, 105), namely, the 29th March, 1791 ; but it also supplies the unlooked-for evidence that the bird in question was not the Spotted Crake, *C. porzana*, but the Little Crake, *C. pusilla*. Of this fact both

the description and the water-colour drawing, made by Markwick from the freshly-killed specimen, leave no room for doubt.

The first example of this species, which, according to Yarrell (4th ed. vol. iii. p. 148), was made known in this country, was shot near Ashburton, in Devonshire, in 1809, and was figured and described in Montagu's Supplement to his 'Ornithological Dictionary,' under the name of Little Gallinule. As it now appears that Markwick obtained a specimen of this bird eighteen years previously, it will be of interest to note his description of it, and his remarks which follow (MS. p. 105):—

“THE SMALL SPOTTED WATER-HEN,* *Gallinula porzana*.

“*Description*.—The bird from which I drew the figure was shot by the side of a mill-pond, and given to me on the 29th March, 1791.

“Its length from the tip of the bill to the end of the tail was eight inches, but to the end of the legs when stretched out backwards ten and a half; its breadth from tip of the wing to tip of the wing when extended twelve inches and a half. Its bill was rather more than three-quarters of an inch long, slender, of a pale green colour, deepest at the base and tip, and also tinged with scarlet at both those parts. The irides also were of a scarlet colour. From the bill all round the eyes on each side was a pale ash-coloured space. The top of the head, hinder part of the neck, back, scapulars, upper covert-feathers of the wings, rump, and tail, were of an olive tawny-brown colour, which was darkest on the head. With this colour were intermixed some dark brown or blackish spots, together with some white ones, both on the back and scapulars. The quill-feathers of the wings were of a dark brown; the chin and throat were white; the foreside of the neck, breast, and belly, of a light tawny or pale ochre colour; the thighs and vent, or under covert-feathers of the tail, were barred crossways with dusky and white bars. The legs were naked above the knees, and of a pale green colour, as were the toes, which were long, slender, three forwards and one backwards, and destitute of any fin or web. The claws were rather long and sharp.

“According to Mr. Latham's opinion this was a late bird of last year, not come into full feather.

“As soon as I had made the foregoing drawing and description I sent the bird itself to the Rev. Dr. Goodenough, who wrote me word again that he had no doubt of its being the Spotted Gallinule of Pennant, and that he had seen Mr. Latham, who was of the same opinion, as I have stated

* This name seems to have been borrowed from Pennant, 'British Zoology,' 1768, vol. ii. p. 386.

above; but when I showed my figure to that gentleman last summer he seemed to have his doubts whether it belonged to that species or not. Indeed, it was so unlike a very fine specimen of the *Gallinula porzana* in his possession, that I cannot help entertaining the same doubts; though if it is not a young one of that species, I know not what it is."

Had the coloured drawing of this bird accompanied Markwick's paper when it was read before the Linnean Society, in May, 1795, it is possible that some ornithologist present might have been able to solve the difficulty as to the species, although, as Latham had misgivings on the subject, this is doubtful, and Montagu had not then become acquainted with it as a British bird.

Only two other species mentioned by Markwick seem to call for notice here, *viz.* the Sheldrake, *Tadorna vulpanser*, of which a brood of young ones was taken on the coast at Bexhill (Cat. p. 50); and the Gannet, *Sula bassana* (the last bird on the list), of which our author writes, "once shot in this neighbourhood." He mentions no locality nor date; but it is not unlikely that the specimen alluded to was one which is thus noticed in the Minute Book of the Linnean Society:—"Jan. 4, 1791. The Rev. Dr. Goodenough exhibited a specimen of the Soland Goose, *Pelecanus Bassanus*, recently shot on the coast of Sussex."

A LIST OF BIRDS OBSERVED IN SHETLAND, JUNE, 1890.

BY RICHARD M. BARRINGTON, LL.B., F.L.S.

DURING ten days spent in the Shetland Isles, June 18th to 27th, the following birds (48 species) were noticed. Those marked † were not observed on Foula.

Falco peregrinus. One on Foula.

†*F. tinnunculus*. Two at Scalloway.

Saxicola œnanthe. Plentiful. Young ones in most cases hatched.

†*Motacilla lugubris*. One at Lerwick.

†*Anthus pratensis*. Common.

A. obscurus. Common.

Alauda arvensis. Frequent.

Emberiza miliaria. Common, but confined to cultivated patches.

Passer domesticus. Frequent near houses.

Linota flavirostris. Plentiful. One nest with seven young.

Sturnus vulgaris. Frequent near coast.

Corvus corax. Two pairs on Foula; also seen at Scalloway.

C. cornix. Frequent. One flock of fifteen.

†*C. monedula*. One or two at Scalloway.

Troglodytes borealis. Frequent among rocks, and by streams and gullies. Larger, darker, and more barred than the ordinary form obtained in Ireland.

Saxby, in his 'Birds of Shetland,' p. 142, speaking of the Wren says:—"I have examined many specimens from various parts of Shetland, thinking it possible that the northern species, *Troglodytes borealis*, might occur, but without succeeding in detecting it."

Since my return from Shetland, where I spent ten days last June, I have had an opportunity of comparing four Wrens collected, one on Foula, and three on the mainland, with authenticated specimens from Faroe (one), Iceland (one), St. Kilda (two), and Ireland (four), and I cannot resist the conclusion that the Shetland Wrens more closely resemble the specimen from Faroe than any of the others.

The dark tint, and the number and distinctness of the transverse bars, especially on the lower part of the abdomen, first attracted my attention; and in these respects, as well as in the size of the bill and feet, I find that it agrees with *Troglodytes borealis*, from Faroe; but the wing of the Shetland Wren is a little shorter.

Columba livia. Frequent.

†*Charadrius pluvialis*. Not evenly distributed. Very common in some places.

Ægialitis hiaticula. Frequenting high ground. A few seen.

†*Vanellus cristatus*. Not common.

Hæmatopus ostralegus. Frequent.

Numenius arquata. Local. Nesting near Scalloway.

†*N. phæopus*. Rare.

†*Totanus hypoleucus*. Not common. Three pairs between Walls and Weisdale.

Scolopax gallinago. Frequent. Young one shot.

†*Tringa alpina*. Two single birds seen; did not appear to be in summer plumage.

Crex pratensis. One on Foula. Saxby states in his 'Birds of Shetland,' that Landrails arrive there in considerable numbers about the end of May, and may then be heard in every cultivated district throughout the islands. He adds that at the time of their first appearance, vegetation has made so slight an advance that they are easily seen, being quite unable to conceal themselves among the short grass or corn.

†*Anas boschas*. One near Scalloway.

†*Querquedula crecca*. One near Scalloway. Both Wild Duck and Teal breed in Shetland. Saxby states (p. 242) that the former is among the birds occasionally found by the lighthouse-keepers on Flugga, lying dead at the foot of the lantern.

†*Somateria mollissima*. Several. Walls and Scalloway. Nest and eggs seen.

†*Colymbus septentrionalis*. One pair with two young near Scalloway; and a nest with two eggs near Weisdale.

Uria troile. Common.

U. grylle. Plentiful at Foula, Walls, &c.

Fratercula arctica. Common.

Alca torda. Common.

†*Phalacrocorax carbo*. One at Scalloway.

P. cristatus. Plentiful.

†*Sterna macrura*. Frequent. Walls, Weisdale.

†*Larus ridibundus*. Five at Weisdale.

†*L. canus*. One nest with young at Scalloway. Two nests with eggs on islands in lake between Weisdale and Walls.

L. argentatus. Plentiful.

L. fuscus. Common.

L. marinus. Not uncommon.

L. glaucus. One seen at Wick, Caithness, June 17th, but none in Shetland.

Rissa tridactyla. Plentiful.

Lestris catarrhactes. Only on Foula. Seventy to eighty pairs on highest part of island. Dark- and light-coloured birds observed. Nests robbed by natives (see *antea*, p. 297).

Lestris crepidatus. About sixty pairs scattered over Foula at the base of the hills, and on moorland. Five or six seen on Bressay, flying from Noss.

Procellaria glacialis. Saxby asserted that the Fulmar Petrel never breeds in Shetland ('Birds of Shetland,' p. 362). It appears

to have taken up its quarters about 1878 ('Summer Birds of Shetland,' by Harold Raeburn, Proc. Roy. Phys. Soc. Edinburgh, 1888, p. 562; see also 'Zoologist,' 1879, p. 380). We found about sixty pairs on Foula, in two colonies, a mile apart. But as high cliffs overhang at the spots selected, a majority of the nests are inaccessible. These birds are increasing here, and are said by natives to have come to Foula on the back of a dead whale about eighteen years ago. It is said also that they remain about the island the whole year.

Puffinus anglorum. A flock at sea near Foula. Breeds sparingly there, the eggs according to the natives being very hard to get. Local name "Cut-water."

Thalassidroma pelagica. Said by natives to breed on Foula in small numbers; but I failed to find any trace of it, and no eggs were offered for sale by dealers on the island.

The natives of Foula have not for ten or twelve years past gone to the cliffs and descended with ropes for the sake of bird-catching. If they do so at the present day, it is merely to "show off" before strangers, or to procure eggs for sale. Cliff-climbing, as a matter of necessity, has long been a thing of the past, and disuse has probably produced timidity and want of skill, if the present generation of islanders be compared with those of the past. Even the St. Kildeans are not what they were. The famous Stack-a-Biorach, which was the test by which the St. Kilda maidens in old times measured the pluck and agility of their lovers—and without climbing which, a young man, according to some writers, had no chance of acceptance—is now rarely scaled. I can confirm the danger and great difficulty of this feat, and regret that I was not able to compare the old Foula method of climbing and bird-catching with my experiences in the St. Kilda group.

NOTES AND QUERIES.

MAMMALIA.

Varieties of Water Vole and Long-tailed Field Mouse.—My brother shot last month on his brook at Wistow Grange, Leicestershire, a very pretty variety of this animal; it is of a pale sandy colour all over, and was about half-grown: varieties of this species are rare. He also sent me a

pale cream-coloured Long-tailed Field Mouse, killed in one of his hay-fields a few days before the Vole.—J. WHITAKER (Rainworth, Notts).

Whiskered Bat in Shropshire and Lancashire.—I am able to add these two counties to the list of those from which *Vespertilio mystacinus* has been already recorded. At the beginning of June last, about 6 p.m., one was knocked down with a stick in a garden at Hanwood, near Shrewsbury. Another was caught in a bedroom at Lytham, Lancashire, in July, 1888.—CHAS. OLDHAM (Ashton-on-Mersey).

Albino Long-eared Bat in Lancashire.—Mr. R. Standen, of Manchester, has in his possession a Long-eared Bat, *Plecotus auritus*, of a uniform light cream-colour, which he killed at Goosnargh, in August, 1866. This bat, which was flying about at mid-day, attracted Mr. Standen's notice by its unusual colour, and after a smart chase he managed to secure it. The eyes and nails were pink.—CHAS. OLDHAM (Ashton-on-Mersey).

Food of the Noctule.—On the 30th April last Mr. G. Sherriff Tye, of Birmingham, sent me a Noctule, in the flesh, which had been killed at Witton, near that town. When shot it had just seized a dor-beetle (*Geotrupes*), the abdomen, the hind pair of legs, and one of the long transparent wings of which were protruding from its mouth. Do not our larger Bats feed, as a rule, on soft-bodied moths in preference to the mail-clad Coleoptera? Bell (Brit. Quadrupeds, p. 14) mentions one in confinement which ate parts of *Melolontha vulgaris*; but, speaking of *Vespertilio murinus* (p. 38), he says, "They feed on various kinds of nocturnal and crepuscular insects, particularly the nocturnal Lepidoptera."—CHARLES OLDHAM (Ashton-on-Mersey).

Shakespeare's Knowledge of Deer.—In my early boyhood I lived on the edge of one of the most beautiful parks in England. The park-keeper was a thorough sportsman, and under his tuition I had the opportunity of learning much of the habits of the deer, and was continually with him when hunting them. There were occasions when the keeper had to hunt and catch a dozen or more of the Fallow-deer to be put in the paddock to be fattened for early venison. This was always a private affair, and there were never more than three mounted on horseback, usually two with the keeper's assistant on foot, with a deerhound in leash accompanying. We used to ride up to the herd—say of about twenty or thirty Fallow-deer of different ages. The park-keeper pointed out the deer required—I being the young lad generally did most of this part of the work—*viz.* riding through the herd and dividing it in two. The selected buck with half-a-dozen of his fellows would thus be separated from the main body of the herd, which looked wonderingly at what was happening. After a moment's rest I again rode at the smaller herd, which tried to rejoin the larger one.

Then, the keeper assisting, we, in a measure, sufficiently marked, to the observation of the herd, the deer required, and who with the rest of the half-dozen had rejoined them, we followed him up; and it being evident that he was the one wanted, the herd assisted in driving him out of their company, beating him off with their horns, with their "forked heads," and thus separated from the herd, the hound was let loose, and in a few minutes he was caught. I have entered into this description with reference to the well-known passage in 'As You Like It' to explain fully my objection to the universal acceptance of arrows as the means by which the round haunches were gored. Shakespeare was a great observer of nature as well as of men, and, according to tradition, was once charged with deer stealing. He had therefore probably learned something of the habits of deer, and observed the want of sympathy with a hunted animal which is engendered of timidity and the law of self-preservation. This explains the cause of the hunted deer being expelled, and in turning round to go out of the herd the blows of the "forked heads" would fall on the back or haunch. The deer's want of sympathy would be natural, Duke Frederick's unnatural; and Jacques, moralising on this, seems to say:—"The Duke, your brother, has gored your haunches in turning you out of house and home, and yet you go hunting the poor dappled fools, turning them out and disturbing them in their own confines, and excite them to be unkind to the hunted one, as the Duke has been to you. So you have not learnt the sweet use of adversity, and in that kind you out-Herod Herod." And now for the question of arrows. All the Shakespearian commentators whom I have noticed (Wood, Harness, Chalmers, Dyce, and Aldis Wright) read "forked heads" as meaning "arrows"; yet, curiously to add, every friend whom I have asked to read the passage in 'As You Like It,' act ii. sc. 1, has said off-hand that the "forked heads" must be the antlers. On my telling them, however, that no commentator takes that view, they have yielded to the generally expressed opinion. But can the "arrows" be a correct view? The hunter, to kill the deer, would aim behind the shoulder—the left, if possible—in the hope of piercing the heart; for this purpose he *might* use the *barbed* arrow. I think the hunter would use the *smooth-pointed*, which would penetrate much more easily and certainly. Now what says Prof. Aldis Wright, in the Clarendon Press edition of 'As You Like It,' p. 10 (I condense the note):—"With forked heads, for distinction of arrow-heads, see note to 'King Lear,' i. I. 135. A forked arrow was not, as Stevens says, a *barbed* arrow, but just the contrary. Commodus used forked heads of the shape of a new moon, wherewith he would smite the head of a bird and never miss." This may be true of the Ostrich, as a bird named by another writer; the moon-shaped arrow would thus clip the neck, but it could not have penetrated the body. It would be an accident if the hunter hit the haunch. The Duke says, "let us *kill*"; he does not wish

to wound; no hunter would shoot at a non-vital part, or wish to spoil the best part of the beast. Another, and an interesting point to me, is to be found in the line:—

“First for his weeping *into* the needless stream.”

Dyce, in his comment upon this line, says, “Here Pope altered *into* to *in*, rightly perhaps . . . when Mr. Collier, objecting to the alteration, remarked the stag did not weep *in*, but *into*, the needless stream, he forgot the line—

“‘But first I’ll turn yond fellow in his grave.’”

On such subjects the commentators ought to study natural history. The weeping deer then is not weeping *into* the stream, as if to augment it* needlessly, but in distress of body is dropping those tears while standing in the stream, which is needless to him—*i. e.* failing in his need to give him the protection required. Then, once more,—

“Being alone
Left and abandoned of his velvet friends.”

Here commentators alter friends into friend. Caldecott, Knight, and Collier do so, in consequence of Whittier’s observation “that the singular is often used for the plural with a sense more abstracted and therefore more poetical.” Thus we see Natural History is not thought of. “Friends” is certainly the true reading, for the herd had swept by.—C. J. WILDING (Arley Vicarage, Bewdley).

BIRDS.

Protective Colour of Birds’ Eggs.—Under this title there is an interesting note by Mr. Ellison (p. 310). It is a curious fact, which I have noticed from time to time, that birds which lay conspicuous eggs (like the Song Thrush, Hedgesparrow, or Bullfinch) are much closer sitters than many whose eggs are dull in colouring. Recently a Bullfinch in my outside aviary built a nest and laid eggs in a small yew tree. When the bird was sitting it was extremely difficult to distinguish the nest, but as soon as the bird went off to feed the blue eggs made it quite a conspicuous object. *Apropos* of the subject of protective colouring, I can give a hint to owners of insectivorous birds: white butterflies are at present very abundant, and they always go to rest after sundown on white flowers or plants with white or yellowish leaves. I go round every evening and easily pick off from fifteen to twenty of these butterflies from the flowers of white penstemons,

* “Augmenting it.” This may refer to his weeping as passing on into the stream; and, grammatically, on this point much seems against me, but I am writing from what I have seen and know.

campanulas, and *Anemone japonica*, and from the leaves of the zonal pelargonium "Sylvester," and the white perennial phlox. These butterflies are much appreciated by the American Robin, the Nonpareil Finch, the English Buntings, Chaffinches, and all the English Thrushes.—ARTHUR G. BUTLER (Natural History Museum).

The Dipper nesting in Trees.—Referring to Mr. Ellison's remarks on the nesting of the Dipper, *Cinclus aquaticus* (p. 314), and to your editorial note thereon, I can give two other instances of the Dipper choosing a tree for its nesting-place. In 1888, when trout-fishing in the river Barle, above Dulverton, a Dipper flew out of a willow tree, just over my head, as I was wading. I saw the nest against the trunk, supported by the stump of a dead branch, and the eggs, five in number, I sent to Col. E. A. Butler, and they are probably now in his collection. I had not, until the last few years, much opportunity of watching the habits of this bird, and was not aware that the site was an unusual one. Last year a Dipper nested in a willow tree overhanging a small trout-stream near here, and the remains of the nest are still visible. I saw them a few weeks ago, when fishing in the brook. I should like to know if any of your correspondents have remarked a scarcity of Spotted Flycatchers this year. In this neighbourhood there have not been as many as usual. The pair that nest regularly in this square returned; but in some places, where they are to be seen year after year, they have not made their appearance.—H. ST. B. GOLDSMITH (King Square, Bridgwater).

Unspotted Eggs of the Spotted Flycatcher.—I send you an account of a curious variety of the egg of the Spotted Flycatcher, *Muscicapa grisola*, which I found here a week ago. The nest was placed in a slight cavity made by the juncture of a bough with the stem of an old oak growing on an island, in a pond of some four acres, and the nest appears to me to be rather more substantially made than is usual. The eggs, four in number, are of the palest blue, with no marks of any sort, and are slightly pointed. On finding them I at first thought I had come upon the nest of the Pied Flycatcher, *M. atricapilla*, but, having since seen both birds together, there can be no doubt that the nest belongs to *M. grisola*. It was built some eight feet from the ground, and I have several times seen the old bird sitting on the nest.—H. HOWARD-VYSE (Stoke Place, Slough).

Reported Nesting of Red-throated Diver and Barnacle in Ireland.—It may interest some of your readers to know that on July 24th, on the beach at Enniscrone, Co. Sligo, I found a dead Red-throated Diver, in perfect summer plumage. It was perfectly fresh, and had evidently died only a few hours before, for the irides were quite full. The bird, however, was in very poor condition, so probably was not strong enough to leave the bay for any breeding station, the nearest being that on the lakes near

Dungloe, on the Donegal coast. From information received from Col. Cooper, of Markree Castle, Co. Sligo, a few years ago, it is not improbable that a pair of Red-throated Divers bred and reared a young one on Lough Ersk, in the Ox Mountains, Co. Sligo. His keeper told him that a pair of Barnacles with a young one were seen on the lake during the summer (I think it was in July he mentioned the fact to Col. Cooper, who ordered him to keep a sharp look out after them); and when, some weeks after, the Colonel asked about the birds, the keeper said they had disappeared, and thought they had left the lake by the river running to the sea at Easky. On Col. Cooper questioning the man, he was most positive the birds were Barnacles, from their size and dark colour; but as it was impossible they could be geese of any kind, the size and colour of the birds, the solitary young one, and the fact of this Diver breeding on the Donegal lakes, lead to no other conclusion but that the birds were Red-throated Divers; the little lake being just the place one would expect to find a pair of Divers haunting, being situated in the heart of the mountains, about five miles from Lough Talt, and most secluded.—ROBERT WARREN (Moyview, Ballina, Co. Mayo).

Black Stork in the Scilly Islands.—I have lately seen in the hands of Mr. Burton, of Wardour Street, for preservation, a remarkably good specimen of the Black Stork, *Ciconia nigra*, which was shot by Mr. Dorien Smith, on Tresco, on the 7th of May last,—in oblivion, as we may suppose, of the existence of the 'Wild Birds Protection Act.' It is to be regretted, however, that the Lord-proprietor of the Isles did not set a better example by protecting such a rare feathered visitor to this much-favoured part of the British Islands.—J. E. HARTING.

Breeding of the Woodcock in Ireland.—Though I have never met with so late a nest of Woodcock as that recorded by my friend Mr. Flemyng (p. 312), I have a clutch of four eggs taken on June 7th which were fresh. The finder told me that he knew of a considerably later nest of eggs having been found last year, by persons who were picking bilberries. Although Woodcocks usually lay here about the beginning of April, or even at the end of March, yet I have known of eggs having been found, more than once, at the beginning of May. Within the last twenty years there has been unquestionably a large increase in the numbers of Woodcocks remaining to breed in Ireland; as in the woods at Glenstal, and reported by Mr. Pentland in 'The Field' of Sept. 28th, 1889. I have noted numerous proofs that this has been the case within the last seven years in the Co. Waterford, wherever the woods are undisturbed, and I can now reckon on seeing Woodcocks in the evening about my plantations from April until July. Though the flight is slow, the vibration of the wings is rapid on such occasions, and the birds seem to fly over a certain beat and return

again and again. The Woodcock utters two very different notes on the wing; one is a croaking note, and the other I may attempt to syllable "chouwit" or "chouwee," though it is far too sharp to be imitated successfully by the human voice. An instance of extraordinary courage in this defenceless bird was related to me by Richard Wolfe, a neighbouring game-keeper, who formerly lived with me, and on whom I can rely. He was walking with some beagles through plantations near Cappoquin, in May or June last, when a Woodcock, which must have had young close at hand, alighted in front of one of the dogs, ran towards him, and flapped her wings in his face; she then took flight, but on the dog going forward she again came towards him, flapping at him with her wings as before. The narrator of this incident, from his observations of Woodcocks of recent years, is of opinion that they produce second or late broods.—R. J. USSHER (Cappagh, Co. Waterford).

The Velvet Scoter in Mayo in Summer.—On June 24th, when visiting the Moyne channel and Killala Pool, I was surprised to see a pair of Velvet Scoters, *Oidemia fusca*, in the midst of a flock of about fifty Mergansers, *Mergus serrator*. There could be no mistaking the Scoters, from their perfectly black plumage, and the white bar across the wing. They were resting with the Mergansers in a little sheltered channel in the sands at low-water, just off Killala Pool, and on being disturbed by my boat they all flew out to the open bay. It was the first time I had had a good view of Velvet Scoters on the wing, and with the aid of my glass I could notice their large size in comparison with Scaups, and the intense blackness of the plumage of the under parts, as well as the white bar across the wings, which was most conspicuous.—ROBERT WARREN (Moyview, Ballina).

The Great Skua on Foula.—The state of matters shown by Mr. Barrington in his article on the Great Skua (p. 297) is much to be regretted by all true naturalists, and if this wholesale and merciless persecution cannot be put a stop to, it will certainly result in the total banishment of the species from the island. I have information showing matters to be even worse than what Mr. Barrington states. My informant writes:—"Not a single young bird got away last year, nor will this." It is almost as bad at the Unst colony, a far smaller one than that on Foula, and thus the very existence of the species as a British breeding bird is seriously threatened. At a third locality where a few pairs have of late years been trying to found a colony—probably driven from Foula—the bulk were shot or driven away by "tourists armed with breech-loaders," and I believe not a single young bird escaped. I should like to point out to Mr. Barrington that the islands are not a kind of *terra incognita*, or "no man's land," and that although, as he says, he only shot one bird, and his friend another, far different versions of their conduct are current in the Shetlands. I do not

believe that those gentlemen, as I am told, "shot right and left at everything they came across"; but that is the conduct ascribed to Messrs. R. M. Barrington, W. B. Barrington, W. G. Williams, G. S. Green, and P. P. Vowells, and one cannot be surprised that when the natives see the law broken with impunity by strangers from the South, they also should set the Wild Birds Protection Act at defiance. The island of Foula is at present for sale, and might be obtained at a very low price. I think an opportunity like this of acquiring an island which contains one of the finest—if not the finest—cliffs in Britain should not be lost. A syndicate of ornithologists would probably be the best proprietors the island could have.—HAROLD RÆBURN (Eastern Road, Romford).

The Modern Breeds of Domestic Fowl.—A reliable account of the principal modern breeds of the domestic fowl, not too long, and illustrated with figures, has been for some time a desideratum with naturalists. It has been at length supplied by Mr. W. B. Tegetmeier in the current number of 'The Ibis' (July, 1890). In twenty-four pages, with twenty woodcuts, Mr. Tegetmeier tells us the chief facts in connection with a subject on which a multiplicity of books have been published, but most of which have been written, either for the guidance of poultry keepers or for enthusiastic admirers of particular breeds. Those who belong to neither of these classes, and yet desire information as to the origin and development of the principal breeds of domestic poultry, may now find what they wish to know within the ordinary compass of a magazine article.

Honey Buzzard in Co. Wexford.—A male Honey Buzzard, *Pernis apivorus*, was shot on the 27th June last, at Tintern Abbey, Co. Wexford, an unusually dark-coloured specimen of a rich brown colour, the head and neck being light grey. The stomach contained the remains of grasshoppers.—EDWARD WILLIAMS (2, Dame Street, Dublin).

Honey Buzzard in Shetland.—A specimen of the Honey Buzzard was shot at Voe of Dale, near Lerwick, on the 10th June last, by Mr. Laurence, of Lerwick. It was a female bird, in very poor condition, the stomach containing nothing but a few insect-larvæ, probably those of beetles, picked up under stones on the hillside. This is only the third occurrence of this bird in Shetland, which is certainly a most unlikely place to attract such a woodland-loving species.—HAROLD RÆBURN (Romford).

Bird-life at Douglas Bay, Isle of Man.—I send you a few notes on the bird-life at Douglas Bay, which I think the more interesting because its shore is lined for almost its entire length by the houses of a town containing a population of 18,000. The bay is crescent-shaped, about two miles across, and has a sandy shore, with a bar of low rocks, uncovered at low water, stretching outside of the sand for most of the distance. The space between high and low tide averages 300 or 400 yards. During the

autumn, winter, and spring a flock of Ringed Plovers frequents the sand; these birds are most partial to that portion of the shore which lies under the promenade (from which they are easily seen), and near the body of the town. I have even seen some, on a wet Sunday at mid-day, running and pecking on the concrete surface of the old promenade, which has no sea-wall, is little raised above the beach, and on which some weed and gravel had been cast by the waves the night before. Last winter a little party of five or six Purple Sandpipers frequented a narrow strip of rock between the promenade and the sea. I noticed them first on Dec. 22nd, and the last on March 25th. They were always on the same reef, and as it runs at right angles to the tide-line, they moved along it with the water. They were surprisingly tame, allowing of approach within a few yards, and then rising, usually only to settle a few yards further away. They invariably kept to the rock, where their dark colour was so like that of the wrack which covered their feeding-ground that only their motions, or sometimes their weak, twittering call, so different from the sounding alarm of the Ring Plover, betrayed them. They waded through the pools as they fed, sometimes apparently swimming, and alighted on spots where only the floating weed showed the presence of foothold, when they were most picturesque objects, the yellow of the beak and legs being distinctly seen, and the wings (which they raised to balance themselves, displaying the lighter colouring underneath) contrasted with the general dull grey of the plumage. When persistently annoyed by dogs or some of the many passers by, they flew out, like the Ringed Plovers under the same pressure, to Conester, the well-known island reef on which the 'Tower of Refuge' stands. The commonest gulls here are the Herring and Black-headed Gulls, which are found, I think, in about equal numbers in winter. The former species breeds in abundance on the Manx coast, and in many places, the station nearest to Douglas being about four miles distant. The latter is not known to be resident in the island, and none are ever seen here during the breeding-season. At all times of the year one or two Lesser Black-backed Gulls mingle with the Herring Gulls of the bay and harbour (these solitary, dark-winged birds are called "parsons" at Peel), and, more rarely, a Greater Black-back may be observed amongst them. At any time a Heron or two may be seen in the neighbourhood, but when the shore is left comparatively quiet they frequent the bar of rocks opposite to the north part of the town in the morning and evening, keeping well out on the edge of the tide, often on some half-submerged tangle-covered ridge. I have seen as many as six together on these rocks, but one or two is more usual. When flying they are often set upon and mobbed by Rooks, which in winter come to the sands and rocks in great numbers at dawn, associating there with the sea-gulls. The Heron is generally called "Crane" in the Isle of Man. A pair of Hooded Crows ("Grey-back" is the local name)

bred for several years in a precipitous spot just outside the town limits on the north. "Grey-backs" are occasionally to be seen on the sands, and are common, and breed on all the rocky parts of our coast. Occasionally one or two Lapwings are to be met with on the sands at early morning; but this bird is not at all common in this neighbourhood. There are daily a few Shags in the bay, and two nesting-places near the pier (one marking a rock, the other the point of a small jetty) are frequently occupied by them; another roosting-place is the battlemented wall of the 'Tower of Refuge,' where I have seen ten or twelve together at one time.—P. RALFE (4, Queen's Terrace, Douglas, Isle of Man).

Little Bittern in Derbyshire.—In the spring of 1889,—I cannot ascertain the actual date, but believe it was in April,—a Little Bittern, a male in good plumage, was obtained on one of Mr. W. Burkitt's trout-ponds at Langwith, in Derbyshire, being shot by his keeper, Unwin. I believe this capture has not been recorded.—J. T. TRISTRAM VALENTINE (1, Sheffield Gardens, Kensington).

Occurrence of the Hobby on the Irish Coast.—Mr. James Byrne, of the Lucifer Shoals lightship, off the coast of Wexford, has forwarded to me the skin of a Hobby, *Falco subbuteo*. It rested on the mast-head on May 23rd, and died on the 24th. Mr. Williams has made a capital specimen of the skin. According to Mr. A. G. More's 'List of Irish Birds' (2nd ed. 1890, p. 6), only seven examples of this bird are recorded to have occurred in Ireland.—RICHARD M. BARRINGTON (Fassaroe, Bray, Co. Wicklow). [See 'Zoologist,' 1877, p. 471; 1883, p. 122.—ED.]

AMPHIBIANS.

The Defensive Nature of the Amphibian Integument.—At various times I have kept about seventy Ringed Snakes, *C. natrix*, in confinement, and of these only three, or at most four, ever ate a toad. Under pressure of hunger a Snake ate a small toad about the middle of September. The reptile died a few days after, and there was a greenish mark near its middle, which proved, on dissection, to have been caused by the partially digested body of the toad. This was of the same colour, and had tinted all the tissues between itself and the cuticle. A little Snake, only a few months old, ate without ill effects, but after some refusals, a large number of toads newly emerged from the tadpole state. Only one of all my Snakes would ever eat, though many attacked the Great Water Newt, *Triton cristatus*. The other Snakes always released this Newt directly it began to struggle; but other newts, and even sticklebacks, were eaten with avidity.—CHARLES A. WITCHELL (Stroud).

Bufo calamita near Valentia Harbour.—During a recent visit to Kerry, I found some specimens of the Natterjack Toad, *Bufo calamita*, not far from Valentia Harbour, near the small village of Castlequin. Hitherto

this Amphibian has not been found in Ireland, except at the head of Dingle Bay, all around Castlemaine Harbour. The Rev. Mr. Delap, of Valentia, told me of his having noticed the Natterjack near Castlequin, about twenty miles west of the place where they had previously been discovered, and I procured a few specimens in a small pool close by. They were evidently about to breed, and I should much like to know whether they breed in England so late as this (it was about May 18th). Perhaps some reader of 'The Zoologist' would give us an accurate statement of the distribution in England of this interesting Amphibian.—R. F. SCHARFF (Science and Art Museum, Dublin).

FISHES.

Effect of Thunder on Trout.—It has been stated that if thunder is in the air while you are fishing, the Trout will cease to rise, and I am in a position to corroborate this statement. A few days ago I was fishing in a small moorland burn when I heard, in the space of a few minutes, several loud peals of thunder. Prior to this I had been having excellent sport; after the occurrence, for the space of twenty minutes, I failed to secure a fish, until the storm had quite passed away. It is difficult to determine whether they were affected by the real noise, or whether they were merely conscious of a concussion or sonorous vibrations produced by the thunder-clap, and transmitted through the water. Yet the former seems unlikely, possessing only a very imperfect auditory apparatus, besides being void of that external ear and canal leading from the internal ear to the surface, which I suppose is essential for the perception of the waves of sound. May I venture to suggest that the lateral line, which I suppose is now acknowledged to be a sensory organ, "the scales along which are perforated by a tube leading into a longitudinal canal up to the head, into which branches of the pneumogastric nerve pass," may be adapted to receive the vibrations of the water. Leaving the means by which the sound is conducted, the question arises, what is the effect on the fish themselves? Do they share the same dread and timidity experienced by other animals, which causes them to withdraw under one of the adjacent banks or some stone, as affording a suitable means of protection. I shall feel obliged if some one will offer an explanation concerning the following points, *viz.*:—(1), Whether fish are conscious of the presence of thunder, and if so by what means; (2), What is the effect produced; and (3), Whether the effect is general among fishes, or limited to certain species.—R. USHER (Cambo, Newcastle-on-Tyne).

MOLLUSCA.

The Bearded Horse Mussel at Aberdeen.—Cod feed largely on small Mollusca and Crustacea, hence the stomachs of these fish may be examined with advantage on the chance of finding rarities. In one caught off the

Aberdeen fishing-grounds in March last there was found a perfect valve of the Bearded Horse Mussel, *Mytilus barbatus*, both of which are now in the Paisley Museum. Regarding the latter shell, Gwyn Jeffreys ('British Conchology,' vol. ii. p. 115), says, "it has not been recorded from any place north of England;" and it would seem that there is no certain record of its inhabiting the north of Europe.—J. TAYLOR (Free Museum, Paisley).

CRUSTACEA.

Abnormal Size and Weight of Lobster.—In March last a Lobster was caught on a long line at Whitby, which weighed while alive 9 lbs. 6 oz., and measured as follows:—Total length from beak to extremity of tail, 18 in.; greatest circumference, 13 in.; breadth of tail, 8 in.; length of crusher claw, $17\frac{3}{4}$ in.; circumference of ditto, 12 in. It has been preserved for the Whitby Museum.

The Angular Crab at Cullen, Banffshire.—In the stomach of a cod taken at Cullen, on the Banffshire coast, in March last, there was found, amongst other *débris*, a specimen of the Angular Crab, *Gonoplax angulata*. There seem to be very few records of this crab being found in Scottish habitats. Bell, in his 'British Stalk-eyed Crustacea,' writes concerning it:—"It was not until this species was obtained by Montagu in the estuary at Kingsbridge, Devon, that it was ascertained to be British. Since that time it has been repeatedly taken on the southern parts of the coast. I have not heard of its being taken in Scotland." Mr. R. Henderson, writing on the Crustacean Fauna, in vol. i. of the 'Transactions of the Natural History Society of Glasgow' (1887), does not seem to have made any capture of it, for, referring to *G. angulata* (p. 332), he quotes Greville's record, *viz.*:—"On the Ayrshire coast, abreast of Arran." In Smiles' 'Life of Thomas Edward' (1876), the Angular Crab is not included in the Banffshire Fauna at the end of the book. It is said to live in excavations in hardened mud.

The Circular Crab on the Aberdeen Coast.—About the same time as the above-mentioned capture of *Gonoplax angulata*, a specimen of the Circular Crab, *Atelecybus heterodon*, was found in the stomach of a cod taken off the Aberdeen fishing-grounds.—J. TAYLOR (Free Museum, Paisley).

INSECTS.

Destruction of Oaks by Tortrix viridana.—The destruction of the foliage of the oak woods in North Wales by the caterpillars of *Tortrix viridana*, as described by Mr. E. L. Mitford (p. 317), is, I am sorry to say, by no means unusual, and has occurred during several recent seasons; notably in 1888, when the damage was much more general than during the present summer. This moth forms a favourite food with most of the

small warblers which frequent the oak woods, and in such situations the Willow Wren appears to feed its young almost exclusively on this insect.—G. H. CATON HAIGH (Grainsby Hall, Great Grimsby, Lincolnshire).

SCIENTIFIC SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.

August 6, 1890.—Capt. HENRY J. ELWES, F.L.S., Vice-President, in the chair.

Major-General George Carden, of Surbiton, Surrey, and the Army and Navy Club, Pall Mall, S.W.; and Sir Vauncey Harpur-Crewe, Bart., of Calke Abbey, Derbyshire, were elected Fellows.

Prof. Meldola exhibited a male specimen of *Polyommatus (Chrysophanus) dorilis*, Hufn., a common European and Asiatic species, which had been taken at Lee, near Ilfracombe, in August, 1887, by Mr. Latter. At the time of its capture Mr. Latter supposed the specimen to be a hybrid between *Polyommatus phlœas* and one of the "Blues," and had only recently identified it as belonging to a well-known species. Mr. Stainton, Mr. Jenner Weir, and Colonel Swinhoe made some remarks on the specimen, and commented on the additions to the list of butterflies captured in the United Kingdom which had been made of late years.

Mr. W. F. H. Blandford exhibited, and made remarks on, four specimens of *Athous rhombeus*, Ol., bred from pupæ, recently collected by himself in the New Forest.

The Rev. Dr. Walker exhibited a large collection of Coleoptera which he had recently made in Iceland. The following genera, amongst others, were represented, viz.:—*Patrobus*, *Nebria*, *Byrrhus*, *Aphodius*, *Philonthus*, *Barynotus*, *Chrysomela*, *Agabus*, *Creophilus*, and *Carabus*. Mr. Champion, Dr. Sharp, and the Chairman made some remarks on the collection.

Capt. Elwes exhibited three species of the genus *Atossa*, Moore, three of the genus *Elcysma*, Butl., and three of the genus *Campylotes*, West.,—all from the Himalayas and North-eastern Asia. The object of the exhibition was to illustrate the remarkable differences of venation in these closely-allied forms of the same family. Colonel Swinhoe, Mr. Warren, Mr. Moore, and others took part in the discussion which ensued.

Mr. P. Crowley read a paper entitled "Descriptions of two new species of Butterflies from the West Coast of Africa," and exhibited the species, which he proposed to name respectively *Charaxes gabonica* and *Cymothoe marginata*. He also exhibited several other new species from Sierra Leone, which had been recently described in the 'Annals & Mag. of Nat. Hist.'—H. Goss, *Hon. Sec.*

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ON THE COAST OF CONNAUGHT.

By R. J. USSHER.

By the kindness of my friend the Rev. W. S. Green, Inspector of Irish Fisheries, I had the advantage of accompanying him on part of his cruise, during the first half of June last, from Galway to the Arran Islands, the bays of southern Connemara, Inishbofin, and Belmullet on Blacksod Bay. I thence travelled through Mayo to Ballina. I thus had a rare opportunity of noting, in the breeding season, the birds frequenting some of our remotest coasts and islands.

We were three days at Inishmore, the largest of the Arran Islands, which is about nine miles long, presenting along its seaward side a line of overhanging cliffs that rise in the neighbourhood of the pre-historic fortress of Dun Angus to three hundred feet. The entire island is of limestone, and the surface is usually composed of bare tracts of this rock, more or less smooth, but furrowed everywhere by parallel crevices in which the maiden-hair and other ferns grow luxuriantly. Except a few trees about two gentlemen's houses, there are none on the island, and, unlike the opposite coast of Connemara, there is no peat. From the central heights the island slopes gently to its north-east shore, near which the population live, cultivating potatoes in the thin layer of soil. Wherever I went through the island the cry of the Chough or its graceful form was never long absent; but I found that its breeding haunts were not, as usual on my own coast, recesses over caves open to the sea; for in Arran the

cliffs are actually hollowed out beneath by the tremendous rollers of the Atlantic, and Choughs place their nests in various positions out of reach of the sea-water, sometimes in crevices just beneath the tops of the loftiest cliffs, sometimes in vertical or tortuous fissures behind an outer cliff that is breaking away from the land. One nest was shown me in the hole that once held a joist of the upper storey within an old castle in the interior of the island; but the most abnormal site was in a puffing-hole, up which the smoky spray of the sea ascended, opening in the flat surface about a hundred yards from the edge of the cliff. About twelve or fifteen feet down this hole a pair of Choughs had their nest, containing young. One or two pairs of Ravens are said to breed in the north-west cliffs. The Hooded Crow, that ubiquitous bird, was common in Arran, as in Connemara and its other islands; but the Jackdaw was absent, nor did we meet with any in Connaught, except in the town of Clifden. Rooks, too, were absent: they are said to come over from the mainland in hard frosts, devouring all the corn they can root up and departing again: they do not breed in Arran. A few Magpies are resident, and are said to build their nests of briars and hay (in the absence of trees and sticks) among the ivy on low inland cliffs. An increasing colony of Starlings are established near the village of Kilonan. I did not meet with Starlings elsewhere on the west coast.

It seemed strange to hear a Blackbird singing loudly on one of the innumerable stone walls, in which they breed in the absence of a bush of any sort. Why this bird should be common in Arran and the Thrush absent, or disappearing, while in Valencia Island the Thrush breeds and the Blackbird is a winter visitant, has yet to be explained.

The absence of many familiar birds, as Sparrowhawks, Kestrels, Warblers, Titmice, Finches, Swallows, and Swifts, seemed remarkable when contrasted with the presence or abundance of others. Cuckoos were common in Arran and on the Connemara coasts. We saw them flying about these bare regions by day, perching on the walls, and at night they congregate in the isolated groups of small trees which here and there surround some house of a better class than the peasant's hut, disturbing the inmates by their nocturnal babbling. Corn Crakes, too, were numerous, both on the coasts and islands of Connemara,

also Wrens and Hedgesparrows, which live and breed in the remotest islands.

The commonest land-bird of the region is the Wheatear, a nest of which, with young, we found in Onaght Fort, while the Twite and the Rock Pipit are also very common. A nest of the latter, with incubated eggs, was found in a hole between the piles of stones and rock-masses which form a raised beach, being washed back from the cliff-tops by the enormous waves that burst up over them.

Probably nowhere in Ireland is more impressive cliff-scenery to be found than along the outer side of Inishmore. Standing at the Black Fort, which before the Christian era was built to fortify a projection in these cliffs called Doonaghard Point, one finds on either hand a deep and wide gulf, in part arched over by the lofty overhanging cliffs, far within whose gloomy canopy the raging swell bursts and washes up on benches of rock hidden from our view, and pours back again in cataracts from the inner regions. Above this scene of tremendous tumult the overhanging cliffs present midway a series of long ledges on which large colonies of Kittiwakes and Razorbills, with some Guillemots, were assembled at the time of my visit, many of them hatching, the Kittiwakes having on the 3rd June laid but one egg each. Such ledges would have appeared unsuitable for Razorbills had not the rock overhung them to such a distance above as to supply the nearest approach available here to their ideal of a breeding recess. Here and there the dark form of a Shag darted on the wing across the deep blue water of these agitated gulfs. The Shag is everywhere the commoner species of Cormorant around the coasts of Connaught.

Proceeding a little further west, I soon heard the clamour of a Peregrine's cry. She issued from a large and deep horizontal fissure near the top of the cliff, where, from her excited demeanour, she evidently had her young. I found within the Dun the remains of a Guillemot she had picked.

Passing across to Connemara, we found a colony of Common and Arctic Terns breeding together on Maan Island; they had not completed their clutches on the 7th June. On this island, too, we saw seven Turnstones, not breeding. A large island named Garumna lies on the south of Connemara; it contains several lakes, in one of which Mr. G. H. Kinahan saw many years ago

Hérons nesting among *Osmunda* on the ground. I explored Garumna, and was shown by the inhabitants islands in several lakes where they said Herons bred, though none were visible when I was there. These islands were more or less rocky, and contained low scrub, bracken and *Osmunda*. A pair of Hooded Crows appeared, by their anxiety on my approach, to have young on one of these low islands. We were informed at Kilkieran that Herons breed on the little islands in a neighbouring mountain-lake called Lough Pibrum.

In districts where suitable trees are wanting Herons sometimes build in the sea-cliffs, as on Bere Island, Bantry Bay, and near Sybil Head, on the Dingle Peninsula; but in Southern Connemara, where cliffs as well as trees are absent, the islands in the numerous lakes, though small, afford the best retreats for Herons as well as other large birds. Wild Ducks breed there numerously, and on the 9th and 10th June I found Ducks sitting on eggs beneath the luxuriant heather and *Menziesia* on such islets.

The 'Fingal' having anchored at Roundstone, I ascended Errisbeg Mountain, which commands a most striking panorama, extending from the cliffs of Moher, in Clare, and the Arran Islands, over all Southern Connemara, intersected by its numerous fiords and lakes, while the neighbouring seas are studded with islands of every size from that of a mountain downwards, terminating in Slyne Head on the west, with the island of Inishbofin and Achill, and the top of Croagh Patrick rising behind the Twelve Pins.

Connemara is a country of granite and peat-bog, whose deeply-indented coasts are devoid of cliffs and support a considerable population. Trees are very rare, yet from Errisbeg I saw beneath me to the west a lake with wooded islands in it called Boulard Lake. Hearing that Herons bred there, I visited it on the 9th June. I had to swim a considerable distance to the island that contained the heronry, and found to my surprise that the large trees which covered it were hollies of great antiquity and gigantic size, for though not very lofty their trunks and spread of branches exceeded any idea I had formed of a holly. The Herons' nests were about ten to fifteen feet from the ground. They were the largest I had ever seen, having evidently been added to from year to year, and some of them must have been

four feet across. They had been all robbed a few weeks previously by men sent specially to destroy the Herons for the sake of the lake fishing. Some were empty; in one were two eggs; in another eggs and newly-hatched young; and in another five nestlings in down, their crests of grey and white depending from their heads—perfect immature Herons. These were doubtless late broods, owing to the previous massacre.

Having heard that Gulls were breeding on another lake called Dulough, I visited it. It was surrounded by very wet bog, and was miles from any human abode. It contained several small rocky islets, on which grew a little furze, heather, and a dwarf willow or two. Above the lake and on these islands were a number of the Common Gull, *Larus canus*, whose cries as I approached their breeding-place reminded me of those of the Herring Gull, but were weaker and more shrill. On reaching the largest of the islands I found about twenty nests on it, loosely made of grass and sedge, all empty but one. This one, and the nests on the other islands, contained from one to three eggs, all fresh. Several of the nests were placed in all sorts of available nooks and depressions in the bare rock, others among the scrub and stones, and one partially sheltered by a dwarf willow. This was the first breeding colony I had seen of the Common Gull, a bird which in the south and east of Ireland only visits us during the storms of winter, and which does not appear to have been recorded as breeding in Co. Galway, though its southern breeding range is known to extend to one of the islands of the Kerry coast, which is its most southern breeding-place in Europe.

Next day, 10th June, we anchored on the eastern side of Birterbuy Bay, and I visited a large lake called Lough Boola, which contains many islands of various sizes, chiefly rocky. On these, and flying about the lake, were many Common Gulls. I visited several islands, and having found fresh eggs on Dulough the previous day, I was not prepared to find, as I did, the clutches I took on Lough Boola ready to hatch. In one nest a young *Larus canus* had just escaped from the shell, and further on a Gull, that evidently had young at hand, alighted on the water before me in great excitement to lure me along. The nests were placed, not in the deep vegetation, such as furze and grass, but on the edges of this around the islets, usually on the north-east or most sheltered side. A pair of Black-headed Gulls and a

pair of Common Terns were also breeding on Lough Boola; I took an addled egg of the former, and two fresh eggs of the latter.

On the 14th June, when crossing the desolate wilderness of the North Mayo Moors from Belmullet to Ballina, after I had passed the river that bounds the Baronies of Erris and Trawley, I came in sight of a lake named Dahybawn, containing an island of two acres in extent. This island stood some twenty feet above the water, and along its southern side was an escarpment, on the face of which was a very large colony of Common Gulls sitting on their nests, which dotted the bank: there may have been about fifty nests. The male birds were flying to and fro for food, some of them searching for it unsuspectingly beside the road by which I passed. This colony was far larger than those I had seen in Connemara, and may be the largest of the species in Ireland.

On Errisbeg Mountain I saw a Merlin, and along its lower slopes I frequently met with Golden Plover in their breeding plumage, the male standing erect on a tussock keeping sentinel, and by his whistle giving warning to the female of the intruder's approach, then with outspread tail taking flight to another spot on ahead, where the whistle was renewed. I again met with Golden Plover on my walk to Lough Boola. They seem to breed commonly on the moors and mountains of Connemara, while a pair of Common Sandpipers make their home on every lake, even on the remote island of Inishbofin.

I was told by a peasant that on an island in Lough Athery, south-east of Ballynahinch, Cormorants as well as Herons nest in trees. I should like to have this confirmed. It seems probable, as Cormorants can find no suitable cliffs along the coast. I was told, however, that they, as well as Gulls and Terns, breed in numbers on Deer Island, which is large, and rises in a hill some miles off Birterbuy Bay. It is said to be the chief breeding-place of sea-birds in the district. It is preserved by the owner, who keeps deer on it. The stormy weather prevented me from visiting it, as landing there is not easy, but as we passed it in the 'Fingal' we saw many Terns flying seawards from it. We met with Black Guillemots in the Connemara bays, and a female Red-breasted Merganser in Clifden Harbour.

On our voyage from Birterbuy Bay to Clifden, through the heaviest sea I have ever seen, we saw Great Shearwaters on two

occasions when south and west of Slyne Head; they were large brown birds, and we saw in one the pale colour round the neck and hooked beak. They skimmed the sea with a flight more like that of a Manx Shearwater than any other bird, but they flapped their wings at least part of the time. We also passed Gannets, adult and immature, and Manx Shearwaters.

Clifden lies up a long, sinuous, sheltered harbour, with some timber about it, and here we met with Jackdaws, Thrushes, and Swifts. Broadstone was the only other place in Western Connaught where I saw Swifts, and there only did I meet with a few Swallows, whose general absence was very remarkable.

Leaving Clifden, and passing three high uninhabited islands, where the sea was alive with *Alcidæ* and Manx Shearwaters, we came to Inishbofin, one of the most western islands of Connaught. Owing to the numerous population and paucity of high cliffs, few sea-birds breed there; but on a group of high, semi-isolated rocks, called the Stags, a number of Oystercatchers breed. The land-birds I met with were characteristic of Western Connaught. Wheatears, Rock Pipits, and Twites were common. Corn Crakes were often heard, and I met with Wrens, Pied Wagtails, Yellowhammers, Hooded Crows, and Rock Doves in the interior of the island, with Ringed Plovers, and, on some small lakes, Common Sandpipers. I saw Choughs in several places, and was struck by their tameness. Their only breeding-place which I saw was a horizontal fissure in an overhanging cliff that formed the side of a remarkable chasm in the land on the north side of the island. The sea occupied the bottom of this chasm. It was as though the roof of a deep sea-cave had been removed from its central portion, leaving the mouth and inner portion intact. On Inishbofin I was struck by the absence of Thrushes, Blackbirds, Finches, Swallows, Swifts, Rooks, and Jackdaws.

On the 13th June we left Inishbofin, and made for Blacksod Bay. We could see that there was a colony of Herring Gulls on Inishturk. We hove to at the Bills, a group of lofty rocks culminating at 124 feet, which lie several miles south of Achill Head, exposed to the full sweep of the Atlantic, and which are the chief breeding resort of sea-birds on this coast. Though the day was beautiful, and the wind northerly, the swell of the sea almost prevented us from landing, but having effected this on the middle rock we beheld a wonderful scene. Above the lower cliffs,

which were pierced with arches and crowded with Kittiwakes and *Alcidæ*, the top presents a gently sloping plateau covered with dark, strong thrift. Among this thrift,—though not on the highest ridge of the island, and not beneath the elevated plateau,—were Great Black-backed Gulls breeding together in such numbers that, when standing and surveying them on the wing, Mr. Green agreed with me that one hundred would probably be too small an estimate of them. They covered the island in a wheeling crowd, while their nests were dotted about among the huge tufts of rank thrift on the top of the island. Most of the eggs had been hatched, though we took some clutches, varying from fresh to the last stage of incubation. The young in grey down, spotted with black, were crouched all around us. It is uncommon to find several pairs of this fine species breeding together, but where can we hear of so large a colony as this on the Bills? These birds seem unusually plentiful on that coast, and the Bills are their great strongholds. The panorama from the Bills included the mountains and islands of Connemara, Croagh-Patrick, Clare Island Mountain, and Achill, with its lofty ranges and stupendous cliffs. The cap of peat on the eastern Bill swarms with Puffins, but few Great Black-backs breed there. Several pairs of Herring Gulls, however, do so, which are absent from the central rock; on the western rock only Kittiwakes breed.

Off Achill Head is a rock called Carrickakill: on this a colony of Kittiwakes appeared to be on their nests on an unusually sloping surface, accessible enough if one could land in the perpetual ocean-swell and run of tide. A little north of this we came up with a Sun-fish, which did not remove though the steamer passed almost over it. Mr. Green then rowed up to it and put a bullet through its head: it measured eight feet six inches from tip to tip of its fins, and about six feet six inches from its nose to its hinder extremity.

On landing at Belmullet I visited my friend Dr. Burkitt, late of Waterford, now eighty-four years of age, the correspondent of Yarrell and Thompson, and the preserver of so many rare additions to the avifauna of Ireland, to which he added yet another species, the Barred Warbler, which he presented to me (p. 310), together with a Dunlin in breeding plumage, killed at Belmullet the previous day. He said that Swallows had become much scarcer within the last seven years at Belmullet. I saw

none there, and it was not until I was twenty miles from it, on my way to Ballina, that I saw two. Mr. Moran, at Belmullet, told me that Choughs are quite common on the northern coast, and that Herons breed in the cliffs.

On my journey to Ballina I saw the few birds characteristic of the western region, with Reed Buntings and a Dipper, Rooks being very scarce until I got off the moorland into cultivated ground, when they increased, and I saw Swallows, Thrushes, Willow Warbler, Chaffinch, and in the town of Crossmalina there were many Swifts. In Ballina I saw House Martins. I did not see a Greenfinch in Connaught, nor a Chaffinch, until I reached Crossmalina. Corn Buntings I only met with in Arran, but the Whitethroat was seen near Broadstone and Clifden, in Connemara, as well as Crossmalina, in Mayo.

When at Ballina, on June 15th, I was taken by Mr. Warren, of Moyview, to Rathroogeen Lake, the only known breeding-place of the Sandwich Tern in Ireland. Before we approached the lake we saw many of these fine birds flying to and from the sea, along with numberless Black-headed Gulls, of which there is a vast colony on this lake. The nests of the latter, with eggs and young, were thickly scattered among the beds of rushes on the margins. Great numbers of "flappers," young Wild Ducks and Teal, were on the water among the reeds. There were also flocks of Redshanks, and the anxiety of one led us to discover her young in down. But I was not satisfied until I had got upon an island in the centre of the lake, which is the citadel of the Sandwich Terns; this is surrounded by a fringe of bushes and low trees. Within this I found a zone of tall nettles, among which many Black-headed Gulls had young ones. In the centre of the island is a bare spot of no great extent, which was strewn with the eggs and young of the Sandwich Tern. As most of the eggs were single and very dirty I concluded they were addled. In some nests were two clean eggs that looked fresh, and in one nest three eggs. In other nests one young bird, newly hatched, squatted beside its brother egg, its coat lying close on it. The Terns' nests were scarcely distinguishable from the quantities of similar materials—bits of dead reed—which covered the ground. I took no eggs, out of respect to the wishes of Sir Charles Knox Gore, to whose preservation of the place the well being of this enormous bird-colony is due.

The following observations were made by Mr. Green and Mr. Poole during the subsequent part of their cruise:—

A pair of young Golden Eagles were offered to Mr. Green for sale. The cliff in which they were reared, in the face of a lofty mountain, was shown to him. I know of no other breeding-place of this splendid bird now left in Ireland, and the young are annually thus taken there. In a low cliff, about forty feet high, on Claggan Island, Blacksod Bay, a pair of Peregrines were evidently breeding, which on two occasions when the vessel was passing flew out with vociferous cries. In the estuary leading from Belmullet into Broadhaven they passed through large flocks of Shags; they also saw many Black Guillemots about Broadhaven. On the Stags of Broadhaven—very lofty isolated rocks—they saw no Gannets, but plenty of Kittiwakes, and, on the top, Great Black-backed Gulls. We may conclude that the only breeding resorts of the Gannet on the Irish coast are the Little Skellig and the Bull Rock. About midway between Broadhaven and Donegal Bay, on June 16th, they passed a Fulmar, and returning to Blacksod Bay, between that date and the 10th July, they steamed off to two hundred and twenty fathoms, and made two most successful hauls of the deep-sea trawl. A huge Whale played alongside, and numbers of Fulmars came so close to them that they could have hit them with stones. Most of them had the speckled appearance of young birds, and a jagged gap in the feathers of the wing, which looked as if they were moulting. Subsequently, whenever they went from ten to twenty miles west of the coasts of Connaught, they met with Fulmars. On one occasion they caught one, which appeared disabled, in a hand-net, but owing to an accident it escaped. On July 17th, at Inishbofin, they saw a flock of sixty-four Choughs, which were flying in a regular flock like Rooks, apparently from the mainland. In Inver Bay, Co. Donegal, they saw many Storm Petrels flying about in the daytime. On the 26th August they saw at least four Great Shearwaters off Bantry Bay; and about Sept. 2nd, in Courtmacsherry Bay, Co. Cork, two Skuas were creating a great disturbance among the other Gulls.

Mr. Poole states his impression that the south-west coast is much richer in sea-birds than the west and north-west; but adds that of course the birds follow the surface-fish, and that their distribution varies at different seasons.

I may add my own conviction, as to breeding-places, that, unless it be in Donegal, which I have not visited, there is no sea-bird colony in Ireland of the same extent as that of the South Saltee, Co. Wexford.

THE GREY AND THE WHITE WAGTAILS IN OXFORDSHIRE.

BY OLIVER V. APLIN.

THE Grey Wagtail is for the most part a winter visitor to Oxfordshire, and although it has been seen in spring and summer on a good many occasions, and there is no doubt that it has bred in the county twice at least, yet no nest was actually discovered before the present year.

In 1875 a pair was repeatedly seen in an osier-bed on the banks of the Swere at South Newington. They frequently carried food in their beaks, and were much agitated when the observer came close to the osiers, but no nest could be found. Last year (1889) again a pair of these most elegant birds took up their quarters early in May at Barford St. Michael Mill, a few miles further down the same stream. They evidently had a nest in the stone-work below the flood-gates, which is very high (this being an "overshot" mill), and in a rather ruinous condition, so that I was unable to make a thorough search for the nest, and it remained undiscovered.

I had this pair of birds under my observation at intervals for some weeks from the 4th May until the middle of June, when it appeared that the young had left the nest, and I saw some of them on the banks of the stream above the mill, but as the hay-grass was just ready for cutting, I could not follow them up to ascertain the number of the brood. During May and early June the old birds were generally to be seen running about over the large stones in the rushing water below the gates; here I often had them within three or four yards of me, and had plenty of opportunities of remarking the ease and agility with which they captured flies on the wing over the water. All three of our common English Wagtails are tame and familiar in the breeding season, and extremely solicitous about their young; but my rather

limited experience leads me to think that the present species is even tamer and bolder than the other two. Yet I have sometimes known the plaintive mobbing cry of Ray's Wagtail become almost painfully monotonous when walking along the meadows in June, and I have seen the Pied Wagtail throwing itself about almost defiantly on the gravel within a couple of yards of my feet when examining a nest of young. But this nest was built in the ivy on a stone ledge just over the front door, and familiarity had perhaps bred some degree of contempt on the Wagtail's part for the human inhabitants of the house. However, these are exceptional instances in the case of common birds, and on each of the only two occasions on which I have approached the nest of the Grey Wagtail I have found them remarkably fearless.

The Grey Wagtail is very fond of perching on trees; the Barford pair were often to be seen in the willows overhanging the water, as also on the old apple-trees in the adjoining orchard. In winter the Grey Wagtail, when disturbed, generally flies up into a willow, if there is one near. The Swere is a very quick stream in places,—quite noisy occasionally,—and has generally a pretty rapid fall, so that it naturally commends itself to the Grey Wagtail, whose love of running water is notorious. On the 30th March last I saw a beautiful Grey Wagtail in spring dress close to Barford Mill, and hoped they were going to breed there again, as our winter birds generally leave the spots they have haunted all the season soon after the beginning of that month; and, although I have not seen one there since, I think it highly probable that they have nested somewhere outside the couple of miles of that stream along which I walk when fishing. The Sorbrook, on the other hand, below where its three heads meet at Broughton Castle, has—partly on account of the number of mills on it—a sluggish current. Yet the mills themselves attract the birds. I saw one on the wing over the stream at lower Grove Mill on the 20th April last, and it was on this stream that the first Oxfordshire Grey Wagtail's nest was discovered.

On the 25th June last Mr. W. Warde Fowler and I were walking past the upper Bloxham Grove Mill when he drew my attention to a Grey Wagtail on the opposite bank of the pool below the flood-gates. I was pretty sure that if the pair were breeding there the nest was to be found somewhere in the brick-work of the flood-gates shoot, in the mill-garden.} Upon our

making enquiries of the miller, he said he believed there was a nest of some kind there, as he had heard his children talking about it. Directly we got to the place both birds appeared in the greatest excitement, flying round over our heads, or settling within a few yards of us in a most agitated state, their tails swinging up and down and their whole bodies vibrating with excitement and anxiety. In addition to the usual call-note, "zit-zi," they uttered two other notes; one a rather soft, plaintive "see-eet," the other a shriller, higher-pitched "see"; generally the two sounds were uttered one after the other, like a double note, but with a slight interval. With the aid of a short ladder, I got down to the nest, which was placed in a hole in the brick-work just below, and a little to one side of, the cross-beam against which the top of the eel-trap grating rested when in use, and so low that it would be under water if a heavy flood was coming down. The nest was a substantial structure, formed chiefly of skeletonized leaves worked together, with coarse grasses and a few roots, and lined with horsehair. It contained only two young birds, and had probably been robbed of some of its eggs. The young were just fledged on the upper parts, tails just sprouting, and wing-quills very short. Upper parts uniformly pale ash-grey, with a little brown mottling on the wing-coverts; at the base of the tail buffish yellow all round. Under parts just feathering, and would be pale yellowish buff. We watched the old ones for some time, and in the bright morning sun I thought I never saw more beautiful birds as they flitted about in the lights and shadows of the ash- and alder-shaded pool. No background showed up their colours better than a dark yew-tree in the mill-garden. Even the miller expressed his admiration of the birds; but it is significant of the slight attention paid by most people to such things, that he had never noticed them before! Though still agitated, the male took some insects on the wing. This was, no doubt, a second brood, as the Grey Wagtail is said to begin nesting early in April, and to have two broods in the season.

It is wonderful how very local the Grey Wagtail's habits make it with us. It is seldom, except in autumn just about or a little after migration time, that we see it away from its favourite haunts,—mills, weirs, lashers, &c.,—and even at migration time water is essential; it is the real "Water Wagtail." Then I have occasionally met with it in unusual places. On the 7th October,

1883, I saw two on the stones of the pond-bay at Clattercote; and in the following autumn, when the water was let down, a bird haunted a runnel, formed by one of the feeding-springs through the exposed mud, from the 8th to the 22nd November, often in company with some late-staying Green Sandpipers. I have also met with it on the shelving banks of the Cherwell, in the parish of Bodicote, where for a short distance the river runs rather quickly; the last occasion being on the 26th December, 1889. Solitary as the bird generally is in winter, I once saw five close together near the same place, on the 14th November, 1879; but probably these were passing either up or down the stream, perhaps to Oxford, where, near the Cherwell's mouth, they have a well-loved station which has been immortalized. Last winter the Grey Wagtail was unusually common in North Oxfordshire. I noticed them on the Swere, in Bloxham parish, and at Barford; on the Sorbrook, at Wickham, Broughton, and Broughton Fulling Mills; and on the Cherwell. The bird at Wickham was frequently to be seen in a shallow running ditch, somewhat impregnated by the farm-yard, skirting the high road. It was there, to my knowledge, from mid-January until the 8th March, and in the cold weather in February grew extremely tame.

The date of the assumption of the black throat in spring seems to vary in different individuals. One which I examined, killed in Northamptonshire on the 20th February, 1889, was moulting the feathers of the throat, which was quite as much black as white. On the 30th March last a bird I saw had a good black throat; but, on the other hand, a male shot at Rainworth, Nottinghamshire, on the 28th March, 1887, and given to me by Mr. Whitaker, has only one or two dark feathers on one side of its throat.

No one who is acquainted with that clear chalk stream, the Buckinghamshire Chess, need wonder that the Grey Wagtail should breed regularly at Chenies ('Birds of Berks and Bucks,' p. 26; and Gould, *Contr. Orn.* 1849, p. 137). I looked out sharply for it last May at Chenies Mill, the haunt of great trout, but I could not search the most likely spot—*i. e.* the mill-tail; I believe, however, I heard the bird's note. A chalk stream, or clear gravel-bedded river, is always dear to the Grey Wagtail. In the middle of last September I fell in with two or three birds so far south as Winchester, where they were tripping over the

masses of weed among the smooth, swirling ripples of the crystal Itchen; and, a few days later, I found them about the weirs on the Kennet, in Berkshire. In North Oxon they do not appear in autumn until quite the end of September or the beginning of October.

Our walk led us past the lower Grove Mill on the same stream, where, curiously enough, another interesting pair of Wagtails awaited us. On a bank of mud and stones in the shallow water below the gates, a very light-coloured black and white Wagtail caught my eye. A little watching proved that it was the female of a pair which were apparently feeding young in the nest, built probably somewhere in the farm buildings. The male was a typical Pied Wagtail, very black. The bird I saw first was as surely a White Wagtail. It does not seem to be generally known that the female of *Motacilla alba* sometimes (even when fully adult) has the crown of the head and occiput chiefly grey, with hardly any black. I have a fully adult female, killed at Fokstuen on the 5th July, 1883, of which the following is a description:—Crown and occiput grey, like the mantle, slightly mottled with blackish grey. Forehead dull white, of very small extent; behind this, and blending into the grey, grey and white mixed; cheeks dull white (mottled with grey) extending in a line over the eyes; above this white line is a line of black, and this is the only black on the top of the head. Chin, throat, and gorget coal-black, not the least “mottled with white,” as stated in Yarrell. Rump grey; upper tail-coverts lead-grey. It may be said to have no pure white at all about the head, and, with the exception of the lines at the side of the crown, no black on the upper parts until we come to the tail itself. Our bird to-day, as far as I could see, agreed with this description exactly. Neither the back, rump, nor crown showed any black; indeed they all looked pale grey, though the crown, in some positions, showed rather darker than the back—an effect, no doubt, produced by the blackish mottlings and the dark lines at the sides of the crown. A female Pied Wagtail at this time of year would be sooty grey, mottled with black on the back, and would have had a coal-black cap and nape, and black upper tail-coverts. This last mark is, I think, the best way of distinguishing a male White from a grey-backed Pied Wagtail when both are in winter dress. We watched our mixed pair for a considerable

time, paying especial attention to the female *alba*, which we observed in every position, and frequently close to us, with strong glasses, so that we could see it perfectly. It was clearly adult, from the extent and purity of the black on chin, throat, and breast. This grey-crowned plumage in *M. alba*, female, can hardly be universal, or it would surely have been noticed by some of the many ornithologists who have observed the White Wagtail on the Continent. If I remember right, there is a grey-crowned bird in the Natural History Museum, but I cannot be sure. Yarrell says that, in the female, "the black on the occiput occupies less space," which is undoubtedly true, but hardly conveys the impression of a bird with scarcely any black at all on the upper surface of its head.

Since writing the above, I have seen, among a fine series of White Wagtails in a private collection, two females in which the black on the top of the head was reduced to a band across the hinder part of the crown. A short time previously I had been looking at the Norfolk mixed pair presented to the Natural History Museum by Lord Walsingham, the male of which is a White and the female a Pied Wagtail, and it was interesting to find a case in which the sexes were reversed.

On the 14th March, 1885, I watched a pair of Wagtails in a field of young wheat at Great Bourton, the female of which was quite a pale grey on the back, and I feel sure now that it was a White Wagtail; but at the time I did not know that interbreeding had ever been proved to have taken place, and thought I might have been mistaken. I saw an undoubted White Wagtail at Bourton on the 17th May, 1884, and on the 27th September, 1885, two more at Clattercote Reservoir. Mr. A. H. Macpherson also saw one on the Isis bank above Oxford on the 4th May, 1886; but up to this year these were the only certain Oxfordshire occurrences of which I was aware; although during a very high wind on the 25th April, 1885, I saw among numbers of other newly-arrived summer migrants,—*e. g.*, Wheatears, Ray's Wagtails, Redstarts, Sand Martins, &c.,—in a sheltered meadow at Bloxham Grove, a bird which I believe was of this species.

NESTING HABITS OF THE GOLDEN EAGLE IN CALIFORNIA.*

BY H. R. TAYLOR.

ON February 20th, 1889, I received the following telegram, to me perfectly intelligible:—“Come to Sargents to-morrow; the Eagles are early.” This was somewhat of a surprise, as I had regarded a set of the Golden Eagle’s eggs taken on February 29th, 1888, as an early laying. Plainly the last three weeks of pleasant weather had made the nesting season early. It is almost needless to say I packed up hastily, and was off for the Eagle territory the following morning. On arrival I met my friend B. at the station, and started off to visit an Eagle’s nest which I had found last year.

On arriving in sight of the nest, which was in a rather small live oak near a road, we saw the male bird perched on a fence not one hundred yards from the tree. When we came near he flew, passing close to the nest, from which the female followed a few moments later.

It did not take us long to climb the tree, when we were delighted to find two eggs, handsomely marked. The nest was only thirty feet from the ground, and was not a large one, being three feet in diameter, by eighteen inches in thickness. It was constructed of oak-sticks, poison-oak branches, and sage-brush; lined with green and dry oak-leaves and grass, with a sprig of the bright red toyon berries. Before reaching my friend’s house, several miles distant, we visited an old Eagle’s nest, which was in an oak about fifty feet above the ground. It was a very bulky affair, formed of big oak-sticks, mustard-stalks, and pieces of grain-sacks. The lining was of Spanish moss and oak-leaves. When we rode under the tree we saw the great bird’s tail projecting over the edge. She perceived us soon and flew off, when we made the ascent and found one egg, brightly marked with brown and lilac.

My friend returned some days later for the eggs, and, finding the female again on the nest, on climbing up grasped her by the tail, thinking to secure some feathers as well. The bird turned

* From ‘Zoe,’ a monthly biological journal, published at San Francisco, vol. i., No. 2, for April, 1890.

upon him angrily, doubtless mistaking him for a coon or wild-cat, and not until beaten off with his hat did she discover the mistake and take flight.

The only Eagle breeding in Santa Clara and San Benito Counties, so far as observed by me, is the Golden Eagle (*Aquila chrysaetus*). The Bald Eagle (*Haliaeetus leucocephalus*) nests, I am told, in Monterey County, also in Alameda County. The Golden Eagle usually chooses an open tree for its nest. The sitting bird is said to leave the eggs uncovered for several hours after 12 p.m. on sunny days, while it takes recreation in flying with its mate. I have never investigated this fact, although once, on a warm day, I saw an Eagle fly to its nest about three o'clock. They become attached to their old homes, and, if not disturbed, refit them for occupancy every year, increasing their bulk sometimes to immense proportions. When robbed they still cling to the locality, commonly building a new nest within three hundred yards of the old one, although frequently they return again trustingly to their old home. If robbed again at a new location they are pretty certain to go back to the old nest the following year; but when there are two nests in the same tree, as frequently happens, the persecuted Eagles only remove to their first nest, fancying that on another limb they will be safe from disturbance.

After several years' study of these Eagles, the writer feels that he has formed the acquaintance of a number of individuals of this species, and this purely from the regularity of their habits. The first Eagle I ever saw in Santa Clara County was moving about the grassy top of a big hill, and on nearly every day thereafter I observed him at his favourite play-ground. On my visit the year following he was still doing "look-out duty" at his old post. The nest of this Eagle had a curious ornament to the interior in the shape of a large "soap-root." The new nest, built the year after, also contained a "soap-root," which fact is of interest, as showing the individuality of my feathered friend. Another Eagle I know has a singular predilection, when nest-building, for grain-sacks, which it uses chiefly in the lining. When I first discovered this Eagle's nest there was one of these large sacks inside. The heavy storms of the next winter dislodged its nest, and in the new one it built I was surprised and interested to observe a grain-sack. The set of two eggs

taken from this nest were unusually large, one of them measuring 79×62.2 millimetres.

A curious circumstance about the Eagles that make their home near Sargent is that several pairs which are always seen there apparently do not nest. The nature of the country in some of the hills is such that one accustomed to riding about might actually know every tree where the birds could build, so that an undiscovered nest would be an impossibility. My friend showed me a pair of Eagles that have lived in the hills at the back of his house for many years. He also pointed out to me their nest, which the birds repaired last year, but did not use. He says they have not laid since 1884, when they had three eggs. This pair stay about the place all the year, living largely (like the other Eagles thereabouts) on squirrels. They are accustomed to roost in one particular tree. I heard them uttering their peculiar, plaintive whistle in the mornings several times during my stay. Their nest was not much over three hundred yards from the house, and was a large structure built on a horizontal limb about forty feet from the ground.

From what has been said, it will be seen that collecting Eagle's eggs in California is not fraught with the difficulties and dangers which confront the ambitious egg-hunter in the Eastern States. One Eagle's nest I found was so accessible that a lady could have climbed to it almost without difficulty.

NOTES AND QUERIES.

William Markwick's unpublished MS. on the Birds of Sussex.—Since my observations on Markwick's unpublished MS. on Sussex Birds appeared in 'The Zoologist' (pp. 335—345) I have ascertained, on reference to the Sussex Archæological Collections (vol. xxii. p. 162), and to the notice of Denne Park given in the second volume of Cartwright's 'History of the Rape of Bramber,' that William Markwick married a Miss Eversfield, of Denne, and of the Grove House, Hollington, near Battle; and that Sir Charles Eversfield, Bart., devised the property at Denne to his sister, Mrs. Olive Eversfield, who left it on her death, in 1803, to her nephew William Markwick, who thereupon adopted the name of Eversfield, as stated by Bennett, *op. cit.*—J. E. HARTING.

MAMMALIA.

The Serotine in Kent.—On August 1st Mr. George Dowker was good enough to send me, in the flesh, a large Bat, which he had just shot at Wingham, in Kent, and which proved to be the Serotine, *Vesperugo serotinus*. I at once forwarded it to Mr. G. E. Lodge to have its portrait taken for 'The Zoologist'; and in view of an article on this species which I am preparing, in continuation of the series commenced in 'The Zoologist,' I shall be glad to receive any notes of the occurrence of this apparently local species.—J. E. HARTING.

Habits of the Stoat.—On June 28th, hearing a rustling in a furze-bush by a roadside, I struck the bush with my stick, when a large Rat ran out. On the spur of the moment I struck at it, and rather unexpectedly killed it; and, somewhat regretting that I had not let it alone, I laid it on the other side of the road, and walked on a few paces, when a Stoat came and began carrying off the Rat. On my looking back the Stoat disappeared, but shortly returned, and began carrying the Rat away in the opposite direction. As I continued to approach, it again ran off, but kept returning at intervals, and by circuitous paths, to prevent my seeing its approach,—ridiculously fruitless efforts, however, as a pair of Stonechats had discovered it and followed it everywhere, keeping alongside of it with a courage that made it plain the little animal was much too intent on his Rat to pay any attention to the birds, which he could easily have got. At length it seemed to become quite indifferent to my presence also, and a peculiar procession might have been seen walking *abreast* along the road,—on the right, the Stoat carrying the Rat; on the left, myself; and in the centre, hopping along, regardless of the two-edged danger, the hen Stonechat: the cock bird was keeping up with us too, but using his wings and the tops of the furze-bushes in preference to the path. The Stoat looked a beautiful object, with his long neck perfectly erect, and the Rat almost lifted off the ground in his mouth. This continued for some distance, till the Stonechats left us. Finally, the Stoat made a sudden rush up the hedge-bank, his burden of course still in his mouth, and being, I suppose, a little puffed with the effort, lay in hiding among the bushes and grass at the top. Peering in, I failed to see the Stoat, but saw the dead Rat lying by itself, so—thinking to prolong the interesting spectacle a little—I put in my stick, and began drawing out the body of the Rat, meaning to put it on the road again. Suddenly there was a spring; the Stoat seized the Rat, and, though I resisted as well as I could, he pulled it by main force from under my stick, and sprang down the other side of the fence with his prey in his mouth, and I saw them no more. I believe this determined little Stoat is several years old; at least a pair have for several years past, to my knowledge, frequented the part of the road at which it disappeared. The second incident happened six days later, on

quite a different road. The day had been wet, and in walking out—about 8 in the evening—I came quite suddenly on a group of three Stoats engaged in a great game of play on the road: they had a hole, or at any rate a niche, among the stones of the fence on each side, and retired for a moment on discovering an intruder, for they caught sight of me at the same instant as I did of them; but apparently they have just as great an objection to be baulked of their play as their victuals, for they almost immediately returned, and, as I remained perfectly quiet a few yards away, the game was resumed, and proved extremely lively. From their behaviour I suppose the animals were young, but they seemed quite full grown: two of them (males I should think) were longer and redder than the third. A curious crowing sort of note—"curoo, curoo, curoo," uttered very quickly—was frequently uttered, and invariably when they ran at full speed. Great part of the game consisted in all three animals careering across the road again and again, frequently crossing each other, when they sometimes sprang high in the air and cannoned against one another, all evidently in the height of fun. Then there was a ceremony which I could not quite understand, of pressing their noses on the bare ground and running along for a foot or so, making a slight grating noise, I do not know how: they all did this. Then they would play with one another like kittens, one chasing another, knocking it down, and running off crying "curoo, curoo," to be knocked down in its turn. And *one* of the three could turn as perfect a somersault as any boy I have seen, doing it, moreover, in exactly the same way,—placing his head very deliberately on the ground as the first step, and then turning quite gracefully over, and righting itself just in time to avoid falling on its back, by standing erect on its hind legs. It did this several times, but, as far as I could make out, it was always the same one. At last one of the two ruddier fellows ran up a tree, and left his comrades alone for a while, and then the most curious part of the affair began. The two Stoats regularly set themselves to enjoy a game of "Tom Tiddler's Ground" with *me*: it was the most barefaced piece of impudence that I have ever experienced from a pair of wild animals yet, although the Hedgehogs up in the woods have often come thrusting their snouts under my feet to see if there were beetles there; *they* took me for an old tree, so might be excused. But these Stoats knew perfectly well that I was not a tree. Their game consisted in trying how near they dared to approach me; they would come side by side with a graceful and joyous trot straight towards me, like lambs or fawns coming to be petted; then suddenly both would turn tail, and, whistling "curoo, curoo," rush off at full speed, almost tumbling in their desperate haste, fully persuaded I was after them; then, discovering that I had stood stock still, they again came bounding along with the same agile grace and sociable expression, and, when within a very few feet of the mysterious object, fled again with the

same expressions of wild alarm. Anything in the animal world so like the play of human children I could not have conceived. At last the redder of the two became satisfied that he had shown enough valour (for I ought to have told you that on each adventure they came a *little* closer than the time before), so he took his post on a stone, and contented himself with watching his comrade. She came on as before, but, without the least appearance of any disposition to turn back, came springing towards me till within about six inches. I verily believe she would have run up my legs this time, but the one sitting behind began "curoo, curoo"-ing as shrilly and vehemently as possible, and at that call she turned and galloped back to him. She returned, however, this time running round me, and quietly took a seat behind me some six inches from my feet: pretty as her movements were, I was not quite easy at this situation, for I know the Stoat's agility in running up the trunks of trees very well. However, she was soon trotting round me again. I had my stick in my hand, the end resting on the ground, and the little animal, coming up to this, reared on her hind legs, put both her fore paws on the stick, and began licking it very contentedly! Anyone coming up at that moment would have taken the creature for a very well-tamed pet, instead of a wild Stoat running about "on her own hook." She continued in this position for a little while, and then returned with a self-satisfied air to her comrade, who showed great delight at her safe return. The third Stoat soon after returned, and the games were continued for some time longer (until a cart appeared); but none of the three showed the smallest interest in their human spectator from the time he had been proved innocuous by the liberties taken with his stick: there were races, and somersaults, and romps, but no more Tom Tiddler's ground; I suppose there was no fun without the element of danger. These stories would be nearly incredible to anyone not acquainted with the wonderful courage of the Weasel tribe, and certainly the last feat surprised me beyond measure. I have passed the spot repeatedly since, in hopes of seeing my small friends again, but have not seen a sign of them.—C. B. MOFFAT (Ballyhyland, Enniscorthy). [Communicated by Mr. R. J. Ussher.]

Annual Migrations of the Deer of the Sierra Nevada.—A small proportion of the Deer of Central California live constantly in the chapparal belt and foothills of the Sierras, but most of them ascend the mountains as spring advances, some part of them, like our mountain Quail, go over and beyond the summit, and spend the summer on the east slope, where they remain until food becomes scarce, or cool weather warns them that it is time to return to the milder climate on the west side. Sometimes heavy early snow-storms find them still on the east side of the mountains, as was the case about Lake Tahoe, October 7th, 1889. On this occasion they started for California as soon as the storm was over, leaving ground that was covered with only about six inches of snow, to make an ascent of

2000 feet or more through snow that was much deeper. There is no doubt that some individuals have their favourite summer resorts, where they were, perhaps, born, and probably all have them, and are thoroughly acquainted with the routes leading from their winter ranges to their summer homes, though some of these routes are not less than a hundred miles long. I know of a doe having lived in and near certain thickets at Big Trees during six or seven successive summers, each summer giving birth to fawns; and I think the offspring, like the mother, clung tenaciously to the same locality, but I cannot say positively concerning the progeny. There could be no mistake as to the doe, as she was crippled; she was known to many persons as the club-footed doe. Mr. Harvey Blood, of Alpine County, told me a young fawn was caught at the Dardanelles, near the Summit, about 8000 feet above sea-level, given the ear-mark of the sheep-owner upon whose range it was caught, and then released, and that it was killed the following summer within 200 yards of the spot where it was branded. The great depth of the snow at this height in the mountains would prevent this fawn from living there more than about a third of the year; the remainder of the year it necessarily being at least fifty or sixty miles down the west side of the Sierras. Perhaps it made the vertical migration alone, as the juveniles migrate later than the adults, usually in pairs, but often singly. Cattle and sheep which are pastured in summer in the high Sierras also make voluntary vertical migrations from their winter feeding-grounds in the valleys to their summer ranges in the mountains, sometimes in small parties, sometimes singly; and owners of these animals say they manifest much uneasiness, and are held with difficulty, when the time approaches for the spring drive. The first cool storm in fall is likely to start them down the mountains to their winter ranges again. They sometimes make a considerable part of these journeys during the night.—L. BELDING, in 'Zoe' (a monthly biological journal, published at San Francisco), June, 1890.

Seals in the Wash.—Every autumn a considerable number of Seals pass through the Wash and along the Norfolk coast in a southerly direction; many are born on the sand-banks in the great estuary between the counties of Lincolnshire and Norfolk left dry at low water. Occasionally Grey Seals are met with, but by far the larger number are certainly *Phoca vitulina*. It is not at all unusual for the shrimpers to see them lying basking on the sands, or rising, mermaid-like, from the sea in the neighbourhood of their boats. About the 8th August last I thus had a good view of one when sailing off Hunstanton, in the neighbourhood of the "sunk" sand. Mr. Clark, of Snettisham, showed me the skins of two young Seals which were taken on the beach in that neighbourhood on the 7th and 9th July last, and Prof. Newton told me that the Master of Downing College, Cambridge, had a young Seal sent to him which was taken in the Wash about

the 12th July. On the 8th August I went to Corton to see a Seal which had been caught on the beach there, I believe, the same morning; this was nearly full grown, and so won the hearts of the ladies at Cliffe House by its mild, beseeching looks and evident discomfort, that Mrs. Colman bribed its captor to liberate it, and we had the pleasure of seeing it swim off to sea. All these, as probably also the Cambridge specimen, which I did not see, were young examples of *Phoca vitulina*.—THOMAS SOUTHWELL (Norwich).

Black Variety of the Water Vole in Wirral.—In the winter of 1881–82 I shot a specimen of the black variety of the Water Vole, close to the village of Parkgate, but have never seen another example since. As it has not been reported from Wirral before, I think a record may be of interest.—EDWARD COMBER (Leighton, Parkgate, Chester).

CETACEA.

The White-sided Dolphin in Ireland.—I have been fortunate enough to procure the lower mandible of an Irish specimen of the White-sided Dolphin, *Delphinus acutus*. On making enquiries I learnt that the Dolphin came ashore at Baginbun Head, in the County Wexford, on the 11th June last. As soon as observed on the rocks, some men put out to sea, and cut its throat. I ascertained that it weighed about 8 cwt. and yielded 4 gallons of oil. It was of a “beautiful drab” colour on the sides, with a white belly. The carcass was towed out to sea, and the only part I could secure was the lower mandible. This measures a foot in length, and contains sixty-four teeth (thirty-two on each side), which are pointed sharply, and bent inwards. This portion of the jaw is now in the Museum of Science and Art in Dublin. Mr. A. G. More tells me that the White-sided Dolphin has only once before been observed on the Irish coast—viz. near Portrush, by Mr. T. D. Ogilby (‘Zoologist,’ 1876, p. 5007). I have to thank Prof. Flower for his kindness in naming the specimen for me.—G. E. H. BARRETT-HAMILTON (Kilmanock, New Ross, Co. Wexford).

BIRDS.

Hybrid between the Grey and Red-legged Partridges.—On Sept. 27th, 1889, whilst on my usual “rounds” among our local game-dealers, one bird, in a large bundle of Common Partridges, *Perdix cinerea*, arrested my attention. On separating this bird from the others, although it was in a terribly mangled condition from the shooting, I saw sufficient to suggest at once that it was a hybrid between *Perdix cinerea* and *Caccabis rufa*. The mixture of the two birds is apparent at a glance, but chiefly so on the wings. The primaries and secondaries show an admixture of the colouring of the two birds, but the tertiaries are almost entirely those of a young *P. cinerea*. The lesser, middle, and greater coverts also resemble those of *P. cinerea*,

but with darker feathers of *C. rufa* intermixed. The scapulars and back resemble *C. rufa*. On the neck and head there is a peculiar admixture which cannot be assigned to either bird, but the appearance of *C. rufa* predominates. There is no gorget, and the black markings on throat and breast are few and not very distinct; the flanks are clearly those of *C. rufa*, but across the breast are traces of *P. cinerea*; the tail is that of *C. rufa*. The legs are horn-brown, bill reddish brown, irides hazel. The bird was received with a hamper of game from Lincolnshire, but the usual reticence of the game-dealer prevented my ascertaining the exact locality. Subsequently (October 7th, 1889) I secured a second specimen, received from the same shooting, and probably from the same covey; but in this *C. rufa* distinctly predominates, *P. cinerea* being apparent on the primaries and tertiaries only. Both birds are small in size, and were very backward in their moulting, being in the "pin-feather" condition; this, added to the fact of the birds being badly shot, rendered the successful handling of them a delicate task. I also secured, last season, a peculiar hybrid Pheasant, a full description of which may be of interest to the readers of 'The Zoologist' at a future time.—F. COBURN (7, Holloway Head, Birmingham).

[If either of the two Partridges above mentioned has been preserved, we should much like to inspect it, and will return it carriage paid. We have seen several *so-called* hybrids of this kind, but they invariably proved to be young "red-legs." The late Mr. F. Bond informed us that in fifty years' experience he never saw a hybrid between these two species.—ED.]

Sea-fowl at Scarborough.—While spending a few days at Scarborough, about the middle of June last, I paid three visits to the breeding-places of the sea-birds on the cliffs of Buckton and Bempton, a few miles north of the lighthouse on Flamborough Head. The climbers all agreed that it had been an unusually good season for eggs, and certainly the great baskets of eggs which I saw collected on the cliffs and taken home were a sight to be remembered. Guillemots were literally swarming, and Razorbills seem very numerous; here and there a small colony had separated themselves from the other birds. There is a very good show of Kittiwakes; ten or twelve clutches of eggs were taken at Bempton one morning when I was there, and I was fortunate in obtaining two of the pale green variety, almost spotless. Looking down with a telescope, many old birds could be seen on their nests. The Herring Gulls still breed in good numbers in their old quarters to the north of Filey Brigg, but not on the Bempton Cliffs, or "white rocks"; nor have Peregrines or Cormorants nested there very lately. I saw one or two Cormorants near Filey Brigg, and three Common Scoters in the bay. The Lesser Black-backed Gull I did not see at all. George Londesborough, the old climber at Bempton, whom many will doubtless remember, died five or six years ago, and his house is now occupied and his work carried on by a clever climber named Wilkinson.

Two of old Londesborough's sons help him with the ropes, but do not climb. Wilkinson's skill in this direction is certainly well worth seeing; he is, moreover, very willing to give information about birds, and reasonable in his charges for the eggs he gets. He has taken two clutches of four Kittiwakes' eggs this year, which he had not done before. All the climbers (I discussed the subject with three different parties) are agreed that August 1st is much too early to begin shooting the sea-fowl, and that many young birds are starved upon the cliffs by the old ones being killed; they would gladly see the close-time extended to Sept. 1st. Of the eggs, nearly fifty in number, which I collected between the 12th and 18th of June, nearly every one was fresh, two Puffins' being the only ones at all incubated; allowing the birds to sit about a month, and the young to remain on the cliffs three weeks longer, one may calculate that during the first ten days of August the ledges will be covered with unfledged birds. An extension of the close-time, even to the 12th or 20th of August, would be a great thing, the greater part of the butchery taking place on the first Monday of the month—a Bank Holiday. Wilkinson told me he thought there had been rather less shooting during the last two summers, since one of the slaughterers had contributed to the number of the slain by blowing his head nearly off. Whatever expression of regret this accident may have caused elsewhere, there was but little among the climbers, as it is very hard for these men to see the creatures they speak of almost affectionately as "our birds" cruelly and wantonly killed by scores at the very time when their attendance on their young makes them the easiest possible victims. The climbers pay the farmers whose land runs up to the edge of the cliff for the privilege of collecting eggs; their work is risky and laborious; and if anything could be done by Yorkshire naturalists to bring about the better protection of the birds whose eggs are like a harvest to them, I am sure they would be grateful for such intervention. — JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

Notes from Brecon.—A nearly white Swift, which has appeared near this town for the last three years, was not seen this summer. I could have shot it easily for the British Museum, as I do not recollect seeing a white Swift in their case of albinos; I am rather sorry now I did not, as I fear we shall see it no more. Last year, in July, a boy asked me to come and look at a young bird he had picked up near the town; it had only recently left the nest, and was unable to fly. I found it was a young Hawfinch. I told the boy what it fed on, and it is alive at the present time, a splendid cock-bird. I think this fact worth mentioning, as it proves that the Hawfinch sometimes breeds in this county, a fact of which I was not certain before. A curious grey variety of the Tawny Owl was killed at Frwdgrech, Brecon, in the spring of this year, and is in the possession of Capt. Swainson. I had the pleasure of comparing the Cirl Bunting he killed with a specimen

of my own; they are both cock-birds in good plumage. The interesting discovery of the nest and eggs of this bird in the gorse near his house he has already communicated to 'The Zoologist.' Wood Wrens, Willow Wrens, and Chiffchaffs have been plentiful here this summer, the Willow Wren being by far the commonest. I regret to say the Kite has become very scarce, and I rarely see one now. My son killed an albino Sand Martin at Llangorse Lake; it was of a deep cream-colour all over. I intend sending it to the Natural History Museum. Also a Dunlin and a Ringed Plover there on the 13th August, the last two birds being new to this county. Grouse are very plentiful here this year, but very wild; in fact, many packs have never had a shot fired at them, and I think they were as wild on the 12th of August as in October; I need hardly say the continued wet weather is the cause. A Redshank was seen at Llangorse early in August, and I am inclined to believe it occasionally breeds there; it is, however, a rare bird in the county. Snipe are numerous, and I never remember seeing so many when Grouse-shooting; they are, of course, all home-bred birds. Our supt. water-bailiff, who is a very fair naturalist, described to me a bird that he had seen on the Usk, and, from his description, that of a very large Swallow with long legs and a short bill, I think it could have been no other bird than the Collared Pratincole, which has once before been observed in this county. In an old Buzzard's nest on the Beacons a Raven nested last year, and also hatched there. Since then a Kestrel has taken possession, but its eggs were removed. A Marsh Harrier has also been seen on the bog called The Trath, on the Illtya Hill, near here. The Common Scoter, a young bird, was killed near the town last winter, and a Cormorant has lately been seen fishing in Llangorse Lake. A curious ash-coloured Jackdaw was killed at Llangoed Castle by Mr. Butler, as he informs me. I had already noticed (as remarked by Mr. Goldsmith in the last number of 'The Zoologist'), that the Spotted Flycatcher is not so numerous here this year as usual. As to Herons swimming, perhaps it may interest Mr. Rope to know that some forty years ago (alas!), when a boy at school at Calne, Wilts, in the park of the Marquis of Lansdowne, I and some other boys caught a young Heron that had just managed to fly from the large herouery in the middle of the lake, and out of pure mischief we threw it into the lake in deep water, close to where some Swans had young, to see if they would attack it, and, to our surprise, it swam easily out, and we let it go. This is the only time I have ever seen a Heron swim. Some years after the same query was asked in 'The Field,' and I sent this information to that paper, as there seemed some doubt on the matter; and, to my pleasure and surprise, the Editor kindly sent me a letter he had received from an old school-fellow, saying he was one of the boys who had helped to capture the young Heron, and that he well remembered the circumstance. I was in Bourne Park last year,

and I visited the large heronry, and I was glad to see that the nests were as numerous and the birds as flourishing as formerly.—E. CAMBRIDGE PHILLIPS (Brecon).

The Nutcracker breeding on the Hartz Mountains.—I have recently received from a woodman in the Hartz Mountains a nest and two eggs of the Nutcracker, *Nucifraga caryocatactes*,—the first eggs from that district, though a nest and young ones were found some years ago by the same woodman during a search instituted by Prof. R. Blasius. The two eggs sent were the only ones in the nest, and on blowing them they proved to have been incubated for several days, so it is very unlikely that more eggs would have been laid. A similar case of the Nutcracker sitting on only two eggs is mentioned in 'The Ibis' for 1887. The nest is constructed of twigs of beech, oak, and hazel (beech largely predominating), a quantity of earth at the base, a bit of blackened string, a large supply of lichens, with a lining of fine fibrous grass, a large tuft of Roe's hair, and a little moss. During a three days' search I was enabled to make at the end of March three old nests—undoubtedly Nutcrackers'—were found in a close-set plantation of spruce-fir, *Abies excelsa*, of about 25 ft. high, placed against the stems of the trees at a height of 12—15 ft. from the ground. One of these, which, from its freshness, was evidently that of last year, was similarly built of beech-twigs. According to the woodman, who is an excellent observer of birds, it is useless to look for the Nutcracker's nest in the Hartz Mountains, except in plantations of spruce of some 25 ft. high. Spruces of a much greater height, and other kinds of trees, have no attraction for it.—L. W. WIGLESWORTH (Geysostrass 15, Brunswick).

Similar Habits of the Greenfinch and Serin.—A well-known habit of the male Greenfinch, in the breeding-season, is a slow and circling flight, with flapping, extended wings, which make the bird seem larger than he really is; he usually sings, too, on these occasions as he flies. I noticed exactly the same habit in the Serin Finch when in the Rhone Valley this year; and this, as in the case of the pigeons, bustards, and game-birds, is evidently for the purpose of impressing the hen with a becoming sense of the beauty and dignity of her mate. On one occasion I observed a male Serin flying a short distance before the hen in this particularly gallant and captivating manner, singing vigorously all the while. They alighted in a tree not far distant, from which, however, in a moment or two the hen took flight in another direction, evidently dissatisfied with her surroundings, and was followed by the cock, no longer with extended wings or singing, but plainly a mute and dejected bird.—C. W. BENSON (Rathmines, Dublin).

Number of Eggs laid by the Shag.—I should like to know whether any of your readers have ever met with a nest of the Shag, *Phalacrocorax cristata*, containing more than three eggs. If we refer to the latest authorities

on the subject we find it stated that both the Shag and Cormorant lay from three to five or six eggs. In the Shetlands I have examined about 1000 nests of the former bird, and never saw a nest containing more than three eggs. Others whose experience has been as extensive as my own confirm this. The nests which I examined of the Cormorant also (a much scarcer bird than the Shag in Shetland) all contained three eggs or less.—HAROLD RAE BURN (Romford, Essex).

[On the Dorsetshire coast, where the Shag is much commoner than the Cormorant, the usual number of eggs laid is three. See Mansel-Pleydell's 'Birds of Dorsetshire,' p. 126.—ED.]

Varieties in Wild Pigeons.—A curious variety of the Wood Pigeon was shot in North Notts last year. It is marked all over with large blotches of white; these are so numerous and large that the greater part of the bird is white. A pure white Rock Dove was shot in Shetland last spring, and has been kindly given to me by Mr. John Young. During May last an albino Turtle Dove was shot out of a flock near Horsham, Sussex, in which county this bird abounds. This is the only albino of this species I have ever heard of, though two pied ones have occurred. I have bought the bird, and with the Rock Dove it makes a great addition to my lot of varieties. I have now varieties of all the pigeons found in Great Britain.—J. WHITAKER (Rainsworth, Notts).

Stock Dove using the old nest of a Thrush.—On May 3rd, seeing a Stock Dove fly out of a spruce-fir, I climbed up to the only nest in the tree, and found it to be an old nest of a Thrush which had been repaired, or rather added to, by a layer of sticks, which partly filled the cavity. In the hollow were two eggs of the Stock Dove, one of which fell out a few days afterwards, the other proved to be partly incubated. In this neighbourhood there is a lack of old trees suitable to the Stock Dove, which accounts probably for the choice of situation above mentioned.—J. S. ELLIOTT (Park Road, Sutton Coldfield).

Some Birds-nesting Curiosities.—On May 11th a Wild Duck, *Anas boschas*, was seen at Riddagshausen sitting on eighteen eggs. In the case of so jealous a bird, it is hardly to be supposed that two females had laid in the same nest. Of three eggs of the Great Crested Grebe, *Podiceps cristatus*, two appeared to have been sat upon two or three days, while the third contained a young one within a few days of being hatched; and of four eggs of the Red-necked Grebe, *P. rubicollis*, three contained young ones nearly hatched, while the fourth appeared fresh. Had these eggs been laid in regular order the unincubated ones must already have been rotten and have smelt badly, which was not the case. With a Marsh Harrier, *Circus aruginosus*, two young ones were hatched a week before the third. Judging from experiments made with the Blackbird, Black Redstart, and

Blackcap, it would seem that birds usually return to their nests after having been robbed of the first egg. In the case of the Black Redstart, indeed, the first egg laid was taken; next day another egg was laid and taken; two days later there were two more eggs, also taken, and the following day there was another, also taken. The bird then forsook the nest. A Kestrel's nest with four addled eggs out of six may also be worth recording.—L. W. WIGLESWORTH (Geysostrasse 15, Brunswick).

Hawfinch breeding in Wirral.—This summer we have had a pair of Hawfinches, *Coccothraustes vulgaris*, nesting at Ashfield, near Neston, Cheshire, as far as I can discover, for the first time in this neighbourhood. They successfully reared their brood; but I fear few escaped, in consequence of the damage they did to the young peas in the gardens round, but one of the old birds was seen as lately as Sept. 13th.—EDWARD COMBER (Leighton, Parkgate, Chester).

Spotted Crake in Wirral.—A specimen of the Spotted Crake, *Crex porzana*, was picked up by Mr. Buckley, on the 26th August last, under the telegraph-wires close to Neston, Cheshire. It was apparently an old bird in full plumage.—EDWARD COMBER (Leighton, Parkgate, Chester).

Breeding of the Woodcock in Ireland.—Your correspondents will probably be interested to hear of a Woodcock's nest later still than any which have been mentioned. The following has been communicated to me by my friend Mr. J. Johnston, of Bray:—"On August 13th, while a party of gentlemen were Grouse-shooting on the hills above Powerscourt Waterfall, a Woodcock was flushed and shot the moment it rose. Capt. Monck went to pick up the bird, and found a nest with four tiny young ones just free of the shells." Late nests of the Woodcock have been so frequently noticed that there is good reason to conclude that the bird generally produces two broods in the season, in Ireland at least. Some years ago a number of nests were reported to me as having been found towards the end of June by a man who had been searching in the Coollattin Woods for young Bullfinches; they were placed, he said, on the ground under holly-bushes, and contained each four eggs. There is no doubt that the nests are much more frequently discovered in the early spring, and any eggs I have obtained were taken in April or May; but the reason is obvious, the dense shade of the woods after they have put on their leafy honours affording the late nests a much more effectual concealment. Moreover, the evening flight of the Woodcock alluded to by Mr. Ussher may be observed from March to July, and, like the drumming of the Snipe, is peculiar to the breeding season. The Snipe also, in this country, is undoubtedly double-brooded, the first eggs being deposited about the third week of April, and the second clutch about the middle of June or later. On July 25th last a Snipe was sitting on four eggs near Cappagh, Co. Waterford, but this is to

be regarded as exceptionally late. Another double-brooded species is the Ringed Plover, which lays in April and again in June. Now the three species mentioned, the Woodcock, Snipe, and Ringed Plover, are partially resident in Ireland, and remain in their breeding haunts here the whole year round; while the Golden Plover, Lapwing, Curlew, and others, which rear but one brood in the season, though likewise partially resident, shift their quarters for the breeding season from the sea-shore to inland moors and mountain ranges, not having time for more than a single brood in consequence of their periodical wandering. Do the Woodcocks, Snipe, and Ringed Plovers which breed in more northern regions and winter in these islands—or pass through on migration—produce more than one brood in the year? I should think not.—ALLAN ELLISON (Trinity College, Dublin).

The Manx Shearwater inland in Sussex.—I was staying at a small village known as Hurst Green, on the borders of Kent and Sussex, in the middle of August, 1882, and, on going into the garden adjoining the house one afternoon, was surprised to see a strange bird coming towards me, apparently in a very exhausted state. It alighted in the garden, and having my collie dog with me at the time, he caught it, when I found it to be a specimen of the Manx Shearwater (*Puffinus anglorum*). I might mention that a strong south-westerly gale was blowing at the time, and Hastings, the nearest sea point, is fourteen miles distant. I presume the bird must have come inland from that direction. I have it still, preserved.—THOS. R. HARDEN (7, Claremont, Hastings).

The Great Skua on Foula.—Mr. Harold Raeburn, in a note on the Great Skua on Foula (p. 354), in an ingenious sentence insinuates that a statement in my paper on the Great Skua is not quite correct, and quotes a letter from some Shetland correspondent to prove it. No good can result from a personal controversy in your pages, but I repeat that only two Great Skuas were shot or fired at, and this with much reluctance, in order to verify a very interesting fact apparently unrecorded by naturalists. As to the force of example, it is valueless on Foula; my friend found a Skua's nest with two eggs, and left it undisturbed. A native saw him walk away, and immediately went up and robbed the nest! It is the egg-dealers of Great Britain and the Continent (and possibly America) who create a market for Skua's eggs, and must be held responsible for banishing those fine birds from Shetland. While the demand exists the natives will take the eggs in spite of any gamekeepers, because the thick fogs which at times envelop the Sneug will render it impossible for any one to see what is going on more than twenty yards ahead. Once the young birds come out, the Skuas remain unmolested, since there is no market for them. The only way, therefore, is to raise a fund, to which I would willingly contribute, and

offer a reward for every young Skua which the natives can show in the nests on a certain fixed week each year, and let a competent ornithologist visit Foula annually on that week and distribute the money. It is obvious that the reward for each bird must exceed the market value of the egg.—R. M. BARRINGTON.

The Great Skua on Foula.—Mr. W. J. Williams, of Dublin, requests me to state that he had nothing to do with the shooting on Foula. He states that, besides the two Great Skuas, only a few other birds of several different species were killed by his party. In my note of last month (p. 354) I expressed my disbelief in the reports of wholesale destruction told of the party; one has always to allow for exaggeration in these cases. But we cannot expect the people of Shetland to draw fine distinctions as to number; and if one wishes to escape blame in a case of this kind, the only plan is not to infringe the Wild Birds Protection Act at all.—HAROLD RAE BURN (Romford).

Introduction of Ptarmigan into the Faroe Islands.—Herr H. Müller, the well-known ornithologist, has at length been successful, after a series of disappointments, in introducing the Ptarmigan into these islands. His son Rasmus sent twenty birds from Greenland to Thorshavn *via* Copenhagen, which arrived there on June 9th, and were immediately liberated on the hills about two miles from Thorshavn; and Herr Müller writes me, on August 22nd, that a pair were observed in the same locality the previous day with a brood of eight or ten young ones nearly able to fly, showing that they had taken well to their new *locale*.—J. J. DALGLEISH (Brankston Grange, Alloa).

A Long-tailed Tit feigning Death.—In November last year I shot at a Tit (*Acredula caudata*) at the top of a larch of moderate size, and broke a wing and a leg. As it came tumbling down it caught a bough with its foot and clung, fluttering. A kick at the tree-stem caused it to let go its hold, and it fell lower; but, catching a second twig at about 15 ft. from the ground, it remained hanging again, and presently became as if dead. Kicks at the tree-stem were now of no avail, so I concluded that it was dead and remained suspended, owing to the natural contraction of the muscles. Getting three sticks of about 2 ft. long, I commenced to throw at the bird, hoping to knock it off or break the twig. Two of the sticks became entangled and lodged in the tree, the thicker one about 2 ft. from the bird. A second throw with the third stick struck close to the bird, and the poor creature, which so far had shown no perceptible movement, now gave way, and came screaming to the ground.—L. W. WIGLESWORTH (Castlethorpe, Stony Stratford).

The Young of the First Brood assisting to feed the Second Brood.—On August 10th I noticed some Swallows (*Hirundo rustica*) taking food

to their young in a chimney just below me, and it seemed to me that there were more than a pair of birds engaged in the operation. I therefore got out my binoculars, and found that one of the birds was a young one, and it came several times with food and went into the chimney. Shortly after three birds (two old and one young) perched on the chimney, and one after the other went down to the nest. There certainly were not two nests, as several times two birds were together on the chimney, and one always waited until the other had returned from the nest before it went down, and further, one was undoubtedly a young (male) bird. A second time the three birds came and perched together on the chimney, and followed each other in the same way down to the nest. I watched the birds for more than an hour, and came to the conclusion that the young of the first brood do occasionally assist in feeding those of the second brood. The nest was evidently in a corner of the chimney not very far down, as they all went to the same spot.—H. ST. B. GOLDSMITH (King's Square, Bridgewater).

[We have seen young Moorhens of a first brood feeding the young of a second brood, under circumstances which left no room for doubt that both broods belonged to the same pair of old birds.—ED.]

Nesting Habits of the Dipper.—Mr. Ellison, in his interesting article on the nesting habits of the Dipper (p. 314), says that the nest is never placed in a tree. The Editor draws attention to three instances of Dippers nesting in trees, recorded in 'The Zoologist' for 1888, and in the same magazine for September (p. 352) two other instances are recorded; to these I can add three more which have come under my observation during the last few years. In 1886 I found a nest, quite unsupported by any lateral branches, built upon the slanting trunk of an ash-tree, at a height of about two feet from the water. In 1889 I found another nest in an alder-tree, the nest being supported and partly hidden by small lateral branches. The tree in which the nest was built had been uprooted by winter storms, and lay across the stream at an angle of about 45° : the nest was about five feet above the water. Last May I found the most curious nest of all; this was placed on the bare horizontal branch of a large ash-tree, at a height of about eight feet above the water, and was a very bulky structure, being easily seen at a distance of some hundreds of yards. I was very much amused last April at what appeared to be very clumsy architecture on the part of a pair of Dippers; they had constructed their nest in a crevice in the stonework of a bridge. Putting my fingers into the nest, I felt the sharp edge of a stone projecting through the usual lining of dead leaves; of course I concluded the nest was not yet finished. Visiting it again some days later I found one egg had been deposited; the sharp edge of the stone still projected! Eventually I found that the bird had only laid two eggs in this uncomfortable nest, one of which lay awkwardly upon the top

of the other. The bird did not attempt incubation in such an inconvenient nursery! Another nest I found this summer was being continually played upon by the spray from a waterfall; it was impossible to put one's hand into the nest without having one's arm made very wet. There was a nest of the Grey Wagtail within a foot of it. These two species of birds I have often found nesting in close proximity. Another pair of Dippers I know of nest annually in a hole in the roof of a cave, a quite inaccessible place without the use of a long ladder. I have never found a Dipper's nest far removed from the water; by the side of the stream they build in every conceivable situation, the nest being sometimes remarkably conspicuous, at other times extremely well hidden. It is, in my experience, almost always lined with dead leaves, chiefly of the oak and beech; the dome and back of the nest, so complete and well-formed in some cases, are, where the situation of the nest allows it, almost or completely dispensed with.—E. W. H. BLAGG (Cheadle, Staffordshire).

The Shetland Wren.—In the list of birds observed in Shetland (p. 346), *Troglodytes borealis* appears without any query appended. It was my intention that a query should be inserted after the specific name, since, with the materials at hand, I did not feel warranted in naming the bird positively.—R. M. BARRINGTON (Fassaroe, Bray).

[Our apologies are due for having overlooked the query. A note of interrogation after the specific name was inserted in the MS., but by an oversight was omitted on the proof.—ED.]

Erroneous Records of Short-toed Larks.—In 'The Zoologist' for February last allusion was made (p. 58) to two Short-toed Larks, *Alauda brachydactyla*, reported to have been taken in Devonshire, and to one obtained about the same time at Yarmouth. The former specimens have since been ascertained by the Rev. H. A. Macpherson to have been imported from Italy, and bought by a dealer at Peckham, who was not quite so candid about their origin as he might have been. Short-toed Larks seem to be often imported from the Continent, and it may be remembered that Mr. Macpherson alluded to the subject (Zool. 1885, p. 68) when querying the supposed occurrence of a specimen of this bird in Kent.—J. H. GURNEY (Keswick Hall, Norwich).

Scarcity of the Spotted Flycatcher.—Referring to Mr. Goldsmith's note (p. 352), I have been particularly struck with the scarcity of the Spotted Flycatcher this year. I have been accustomed to look upon it as amongst our commonest visitors; I have not seen more than two pairs this season, whereas last year we had four nests on the College grounds, within quite a short distance of the house. Its egg was one almost sure to be found amongst those taken by the bird-nesting "yokels" of the neighbourhood, but this season I have not come across it in that way in a single

instance. I obtained one clutch of eggs in which the ground colour was exceedingly light, and the markings very faint indeed, and it had not been that the bird was on the nest, I should have had considerable doubt as to their belonging to this species.—JOHN H. WILLMORE (Queenwood College, Stockbridge, Hants).

[The alleged scarcity of the Spotted Flycatcher this summer is probably only local. There have been plenty in Richmond Park, and during the last days of August, at Cowfold, near West Grinstead, Sussex, it appeared to be one of the commonest birds in the neighbourhood.—ED.]

Ruddy Sheldrake in West Sussex.—Messrs. Pratt and Sons, of Brighton, have just stuffed a female Ruddy Sheldrake (*Tadorna rutila*), which was shot at Harting, near Petersfield, on Sept. 12th. The bird belongs to the Rev. H. D. Gordon, of Harting Vicarage, and is in very fair plumage. I hope you will think it worth recording in 'The Zoologist,' as I suppose there is a chance of its being a wild bird.—HERBERT LANGTON (11, Marlborough Place, Brighton).

Breeding Plumage of Richardson's Skua.—Last spring I happened to be in a breeding-place of Richardson's Skua. Although there must have been at least twenty pairs, and possibly more, they could not be said to be building in a colony, as their nests were spread over about five or six square miles. Both the dark and light races were represented, though I think the light ones predominated. From a good many observations I came to the conclusion that the dark male and white female was the most common combination. Then came both white birds. I only observed two pairs of both dark birds, and one in which the male was the light and the female the dark. In all these cases I judged that bird to be the female which was the most anxious on an approach to the nest: of each pair one bird, and one only, fell on the ground, and went through extraordinary acrobatic performances, although the other would always fly round close to the intruder as long as he was near the nest. Messrs. Pratt have drawn my attention to some Richardson's Skuas obtained in the Orkneys, which, although of the dark race, have patches of white feathers on the chin, and also on the shoulder. They say they have observed the same tendency in the Pomatorhine Skua, and in the same situations, and that these variations have always been in Orkney specimens.—HERBERT LANGTON (11, Marlborough Place, Brighton).

AMPHIBIA.

Distribution of the Natterjack Toad.—In reply to Dr. Scharif's note in the last number of 'The Zoologist' (p. 357), I beg to state that the breeding season of the Natterjack, *Bufo calamita*, is from the middle of May to the middle of June in the north of France, in Belgium, and in

Germany—two months later than the Common Toad, *B. vulgaris*. Although very local, *B. calamita* is distributed over the whole of England, as far north as the Scotch coast of the Solway Firth (Bell, 'British Reptiles'). Its occurrence in the Co. Kerry has been recorded by Dr. Günther in the British Museum Catalogue of Batrachians (1858).—G. A. BOULENGER.

SCIENTIFIC SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.

September 3, 1890.—MR. HENRY T. STANTON, F.R.S., in the chair.

Mr. C. Fenn exhibited and remarked on specimens of *Eupithecia satyrata*, *Eudorea ambigua*, and *Tortrix viburnana* from Darlington.

Mr. H. Goss exhibited, on behalf of Mr. Martin Stanger Higgs, a remarkable variety of *Melitæa aurinia (artemis)*, taken a few years ago, in Gloucestershire, by Mr. Joseph Merrin.

The Rev. Dr. Walker communicated some observations on the Entomology of Iceland, and gave an account of his recent travels in that island. He stated that he had taken *Bombus terrestris* this year, for the first time, in the north-west of Iceland, from which quarter of the island it had not been recorded by Dr. Staudinger; he also referred to the enormous numbers of Ichneumonidæ and Diptera which he had noticed in the island. He further stated that in 1889, in the months of June and July, *Noctua conflua* was the most abundant species of Lepidoptera in Iceland; but that this year, in July and August, *Crymodes exulis* was the prevailing species, and that *Charæas graminis* and *Coremia munitata* also occurred in great numbers. In reply to a question by Mr. Stanton, Dr. Walker said that the flowers chiefly frequented by the humble-bees were those of a small species of white Galium (probably *Galium saxatile?*) and *Viola tricolor*. Dr. Walker also read "Notes on *Calathus melanocephalus* collected in Iceland, the Westmannö Isles, and the Faroe Isles in June and July, 1890." Messrs. M'Lachlan, Stanton, Jenner Weir, Stevens, Jacoby, Lewis, and others took part in the discussion which ensued.

Mr. Arthur G. Butler communicated a paper entitled "Further Notes on the Synonymy of the genera of Noctuites."—H. Goss, *Hon. Sec.*

NOTICES OF NEW BOOKS.

The Birds of Essex: a Contribution to the Natural History of the County. By MILLER CHRISTY, F.L.S. With 162 woodcut illustrations, two plans, and a frontispiece. 8vo, pp. 302. Chelmsford (Durrant & Co.), Buckhurst Hill (The Essex Field Club), and London (Simpkin, Marshall & Co.). 1890.

IN this closely-printed, profusely-illustrated volume, which has just been issued as the second of the Essex Field Club Special Memoirs, we have the latest addition to the published treatises on county ornithology, of which there is now so goodly a series. It has been no secret that for a long time past Mr. Miller Christy has been collecting information for this work, and in dealing with the mass of material that has come to hand, his industry and judgment are apparent upon almost every page.

Referring to the scope and aim of the work (Introduction, p. 7), the author says:—

“General information as to the habits and natural history of the species described, though not actually out of place, if space permits its insertion, is nevertheless by no means a prime requisite. A county or other local ornithology should, according to my ideas, deal primarily with the distribution and the frequency or otherwise of the species found within the area treated of, and of their habits and migrations within that area. More general information should, I consider, be reserved for more comprehensive and general works, treating of the entire natural history of the species. Hence I have inserted in these pages very little upon the general habits of birds.”

Mr. Christy's list contains the names of no less than 272 species, of which five are especially remarkable because their occurrence in Essex led to their being described for the first time as British birds. These are the Alpine Accentor, shot near Walthamstow, on the borders of Epping Forest; the Blue-headed Wagtail, obtained by Henry Doubleday at Walton-on-the-Naze in October, 1834; the Pheasant, concerning which we would remark that although the earliest record

relates to its appearance in a bill of fare at Waltham Abbey in 1059, this by no means proves that the bird was first introduced to British soil in the county of Essex; the Adriatic Gull, *Larus melanocephalus*, shot in Barking Creek in January, 1866; and Scopoli's Sooty Tern, *Sterna anæsthera*, obtained on one of the lightships at the Nore in September, 1875, as recorded by Mr. Howard Saunders in 'The Zoologist' for 1877, p. 213.

As regards the nomenclature adopted in this work, Mr. Christy informs us, in his Introduction, that it is that employed in 'The Ibis' List of British Birds. This list, he considers, "should now be regarded as the standard and only authorized one; for, although not altogether free from objectionable points, it is the joint work of several of our best working ornithologists, by whom it was most carefully and deliberately compiled, and it has been officially adopted by the Union. It is obviously, therefore, of greater weight than any list compiled by a single person only." This is doubtless a good reason for adopting it; but we are unable to agree with Mr. Christy when he adds that "the height of absurdity has been reached, and the utility of any nomenclature at all has been almost destroyed, when it is necessary, after mentioning a particular name, to add by whom (and often by whom it was *not*) bestowed"! He has surely overlooked the fact that the same specific name has been bestowed by different authors on different species, and unless the author's name follows that of the species the latter cannot be indicated with sufficient clearness. Take the case of *Sylvia rufa*, for example, a name which has been applied by Boddaert, Gmelin, and Temminck to three different Warblers.

It was a good notion to include in this volume some biographical notices of Essex ornithologists (pp. 8—34), and some account of the chief Essex Bird Collections (pp. 35—38). In addition to these chapters we have, outside what may be termed the County Catalogue, chapters on Hawking (pp. 43—45), and on Decoys and Wildfowling (pp. 47—71), the last named being illustrated, and having plans of the only two decoys in Essex which are still worked at the present day.

The small woodcuts of birds interspersed throughout the text are numerous, but of unequal merit. The majority were originally published in Johns' 'British Birds in their Haunts'; others are copied from Bewick and from Buxton's 'Epping

Forest,' while a few have been specially drawn and engraved for the work by Mr. G. E. Lodge.

Nature and Woodcraft. By JOHN WATSON, F.L.S. With Illustrations by G. E. LODGE. 8vo, pp. 302. London: Walter Smith & Innis. 1890.

UNDER this attractive title Mr. Watson has collected a number of newspaper articles on a variety of topics more or less connected with Natural History, and most of them very pleasantly written. But we have failed to discover a single observation that is new, while we have found many with which we are quite unable to agree.

To take a few instances from the first chapter on Birds of Prey. The "bright orange of the tarsi" is not a distinctive character of the Sparrowhawk, as the author supposes (p. 6), nor is it the habit of this bird to "beat the air with *pointed* wings," and "hang as if suspended" (p. 7). The Sparrowhawk has rounded wings, and the action of hovering (which has suggested the name "windhover") is that of the Kestrel. On page 10 we are told that the Peregrine Falcon "will dash through a flock of wild ducks or a covey of partridges, *wounding several in its sortie*, but eventually carrying off the one selected with unerring aim." That the one selected is struck down with unerring aim is true enough, but that several are previously wounded is altogether a myth, and we make this statement with confidence, having seen scores of grouse and partridges killed by falcons.

Equally wide of the mark is the assertion (p. 12) that "the great grouse poachers of the moors are the beautiful little Merlins." We have seen these birds repeatedly in their natural haunts; have trained and flown several; and have seen many others trained and flown by other people at quarry suited to their size and strength, and thus have had abundant opportunity of judging of their capabilities. But we have never seen anything to make us believe that the Merlin is in the habit of killing grouse, or that it possesses the requisite strength and weight to do so if it would. That it occasionally carries off newly-hatched grouse on which to feed its own young in the nest is likely enough; but

even then it must be remembered that when a hawk is in the air, a warning note from the old hen grouse causes her young, if near her, to shelter under her wings, or if at a little distance to squat and hide in the heather till the danger is past.

The usual prey of the Merlin consists of Linnets, Stonechats, and Meadow Pipits on the moors, and Larks, Buntings, and other small birds on the lower and cultivated grounds. On the coast it may be seen in pursuit of a Dunlin or other small Sandpiper; but in no instance do we remember to have seen it with prey larger and stronger than itself, as a grouse undoubtedly is.

By a curious coincidence, while these pages were passing through the press, we received from a correspondent in Ireland a fine female Merlin, which had just been shot while in pursuit of a Martin. We at once placed it in the scales, and found it to weigh a trifle under 7 oz. A Red Grouse in good condition will weigh 28 oz., or just four times as much.

The statement (p. 16) that "Christopher North is the only writer who has done justice to Owls" argues a limited acquaintance with ornithological literature, or a somewhat defective memory; otherwise the name of Waterton (amongst many others) could hardly escape mention in connection with this bird.

Nor is it only in such shortcomings as these that this book is a disappointing one. The chapter on White Wild Cattle, for example, not only contains nothing new, but, compared with the Report recently furnished by a Committee of the British Association ('Zoologist,' 1887), it is singularly meagre and unsatisfactory. Two misprints, by the way, occur in the opening sentence, where "Bickling and Viangæ" should, of course, be "Blickling and Vaynol."

These signs of hasty compilation and general want of accuracy considerably detract from what is otherwise a very pleasantly written and nicely printed volume.

Mr. Lodge's sketches of "the Peregrine's Eyrie," "the end of a Sparrowhawk," "the Golden Eagle," and "Snow Buntings," which have been carefully lithographed by Mr. L. Hutchinson, make pretty and appropriate illustrations.

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ON THE DISTRIBUTION AND PERIOD OF SOJOURN IN THE BRITISH ISLANDS OF THE SPOTTED CRAKE.

By O. V. APLIN, M.B.O.U.

THE Spotted Crake, *Porzana maruetta*, has been variously treated by writers upon British birds—as a summer migrant, arriving early in the spring and leaving late in the autumn; as a rather late arrival in spring; as a partial resident; and also as a migrant more commonly met with in autumn and winter than at any other season.

It may therefore be interesting to bring together in a short paper, for comparison, such information respecting the distribution, dates of migration, and period of residence of this bird in Britain as may be gathered from the works of some of the older writers on British Ornithology, as well as the more recent and detailed observations furnished by the various local avifaunal works now available for determining the general distribution of this bird in these islands. Further notices have been collated from periodicals, the Migration Reports, &c. To this published matter I am able to add some information derived from correspondence with several ornithologists, as well as a few notes of my own.

The Rev. L. Jenyns (now Blomefield) wrote that this bird “is usually considered as a migratory species, retiring at the approach of winter, but it is highly probable that many individuals remain with us throughout the year. It is certainly to be met

with from early in March to the middle of November" ('Manual of British Vertebrate Animals,' 1835, p. 218).

For convenience it may be here mentioned that a Spotted Crake was seen by the late Edward Blyth in the London market in the month of January, 1834 (Yarrell, 4th ed. vol. iii. p. 144). This will be referred to later under the head of Middlesex.

Selby quotes Montagu in proof of the fact that it "is one of our earliest birds of passage in arrival, and among the latest in taking its departure." And continues, "Though not numerous, these birds are rather generally disseminated throughout England, in such localities as accord with their habits; and I have also found them in various parts of Scotland, although Montagu states that in his time, the species had not been observed further to the northward than Cumberland. . . . By the aid of a dog accustomed to pursue these birds, I have (in the autumn, just previous to their departure) sometimes flushed as many as six in a large morass in my neighbourhood [Twizel, Northumberland], the majority of which were generally young birds of the year" ('Illustrations of British Ornithology,' 1833, vol. ii. p. 179—180).

NORTHUMBERLAND and DURHAM.—"A resident, and to some extent migratory. It occasionally breeds in the district. A nest of eggs was taken at Prestwick Carr, many years ago. . . . A few years ago another nest of young, just hatched, was taken at the same place. . . . And, according to Mr. W. Proctor, it bred some years ago at Framwellgate Carr, Durham" (Hancock, 'Cat. Birds Northumb. & Durham,' p. 125). See also Selby's remarks relative to the neighbourhood of Twizel, Northumberland (*ut sup.*).

CUMBERLAND.—"An extremely scarce resident species, but has certainly bred near Wedholme Flow, where several young birds were shot in 1881. . . . Constantly observed for some years in Bigland's Bog . . . during the entire summer months. . . . An example in our possession, shot near Penrith, was constantly observed from November until it was shot in the following April; and a second, possibly its mate, was killed in May of the same year. Mr. J. Armstrong shot another near Monkhill Lough, in June. The Spotted Crake is most frequently shot on the spring and autumn migration. . . . Mr. Dixon informs us that, when snipe-shooting in November, he has shot several Spotted Crakes on Cumwhitton Moss" (Macpherson and Duckworth, 'Birds of Cumberland,' p. 126—7). By way of supplement to these remarks,

Mr. Macpherson has kindly sent me the following additional information about the Spotted Crake in Cumberland:—"I believe that in our mild climate on the west coast some may remain throughout the winter, as I was assured they did in a certain locality, and I have one that had done so, as I stated in the text; but of course this is the exception, even in our mild climate; the bird is chiefly an autumn visitor, its presence in spring being evidenced also before the Wild Birds Act existed. In 1889 several of these birds occurred in Cumberland; *e.g.* in August, one; September, one; October, two; while at the other end of our area, in Furness, three were shot in October. November is similarly favoured. I hear of a few every autumn, and less frequently in spring. A Spotted Crake, evidently on migration (as it was shot as soon as it alighted on the beach), was killed in 1888, on March 31st, at Silloth, and sent to me."

LANCASHIRE.—"Best known as an autumn and winter visitor, and although rare on the whole, there are few districts in which, at one time or other, specimens have not been shot. . . . No actual nest is on record; but Mr. J. B. Hodgkinson tells me that the species used to be very common on a marsh near Preston, now drained, and that he has often seen young birds there which must have been bred close by. . . . Lord Lilford informed the author that near Tarleton it was not uncommon in September, and Mr. H. P. Hornby is stated to have seen and shot a considerable number near St. Michael's-on-Wyre, between September and December" (Mitchell, 'Birds of Lancashire,' p. 167—68).

YORKSHIRE.—Not rare, "especially in winter; a few nesting regularly on the sedgy banks of the Hull near Beverley, and at times near York and Doncaster" (Clarke & Roebuck, 'Handbook of Yorkshire Vertebrates,' p. 65).

NOTTINGHAMSHIRE.—"The Spotted Crake has been killed in various parts of this county, and Mr. Felkin states that it has been found breeding on the Trent near Nottingham, but I have no particulars. Those which I have noted have been during their autumnal migrations" (Sterland, 'Descriptive List of the Birds of Nottinghamshire,' p. 52). Mr. Whitaker writes (*op. cit.*), "Twenty-five of these birds were shot during the autumn of 1871, in the neighbourhood of Nottingham, where they breed." This locality (still frequented by the Spotted Crake) is a low-lying, boggy tract of ground close to the town of Nottingham,

adjoining the river Trent. It has been formed by subsidence of the ground, consequent upon mining operations.

LINCOLNSHIRE.—“Numerous during September and October, all over the district. I have seen a considerable number at the birdstuffers’ shops, the greater proportion being birds of the year. Three, all immature, were obtained near Spurn. The Spotted Crake is known to breed in at least two localities in North Lincolnshire. We have considerable additions to the local birds in autumn” (Cordeaux, ‘Naturalist,’ 1889, p. 7).

NORFOLK.—“Visits us regularly in spring, and, though chiefly confined to the Broad and Fen districts, is by no means uncommon between the months of March and October. . . . Lubbock speaks of the spring arrival of this species as occurring with ‘great regularity between the 12th and 20th March,’ but of late years I have no record of their appearance earlier than the 21st of that month, and a female killed on the 23rd March, 1866, at Ludham, was then forward in egg” (Stevenson, ‘Birds of Norfolk,’ vol. ii. p. 393). This author mentions eggs taken during the first week in May (as recorded by Mr. W. R. Fisher) in the neighbourhood of Yarmouth, and that he had fresh eggs from Hickling on the 26th of that month, and had seen the young in their black down, taken on Rockland Broad, in the last week in July. He quotes a note of Messrs. Sheppard and Whitear, who write:—“We have seen a considerable number of its eggs at Yarmouth, which, as well as its young, were found in the neighbourhood of that place, and are also in possession of an egg taken from a female of this species, which was killed in the marshes below Norwich.” Mr. Stevenson thinks Spotted Crakes were formerly more abundant in Norfolk than at the time he wrote (1870), for Mr. Rising informed him he had killed seven or eight in a day at Horsey, “where they are comparatively scarce at the present time.” Prof. A. Newton told him that the last nest he had heard of was in 1849, near Whittlesea Mere, where the species used to abound formerly. A nest found a few years previously on the margin of a reed-bed on Walton Common, near Westacre, is also mentioned by Mr. Stevenson, who adds that the small chain of fens on the river Thet, in South-west Norfolk was also frequented by the Spotted Crake. From his notes for the last twenty years, this author found that the large majority of specimens taken to the birdstuffers were killed between the 2nd and

29th October. About the close of October he believed the greater number took their departure, but stragglers were occasionally met with in November: records on the 2nd, 9th, 16th and 30th, in different seasons, are given. Mr. Stevenson was assured by the marshmen that this Crake might at times be found in mid-winter; but one shown to him, in the flesh, on the 2nd December, 1868, was the latest he had ever known. Birds observed thus late in the year were almost invariably in immature plumage, and were most probably the result of a late hatch, and therefore unable to join the earlier migrants ('Birds of Norfolk,' vol. ii. pp. 393—395).

From the "Ornithological Notes from Norfolk" for the years 1881—1883, communicated by the late Mr. Henry Stevenson to the 'Transactions of the Norfolk and Norwich Naturalists' Society,' I extract the following notes:—

1881.—September: "An unusual number" shot in the marshes. October: "In some numbers in the Broad district." November: "Again this month I have heard of eight or ten specimens shot in the Yarmouth neighbourhood, and four near Lowestoft. I have reason to believe it still nests on the margins of our wildest and most extensive Broads."

1882.—October: A "good many" at Yarmouth.

1883.—October: One or two at Yarmouth. November: One on the 6th at Yarmouth.

Lord Lilford (under date 16th May, 1890) kindly writes:—"I have more than once met with it in East Norfolk in March; and I know that the eggs are frequently found in that district before the end of that month."

CAMBRIDGESHIRE.—The Rev. L. Jenyns (now Blomefield) writes:—"I have known these birds killed in Bottisham Fen as early as the 26th March, and occasionally during the summer and autumn on to October, but not during the winter" ('Observations in Natural History,' 1846, p. 185).

ESSEX.—"A rare and local summer or autumn visitant. It appears to be by no means common in the county, though it seems possible, from a fact mentioned below, that it may breed on our coast. . . . Specimens procured on the 23rd April, the 22nd August, early September, on several occasions in October (up to 28th), and in November, are recorded" (Miller Christy, 'Birds of Essex.')

LEICESTERSHIRE.—"Sparingly distributed, probably breeding.

. . . . According to Harley, it was very common during the summer of 1842. . . . Nowhere in Leicestershire was it met with in greater abundance than in the meadows and fields near the Soar, and from Loughborough to Kegworth it was plentiful. . . .” Several occurrences are enumerated in different years, but in few cases is the season of the year mentioned. Two are recorded in October (one of them on the 17th), and another shot at Saddington Reservoir on the 15th January, 1884 (Browne, ‘Vertebrate Animals of Leicestershire and Rutland,’ p. 144).

NORTHAMPTONSHIRE.—Lord Lilford writes:—“Certainly not resident in the breeding season. . . . Two were shot 19th August, 1880; two others 11th October, 1883, and one on the 23rd October, in the same year” (‘Notes on the Ornithology of Northamptonshire,’ reprinted from ‘The Zoologist,’ 1879—1886).

WARWICKSHIRE.—I have known of its occasional occurrence in autumn in the southern division of this county.

OXFORDSHIRE.—In my lately published work on the Birds of this county I have entered this species as “a spring and autumn migrant, occurring in March, and again occasionally in August, but more commonly in September and October. The 10th March, on which day in 1887, an example struck the telegraph-wires at Oxford, and came into the possession of Mr. A. H. Macpherson, is the earliest date for its arrival in spring of which I am aware; another met the same fate near Banbury on the 14th of that month in 1881. . . . I have no note of its having been obtained later than the 19th October. . . . There is some reason to believe that the Spotted Crake may breed in Oxfordshire, the occurrence of immature examples in August rendering the supposition most probable; among other instances an entry in Mr. Beesley’s note-book, relating to one shot on the 19th of that month, in 1849, may be cited. From its skulking habits it would easily escape observation in the height of summer” (‘Birds of Oxfordshire,’ pp. 137, 138). The following additional instances of its occurrence in the northern part of the county during the last few years have come under my notice:—

1879.—One at Bicester, 23rd September; several in the neighbourhood of Banbury in October.

1882.—One picked up under the telegraph-wires, 29th August.

1883.—One shot at Adderbury, 25th August; another on the 26th by the Cherwell at Bodicote.

1884.—One near Banbury, 12th September; another on the 14th October.

1885.—One on the 16th October near Bodicote.

1886.—One in April near Banbury.

1888.—Several in the first half of October.

1889.—One, adult, picked up under the telegraph-wires near Banbury, 1st September; one, bird of the year, middle of September.

BERKSHIRE and BUCKINGHAMSHIRE.—“By no means a common bird, and of local habits,” writes Capt. Clark Kennedy, who records a good many occurrences, and remarks:—“It usually arrives here in the beginning of April or towards the end of March, leaving us again in October.” The occurrence of a specimen, shot at West Drayton, on the 2nd August, 1860, is mentioned, and of others at Monkey Island in September and October (*‘Birds of Berkshire and Buckinghamshire,’* p. 99). In September, 1889, I examined a bird of the year which had been killed in the low-lying belt of marshy land along the Kennet valley between Kintbury and Newbury, about the middle of July in that year. This locality is an extremely likely breeding-place for the Spotted Crake, a good deal of the ground being covered with beds of reed and willow, intersected by ditches, and must be very wet at all seasons. Dr. Lamb (*‘Ornithologia Bercheria’*) writes:—“A female of this rare bird was shot at Kintbury, near Newbury, March, 1810” (*‘Zoologist,’* 1880, p. 320).

MIDDLESEX.—Mr. J. E. Harting, in the *‘Birds of Middlesex,’* (pp. 204, 205), records the occurrence of several specimens of this bird in the county prior to the year 1866. Of these one was procured in the London market in January, 1834, and was in so fresh a condition as to suggest to the late Edward Blyth, who examined it, that it was very likely obtained in some marsh near London, possibly Hackney Marsh, at one time so good a locality for water birds. Another, in the collection of the late Frederick Bond, was shot at Kingsbury, and recorded by him in *‘The Zoologist’* for 1843. Two were killed by Mr. W. K. Heseltine at Laleham in 1858, one on Oct. 5th, the other on Nov. 3rd, on a tract of rough meadow-land, known as the Burghway, which in severe weather was often the resort of Snipe and other migratory birds. On Aug. 2nd, 1860, Mr. W. H. Power shot a Spotted Crake at West Drayton, as it was crossing the river Colne, which

here divides the counties of Middlesex and Buckingham. Two others were shot at Jessop's Ait, Chiswick, in the autumn of 1862, near Stone Bridge, on the Brent, on Oct. 16th. The late John Dutton, of Hammersmith, had one in his collection which was shot at Jessop's Ait, above mentioned, on the 12th Nov. 1863, and reported two others obtained there about the same time. On the 7th Oct. 1863, two, male and female, were shot in Hackney Marsh by Mr. R. M. Presland, and on the 26th of the same month another was shot at the same place by Mr. J. A. Clark. Finally one in Mr. Harting's collection was procured near the Hyde Bridge, on the Brent, in the month of October while looking for Jack Snipe. Mr. Harting now adds the interesting fact that the Spotted Crake has been ascertained to have nested in Middlesex. Graves, the author of 'British Ornithology,' writing in 1821, observed, "The Spotted Crake is met with in greater abundance within a few miles of London than perhaps in any other part of this kingdom. We have known this bird to breed in the fields to the left of the Kent Road, called Rolls' Meadows. One of them was killed, after which they forsook the spot" (vol. i. 2nd ed. 1821).

HERTFORDSHIRE.—In the series of "Notes on Birds observed in Hertfordshire," for the years 1881—1887, communicated by the late Mr. J. E. Littleboy, of Hunton Bridge, King's Langley, to the 'Transactions of the Hertfordshire Natural History Society,' the following entries occur under the head of this species:—One killed by the telegraph-wires at Watford, October, 1881. One shot at Tring Reservoir, Sept. 1883; another in October, 1885.

WILTSHIRE.—"Not uncommon, but so retiring and timid in its nature that it escapes observation." One killed in September. Several procured in October; one near Devizes in November, 1863, and another at Melksham, December, 1879. "It is one of the earliest migrants to arrive, and one of the latest to depart. . . . There is a record of a nest of twelve eggs having been cut out of a clover-field adjoining a marsh beside the stream at Mere, in June, 1881. One of these eggs was sent to the Editor of 'The Field,' and pronounced to be a genuine egg of *C. porzana*" (Rev. A. C. Smith, 'Birds of Wiltshire,' pp. 442, 443).

SOMERSETSHIRE.—"Whether this bird is resident or migratory may appear doubtful. There is a note in 'The Zoologist,' by the Rev. Murray A. Mathew, of his having shot two as late as the

18th November, and it makes its appearance again as early as the middle of March" (Cecil Smith, 'Birds of Somerset,' p. 440).

HEREFORDSHIRE.—"A few pairs visit the county most summers, and there is every probability that it breeds here. Four specimens have been brought to the Museum at varying intervals from April to June, during the last four years (1880—1884), which all came from small streams or marshy places in the valley of the Lugg" (Bull, 'Notes on the Birds of Herefordshire,' p. 207).

HAMPSHIRE.—The Rev. J. E. Kelsall has collected the following information:—One at Kingsley, East Hants, no date (Bell's edit. of White's 'Selborne'); one, Newton Stacey, West Hants, 1889 (Chalkley, naturalist, Winchester); several near Ringwood, April, May, September, October, and November—three in September, one in October, and two in November, 1888 (Mr. G. Corbin); one near Portsmouth, Sept. 1889. Isle of Wight: "Not yet ascertained to nest in the island, though likely enough a pair or two may linger in favourable localities. . . . Hitherto obtained as a rare winter visitor (*sic*), or at the two periods of migration" (Mr. A. G. More, in Venables' 'Guide to the Isle of Wight'). Lord Lilford writes (*in lit.* 16th May, 1890):—"Mr. E. Hart, of Christchurch, Hants, gave me March 27th as earliest date for this year; but, if my memory serves me correctly, this is by no means the earliest date I have had from him. I am inclined to think that all the Spotted Crakes that intend to breed in our islands arrive during March." In reply to my enquiries, Mr. Hart, under date of March, 1890, writes:—"The Spotted Crake, *Porzana maruetta*, is rather common about this part of Hants. Having two rivers, consequently there are many places suitable for this bird. They arrive here towards the latter part of March, the 20th being the first entry of its occurring in this month. Towards the last week of September and the early days of October, I always find them about the rushy places in the harbour, and have flushed as many as five at this time of the year in a morning's walk. October 16th is the last entry I have on which I have killed it in this month. Occasionally some stay longer, and may perhaps remain all the winter, having killed one in January, 1863, and another December, 1869. I have frequently found their nest with eggs, and in July, 1872, I caught some young ones in down only a few days old.

Also, on June 14th, 1881, I captured some with just the feathers on wings and shoulders showing."

SUSSEX.—Arrives from the Continent about the latter end of March or early in April, and examples have at that period been occasionally taken in an exhausted state within the precincts of the town of Brighton. After a dark, stormy night, in the spring of 1841, a Spotted Crake was found alive in the churchyard of Trinity Chapel, probably attracted—like many other migratory birds which have been captured in the gardens, and even in the areas of the houses—by the long line of gas-lights which extends, almost without interruption, from Brunswick Terrace to Kemp Town. Specimens have been shot near Storrington in the autumn, and several were killed during the month of October, 1841, on Henfield Common (Knox, 'Ornithological Rambles in Sussex,' 3rd ed. p. 240). Mr. J. E. Harting writes me word that "Some years ago Henfield Common, in Sussex, was a sure find for Spotted Crake. It was more like an Irish bog than an English the common, and in places quite as treacherous. There were soft places in which you might get in almost overhead." He adds that twenty years ago he used to meet with the Spotted Crake in the marshes lying between Sidlesham and Selsea, where it might sometimes be seen in the broad dykes, swimming like a little Moorhen, nodding its head and flirting its tail. On the 5th Oct. 1872, when out snipe-shooting in the parish of Harting, in West Sussex, he flushed and shot one of these birds, which he still has preserved in his collection. It was squatting in a tuft of rushes, and would probably have been passed by undetected, had it not been found by his setter, a red Irish dog which he had broken to retrieve, and which was first-rate for Snipe and Rail. In Mr. W. Borrer's forthcoming work on the Birds of Sussex we shall doubtless find still further particulars of the occurrence of the Spotted Crake in this county.

DORSET.—"A rare visitant on migration in spring and autumn. . . . I have notes of one shot near Weymouth, Nov. 5th, 1852; another near Wareham in September, 1868. The late Mr. Thompson sent one alive to the Zoological Society's Gardens, in the Regent's Park, which had been caught in a garden at Radipole. His son shot one at Lodmoor, near Weymouth, Sept. 28th, 1872; and one obtained in the neighbourhood of Blandford is in the collection of the Rev. J. Penny" (Mansel-Pleydell, 'Birds of

Dorset,' pp. 71, 72). Mr. E. Hart, of Christchurch, writes that he has seen the Spotted Crake in Dorset, but does not consider that it is quite so common in this county as in Hants.

DEVONSHIRE.—Montagu, in his 'Ornithological Dictionary,' writes:—"We have met with it as early as the 1st of April, and as late as the middle of October," remarking that it was rather scarce and certainly migratory. In the 'Supplement' to this work he mentions having "obtained this species as early as the 14th of March, and as late in the year as the 23rd of October in Devonshire, but never in the winter months." Two from Montagu's collection are preserved in the Natural History Museum, South Kensington. Moore, in his 'Catalogue of the Birds of South Devon,' after referring to Montagu's remarks above quoted, mentions five specimens procured in South Devon, but without giving dates or localities. Rowe also includes this bird in his 'Catalogue of the Birds of Devon,' 1863, p. 31. Mr. W. S. D'Urban, writing in 1875, remarks that the Spotted Crake is sometimes met with in South Devon in September, and that the late Mr. F. W. Ross once had as many as six freshly-killed specimens in his possession at one time, killed in September (Sketch Nat. Hist. S. Devon, in the 'Handbook of S. Devon and Dartmoor'). In the latest Devonshire list by Mr. Edward Parfitt (1876), the Spotted Crake is included as "not common; but specimens occasionally met with. One was found on the Tavistock Railway last year (1875) dead, probably killed by flying against the telegraph-wires, and three others were procured in the marshes near Newton."

CORNWALL.—"Sportsmen who traverse the snipe-marshes and wet moors often come across this bird *in winter*, and in some years it is not uncommon at this season. . . . I know of no instance of its remaining with us during the nesting-season" (Rodd's 'Birds of Cornwall,' p. 135). He adds (p. 290) that on the 4th October, 1870, a Spotted Crake was shot at St. Mary's, Scilly, where this bird is occasionally met with in autumn and winter (p. 302).

In Wales the Spotted Crake has been noticed in the following counties:—

BRECONSHIRE.—"A regular visitant, but very local. . . . On the Trath, a large bog on Mynydd Illtyd, near Brecon, it is to be found every year; but the favourite spot for them in this county

is the large bog near Onllwyn, and here in the early part of the shooting season I invariably flush several, and many breed in this place. I one day flushed six and killed four, three of which were birds of the year. The station-master who was then at Onllwyn informed me there were two broods of them hatched in that part of the bog close to the station that year. . . . I have never seen one after October. . . . It has been killed on some of the bogs near Cray, and its nest and eggs have been taken on the Trath near Brecon" (Phillips, 'Birds of Breconshire,' Zool. 1882, pp. 219-20).

GLAMORGANSHIRE.—Mr. Dillwyn Llewellyn told Mr. Phillips (*l. c.*) that in the fall of the year he could at any time move three or four in some bogs in this county.

CAERMARTHENSHIRE.—Montagu received one or more specimens from this county ('Ornithological Dictionary').

MERIONETHSHIRE.—"A few shot most seasons" in the Barmouth district (Rawlings, 'List of the Birds of the Barmouth District,' p. 6).

For the greater portion of the following records of the Spotted Crake in Scotland I am indebted to the Rev. H. A. Macpherson:—

The late Mr. R. Gray wrote, in 1871, "So far as I have observed, the Spotted Crake is a very uncommon species in the western counties; it is, however, more numerous distributed throughout the eastern counties, extending from Orkney to Berwickshire." After referring to Mr. A. G. More *re* the breeding of this species in Scotland, he adds:—"As the birds have been repeatedly taken in the breeding season in Banffshire, Fife, East Lothian, and Berwick, it is not unreasonable to infer that the species nests in these counties also." He also says that it appears early,—*e. g.* in April,—and has been shot in November, December, and even January (Gray, 'Birds of the West of Scotland,' p. 333).

ELGIN.—Nest taken in this county (Yarrell, 4th ed. vol. iii. p. 144).

PERTH.—Nest taken in this county (Yarrell, *ut sup.*).

BERWICKSHIRE.—One adult shot, 18th Oct. 1873; one shot 19th Oct. 1868 (B. N. C. 1873—5, p. 134).

MIDLOTHIAN.—One obtained March, 1864 (Proc. N. H. S. Glasgow, vol. i. p. 55).

AYRSHIRE.—One shot 3rd Nov. 1875 (*ib.* vol. iii. p. 197).

ABERDEEN.—One shot at the mouth of the river Ythan,

September, 1875 (ib. vol. iv. p. 250). Nest taken in this county (Yarrell, *ut sup.*).

LOCH LOMOND.—Two shot Sept. 1877 (Proc. Ryl. Phys. Soc. vol. iv. p. 207). Two shot, 10th Oct. 1881 (Proc. N. H. Glasg. vol. v. p. 211).

LANARKSHIRE.—One picked up at Possil Point, near Glasgow, 1st Sept. 1889 ('Science Gossip,' Nov. 1889).

DUMBARTONSHIRE.—One 7th Oct. 1879 (Proc. N. H. Soc. Glasg. vol. iv. p. 17).

Recorded also, but without date, from Ayrshire, Ross-shire, Strathbeg; as occurring in autumn in Dumfriesshire, on Tayside, near Tarbut. Mr. Lumsden says:—"Is seldom met with in Scotland. . . . In Scotland its nest has been taken only on one or two occasions" (Proc. N. H. Soc. Glasgow, vol. iii. p. 197).

A young male Spotted Crake was found dead at Possil, near Glasgow on the 1st Sept. 1889, as recorded by Mr. J. M. Campbell, Zool. 1889, p. 392.

It is not included by Mr. Macpherson in his account of the Birds of Skye (Proc. Roy. Phys. Soc.), nor by Messrs. Harvie-Brown and Buckley, in their 'Vertebrate Fauna of the Outer Hebrides.' Neither Dunn, in his 'Ornithologists' Guide to the Islands of Orkney and Shetland' (1837), nor Saxby, in his 'Birds of Shetland,' include it in the avifauna of those islands; but, according to Messrs. Baikie and Heddle (Hist. Nat. Orcad. p. 69), it has been observed, though rarely, on Sanday, and Mr. R. Gray also mentions its occurrence in Orkney (*ut sup.*); while, in 'The Zoologist' (1882, p. 21), there is a record of one shot on Fetlar, an islet adjoining Unst, the northernmost of the Shetlands, on the 25th October, 1881.

Mr. Howard Saunders, summing up the range of the Spotted Crake in Scotland, observes that it has nested on the east side of Scotland "as far north as Elgin, while on migration it has occurred in the Orkneys and twice in the Shetlands (in October); on the west it has bred in Dumfriesshire, but has not yet been recorded north of the Clyde" ('Illustrated Manual of British Birds,' p. 495).

In Ireland the Spotted Crake is said to be a very rare visitor, usually found in autumn (A. G. More, 'List of Irish Birds,' p. 18). The nest, however, has been found in Roscommon, where the bird is well known as the Little Crake (Watters, 'Birds of Ireland,'

p. 182), and probably also in Kerry (Thompson). In Harvey's 'Fauna of Cork,' the bird is said to be perhaps more common than is generally supposed. Messrs. Parker (both ornithologists as well as sportsmen) have not unfrequently met with it for several years past. It has occurred also to Mr. Robert Davis in Tipperary (*op. cit.*, p. 13). A bird of this species was shot near Portrush on the 15th October, 1888, as noted by Mr. Harting.

Mr. Howard Saunders, in his 'Illustrated Manual of British Birds,' p. 495, writes:—"It usually appears in May and departs in October, but birds have been known to remain till mid-winter, and the occurrences recorded from Norfolk in March were more probably due to individuals which had not left the country than to early arrivals."

But unless we are prepared to admit that a very considerable number of these birds pass the winter in this country (and, except in one or two localities, this supposition is not borne out by the published accounts of local observers), and that these winter residents begin an internal migration of no small extent in March and April, it is difficult (looking at the facts quoted in this paper) to come to any other conclusion than that the spring arrival of the Spotted Crake in England habitually takes place at a considerably earlier date than that indicated by Mr. Saunders in the work quoted above.

Indeed the very fact of the Spotted Crake remaining with us late into the autumn would make us expect it to be an early migrant in spring. With some exceptions, it seems to be a rule that those birds which remain late in autumn arrive early in spring; and there is no question about the fact of the Spotted Crake habitually remaining here until nearly, or quite, the end of October, and often still later. The Wheatear and Chiffchaff both arrive in March, and I have seen them in October. The Redstart and Blackcap, arriving a little later, both remain until the end of September. On the other hand, the Swift, Spotted Flycatcher, and Turtle Dove, which are all late arrivals, have generally left by the middle of that month (in the case of the Swift, nearly a month earlier); while the Corn Crake, which is seldom heard before May, although it probably always reaches us in April, is rarely met with (putting on one side the cases in which it has remained all winter) after the first fortnight of partridge-shooting—here in Oxon at least.

Bearing strongly upon this point is the date given by Prof. Giglioli of its spring arrival in Italy ('Avifauna Italica,' 1886, p. 350), in a passage which may be thus translated:—"It comes among us in March, and sometimes sooner, . . . and leaves us at the end of October or in November. . . . One shot as late as the 29th December (1884) in the province of Venice."

At least three-fourths of the Spotted Crakes noticed in Oxfordshire occur at the periods of migration. I have notes of examples picked up dead under the telegraph-wires on the 14th March, 1881, and the 10th March, 1887, and have known of the occurrence of others in April. A considerable proportion of the specimens procured here are killed in this manner; these it is pretty certain must have been on migration at the time; and, from the absence of any records of the birds striking the wires in May, it is reasonable to suppose that no immigration to Oxfordshire takes place during that month. It would be interesting if ornithologists would place upon record the dates of any spring arrivals of the Spotted Crake which have come under their notice, for on looking through the published accounts and notices of the bird the small amount of actual evidence upon this point is remarkable.

In searching through the 'Reports on Migration of Birds' by the Migration Committee, the paucity of entries relating to *P. maruetta* is remarkable. In the five reports I have by me (1882—1886) there is only one spring note, and that is untrustworthy. Altogether there are only four entries for Great Britain and Ireland—*viz.*, 1884, Redcar, 2nd Sept., one; 1885, Spurn, 23rd Oct., one; Rathlin Island, May 12th, one "Spotted Crake," June 30th, another seen. But as this species is not included in the "List of Birds noticed" on the Irish coast, it is evident that the reporters considered these two last records more than doubtful.

Mr. Howard Saunders writes of it as "visiting Heligoland on both migrations, especially in that of May." But I do not find any May occurrences entered in Herr Gätke's "Ornithological Almanack," included in the Migration Committee's Report for 1885, the only entry relating to *P. maruetta* being on Aug. 22nd, "some." In the same observer's "Bird Notes from Heligoland for the year 1886" ('Naturalist,' reprint, No. II.) there is no mention at all of the Spotted Crake, so that it certainly does not occur there very numerously or very regularly. Even if there is

an extensive May immigration of Spotted Crakes at Heligoland, it does not follow as a matter of course that we should have a simultaneous immigration to our shores. In 1886 the Corn Crake occurred several times in Heligoland in the latter half of May—long after it had appeared and settled down in Great Britain.

CONCLUSION.—To sum up the evidence previously adduced, it seems clear that—

(i). The Spotted Crake is an early spring migrant to this country, arriving from the second week in March onwards.

(ii). It probably breeds in every county of England and Wales which affords a sufficiency of swampy or boggy ground with plenty of cover, or of lakes and rivers, the banks and edges of which are overgrown with reeds, rushes, and rank vegetation. It becomes much more uncommon in Scotland, where at present it has been recorded as breeding on the east side only, although a good many instances of its occurrence on the west side in autumn are on record. On the mainland it has been recorded as far north as Ross-shire, and stragglers have reached the Orkneys and Shetlands; but in the Hebrides it has not been noticed.

(iii). It habitually remains in this country up to the end of October, and often until the beginning of November.

(iv). In some parts, chiefly the west and south of England (*e.g.* Cumberland, Lancashire, Hampshire, Cornwall), it frequently, if not habitually, remains during the whole winter; while occasional occurrences at that season have been noticed in many localities.

When we consider the shy nature and skulking habits of the Spotted Crake, and the difficulty with which it is induced to fly, also the nature of the localities it frequents, it seems probable that these birds are far more abundant in England than is generally supposed. Who indeed, unless assisted by one or two of the best working dogs, could hope to see anything of the Spotted Crake in an ordinary well-grown osier-bed or willow-holt, or along the reedy margins of a slow-flowing river? To say nothing of the impenetrable swamps it often frequents, I know that along many of our North Oxfordshire streams there are spots (worn-out osier-beds and old plantations) in every way adapted to the Spotted Crake's requirements, but from which if they contained a dozen birds, it would be almost hopeless to attempt to flush them. The Cherwell itself, with its bed often choked up with bur-reeds, rushes

and water-lilies, might harbour many pairs. Yet it is only at migration time that we hear anything of the Spotted Crake; and as Mr. Harting, in a recent letter to me, writes:—"The reason we so seldom see this bird is that it seeks safety in running instead of flying (unless suddenly found in the open), and its running powers are superior to those of the Moorhen."

A COMMENTARY ON SIR JOHN SEBRIGHT'S
OBSERVATIONS UPON HAWKING.

BY THE EDITOR.

AMONGST the scarcer English treatises on Falconry may be included 'Observations upon Hawking, by Sir John Saunders Sebright, Bart., M.P., describing the mode of breaking and managing the several kinds of Hawks used in Falconry. London: printed for J. Harding, 32, St. James's Street. 1826.'

This thin octavo volume of only 64 pages possesses the merit of having been written from the personal experience of the author, who had the further advantage of getting his MS. revised by his friend John Dawson Downes, of Old Gunton Hall, who was one of the leading falconers of his day, and who, in conjunction with Col. Wilson, of Didlington (afterwards Lord Berners), Col. Thornton, of Thornville Royal, and George, Earl of Orford, did much to encourage and maintain this time-honoured sport in England during the first quarter of the present century.

Through the courtesy of Messrs. Jarrold & Sons, the well-known booksellers of Norwich, I have lately had the pleasure of inspecting the original MS. of Sir John Sebright's work, and a careful examination of it and comparison with the printed volume has resulted in the following notes, which it is thought are of sufficient interest to warrant their publication. The MS. is contained in three white copy-books without covers, written on one side only (the left), each book having about twenty-two such pages, which are numbered. It appears to have been fairly copied out by an amanuensis, submitted to Mr. John Dawson Downes, of Old Gunton Hall, who made notes and suggestions on the right-hand pages, and was then corrected by

the author in red ink, by the light of these suggestions, some of which were adopted by him.

The following notes by Downes have not been printed by Sebright, and certainly seem worthy of being rescued from oblivion. The first of these relates to the breeding of the Peregrine Falcon in Hunstanton Cliffs, Norfolk:—

(1). “The late Nicholas Styleman, Esq., of Snettisham, in Norfolk, in reply to my inquiry of how long had the Hawks been known to breed in the cliffs of Hunstanton, in Norfolk, informed me for more than a century. This proves, in the case of one dying, the other finds a mate, and returns to the same eyrie, although the young birds should be taken year after year, as they had then been for twenty years. The last eyrie there was about eight years since.”

Assuming this note to have been penned during the year in which the book was printed (1826), the date of the last eyrie at Hunstanton would be 1818.*

(2). Downes remarked that eyesses should be fed *twice* a day, using the voice in going to feed them, as when luring. Sebright wrote, “the longer they can be kept at hack, as this state of liberty is called, the better will they ultimately be.” On this Downes observed, “dele *at Heck*; it is not so called until after the birds have been taken up and trained.”

(3). Sebright wrote (MS. p. 6):—“I have seen some excellent Hawks that were made so tame *at Hack* as to feed on the falconer’s fist. It is a practice, however, that I cannot approve. Eyesses are not the better for being very tame. The usual way of feeding them is to throw the meat to the distance of a few yards, and to allow them to carry it away; but I think it much better to fasten it to the ground, and by thus using them to feed near the falconer they will be less disposed to carry—that is, fly—away with the game, a fault to which all Hawks are more or less inclined.” On this Downes wrote:—“I have never seen meat thrown to the Hawks and to allow them to carry it away. Till taken up their meat should be cut in pieces, and given to them in a plate; they should be called as when luring, and they

* In the Trans. Norf. Nat. Society, vol. iv. 1888—89, p. 658, Mr. T. J. Mann has printed an interesting table from an old note-book in the handwriting of Sir Hamon L’Estrange, of Hunstanton, Knt., showing what Hawks were taken by him from Hunstanton Cliff from 1604 to 1653.

will readily come from any distance within hearing. They should take pieces from the hand, and allow themselves to be touched while feeding; if they are highly fed there is no fear of their becoming too tame before taking up. This mischief arises from making them too sharp in their lurings and first flyings. Two or three times a week, till their feathers are well up, raw egg should be mixed with their meat; this makes the feathers broad and strong: pinching them a day produces hunger traces."

(4). On making a Hawk used to the hood Downes gave the following hint (MS. p. 10) about drenching with cold water to make a bating Hawk sit quiet, a plan I saw practised by the Dutch falconers at Valkenswaard:—"The eyess Hawks, after they feed readily on the hand, are to be made for the hood. This is done by brailing the wing, and making them quite wet by letting water run on to them, splashing them from a whisp of hay or grass; this makes them still. They are to be kept upon the hand till dry, hooding and unhooding very frequently, and brushing them with a feather. This is to be repeated two or three days if necessary, till they stand for the hood. They are not fed at these hoodings. To be done in the morning that they may be dry by night. After they have been made to the hood, then to have something at all times given to them when hooded." This hint Sebright adopted and introduced in his book.

(5). Downes thus describes the *lure* used in his day (MS. p. 12):—"The *lure* is a forked piece of wood covered with tow, afterwards with linen, and the wings of birds, and heavy enough to prevent her flying away with it." He added (p. 13):—"It is not mentioned that the lurer is to halloo at the same time that he swings the lure." Sebright added this.

(6). Treating of Partridge-hawking, Sebright wrote (MS. p. 15), that the Hawk, on "being unhooded and cast off, would, *if a good bird*, mount to a considerable height." Downes suggested, "*if in order*" (the technical term for being right), but Sebright preferred his expression and retained it.

(7). On taking up a Hawk after killing a Partridge (after Sebright's words "by kneeling down and extending one's arm gently one may get hold of the Partridge"), Downes wrote:—"Which is to be artfully covered by the hand holding some

reward which will be accepted by the Hawk, and the Partridge secretly taken away, and the Hawk taken up and rewarded"—an important hint to prevent a Hawk from carrying; yet Sebright has not printed it.

(8). "When the Hawk," says Sebright (p. 37, MS. p. 31), "has learnt to come well to the lure, a live Pigeon is to be given him from the hand; one is then to be thrown up to him in a creance, and, if he behaves well in these trials, he may be trusted at large to fly a Pigeon whose flight has been shortened." Downes adds, with a view to Heron-hawking, "after Pigeon give trains of a hen, then of a cock—a light colour is preferred—then of a Heron." Sebright, however, does not suggest these stages in the training.

(9). Snaring Herons on the nest (p. 38), Downes wrote:—"This is done at sundown; the string is led down wind of the tree; they soon return to the nest at this time, and are not so curious in observing anything that is done in it (MS. p. 32) as they would in the open day."

(10). Under the head of Icelander (MS. p. 38), Downes wrote:—"The Icelander and the Gyrfalcon are not varieties of the same species. The Icelander exceeds the Gyrfalcon considerably in size and in length of wing. The Gyrfalcon has the longest train and the shortest wings of all the Hawks called long-winged—the wings are considerably shorter than the train—and is about as much smaller than the Icelander as the slight Falcon [Peregrine] is smaller than the Gyrfalcon."

(11). Referring to the use of the Eagle Owl for attracting the Kite, Downes wrote (MS. p. 39), "This is sometimes done for Rooks for slight Falcons."

(12). Commenting upon Sebright's remark that "the Icelander and the Gyrfalcon are managed very much in the same way as the slight Falcon," Downes adds (p. 39, MS.); "but the Gyrfalcon is a much harder bird to manage than the Icelander."

(13). Opposite the paragraph in which the mode of taking Goshawks is described (MS. p. 41), Downes has written:—"Goshawks are never flown *at Heck* when taken [from] the nest; they are allowed to fly like slight Falcons [until] they begin to prey for themselves; they are then taken up: this is not called *flying at Heck*. The Goshawks brought here are all taken after [they] have begun to prey for themselves by a Hoop-net. They are rarely taken out of the nest."

(14). On the subject of "weathering" (MS. p. 55), Downes observes:—"Passage Hawks are weathered by pegging them down by their leash near a small hillock covered with a flag of grass, giving a mouthful or two, and unhooding them, walking close before them backward and forward all the time. They are sometimes set upon these hillocks in their hoods to weather."

(15). The "cage" is thus described by Downes (MS. p. 58):—"The *cage* is $4\frac{1}{2}$ ft. in length and 2 ft. in width. Instead of canvas stretched across, slight rods of hazel or elm are placed across each end reaching 18 in., leaving 20 in. for the man; the rods prevent the Hawks from dropping down in the inside when they bate. The legs are on the sides, 13 in. from the corners; at the corners they would be in the way and hurt the birds."

The printed treatise ends with the statement that the "several instruments used in falconry are well represented in the plates of the French 'Encyclopædia,' printed in 1751." The MS., however, contains this additional remark (p. 59):—"This is the common way of breaking the eyess, but I am of opinion that it may be better done, and certainly with much less trouble, by accustoming him to feed upon the lure when he is flying *at hack*; he would soon learn to follow it when swung round in the air. The falconer might kneel down to him when he is feeding upon the lure, and give him food from the hand. A few live Partridges should be thrown up to the Hawk just before the commencement of the season, and he should be allowed to eat them close to the falconer. I have no doubt but by this treatment a young Hawk would be fit for use as soon as he was taken up. Nothing would remain to be done but to accustom him to stand to be hooded."

This passage has been introduced at p. 19 of the printed treatise, and on the next page the following paragraph (slightly altered), which is written on the back of p. 58 of the MS.:—"If young birds are fed at daybreak they may be kept long in a state of liberty before they will prey for themselves; for they have no inclination to pursue game when not impelled by hunger."

On the last page of the MS. is written in pencil:—"This manuscript of Sir John Saunders Sebright's 'Observations upon Hawking' was given to me by Sir John Sebright, Bt., at Beechwood, on Thursday, the 25th of September, 1828.—J. D. DOWNES."

ON THE SUPPOSED SELECTIVE ACTION OF BEES ON FLOWERS.

BY G. W. BULMAN, M.A., B. Sc.

THE following illustrations of the bee's taste with regard to flowers, from my own experience, tend to show that these insects do not exhibit, as has been supposed, that decided partiality for blue, nor that nice discrimination of form necessary to enable them to develop a race of blue flowers specially adapted to them in shape by their selective action. On a patch of mingled blue and white Canterbury bells I noted to which colour the bees went first as follows:—

(1). A humble bee went first to a faded white flower, then to other white ones. After thus spending a long time on a few flowers, it went to blue, and then returned to white. A single blue flower was then visited, and it came back to white.

(2). A hive bee visited several white flowers; went off without going to blue.

(3). A humble bee visited several white flowers, and flew off to another patch of white, without going to blue.

(4). A humble bee visited two white flowers, and then flew off.

(5). A hive bee; white.

(6). A hive bee; white.

(7). A humble bee; white.

(8). A hive bee; white, then one blue flower, and back to white.

(9). A small wild bee; three or four blue flowers, then white.

(10). A humble bee; three blue flowers, and then flew off.

(11). A hive bee; white, and flew off to adjacent patch of white.

(12). A hive bee; five white flowers, and off to adjacent patch of white.

(13). A hive bee; four or five blue, then white.

Thus in 13 instances 10 bees, on coming to the mingled blue and white flowers, went first to the white, and only 3 went first to the blue. Of the latter one restricted itself to blue, and of the former a few confined themselves to white, that is to say, so far as my observation of them extended. Many of them passed from blue to white, and from white to blue. From this I infer that these bees do not prefer blue flowers.

A few days later I made some further observations at this same spot, but this time I have only the record of two bees. The first came to white flowers, of which it visited a large number ; then it took one blue flower, and came back to white. The second came to blue, of which it visited a few, and then went to white. The two together then paid a few visits to white flowers ; then one of them flew off to an adjacent plant of white ; the other paid a few visits to blue, and then went back to white. Both were hive bees.

I have often observed that bees go from one colour to another during their journeys with seeming indifference. Their habits with regard to different colours of the same species growing together may be observed in almost any garden. Thus nearly every morning for a time I watched them on a little clump of *Cistus* (*Helianthemum vulgare*) where red, yellow, and white flowers were growing together ; they would pass from one colour to another in every possible order. And on clumps of differently coloured—pink, white, and blue—garden hyacinths, growing together, I have not been able to detect a preference for any one of these colours. I have also seen them pass from white to blue, and from blue to white, on patches of *Myosotis*. I have the record of the actual order in which the two colours were taken by certain bees one day last May. Two of these are given below. The letters B. and W. refer to blue and white flowers respectively, and each indicates a visit to a single inflorescence, and may mean from one to three or more flowers :—

1. W. W. W. B. B. B. W. W. W. W. W. W. W. W. W. W. W. W.
W. W. W. W. W. B. W. W. W. B. W. B. B. B. W. W. W. W. W. W.
B. B. B. W.

2. B. W. B. W. B. B. W. B. W. B. B. B. B. B. B. B. B. B. B. B.
B. W. W. B. W. B. B. B. B. B. W. B. W. W. B. B. B. B. B. B. B.
W. B. B. W. B. B. W. B. B. W. W. W. B. W. W. B. W. B. W.

And I find that Darwin has noticed this same indifference to colours in varieties of the same species. In his 'Cross- and Self-fertilisation of Plants,' he writes :—"Humble and hive bees are good botanists, for they know that varieties may differ widely in the colour by their flowers, and yet belong to the same species. I have repeatedly seen humble bees flying straight from a plant of the ordinary red *Dietamnus fraxinella* to a white variety ; and from one to another very differently coloured variety of *Delphinium*

consolidum and of *Primula veris*; from a dark purple to a bright yellow variety of *Viola tricolor*; and with two species of *Papaver*, from one variety to another which differed much in colour" (p. 416).

Having the colour blue specially in mind, I have made some observations on bees visiting lavender flowers. Surely, if they prefer blue, they will, on leaving a bush of lavender, seek out another or some other blue flower. During these observations a good many bees escaped my notice on leaving the lavender, but I have been able to note in the case of the following the flowers they next visited:—

- (1). From lavender to *Geranium Robertianum*.
- (2). From lavender to another bed of same.
- (3). From lavender to *Geranium Robertianum*, and then to *Stachys sylvestris*.
- (4). From lavender to *Leycesteria formosa* (white flowers).
- (5). From lavender to *Epilobium montanum*, and then, after one visit, back to lavender.
- (6). From lavender to snapdragon, of which it tried several flowers unsuccessfully, and then to *Stachys sylvestris*.
- (7). From lavender to evening primrose (yellow).
- (8). From lavender to *Geranium Robertianum*.

Thus, out of these eight cases, seven left the lavender for flowers of another colour, and one only for another patch of lavender. One of the seven returned to the lavender after visiting one pink flower.

On another occasion I watched some bees which were visiting in large numbers some blue campanulas, which grew near a bush of white *Syringa* in flower. During the few minutes I watched them six passed from blue *Campanula* to white *Syringa*, and probably many passed in the other direction; but I only noted those going from the *Campanula*.

This changing from species to species is important, apart from the question of colour. There is a more or less vaguely received idea that bees are rather constant to the flowers they visit; that they usually keep to one species during a single journey. My observations lead me to conclude that this is far less the case than is usually supposed, and certainly much less than required to enable them to differentiate a new species by their selective action.

Since first noticing a few instances—which I set down as chance exceptions to the rule—I have very frequently seen examples of the bee's inconstancy. I scarcely ever watch them now for more than a few moments without seeing some illustrations of it. As an extreme case I may cite a bee which made eleven changes for twenty-seven flowers visited. The following are typical examples, and were noted during about half-an-hour's observation in a garden. I could give many such from my note-book:—

(1). A bee goes from *Veronica Buxbaumi* to *Stellaria media*.

(2). Another goes from *Ranunculus ficaria* to *Scilla verna*, and back to *R. ficaria*.

(3). Another goes from *Veronica Buxbaumi* to *Stellaria media*, and back to *V. Buxbaumi*.

(4). Another goes from *Ranunculus ficaria* to *Scilla verna*.

May we not infer that if the bee of to-day thus frequently passes from species to species, its ancestors would also—and even much more so—pass from variety to variety in time past? And if so, what becomes of the incipient species?

There is a passage in Darwin's 'Cross- and Self-fertilisation of Plants' which indicates very clearly what the bee is expected to do in making permanent the "incipient species," and which will help us to an answer of the above question. I allude to his remarks on that variety of *Mimulus luteus* which appeared in the course of the experiments on cross- and self-fertilisation with that plant:—

"In the third and fourth generations of *Mimulus luteus*, a tall variety, often alluded to, having large white flowers, blotched with crimson, appeared amongst both the intercrossed and self-fertilised plants. It prevailed in all the later self-fertilised generations to the exclusion of every other variety, and transmitted its characters faithfully, but disappeared from the intercrossed plants, owing, no doubt, to their characters being repeatedly blended by crossing."

Remembering that such variations as these are those upon which the bee is supposed to have exerted its selective influence, we see exactly what is required of it. These varieties must be preserved from intercrossing, and the bee can only do this by temporarily restricting itself to them. But this is not all. Darwin has expressed the belief that even if individuals of the

variety had been crossed in the earlier generations it would have been lost:—

“Florists may learn from the four cases which have been fully described that they have the power of fixing each fleeting variety of colour, if they will fertilise the flowers of the desired kind with their own pollen for half-a-dozen generations, and grow the seedlings under the same conditions. But a cross with any other individual of the same variety must be carefully prevented, as each has its own peculiar constitution.”

The contrast between the bee of nature and the bee required to give permanence to an incipient species is obvious. And, as far as my observations go, there are no blue flowers more frequently visited by bees than are many of other colours,—white, yellow, greenish, pink, &c. Indeed, some uncompromisingly green flowers seem to be rather favourites, *e.g.*, plane tree, red currant, and raspberry.

“The flowers of a species of *Trianosperma* in South Brazil are visited, according to Fritz Müller, very abundantly all day long by *Apis mellifica* and species of *Melipona*, although they are scentless, greenish, quite inconspicuous, and to a great extent hidden by foliage. If the bees of to-day, in the midst of flowers of every hue, are content at times to take their honey from green flowers, is it reasonable to suppose that the bee of former ages would neglect them?”* Moreover, there are some bright blue flowers which they do not visit frequently, such as periwinkle, *Lobelia*, and hairbell.

With regard to the periwinkle, the bee is apparently somewhat erratic. H. Müller, for example, states that he has seen *Vinca minor* abundantly visited by insects, and gives a list which includes seven species of bees. But he also informs us that other well-known observers—Sprengel, Darwin, Delphino, and Hildebrande—seem never to have seen any insects upon it but thrips. And on *Vinca major*—which differs from *V. minor* chiefly in size—he has once seen *Bombus agrorum*! For my own part, I think I have seen bees on the periwinkle on one or two occasions.

With regard to *Lobelia*, the bee—so far as my observations go—is extremely irregular. I watched them for several years

* H. Müller, ‘Fertilisation of Flowers.’

without seeing any on this flower. Then I saw a few isolated examples, and this year, on two occasions, I have seen the flower abundantly visited. I believe Darwin has somewhere noted the same extreme capriciousness of the bee with regard to *Lobelia*.

As to the hairbell, I can distinctly remember once seeing a bee visiting the flower; but I fancy Müller has a fair list of species for it. And I can quote poetical authority for the fact that it is visited, for Keats writes of—

“A bee bustling
Down in the blue-bells.”*

I have paid special attention to the hairbells of late, but have been very unsuccessful in finding bees in its flowers, although I have observed plenty of small black flies.

And I have seen bees visiting flowers which had lost their petals, and had only a green calyx surrounding their essential organs. On one occasion, while watching a patch of *Geranium Phæum*, I counted seventeen visits to flowers without petals in the course of a short period. And I find that Darwin has noticed the same fact with regard to this flower. I have also seen petal-less flowers of *Helianthemum vulgare*, *Geranium pratense*, *Rubus fruticosus*, and garden sage visited by bees.

Do such facts indicate that bees would select from a race of green flowers those which showed a slight tendency to other colours? And it may be further asked, could any race of insects afford—apart altogether from the question of taste—to restrict themselves to the few flowers varying in a given direction? At first there would be—according to the theory—only a few flowers differently tinted among the original green, and these could not supply sufficient honey of themselves for the bees, and those not so varying would have to be visited also, and so receive similar advantages.

Summing up these few observations, the result is emphatically against the popular theory of the bee's selective action on flowers.

* We doubt whether Keats intended to apply this name to the hairbell. It is commonly bestowed on *Scilla nutans*, from the bell shape and bright blue colour of the flower; and in Scotland is applied to *Campanula rotundifolia*. At any rate, Keats' poetical allusion here is of no scientific value.—ED.

MEMOIR OF THE LATE CECIL SMITH, J.P., F.Z.S.

By the unexpected and somewhat sudden death of Mr. Cecil Smith, of Lydeard House, Bishop's Lydeard, near Taunton, 'The Zoologist' has lost an old and valued contributor, and the ranks of British ornithologists a most useful ally in the West of England.

The deceased naturalist had gone to Guernsey for his health, and for a short time seemed to improve, but unfortunately he caught a chill, which aggravated some previously existing form of lung disease, and terminated fatally almost before any serious danger was apprehended.

Mr. Cecil Smith was born at Bishop's Lydeard in May, 1826, and consequently was in his sixty-fourth year at the time of his death. He was educated at Trinity College, Cambridge, where in 1848 he took his B.A. degree. In 1852 he was called to the Bar, and practised on the Western Circuit until 1861, when on the death of his father he withdrew from the profession, and retired to his Somersetshire home, where, ever since, he has lived the life of an English country gentleman.

Always fond of Natural History, and especially devoted to Ornithology, Mr. Cecil Smith spent some years in collecting information about the birds of his county, an account of which he published in 1869, under the title of 'The Birds of Somersetshire.' Having married a Guernsey lady, Miss Carey, he paid occasional and prolonged visits to that island, and amused himself by noting the occurrence there of every species of bird he could see, or hear of on good authority. What was at first a mere list became gradually filled out with details, until at length, in 1879, he published a second volume entitled 'The Birds of Guernsey and the neighbouring Islands, Alderney, Sark, Jethou and Herm,' which was especially useful to ornithologists as being the first really good account of the birds of the Channel Islands which had then appeared. It was reviewed in 'The Zoologist' for 1879, p. 387.

From 1863, after he had settled down to the real enjoyment of a country life, Mr. Cecil Smith was a constant reader of this Journal, to which he gradually became a pretty frequent contributor. Looking through the Index to Authors' names

from that year to 1889, we find him credited with no less than ninety-two communications, none of them of great length, nor perhaps of great importance from a scientific point of view; but most of them certainly useful as recording facts, chiefly ornithological, ascertained by a careful and competent observer.

The following is a list of them in chronological order:—

1863.—Summer Birds at Taunton, p. 8816.

1864.—Food of Rooks, pp. 8885, 9043. Little Auk in Somersetshire, p. 8891. Egyptian Goose and Great Grey Shrike in Somersetshire, p. 9348.

1865.—List of Birds in the parish of Bishop's Lydeard, p. 9794. Crane at Stalford, p. 9848.

1866.—Black Tern in Somersetshire, p. 272. Birds observed in Channel Islands, exclusive of Jersey, p. 447.

1867.—Purple Sandpiper, Little Gull, and Fulmar Petrel on S. Coast Devon, p. 562. Red-throated Diver and Norfolk Plover in Somerset and Devon, p. 760. Lesser Tern at Taunton; Sandwich Tern and Snow Bunting at Exmouth, p. 832.

1868.—Curious variety of House Martin; Late appearance of the Swallow, p. 1058. Long-tailed Duck at Exmouth, p. 1059. Black-tailed Godwit in Somerset, p. 1178. Chough in Somerset, p. 1219. Lesser Tern in Devonshire; Black Tern in Somerset, p. 1378.

1869.—Common Crossbill near Taunton, p. 1514. Ornithological Notes from South Devon, p. 1845. Robin and Wigeon breeding in confinement, p. 1865. [Nest of Wigeon in mowing grass; five eggs laid, but addled.]

1870.—Robin eating Ladybirds, p. 1981. Fulmar Petrel, Little Auk, and Grey Phalarope in Somerset, p. 1982. White's Thrush in Somerset, p. 2018. Ruff in Somersetshire, p. 2103. Red-necked Grebe at Teignmouth, p. 2106. Grey Phalarope at Bishop's Lydeard, p. 2385. Little Crake in Somerset, p. 2386. Schinz's Sandpiper in North Devon; sternum of Schinz's Sandpiper, p. 2409. Grey Phalaropes in Somerset, p. 2410.

1871.—Bird baiting, p. 2438. Wood Sandpiper in Somerset, p. 2441. Grey Phalarope near Taunton, p. 2442. Great Bustards in Devonshire, p. 2475. Iceland Gull in Somerset, p. 2488. Bittern in Somerset, p. 2522. Canada Goose, p. 2523. Red-necked Grebe and Bittern in Somerset, p. 2563. White's Thrush in Somerset, p. 2607. The flock of Bustards; American Bittern in Guernsey, p. 2642. Cormorant inland in Somerset, p. 2810. Marsh Harrier in Somerset, p. 2866. Food of the Wood Pigeon, p. 2868.

1872.—Hen Harrier, Norfolk Plover, and Red-breasted Merganser in Somerset, p. 2911. Ornithological Notes from Guernsey, p. 2921. White's Thrush, p. 2941. Early arrival of the Chiffchaff, p. 3064. Notes on the breeding in confinement of the Pochard, Pink-footed Goose, and Wigeon, p. 3243.

1873.—Pinkfooted Goose, p. 3413. Guillemot moulting its quill-feathers, p. 3454. Ornithological notes from Somerset, p. 3624.

1874.—Ring Ouzel, &c., at Exmouth, p. 3831. Ornithological notes from Somerset, p. 3868. The Black Gannet, p. 4239.

1875.—Ornithological notes from Somerset, p. 4332. Albino and other variations of plumage in Birds, p. 4422. Marsh Warbler, *Acrocephalus palustris*, in Somerset, p. 4713.

1876.—Ornithological notes from Guernsey, p. 4780. Black-throated Diver in Somerset, p. 4804. Ornithological notes from Guernsey and other of the Channel Islands, p. 5024.

1877.—Purple Gallinule in Somerset, p. 227. Little Bittern in Guernsey, p. 259.

1878.—Pied Flycatcher and Black Redstart in Somerset, p. 27. Curious nesting freak of the Common Buzzard, p. 339.

1880.—Pomatorhine Skuas in Somerset, p. 19. Long-eared Owls in Guernsey, p. 220. Green Woodpecker in Somerset, p. 221. Red-legged Partridge in Guernsey, p. 397.

1881.—The Marten in North Wales, p. 419. Remarks on the breeding of certain Water-fowl in confinement, p. 446.

1882.—Iceland Gull and Great Grey Shrike in Somerset, p. 71. Buffon's Skua in the Channel Islands, p. 188. Marsh Harrier in Herm, p. 267. Manx Shearwater in Somerset, 433. Black-winged or Japanned Pea-fowl, p. 462.

1883.—Bonaparte's Gull at St. Leonards-on-Sea, p. 120. Hybrid between Lesser Black-backed and Herring Gulls, p. 174. Heronries in Somersetshire, p. 221. Erroneous report of Demoiselle Crane in Somerset, p. 333. American Bittern in Pembrokeshire, p. 341. Wayside notes during a West Country drive, p. 448.

1884.—Fulmar Petrel in Somerset, p. 145. Great Grey Shrike and Snow Bunting in Somersetshire, p. 149.

1885.—Wayside notes during a West Country drive, p. 3. Ornithological notes from Somerset, pp. 65, 233. Red Grouse in Somerset and Wilts, p. 147. Little Gull in Guernsey, p. 262.

1886.—A white Fox in Somerset, p. 104. Changes of plumage in the Kestrel, 110.

1888.—Additions to the list of Somersetshire Birds, p. 174. Lesser White-fronted Goose in Somerset, p. 228. Pallas's Sand Grouse in Somerset, p. 266. Pallas's Sand Grouse in Guernsey, 266.

1889.—Gadwall in Somerset, p. 149.

In addition to this list may be noticed Mr. Smith's occasional communications to 'The Field' and to 'Science Gossip,' though some of these were merely duplicates or reprints from 'The Zoologist.' His remarks on the occurrence of the Marsh Warbler, *Acrocephalus palustris*, as a summer visitor to Somersetshire (Zool. 1875, p. 4713), and his observations on the change of plumage in certain water-fowl and sea-gulls kept by him in a state of complete freedom, though pinioned, on a pool before his house, deserve to be especially referred to (Zool. 1881, p. 446).

Having visited him in his Somersetshire home, and enjoyed many a pleasant day's shooting with him amongst the turnips and stubble-fields of Bishop's Lydeard, and the attractive sand-hills of Braunton Burrows, in North Devon, we can testify to his keen powers of observation, as well as to his knowledge and experience as a sportsman. His native Red-deer were a special source of delight to him, not only during the hunting season, when he frequently followed the celebrated Devon and Somerset pack, but at other times of the year, when he quietly sought them out for the purpose of observing, while unobserved, their actions in their wild haunts. We look back with pleasure, not unmingled with regret, to our rides with him on horseback over the Quantocks for the purpose of getting near a stag or hind, and admiring it, in all its beauty of unrestrained freedom, amid surroundings eminently suited to its wild nature.

It is sad to think that these days can never return, and that another good friend and true has passed away.

Mr. Cecil Smith enjoyed the respect of all who knew him in his own neighbourhood, where for many years he had been a magistrate, and was well known (even to many perhaps who had never met him) as an enthusiastic member of the British Ornithologists' Union, and a Fellow of the Zoological Society.

His wife predeceased him by some years, but he leaves several daughters, who shared in an unusual degree their father's tastes and pursuits, and a son, Cecil, who succeeds to the paternal acres in Somersetshire.

NOTES AND QUERIES.

MAMMALIA.

Grey Seal on the Norfolk Coast.—On September 16th, at a neighbouring fair, I came across a travelling show which professed to contain a strange sea-monster captured off the Norfolk coast by one of the Lynn boats. Expecting to find a Common Seal I went in, but saw, instead, a Seal which was strange to me. From a description and very rough sketch, which I forwarded the same day to Mr. Southwell, that gentleman suggested that it might be an example of the Grey Seal, *Halichærus gryphus*, and this it doubtless is. It was caught in a net, about four months ago, off the Norfolk coast, near Wells. The colour is dull grey, with darker markings; length about five feet; weight (the owner tells me) about ten stone; it has a beard, or whiskers, about three inches in length. The sex I do not know; the owner believes it to be a male. It seems quite untamed, and shows its dislike to being handled by uttering a sound which I can only compare to the roar of a lion when hungry or enraged. Its eyes are rather large, with linear pupils (the sun was shining brightly when I saw it), and their expression very unlike that of the mild, dog-like, eyes of the Common Seal; in fact, if I ever saw an “evil eye” in any animal, this Seal possessed it. The figure of the Grey Seal in Bell’s ‘British Quadrupeds’ gives a fair idea of the creature; in that work, also, the Grey Seal is described as “scarcely susceptible of domestication.” Mr. Southwell has kindly pointed out to me that “the most reliable and striking feature in the external appearance of the Grey Seal is, perhaps, the length of the nails on the flippers.” The owner of this example showed me where he had shortened the long nails on the hind flippers to prevent them from injuring the skin. The beast seemed to be in perfect health, and I should be glad to hear of its being transferred to some collection where its existence would be happier than in the box it now occupies. Probably the Grey Seal occurs in the Wash from time to time without being identified. In my diary for 1888 there is a note that, one day in August of that year, when rowing off Hunstanton, I “saw a very large Seal not far off,” which may or may not have been of this species.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

BIRDS.

Migration of the Nutcracker.—The ‘Report on the Migration of Birds in Denmark for 1887,’ compiled by Herr Olaf Winge (Ornis, vol. vi.), contains some interesting notes on the migration of the Nutcracker, *Nucifraga caryocatactes*, Linn., in the autumn of that year, on the east and

west coasts of Sjælland. The movement appears to have commenced on Sept 10th, when one was shot at Storehedinge, near the Stevns lighthouse. This light is placed on the extreme easterly point of the island facing the Baltic. From this date the Report says, "They were common, and many were shot in different places; at the close of September they diminished in number, but at the middle of October many again arrived; at the close of the month they quite disappeared; the last was shot on October 29th. Undoubtedly several hundreds have passed over: one day, in the course of half an hour, an observer watched thirty move away in parties; mostly two or three kept together; but parties of from six to ten were also seen. All the specimens examined were of the *leptorhynchus* form, but one *pachyrhynchus*." At Vordingborg, near the extreme south of Sjælland, there was a large passage in the later part of September and the beginning of October. At Refsnäs, on the extreme westerly point of the island facing the Great Belt, from the middle of September to the middle of October, large flocks of Nutcrackers were observed. All these flights appear to have been on passage from north to south along both the east and west coasts, presumably coming from the southern parts of Sweden. A flock of seven or eight were seen at Rönne, Bornholm, on Sept. 20th, and four were shot, all *leptorhynchus*. They were seen in large numbers on Bornholm at the close of September and in the beginning of October.—JOHN CORDEAUX (Great Cotes, Ulceby, Lincolnshire).

Habits of the Nutcracker.—The latter part of Mr. Wigglesworth's letter (p. 388), on the nesting habits of the Nutcracker, *Nucifraga caryocatactes*, in which it is stated that this bird nests exclusively on the spruce fir, is interesting to me as being in decided contrast to its habits in summer and autumn, when only I have seen it. It is then found almost exclusively in the woods of Arolla pine, *Pinus cembra*, under which the ground is covered with half-picked cones, and from which it derives its Swiss rural name, "Arolla Vögel." It is common at the head of the Visp Thal, near Zermatt, where the spruce and Arolla woods grow in close proximity, but not much intermixed, and it was in the latter trees only that I learnt to expect it; indeed so much did I look for the bird where I found this tree, that, seeing in the distance a battered *Pinus cembra*, on the road to the Wengern Alp, I said to my daughters who were with me, "Now we shall see the *Arolla Vögel*," and sure enough, as we drew near, out flew half-a-dozen. My friend, the late Mons. Emil Boss, used to shoot a good many in the winter, and told me that the crop was always full of Arolla seed. He said the birds were very good eating. Were I forty years younger I should be tempted to make a spring visit to Zermatt, on purpose to investigate the habits of the Nutcracker in the nesting-season; perhaps one of your younger readers will take the hint. True the hotels are then closed; but I have no doubt the proprietor, Mr. Seiler, who lives at Brieg in the winter,

would do what he could to provide accommodation. — H. T. FRERE (Burston Rectory, Diss, Norfolk).

The Great Skua on Foula.—I have been twice in the Island of Foula this year,—for five days in May, and, again, for three weeks in August,—and I am satisfied that the Great Skua has increased in numbers, and that there are now from 80 to 100 pairs that make the hills their home. But alas! though the birds have prospered in the past, they will do so no longer, unless some means are taken to stop the wholesale egg-taking and the slaughter of birds, which for some reason or another has been carried on this year on a scale far exceeding previous seasons. It is not to be wondered at that people to whom every penny is of consequence should take eggs that lie absolutely under their feet, when they can sell them readily by the dozen to dealers, with whom the parcel-post puts them in easy communication; but the thing must be stopped if only thirty-five or forty young birds are allowed to be hatched in a season, and those the smallest and weakest of their race, the outcome of the third laying of one egg, which is the Bonxie's last effort to perpetuate her race, when the four eggs of the first and second laying have been ruthlessly taken from her. This robbery, however, would be stopped if the natives could be assured that they had really no right to take the eggs. There are only some half-a-dozen of them who do it habitually, and if one or two of these could be caught and fined the trade in eggs would come to an end. But if the man who takes an egg is bad, what is to be said of the man who shoots the parent birds in the breeding-season? The excursionist who comes to the island for a few hours, with fifty or sixty others, does no harm. If he brings a gun at all he is watched and followed, and he would certainly not be allowed to shoot anything so precious as a Bonxie; therefore the story that a dozen carcasses were found after the steamer had been at the island is a statement based on no particle of truth; but there has been this year, between my two visits, a party of men who, in the close-time, shot day and night, week-day and Sunday, and either killed very many more than the two birds they have owned to, or else were past-masters in the art of disturbing other people without getting what they were trying for. Men who shoot a single specimen for a particular purpose could be forgiven; men who pop away at defenceless birds, and kill them almost literally on their nests, ought to be told that neither gentlemen, sportsmen, nor naturalists can regard their deeds with anything but the strongest disapproval.—ADELAIDE L. TRAILL (23, Duke Street, Edinburgh).

The Great Skua on Foula.—Mr. Barrington (p. 391) repeats “that only two Great Skuas were shot, or fired at, in order to verify a very interesting fact apparently unrecorded by naturalists,”—by which, I presume, he means his discovery of the colour of the sexes, and that of a dark and a

light bird being apparently always paired. So far so far well ; but I am of opinion that in order to prove anything further, the sacrifice of many more Skuas would be necessary,—a course all true naturalists must deprecate, and certainly avoid doing, at least in Great Britain. As to what Mr. Barrington says, “As to the force of example, it is valueless in Foula,” Mr. Barrington should remember there is no law at present against taking eggs, but there is a law against shooting birds, and I know myself that there is a wholesome fear, amongst the people in the island, of breaking this law. But if gentlemen go there, and break the law as regards a rare British bird, they set a most undesirable example to the people. I myself had permission to kill three Great Skuas, but refused at once to set any such example to the natives, and told Mr. Scott himself, and his agents, that I would not do anything of the kind ; and no gun was taken ashore by any of our party, either on Sunday or week-days. I perfectly agree with Mr. Harold Raeburn, “that if one wishes to escape blame, in a case of this kind, the only plan is not to infringe the Wild Birds Protection Act.” I cannot bring myself entirely to agree with a suggestion of raising a fund to practically bribe the natives not to take the eggs. Whatever the difficulties may have been in securing a special Act of Parliament, in the case of the Sand Grouse, I feel convinced that to protect both the birds and the eggs of the Great Skua by law is the only practical and permanent way of securing the desired result ; and the head man of the island, or the proprietor himself, might quite well be held responsible if the law were then infringed. I quite agree with Mr. Barrington that gamekeeping, unless strongly backed by law, would be the most troublesome and expensive way of setting about preservation of the Skuas, knowing, as I do, and as a Scotchman under Scottish law, how difficult it often is to obtain convictions, even under the Game Acts, in several counties of Scotland. In conclusion, I beg to state that I have, in my collection here, a Great Skua, shot and sexed in Farøe, by Col. Feilden,—a light-coloured bird, marked on label “♂.” Shooting Great Skuas, therefore, in future, can serve little useful purpose, except to augment the collections of private individuals or museums, and, if this must be done, it should at least be effected where there is no law against it ; and it is also my opinion that there are enough specimens already in museums and in private collections to accentuate and prove Mr. Barrington’s discovery, and even to go further.—J. A. HARVIE BROWN (Dunipace, Larbert).

Greater Spotted Woodpecker eating young Titmice.—On June 18th Mr. Roberts, taxidermist at Norwich, received from Haileybury, in Hertfordshire, a Greater Spotted Woodpecker,—an immature bird, apparently of the year,—which contained the remains of two or more young birds ; one beak and three legs were nearly intact, and in the opinion of Mr. T. Southwell they were legs of a Titmouse, probably the Blue Titmouse,

either taken out of a nest or when leaving it.—J. H. GURNEY (Keswick, Norwich).

Black-throated Diver breeding in Norway.—In June last I observed, on a lake in Norway, a pair of Black-throated Divers with three young ones. The parents left them on seeing me, but returned in about ten minutes and swam off with them. I observed them very distinctly through a binocular. The nest was on an island, close to the water, but the fragments of egg-shells were too small to show the number of eggs, though in another case I found two nearly complete shells from which the young had escaped.—J. P. THOMASSON (Woodside, Bolton).

Number of Eggs of the Cormorant and Shag.—Speaking from my own experience in Ireland, in reply to the query of Mr. Raeburn, I have over and over again taken clutches of Shag with four eggs (never more), though three is the usual number. I have found eggs of this species in the first stage of incubation as early as the 15th April, and from having found young in several nests on the Saltees on the 14th May (not the 11th, as stated in Mr. Saunders' 'Manual'), I believe that Shags frequently lay here in the middle of April. The Cormorant is decidedly the commoner species on the Waterford coast, though the Shag—common as it is here—is far more abundant on the west coast of Ireland. I have found clutches of four Cormorants' eggs, in different years, on the 15th and 16th of April, though these were early instances. The usual number of eggs is four, three being certainly exceptional here; but I have taken a good many clutches of five, though I have never met with six in one nest. Mr. Raeburn does not state the dates when he found either species laying in Shetland, nor whether the Cormorants' clutches of three eggs were fresh or incubated. If I saw Cormorants' nests here with three eggs in each, I should conclude that the clutches were incomplete, unless I found them incubated.—R. J. USSHER (Cappagh, Co. Waterford).

Number of Eggs laid by the Shag.—In reply to Mr. Raeburn's question (p. 388), whether any of your readers have met with more than three eggs in a nest of the Shag, *Phalacrocorax cristatus*, I beg to inform you that I have often found four, in nests of both the Cormorant and Shag, off the west coast of Scotland. The number of eggs laid by birds is probably affected by the food supply. I know a district in Wales where the Tawny Owl rarely lays more than two eggs. At the well-known Black-headed Gullery at Scoulton the keeper once told me that "the take" had fallen from 1000 to 300 eggs a week, in consequence of the drought which prevailed at the time.—J. YOUNG (64, Hereford Road, W.).

Sooty Shearwater at Hastings.—Through the kindness of Mr. Thos. Parkin, of Halton, near Hastings, I am able to record the capture in that neighbourhood, on the 3rd of September last, of an adult male Sooty

Shearwater, *Puffinus griseus* (Gmelin). It has been well preserved by Mr. Bristow, of St. Leonard's-on-Sea, and is now in my collection.—WILLIAM BORRER (Cowfold, near Horsham).

Jackdaw killing Rats.—“During a stay at Northwich, Cheshire, in the spring of this year,” my brother wrote me, “while superintending . . . my attention was drawn, by Ashworth, an ex-gamekeeper, to the unusual behaviour of a Daw, which was seen to suddenly swoop down by the side of the river Weaver, and immediately rise again, with a full-grown Water Rat in its claws, to a height of about forty feet, when the rat was dropped. This the Jackdaw repeated seven or eight times, until the rat's life was extinct; then, giving a triumphant ‘caw,’ he picked the animal up in his beak, and made the best of his way to a neighbouring steeple. . . . The method resorted to in this case is exactly similar to the plan they have, on the sea-coast, of opening mollusks.”—C. E. STOTT (Lostock, Bolton-le-Moors).

Extraordinary abundance of the Corn Crake near Waterford.—In counties Dublin and Wicklow, both this year and last, there has been a very noticeable scarcity of Corn Crakes, and many persons have remarked it to me; whereas near Waterford these birds were so abundant this summer that during the cutting of a meadow of perhaps four acres a hundred or more were driven out, the last perch or so that was left uncut in the centre of the field being literally alive with them. It was a curious sight to watch the Crakes rising in twos and threes from the ever-diminishing patch of grass, or running, mouse-like, among the swathes of fresh-cut hay, while the hapless young were destroyed in dozens by the machine.—ALLAN ELLISON (Trinity College, Dublin).

Increase of the Redstart in West Scotland.—When at Ballachulish for a short time in August last, I was much struck by the extraordinary numbers of Redstarts. The birch-woods on the sides of some of the hills were full of them, whereas I did not see a single bird of this species when at the same place five years ago, although there were, no doubt, a few pairs in the district. Unless the increase is merely local, it will be strange if this bird does not very shortly make its appearance in the Hebrides.—ARTHUR H. MACPHERSON.

Nesting Habits of the Dipper.—Your correspondents will observe that when I used the words “never in a tree,” speaking of the position of the Dipper's nest (p. 314), I referred merely to the breeding habits of this bird as observed by myself in the Co. Wicklow, where I have never heard of a nest so situated. The position of some of the nests, described as having been found in trees, bears a strong resemblance to the ordinary situation in a bank or under a bridge. Mr. Goldsmith (p. 352) describes a nest against the trunk of a willow tree, supported by the projecting stump of a branch;

and Mr. Blagg (p. 393) mentions another somewhat similarly placed on the trunk of an ash. Both of these remind one of the nests placed on stones projecting from the masonry of bridges, as described on page 314. The position of the nest on the post and rail is exceedingly like that of some of those situated in trees. It is amusing to notice how young Dippers, still unable to fly, will if disturbed from their nest flutter into the water and escape by floating down the stream.—ALLAN ELLISON (Trinity College, Dublin).

Blue-throated Warbler at Sheerness.—On Sept. 17th I had the pleasure of seeing one of these pretty little birds as it was hopping about among some masses of *Atriplex* and *Chenopodium* growing at the foot of the sea-bank beyond Marine Town, Sheerness. It was quite tame and allowed me to look at it for a considerable time as it ran in and out among the plants, occasionally snapping at some insect or flitting off to a stone on the adjacent shingly beach, where it sat and watched for a few minutes, and then returned to the *Atriplex*, and went on with its search for flies, &c. It appeared to be a young bird in moult, for I could only see a few blue feathers on its throat, and there was no trace of a white or reddish spot.—GERVASE F. MATHEW (H.M.S. 'Tyne,' Gibraltar).

Scarcity of the Spotted Flycatcher.—With respect to the notes which have recently appeared under this heading (pp. 352, 394), and the Editor's comment thereon, I can state that in the counties Dublin and Wicklow, Spotted Flycatchers did not seem less plentiful this year than usual. On May 24th, during an excursion of the Dublin Naturalists' Field Club, we observed quite a flock of these birds among the trees at Poulaphuca Waterfall, near Blessington, Co. Wicklow. On August 13th, near Shillelagh, I observed perhaps a score of Flycatchers, some of them young, still fed by their parents, in company with Creepers and several species of Tits, collected in a group of alders on a river-bank. In the neighbourhood of Waterford also I observed no scarcity of Flycatchers.—ALLAN ELLISON (Trinity College, Dublin).

Kingfisher flying into a House.—One often reads of birds flying against glass, and sometimes into a room, and possibly the following occurrence may be thought worthy of a note :—Early on the morning of September 7th a Kingfisher flew into the dining-room of an old farm-house in a neighbouring village. The window faces the south, and is shadowed by a wing of the house which runs to the east, so that the room is not a light one, and the window does not show out at all brightly from the outside. Is it possible the bird was pursued by a Hawk? or what could have induced it to fly into the room?—HENRY F. ALLISON (Beckingham, Newark). [The bird was probably deceived by the reflection of trees and shrubs in the window-panes.—ED.]

SCIENTIFIC SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.

October 1, 1890.—The Right Hon. Lord WALSINGHAM, M.A., F.R.S., President, in the chair.

The Rev. Dr. Walker exhibited, and read notes on, a long and varied series of forms of *Crymodes exulis*, collected in June and July last in Iceland. In reply to a question by Lord Walsingham as to whether all the forms referred by Dr. Walker to *Crymodes exulis* had been identified as belonging to that species, Mr. Kirby said the species was a very variable one, and that several forms had been described from Labrador and Greenland. Mr. South stated that he had examined Dr. Walker's specimens, and he believed that most of the forms exhibited had been described by Dr. Staudinger in his papers on the Entomology of Iceland.

Dr. Sharp exhibited a specimen of *Ornithomyia avicularia*, L., taken near Dartford, to which there were firmly adhering—apparently by their mandibles—several specimens of a mallophagous insect. He also exhibited some specimens of fragile Diptera, Neuroptera, and Lepidoptera, to show that the terminal segments in both sexes might be dissected off and mounted separately without the structures suffering from shrivelling or distortion. Dr. Sharp also said, in reference to the statement made by him, on p. 421 of his paper recently published in the 'Transactions' of the Society, as to the number of the segments of the abdomen, and the position of the genital orifice in the female of Hemiptera-Heteroptera, that he had recently been making some dissections, and found that the structures externally were difficult of comprehension, and he now thought that the statement he had made from observation, without dissection, might prove to be erroneous.

Mr. G. F. Hampson exhibited and remarked on a series of *Erebia melas*, taken in July last, in the Austrian Alps (Dolomites), by Mrs. Nicholls. Captain Elwes observed that this species was abundant in the Pyrenees; but although he had frequently suggested to Dr. Staudinger and other European lepidopterists that it probably occurred in the Swiss or Austrian Alps, he had never been able to obtain specimens from any part of Europe except the Pyrenees; and that it had been left to an English lady to be the first to take a species of *Erebia* new to these Alps. He added that the species only frequented very steep and stony slopes on the mountains, so that its capture was attended with difficulty.

Mr. M'Lachlan exhibited specimens of an extraordinary Neuropterous larva found by Mr. B. G. Nevinson in tombs at Cairo. He said that this larva had been assigned to the genus *Nemoptera* by Schaum, who described it as having been found in tombs in Egypt (Berl. Ent. Zeitschrift, vol. i.);

and Roux had previously (Ann. Sci. Nat. t. xxviii) described and figured it as an abnormal apterous hexapod under the name of *Necrophilus arenarius*. Mr. Nevinson supplemented these remarks with an account of his capture of the specimens in the Egyptian tombs.

Mr. G. T. Baker exhibited a series of forms of species of the genus *Boarmia* from Madeira; and also a series of melanic varieties of *Gracilaria syringella* from the neighbourhood of Birmingham.

Mr. W. F. H. Blandford exhibited and remarked on a series of specimens of *Dermestes vulpinus*, which had been doing much damage to the roofs of certain soap-works in the neighbourhood of London, where it had no doubt been introduced with bones and fat.

Mr. R. W. Lloyd exhibited a specimen of *Carabus catenulatus*, in which the femur of the right foreleg was curiously dilated and toothed. He stated that he took the specimen at Oxshott, Surrey, on the 27th September last.

The Rev. C. F. Thornehill exhibited a black variety of the male of *Argynnis aglaia*, taken by himself in July last on Cannock Chase; also a number of living larvæ of a species of *Eupithecia* feeding on the flower-heads of *Tanacetum vulgare* collected in a limestone quarry in Leicestershire. He expressed some doubt as to the identity of the species, but the general opinion was that the larvæ were only those of *Eupithecia absynthiata*.

Mr. G. Bryant sent for exhibition a variety of the larva of *Trichiura crategi*.

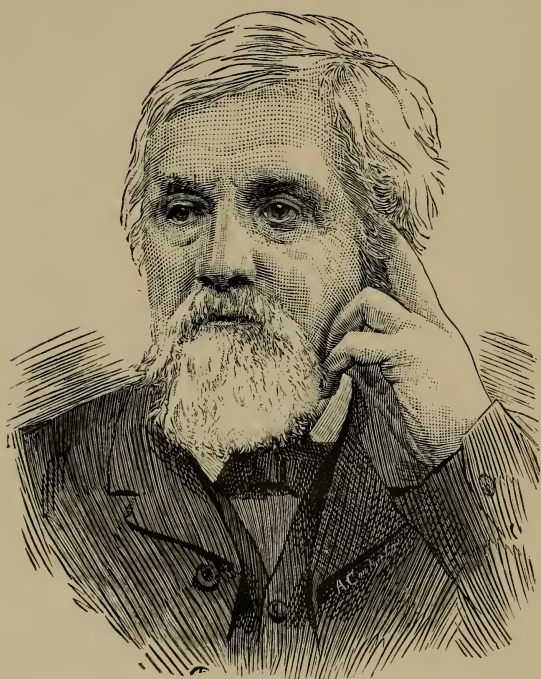
Mr. C. G. Barrett exhibited a specimen of *Plusia moneta*, Fabr., a species new to Britain, taken at Reading by Mr. W. Holland in July last. It was stated that the first specimen of this species captured in England had been taken at Dover last June, and is now in the collection of Mr. Sydney Webb, of that town. Mr. Kirby said that Mynheer Snellen had reported this species as being unusually common in Holland a few years ago.

Mr. W. Dannatt exhibited a variety of *Papilio hectorides*, female, from Paraguay. Mr. Osbert Salvin said he believed he had seen this form before.

Mr. C. J. Gahan exhibited a curious little larva-like creature, found by Mr. Green in a rapid mountain stream in Ceylon, and observed that there was some doubt as to its true position in the animal kingdom. It was made up of six distinct segments, each of which bore a single pair of laterally directed processes or unjointed appendages. Mr. Hampson remarked that the appendages were very suggestive of the parapodia of certain chætopod worms, but that all the known polychætous worms were marine. Lord Walsingham and Mr. M'Lachlan expressed an opinion that the animal was of myriopodous affinities, and was not the larva of an insect.

Mr. Baker read a paper entitled "Notes on the genitalia of a gynandromorphous *Eronia hippia*."—H. Goss, *Hon. Sec.*





JOHN HANCOCK.

Born, 1806.

Died, 1890.

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MEMOIR OF THE LATE JOHN HANCOCK, OF NEWCASTLE-ON-TYNE.

A TRAIN of old memories is awakened by the lamented death of John Hancock, which took place at Newcastle on October 11th, in the eighty-fourth year of his age. To have known a man who had conversed with Bewick, who was a contemporary of Selby, Yarrell, St. John, and Hewitson, and who with his brother, Albany Hancock, and his friends Joshua Alder, George Johnstone, of Berwick-on-Tweed, and Robert Embleton, helped to found in 1846 the "Tyneside Naturalists' Field Club," was indeed a privilege; and by his death one of the last links of the chain which bound us to those well-known pioneers of British Zoology has come to be severed.

He was the third son of Mr. John Hancock, saddler and iron-monger at the Bridge End, Newcastle, and was born there in the house above the shop about 1806. His father was a man of cultivated tastes, an ardent student of Natural History, and formed a good library and collections in the departments of study to which he devoted himself. He died at the early age of forty-three in 1812, leaving a widow and six children, of whom the eldest was only eight years of age. In process of time her eldest son Thomas and her third son John entered into the business at the Bridge End, and for many years it was carried on under the style of T. and J. Hancock. The younger brother devoted himself especially to the study of Ornithology and Entomology, and, with the co-operation of several of the friends

above named, the Natural History of the district was carefully explored.*

At this time there lived in Newcastle Mr. R. B. Wingate, a good ornithologist and professional birdstuffer, who was also the friend of Thomas Bewick (the celebrated wood engraver). With Wingate Hancock was intimately acquainted, and often visited him, saying "he was the first man in England who ever stuffed a bird like life." It might perhaps be said his acquaintance with Wingate had some influence on his own career, for in 1826 or 1827 he turned his attention to birdstuffing, an art in which he soon learnt to excel.

In 1851, at the Great Exhibition in London, Mr. Hancock exhibited a series of groups illustrative of falconry. They are now in the Newcastle Museum, and form part of the collection he presented to the Natural History Society. Of these groups it has been said that they were "vitalised by the feeling not of the mere birdstuffer, but of the poet, who had sympathised with Nature, felt the life of birds as sometimes kindred with his own, and, inspired with this sympathy and labouring to utter it, had thus re-created life, as it were, within the grasp of death." He was one of the closest and most careful observers of bird-life in this country, and his opinions were held in the highest esteem by all ornithologists.

He was not a great writer, and his printed contributions to zoological literature were principally short papers communicated to the Natural History Transactions of Northumberland and Durham, and of the Tyneside Naturalists' Field Club. In the 1847 edition of Bewick's 'British Birds' he drew up the synopsis, and revised the nomenclature of the entire work. In 1853 he published a series of lithographic plates, drawn on the stone by himself, illustrating the groups of birds shown by him at the Great Exhibition in 1851. In 1874 he published in the Natural History Transactions above referred to a "Catalogue of the Birds of Northumberland and Durham," illustrated by fourteen plates lithographed from his own drawings. In the Introduction to this Catalogue he gives a most interesting account of some of the great centres of bird-life in the two counties,

* For these details of his early life we are indebted to his friend Mr. Wright, for many years Curator of the Newcastle Museum.

since destroyed, and his record of a day's work on Prestwick Car (p. xii) will make many an ornithologist sigh for the days that are no more. His discovery of the nest and eggs of the Wood Sandpiper, *Totanus glareola*, on this piece of wild moorland in June, 1853, was an event of great interest to naturalists, and his record of the capture of no less than eighty-two specimens of the Waxwing, *Bombycilla garrula*, in different parts of Northumberland during the autumn and winter of 1866—67, shows the close attention which he paid to the occurrence of rare birds in his own county.* Nor should we omit to mention his account of the breeding of the Tufted Duck, *Fuligula cristata*, in Northumberland (Trans. Tyneside Nat. Field Club, vol. v. (1860—62), pp. 39—41), and his report of the occurrence for the first time in Great Britain of the Rufous-naped Nightjar, *Caprimulgus ruficollis* ('Ibis,' 1862, pp. 39—40), and of the Spotted Eagle, *Aquila navia*, at Cresswell, on the Northumberland coast (Nat. Hist. Trans. Northumb. vol. viii. p. 217).

Charles St. John thought that the Pink-footed Goose, *Anser brachyrhynchus*, used to breed on one of the Sutherlandshire lochs, but, on Hancock accompanying him there to settle the point, it was found that the birds in question were all "Grey-lags," *Anser ferus*.

In conjunction with his brother Albany, he contemplated publishing a work on the British Birds, with plates, in quarto, but this was never carried out, although he had prepared some of the drawings. He was a member of the Literary and Philosophical Society, and for some years a member of the committee. He was one of the original members of the Tyneside Naturalists' Field Club, a member of the Natural History Society of Northumberland and Durham, and one of its vice-presidents. The interest he took in its affairs is shown by the energy and enthusiasm he devoted to the building of the new Museum, and the munificent liberality in presenting to it his unrivalled collections.

The old Museum in Westgate Street had long become too small and cramped for the collections of the Natural History Society, and the project of a new building in a more suitable locality originated with John Hancock. With enthusiastic

* Nat. Hist. Trans. Northumb. & Durh. 1867, p. 281.

energy he set himself to carry it out. By his personal influence and the liberality of his personal friends he was enabled to see the new building begun in 1880. In 1881 he presented his entire collection of British birds to the Museum, and in August, 1884, he had the satisfaction of seeing the new Museum opened by the Prince and Princess of Wales, in the presence of a brilliant assemblage, and had the pleasure of receiving their warm congratulations on the success of his labours.

Twenty-seven years, alas! have passed away since we first saw John Hancock, and commenced an acquaintance and a correspondence which will ever be remembered with pleasure. In the month of May, 1863, a month which will always be memorable from the impressions then received of Tyneside and Coquetdale scenery, of Chillingham Castle, a visit to the Farne Islands with Robert Embleton, of Beadnell, and last, but not least, a visit to Selby's famous collection of birds preserved at Twizell House, near Belford, we left the north country moors, and the coast by North Sunderland and Dunstanburgh Castle, to spend a few days in the busy, smoky town of Newcastle-upon-Tyne. Strolling up to St. Mary's Terrace, we knocked at the door of No. 4, where Hancock resided, and surprised him, characteristically, in the act of skinning a Sand Grouse!

It will be remembered that 1863 was the year of the first great visitation of this remarkable bird to the British Islands, and more than a score had been killed in different parts of the Tyneside district. Three were shot out of a flock of twelve or fourteen near Thropton, on the Coquet, on May 21st, and two of these were in process of being preserved by Hancock at the time of our visit on May 23rd.* Our meeting was a very cordial one, for we had many mutual friends in the north country, and although first visits are usually brief and formal, we found so much to talk about, that the interview which commenced at ten o'clock in the morning was only terminated at 6 p.m. by the recollection of a dinner-engagement at Benwell, where in an hour's time we were destined to meet again. Several hours that day had been devoted to an inspection of the Museum, then at the old house in Westgate Street, and we shall never forget the animation with which Hancock discussed the question of the races of Northern

* See Trans. Tyneside Nat. Field Club, vol. vi. (1863—64,) pp. 100—103.

Jerfalcon, illustrating his instructive remarks by the production of specimens which he handled as tenderly as if they had been delicate flowers.* Hybrid Grouse, Ducks, Seafoal from the Northumberland shores and islands, and the eggs of many of them collected by himself in Scotland and Norway, were all examined and admired in turn; while we inspected with a kind of reverential awe some of the very specimens which had been handled by Bewick, and engraved by him for his inimitable work on British birds. The examples of Hancock's own skill as a taxidermist were particularly striking, from their marked departure from conventional types, and from his successful attempt to represent birds in action. Some of his groups of birds in the Museum at Newcastle-on-Tyne, and others which we have since seen at Exeter and Bath, have in our opinion for their life-like appearance never been excelled. But this, of course, amongst ornithologists is a matter of notoriety. His drawings were not so good. The illustrations to his 'Catalogue of the Birds of Northumberland and Durham,' published in 1874, coming as they do from his own hand, are very disappointing, some of them being stiff and unnatural in their pose, quite unlike the skilfully-stuffed specimens in the Museum. The best of these drawings is that of *Alca impennis*, the Great Auk, from an adult bird in summer plumage purchased on the Continent by Hancock in 1844, and since presented by him to the Newcastle Museum. It is remarkable for having been most successfully re-stuffed and re-modelled by Hancock, who extracted all the bones which had been left in the skin originally, and which are now exhibited side by side with it. The mention of this interesting bird, of which another and immature specimen is preserved in the Newcastle Museum, reminds us of Hancock's skill in modelling.

On the occasion of our visit he opened a drawer in his egg-cabinet in which were, to all appearance, a dozen eggs of the Great Auk! Noticing our start of astonishment, he exclaimed, "Don't be surprised, only one of those is genuine; which is it?" We were unable to say; so closely had he imitated eleven genuine eggs which had been lent him for the purpose by various owners.

* His views on the different species or races of Jerfalcon will be found stated in Brit. Assoc. Reports, 1838, pt. ii., p. 106; Ann. Nat. Hist. 1839, pp. 241—250, and 1854, pp. 110—112.

They were made of plaster of Paris, of the exact size and shape of the originals, hollow, of the right thickness, and with holes at the ends, as if they had been blown. The markings, too, were skilfully imitated. So perfect, indeed, was the imitation, that when Hancock returned to its owner a genuine egg which he had borrowed for modelling, together with a copy of it as a return for the loan, the recipient was unable to decide which was the original, and wrote to Hancock begging him to come and resolve his doubts. The anecdote of his living Greenland Falcon, which, sitting hooded on the perch in his room, was mistaken by a visitor for a stuffed bird, and thought by him to be a little stiff in its pose, is told with gusto in his 'Catalogue' above referred to.

It is to be regretted that he has not left in print more of his personal reminiscences, and other observations; to hear him discourse of his birdsnesting with Hewitson in Norway, and of his rambles with Charles St. John in Sutherland, made one long for the retentive memory of a Boswell to rescue from oblivion such delightful narratives.

He had no great taste, as we have said, for writing. Even when engaged upon his 'Catalogue' of north-country birds, when the opportunity occurred for saying much that he could say about some of the rarer species with which he was familiar, from observation of them in their proper haunts, he contented himself with a few brief remarks—much too brief to satisfy those who knew what knowledge he possessed, could he only have been induced to communicate it.

With a view of attaining an accurate acquaintance with the form and habits of Falcons, he trained nearly all the British species (Cat. B. Northumb. p. 12). including one or two Greenlanders and Icelanders which he got from the late Duke of Leeds, and through some of the local ship-owners. There is a tradition amongst falconers that he once killed a young Blackcock with an eyess Falcon, a feat which we have since seen accomplished in Hancock's own county by a Falcon belonging to Major Hawkins Fisher.

His friendship with Hewitson, the author of the well-known work on 'British Birds' Eggs,' occasionally brought him south on a visit to his friend at Oatlands, near Weybridge, where, in 1848, Hewitson had purchased some land and built himself a house. On these occasions we seldom missed an opportunity of

seeing him,—“on migration,” as he said,—and of renewing an acquaintance which would have been greater but for the distance which usually separated us. In this charming retreat at Oatlands, where Hewitson lived and worked for thirty years, he spent many a pleasant week, and, surviving his friend, who died in 1878, lived to inherit the property which was bequeathed to him, and which he maintained until his own death. It was here, in the summer of 1884, that he personally observed a young Cuckoo ejecting the young of its foster parent, the Hedgesparrow, of which he has written an interesting account in ‘The Zoologist’ for 1886 (pp. 203—207).

But, in spite of the charms of this south country home, he could never separate himself long from his native town, where the whole interest of his life was really centred. He had always at heart the completion and improvement of the Museum at Newcastle, and kept up his house in St. Mary’s Terrace as a *piéd à terre* from which to superintend the additions which were constantly being made under his direction.

Some three years ago he had an attack of paralysis, which at his time of life left him in an enfeebled state. From this attack he never really rallied, and on October 11th last, after a few weeks of serious illness, he passed quietly away, to the great regret of all who knew him.

The portrait which accompanies this memoir is from a photograph by Mr. John Worsnop, of Bridge Street, Rothbury, Northumberland, for the use of which we are indebted to the Editor of ‘The Graphic,’ in which journal it was published on the 25th October last.

THE BOOTH MUSEUM AT BRIGHTON.

IN ‘The Zoologist’ for March last (pp. 92—96) we published a memoir of the late Mr. E. T. Booth, of Brighton, whose beautiful collection of British birds has, since 1876, been one of the chief attractions to naturalists visiting Brighton, although the Aquarium, from its greater accessibility, has doubtless always commanded a large share of public notice.

In the memoir referred to, after describing the Museum building, and the nature of its contents, we announced that in pursuance of directions given in his will, Mr. Booth’s executors

had offered the entire collection to the Trustees of the British Museum, on the condition that it was not to be amalgamated with the general collection of mounted birds there, but kept distinct as the "Booth Collection," and we expressed a hope that this offer would be accepted.

We were not then informed of the fact that the collection was intended by the testator to be kept intact at Brighton—not in London, as we had been given to understand.

This restriction placed so much difficulty in the way of accepting the gift that, after due consideration, the Trustees of the British Museum felt obliged reluctantly to decline it. In pursuance of Mr. Booth's wishes, the Museum building and its contents were then offered to the Corporation of Brighton, who accepted it, and the 3rd November last was fixed for the ceremony of a formal delivery of the gift by the executors.

On that day, accordingly, a numerous company of residents and visitors at Brighton assembled in the Museum building in the Dyke Road, where they were received by the Mayor, Mr. Mainwaring (who wore his robes and chain of office), and the Town Clerk, Mr. Tillstone. Mr. George Brodrick, as solicitor to Mrs. Booth, having formally presented the keys of the building to the Mayor, the latter, addressing the meeting, said that they were met to do honour to their deceased friend, Mr. Booth, and at the same time to receive the valuable gift which he had left to the town. They saw before them the work of a lifetime, a collection unique of its kind, and he trusted that it might be the commencement for the town of Brighton of such a Natural History Museum as the world had not yet seen. He was quite sure that when they looked carefully at the contents of the many cases, they would be perfectly satisfied that though they might be equalled, they could never be surpassed. This Museum would be of very great advantage to the town of Brighton. Not only would it add to her attractions, and afford another place in which people could amuse themselves for hours, but it would form an institution where Natural History could be learnt, and where artists, particularly, could study the forms of British birds. He was grateful to the Trustees of the British Museum for having declined the offer first made to them, and glad to see present amongst them on that day their representative in the person of Professor Flower, the Director of the Natural

History Museum in London, who, he hoped, would address the meeting.

Being thus called upon to speak, Prof. Flower said they were assembled in a room that contained a collection in many respects unequalled by any other in the world. In the first place, it had been entirely the work of one man in a life of no great length,—he had only reached the age of fifty when he died,—but who devoted an extraordinary amount of energy and perseverance, and also expended a very considerable amount of money, in making it as perfect as possible of its kind. They must not suppose for a moment that Mr. Booth was the only man who ever made a collection of British birds. Birds had always been favourites, and the birds of our own islands, though far less remarkable for form, size, and brilliancy of plumage than those of other lands, had for many reasons been peculiarly attractive. The national pride which causes us to love our countrymen better than foreigners includes birds as well as other bipeds. It had, therefore, been the aim of many public museums, as well as private lovers of natural history, to make as complete a collection of British birds as possible. But it was one thing to have a collection adapted and conveniently arranged for reference and study by the learned ornithologist, or consisting of as many specimens as could be crammed into the smallest space they could occupy, without regard to their condition or their order, and quite another thing to have a collection under such circumstances and so arranged as to convey the fullest possible amount of information and instruction, and to excite the greatest possible interest in the minds of those who, like the majority of us, were not in a position to devote any large portion of our scanty leisure to their study. For this latter purpose he had no hesitation in saying it would be difficult to imagine a collection so complete, and so admirably arranged and displayed, as the one in which they were. He purposely avoided comparison with the beautiful series, showing the nesting habits of birds, now being arranged in the National Museum in London under the supervision of Dr. Günther, because the objects of the two were in many respects different, as were also the methods in which they were carried out. They must recollect that the collection was formed by one who was an intense lover of bird-life, one who spent the greater part of his own life, night and day, summer and

winter, in watching their manners and actions in their native haunts, and who knew from his own keen observation exactly what were their favourite surroundings, what kind of soil or of rock, or of tree or of flower each species would be most likely found among or near. Most collections contained only the birds themselves. Here we had not only birds, but the home in which the birds dwelt, most carefully and accurately reproduced, and on such a scale and in such a manner as had never been done anywhere before. As for the birds themselves, not only were they the finest and best specimens of their kind that could be procured, and in many cases showing various stages of plumage, at different ages and different seasons of the year, but far more care, knowledge, and artistic skill had been expended on their mounting than was generally the case either in museums or in private collections. The art of taxidermy, though quite an old one in Europe, extending back certainly three or four hundred years, had made very little progress until very recent times, and even now, though there was so great a development of nearly all branches of art, it had had far too little attention bestowed upon it. Very few people seemed to know the difference between a really well-mounted bird or mammal and an inferior one, but there was as much difference between them as between a picture of a lion by Landseer or Rosa Bonheur and a picture of the same animal depicted by a village artist on the sign of a public-house. And yet so little did people understand this, that they went on filling museums and collections with wretched examples, and continued to pay the unfortunate bird-stuffer a miserably inadequate sum for work which should be the work of a real artist, and which could only be done by a man who not only had devoted great care and attention to the subject, but had also the rare gift of inborn genius. He was very critical, indeed, as they could see, on the subject of bird-stuffing, and he was happy to be able to say, and every time he entered that museum it struck him more, that the greater number of specimens in it, though, of course, they were unequal, were most admirable specimens of the art of taxidermy. Many of them were very fine indeed, all were above the average, and he believed there was not a single bad one among them. The collection was eminently adapted for public instruction. If the advantages to be derived from it were only the momentary pleasure of looking

at it here, it would be of comparatively little account, but if properly used, it might be the means of spreading knowledge and interest which would affect the whole course of some of their lives. They had all cares and troubles enough in their passage through this world, and they were so often brought in contact with so much that was mean, disagreeable, and ugly, that they ought not, for their own sakes, as well as for the sakes of those among whom they lived, to neglect any sources of joy and gladness that might be offered to them. The man who walks through life with his eyes open to beauty, wherever it could be found, was by so much a happier and a more useful man than one whose eyes were closed to it. The observation of bird-life was one among many of unfailing sources of pleasure. They could not walk upon their downs, or along their cliffs, or on their sands, with their eyes open without seeing birds innumerable, though he believed that many never did see them. That museum, however, should teach them to see these, to know them one from another, to make them their friends and companions, and, rightly used, it might be a source of making many lives happier, and sweeter, and purer than they otherwise would be. For such a collection as that ever to be dispersed or destroyed would be a national misfortune. The Mayor had alluded to the fact that it was offered to the British Museum, and if he had had any idea then that, if they did not accept it, it would be destroyed or dispersed, he should have felt it his duty to advise the Trustees to take it over. He received, however, intimation at the time of the fact that the Corporation were not only willing, but most anxious to take charge of the collection, and maintain it. Although it would have been a great privilege to him to have been its official guardian, he rejoiced to think it was going to remain in Brighton, and that they had expressed their determination to maintain it for the benefit of their fellow-townsmen and for visitors. The great central national collections were the fitting repositories of many specimens of natural objects, and works of art. Such as are unique, and such as are necessary for the researches of advanced students who require facilities for their investigations, which can only be obtained by the direct comparison of a large series of specimens one with another, ought to be in them. But, on the other hand, the more collections like that—adapted for general instruction—were to be met with in other great centres of

population, the better it would be for the welfare of the country generally. Apart from the fact that the collection was made at Brighton, and a large number of the birds obtained in the immediate neighbourhood, Brighton seemed to be a particularly suitable place for preserving a museum like this. They had a vast number of visitors, who come for the purpose of seeking repose or health, for whom such a light, interesting, and easy occupation as is afforded by learning what that museum could teach, ought to be the best that can be found. It only needed to be better known, and, if possible, without disturbing its arrangement and order, to be placed in a more convenient and central situation to be very much more widely appreciated than it had been hitherto. In conclusion, he said he was sure that he was expressing the feelings of friends around him who were interested in the advancement of the Natural History sciences, and of many more who were unable on account of other engagements to be present, in thanking the Mayor and Corporation for asking them to come to this interesting meeting, and in congratulating them on possessing such a valuable addition to the many attractions of the town.

The Mayor having announced that the Museum would, for the present, be carried on in the same way as hitherto, and that it would be looked after by the Museum Committee under the chairmanship of Mr. Crane, one of the most enthusiastic of their fellow-townsmen who were naturalists, the formal proceedings terminated.

In the evening a banquet, presided over by the Mayor, was given at the Royal Pavilion, Brighton, to which about eighty guests sat down, including Aldermen Sendall, Cox, Brigden, Soper (the Mayor elect), Abbey, Davey, Ewart, Hawkes, Martin, Reeves, and Wood; Councillors Booth, Colbatch, Clark, Daniel, and Tester; Mr. H. Willett, Mr. Crane, and most of the clergy of Brighton and the neighbourhood. The visitors also included several well-known naturalists, among whom were invited Prof. Flower, C.B., F.R.S., Director of the Natural History Museum, Dr. A. Günther, F.R.S., Mr. R. B. Sharpe, Mr. Henry Seebohm, Count Salvadori, Mr. W. Borrer, Mr. T. J. Monk, and Mr. J. E. Harting, though some of them were unavoidably prevented from taking part in the proceedings.

In conclusion, it may be stated that a detailed description of the Booth Museum and its contents, by the Editor of this journal, was published in 'The Field' of the 16th Sept. 1876, when the Museum was first thrown open to the public.

NOTES AND QUERIES.

MAMMALIA.

Alleged antipathy of Cattle to Deer.—In the Report on the Chillingham cattle, read at the meeting of the British Association in 1887 (Zool. 1887, p. 405), is the following statement, which is surely an error:—"The cattle live on good terms with the Red-deer, but they will not tolerate Fallow-deer or Sheep in the park." On the 13th September last, when at Chillingham, I watched a small party of Fallow-deer for some time, as they fed on the hill-side with five of the white cattle; and the keeper, Michie, assured me that both Red- and Fallow-deer live in perfect harmony with them, and, if in any way alarmed or disturbed, generally seek safety in their company.—CHAS. OLDHAM (Ashton-on-Mersey).

[In Mr. Assheton Smith's park at Vaynol, near Bangor, where we have just spent three weeks, white cattle and Red- and Fallow-deer roam together, and no such hostility as that above referred to has ever been noticed.—ED.]

English Deer Parks.—I feel that your readers will be interested to learn that I am getting on fairly well with my projected book on this subject; but several owners of parks, who have had my circular sent to them to fill up, have not as yet returned it. May I venture to ask them, through the medium of 'The Zoologist,' to be good enough to do so as soon as possible? If the papers are returned quickly, I think the book might be out in the spring; but of course I have to rely entirely on the kindness of the owners of parks.—J. WHITAKER (Rainworth, Notts).

Hedgehog v. Rat.—A friend residing in the North of Ireland wrote to inform me that her garden was over-run by Rats, and that her gardener assured her that if she could procure and turn down some Hedgehogs in the said garden the Rats would disappear. I accordingly sent her two or three of our native Hedgehogs, and in reply to my enquiries concerning the success of the experiment, lately received a letter from the lady above referred to, of which letter I copy the last sentences:—"As far as I can remember, the Hedgehogs were introduced into this garden in March last, and remained alive for six months. In about a fortnight from the time that they were put in, I had nothing eaten by Rats, and, in fact, never saw one. The garden is about two acres and a half in extent. The

Hedgehogs either died or were killed by terriers, but certainly as soon as the precious animals disappeared, sure enough the vermin appeared again." My friend asks for another consignment of Hedgehogs, which I hope to despatch shortly, on the condition that at least they shall not be destroyed by dogs. I should be very glad if any of your readers can give me any information, from their own experience, on the subject of Hedgehog *v.* Rat.—LILFORD (Lilford Hall, Oundle).

Wild Cat in Shetland.—Mr. James G. Laurensen, merchant, Lerwick, while shooting Rabbits, on Tuesday, October 7th, had rather a strange adventure with a Wild Cat. He went down the cliff east of Bressay Lighthouse, to about 200 feet from the sea, where he shot a Rabbit, and was in the act of picking it up when he saw the Wild Cat in pursuit of a Rabbit; he fired at it, but did not kill it, as it was too far away for No. 6 shot, which he was using, to take effect; it immediately bounded up the rocks, and sprang at him; he had the left barrel ready, and shot it while in the act of springing on him: it however alighted on his breast, and tore his wrist with its claws. It weighed 15 lbs., and measured 38 inches from nose to tip of tail; its chest measured 17½ inches.—THOMAS MARSHALL (The Store, Stanley, N.B.).

BIRDS.

Occurrence on the Welsh Coast of *Æstrelata torquata*, Macg.—In the month of December a rare Petrel from the South Pacific was shot off the coast, in Cardigan Bay, between Aberystwith and Aberaeron, and was taken by the fisherman who shot it to the clergyman of the parish. Seeing that it was an uncommon bird, and being unable to name it, he suggested that it should be offered to the local taxidermist for preservation. The latter accordingly mounted it, and it has recently been purchased from him by Mr. J. W. Willis Bund, who brought it to me for identification. Through the kind assistance of Mr. Osbert Salvin, who has made a special study of the Petrels, it has been determined to be, without doubt, a specimen of *Æstrelata torquata*, whose true home is in the South Pacific Ocean. It was first described and named in 'The Zoologist' for 1860 (p. 7133), by John Macgillivray, who obtained it, in 1859, at Aneitum, one of the New Hebrides group of islands. Other specimens have since been procured in Fiji, as noted by Mr. Salvin in 'The Ibis' for 1888 (pp. 359, 360). The bird now before me is rather dark on the under-side; but this appears to be a variable character, as specimens in the British Museum vary from pure white on the under surface to nearly the colour of the present example. How it contrived to wander so far from its natural haunts, and reach the Welsh coast, is quite inexplicable, unless we are to assume that it was influenced by the Gulf Stream, which is so often alleged to bring us waifs and strays whose appearance on our coast cannot otherwise be accounted

for! Petrels seldom live more than a few days if captured alive, and it is therefore unreasonable to suppose that this bird could have been brought into British waters by human agency, and then contrived to make its escape. On Mr. Willis Bund's behalf I had the pleasure of exhibiting it at a meeting of the Linnean Society on November 6th, when, needless to say, it caused considerable wonderment amongst the ornithologists who were present. A description of the species will be found in 'The Zoologist,' as above mentioned, and some idea of its appearance, though not of its coloration, will be afforded by a glance at the coloured plate of its congener, *Cestrelata hæsitata*, which is given in the third volume of Stevenson's 'Birds of Norfolk,' edited and recently published by Mr. Thomas Southwell,—a volume which I do not doubt will be hailed by the readers of this journal with considerable satisfaction. Suffice it to say that the bird is about the size of *Larus minutus*, of a smoke-grey colour above and below, with a white face and throat, and an irregular white collar which suggested to its original describer the specific name *torquata*.—J. E. HARTING.

The Ornithology of Heligoland.—It is the mark of most Englishmen to desire to become tolerably acquainted with the animal life, to use a convenient but inaccurate phrase, of the countries which they may chance to visit. They may not care for the scientific classification of the lower animals, but they are undeniably fond of observing their habits. Now, in one department of Natural History, the little island we have at this moment in view presents a record which, in all probability, can nowhere else be approached within measurable distance. This is the Migration of Birds. Herr Gätke, the Government Secretary, has a collection of specimens, all killed upon the island, which is nothing short of astounding when considered in connection with the extremely limited area at his command. According to Mr. Henry Seebohm, an excellent judge, and himself the author of an admirable 'History of British Birds,' "one of the most valuable contributions to our knowledge of Ornithology that has ever been published is a digest of Gätke's observations for the year 1885." Other places, such as Malta and Gibraltar, are well situated for observing what are technically called the "fly-lines" of various birds. But no one as yet appears to have had the leisure or the inclination to carry out a series of systematic records of them, which should serve as data upon which all ornithologists might confidently rely. Perhaps neither Malta nor Gibraltar is climatically adapted for a lengthened course of observation at all hours and seasons, whereas Heligoland is, beyond all question, delightfully compact, never too hot, and rarely too cold, for manœuvres *sub dio*. It is impossible to tire oneself in surveying an area which barely touches two hundred acres, and yet one has to keep on the *qui vive* not only with a view to *genera* and *species*, but also to avoid taking the necessary three steps which would involve walking overboard. Despite these unusual facilities, however, it is

quite certain that Herr Gätke has worked with equal enthusiasm and patience to bring about the magnificent result with which he is justly credited; for, thanks to his labours, we read that "Heligoland is the only part of the world of which the Ornithology has been properly worked." What wonder, with so glorious a model before him, that "every boy on the island is a born and bred ornithologist"? There are in all about five hundred different birds which are known to either breed or winter in Europe. Of these rather more than two hundred (222, to be exact) are found in Great Britain and in Ireland during winter or summer, that is, over an area of about 122,000 square miles; whereas considerably more than three hundred, at one season or another, have been identified by the indefatigable Gätke in his tiny but most prolific domain, measuring, all told, four-fifths of a square mile. Truly a wonderful instance of the superiority of quality to quantity! Mr. Seebohm quotes freely from the Secretary's diary, which in good sooth contains some staggering entries. The language, in respect of numerals, is scarcely equal to the demands he would fain make upon it. Thus, on one night he notices "thousands of Great Tits"; on another, "tens of thousands of Sky Larks"; on a third, "immense flights of the Common Buzzard." A little farther on we find him recording the passage of "millions of Red-throated Divers," "countless numbers of Hedge-sparrows," "thousands of Jays," "myriads of Goldcrests," *und so weiter*. One of the most curious bits of reading extant in Natural History is Mr. Seebohm's own account of a "migration night" in Heligoland, when every native is on the watch with stick and lanthorn. The uninitiated cannot understand why a great arrival of feathered guests should be looked for on one night more than another; the native is endowed with a special sense, which enables him to foretell, almost unfailingly, the approaching migratory wave. The variety of birds is no less extraordinary than their countless multitude. "Perhaps the first bird you flush," says the historian, "is a Sky Lark; the report of your gun may start a Golden Plover or a Jack Snipe; then, may be, you see some small birds picking insects off the potato-leaves, and you presently secure a Little Bunting, an Aquatic Warbler, and a Shore Lark. Your next shot may be a Corn Crake, followed by a Ring Ouzel, a Richard's Pipit, or a Teal. Then, perhaps, a Great Spotted Woodpecker or a Short-eared Owl attracts your attention." There is assuredly no monotony here. And whence come they, whither go they, one and all? Not even the joint intelligence of Gätke-cum-Seebohm can adequately unfold this great mystery to us. That they do come, however, and do go, in numbers almost inconceivable, is a fact which has been ascertained beyond all suspicion of doubt. A strange experience is that of the lighthouse-keeper, whose beacon is sometimes the centre of a mass of bird-life, each unit madly struggling to reach the fatal light, only to fall, a bruised and lifeless little corpse, in the gallery which runs round

the building. He may "welcome the coming, speed the parting guest," but not rarely has he to remove a heap of slain, whose migration is henceforward for ever at an end, or is directed elsewhere than along the "fly-line" which touches Heligoland. In a little island where many things are strange there is surely nothing more inscrutable than this periodical *Wanderung*. That without a moment's warning the air above us should be filled with myriads of birds, apparently discharged like arrows from a bow, "perpendicularly down from the invisible heights," is a riddle which none as yet may rede. While so wealthy in Avifauna, these few acres are, naturally enough, almost wholly deficient in quadrupeds and reptiles. But, *en revanche*, the surrounding waters are alive with fish of many kinds, and Seals and Porpoises are often visible.—*From the 'National Review,' August, 1890.*

[It is with great satisfaction we are able to add that Herr Gätke's famous collection of birds, formed by him during many years' residence on Heligoland, has been purchased by Mr. Henry Seebohm for presentation to the British Museum; and we learn also that Herr Gätke's journal of observations on the Ornithology of this island is in a fair way towards publication.—ED.]

The Baltimore Oriole in Shetland.—Mr. H. Dykes Lloyd has recently forwarded for identification a specimen of the Baltimore Oriole, *Icterus Baltimore* (Linn.), which was caught alive, in an exhausted condition, on the 26th of September last, at Balta Sound, Shetland, by Mr. Andrew Anderson, a merchant of that place. Mr. Lloyd, for whom this bird has been preserved, writes word that another of the same species was seen on the same day at Haroldswick, but was not obtained. This species is so frequently imported to England from New York as a cage bird that we may not unreasonably assume that the pair which found their way to Shetland may have made their escape on being landed at Liverpool. It may not be generally known, perhaps, that the specific name "Baltimore" was bestowed by Linnæus not on account of its supposed abundance in the neighbourhood of Baltimore, or because it was first received from that part of the world, but out of compliment to Lord Baltimore, whose livery was black and yellow, like the plumage of the male Oriole.—J. E. HARTING.

Spotted Crake in Great Britain.—Will you allow me to say, with reference to my paper on this subject (pp. 401—417), that I have since its publication already received some valuable information (respecting Suffolk, Somerset, Devon, Wales, &c.), and that I should be glad of more? Any additional facts that I am able to collect, together with a few corrections, I propose to offer to 'The Zoologist' in the form of a supplementary paper. Conclusion ii. will doubtless have been noticed by readers.—O. V. APLIN (Bloxham, Oxon).

Crakes and Rails.—After reading Mr. Aplin's most interesting paper on the Spotted Crake in 'The Zoologist' for November, I wondered what
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the necessity was that compelled it to emigrate southwards in winter, whilst the Water Rail can manage to exist with us throughout the year. On consulting the most recent ornithological works in my possession (*e.g.*, Yarrell, 4th ed., Seebohm, and Backhouse), I found that the Land Rail has the most northern geographical range, exceeding that of the Spotted Rail by about 2° , and that of the Water Rail by about 5° . This would lead one to suppose that the Land Rail was the more hardy and the Water Rail the more delicate bird of the trio. But this order seems to be reversed with us. In the winter Water Rails are common residents, Spotted Rails seldom found, and Land Rails occurring less frequently still. This fact would go to prove that not want of warmth, but want of food is the prime cause of migration. The Land Rail being less strictly insectivorous—or, perhaps, I should say more graminivorous—than the Water Rail or Spotted Rail, its food supply is more readily affected by low temperature than theirs would be. And although the Water Rail and Spotted Rail frequent the same localities, the greater length of beak in the former would enable it to procure food which the latter could not reach. Therefore *Rallus aquaticus* remains with us after *Porzana maruetta* has departed, because its food (consisting of aquatic insects and their larvæ, &c.) is not so subject to the effects of frost or flood. According to the latest published account of the Birds of Norfolk (Mr. Southwell's list in 'White's Norfolk' for 1890), the Land Rail is catalogued as a summer migrant, breeding here. The Spotted Rail is described as a summer migrant, occasionally breeding here, and the Water Rail as a resident receiving migratory additions in autumn and winter. In the Broad district, from which I am writing, the Spotted Rail is more common than the Land Rail, and more frequently breeds here. A clutch of young Spotted Rails, hatched in this parish last year, were unable to fly on August 29th. I amused myself for nearly an hour trying to catch one of them, but, even with the aid of my old Retriever (who, like many dogs, is very keen on the scent of a Rail), I was not able to secure a single individual, although once or twice I had one almost in my hands; but plunging about knee-deep in water, with an uncertain foot-hold and amid rank vegetation, I had set myself no easy task, and, as the day was hot, I was glad that I had divested myself of my coat before I commenced operations. Mr. Seebohm and other authors mention the unsociability of Crakes and Rails; let me give you three instances of exceptions to prove this rule (others may be found in 'Booth's Rough Notes'). During the hard weather of the winter of 1878—79 I shot twenty-three Water Rails in less than three weeks, from about half a mile of ditch, and then left several. One day during that time I saw three cross a road (from the ditch on one side to that on the other) together, or rather one after the other in quick succession. In three days of September, 1885, my brother and I flushed twelve and killed ten Land Rails, from two adjacent

fields, in the parish of Little Waltham, Essex. In one of the fields, which was standing barley, I killed at a double shot a *Crex pratensis*. On October 22nd, 1888, just as I was finishing a day's Snipe-shooting with a friend at Hickling, in this county, I saw him knock down a Spotted Rail, and, on going to help him find it, my dog caught another and flushed a third, which I shot: these three (one adult and two immature males) all met their death within twenty yards of each other. Coots are of course gregarious, and Moorhens—the connecting-link between Coots and Rails—are far more sociable than many people imagine. I have frequently seen twenty or thirty together on one Pheasants' "feed," and on February 25th, 1880, I counted over forty feeding on a grass meadow adjoining the Rookery pond at Wooton, Surrey. On December 28th, 1880, my brother and I started twelve, and shot eight out of one holly bush in which they had gone to perch. The latest and earliest dates I have for the occurrence of the Spotted Rail are as follows:—Feb. 24th, 1882, Potter Heigham; Nov. 5th, 9th, and 19th, West Somerton and Brunstead. There are several reasons why more Spotted Rails are killed in October than in any other month. In the first place, Snipe-shooting is more general, and the Jacks, *S. gallinula* having arrived, the ground is more thoroughly worked by dogs. Secondly, by October, vegetation begins to die off, frost and rain help to level it down, and waters generally begin to rise; concealment, therefore, is not so easy, and the limits thereof become more circumscribed as the season progresses. Thirdly, as the time of autumnal migration approaches, the individual broods probably re-assemble, if after hatching they do ever stray far apart, and perhaps—being near the coast—their numbers are reinforced by birds that have summered farther north. On Oct. 17th ult. my brother and I were shooting some rough marshes in the neighbouring parish of East Ruston, when a bird rose of its own accord, at some distance from us, which I took to be a Woodcock: it flew high and very strongly, and, after a flight of some 300 yards, eventually dropped in another rough and still wetter marsh. My brother being nearer to it—we were walking wide apart—said directly that it was a Land Rail, a statement which I called in question, never having seen a Rail fly like it before, and was consequently rather ashamed of myself for thus not knowing "a hawk from a barnser," when, with Nep's help, we brought a veritable *Crex pratensis* to bag. But others have been thus deceived before me, as I read in 'Yarrell'—"Land Rails have also been shot in mistake for Woodcocks in winter, especially on the promontories of the West Coast of Ireland." From birds I have shot I have noticed that Land Rails are as fond of feeding on "Daddy Longlegs" (the perfect insect of *Tipula*) as Pheasants are on oak spangles, the excrescences on the under-side of oak leaves caused by some gall-insect; but whether they are the work of *C. quercifolii* I am not sure. As to the cause or causes of migration, if birds

have premonitions of sharp weather which will cause a lack of food, how is it that many winter migrants to this country do not move on further south or west previously to severe weather here? It would seem that more northern forms are not necessarily more hardy, since Redwings and Fieldfares succumb to protracted frost before Blackbirds and Thrushes do, although at such times all four seem to frequent the same spots and to seek the same subsistence.—MAURICE C. H. BIRD (Brunstead Rectory, Stalham, Norwich).

The Sea-Lochs of Inverness-shire.—There are few places on the West Coast of Scotland which in their attractions for the naturalist surpass the wild Sea-Lochs of Inverness-shire. The rugged beauty of their mountain sides has its own peculiar fascination, where Falcons seek an eyrie and the Buzzard a home. The wail of the Curlew echoes up and down the silent water, and on every rock of vantage sits a Heron. The Red-breasted Merganser, *Mergus serrator*, may be seen there to advantage in August, with its brood of ten or twelve young ones already half as big as their parent, whom they follow in a compact little flock, taking wing when she does, and splashing with much unnecessary bustle with her along the surface of the water. With a boat it is easy for an expert rower to hem them in at the head of the Loch, as they imitate their mother in every movement, and she apparently never thinks of escaping from a boat by diving. At another time, when they are not watched, or at least not aware that they are within the range of our binoculars, half the party will perhaps be beneath the surface at one time; and the little white-bellied Sea Trout have a bad time of it, and doubtless the Brown Trout as well, when these rapacious fishers get into a "broon." Mergansers will also eat long fronds of sea-weed (as we proved by dissection), in which there cannot be much nourishment one would think. The keepers find their nests on the rocky islands, placed there for security. One which we landed to see was at some height, ensconced beneath the heather; eight young ones had left it, and one egg remained, which clearly told its own species, for the duckling inside had a distinctly visible saw-like bill. Eight of course was not a full complement to be hatched off, but duckling Mergansers have Gulls for enemies; and in another case the keeper saw a Merganser followed by a single young bird, the only one left to it, and that, strange to say, on August 14th was only about one-fourth grown. When three-quarters grown the irides of a young Merganser are yellowish, with an inner circle of hazel, and the legs may be best described as brownish yellow, with darker webs. Foolish Guillemots, *Uria troile*, are not of much interest to a Southerner; but young Black Guillemots, *Uria grylle*, bred, it may be, on Skye, come up Loch Hourn in August, and, from indifference or ignorance of the cruelties practised by their mortal enemy man, or from inability to fly, are not hard to catch alive. The muscles and bones of the

wing in this species appear to be of great strength, enabling them to keep under water in all weathers when fishing. Having made a capture of one, we noticed the remarkable way in which, when in the water, it turned over on its side: our captive, when placed on the level ground, forthwith proceeded to run like a chicken, and was not happy until placed in a tank which contained a few small Trout; but it did not seem able to find them, albeit it swam about with its head beneath the surface as if looking for something, and I marked the ready way in which it could dive in only a few inches of water. Many birds attain their full size before the primary quills are completely grown, and this was the case with the Guillemot in question, which we ultimately consigned to the Loch from which we obtained it. The Red-throated Diver, *Colymbus septentrionalis*, I did not meet with; but a beautiful pair of Black-throats, *C. arcticus*, were swimming side by side on Loch Quoich on August 15th. So far as could be judged at a distance they had lost little of their superb summer plumage. I am surprised at Mr. Thomasson seeing a pair of this species with three young ones, as stated (p. 346), for two is undoubtedly the usual number, and his discovery that they occasionally have three is very interesting.—J. H. GURNEY (Keswick Hall, Norwich).

Habits of the Grey Wagtail.—I have read with much pleasure Mr. O. V. Aplin's interesting notes on the Grey Wagtail (pp. 371—376). In almost every part of Ireland which I have visited I have found this a very common bird, in many places more numerous than the Pied Wagtail. About Shillelagh I know of some six or eight nesting places of the Grey Wagtail, within a couple of miles, most of which are frequented every year, the nest being generally built for a series of years in the same spot. A mill, a bridge, an old farmyard near a stream, are favourite haunts during the breeding-season, for the bird is by no means shy or retiring. To my observation, in at least five cases out of six, this bird builds its nest directly over the water of a stream, while the neighbourhood of a waterfall seems to afford a special attraction. There is a bridge where for many years a pair of Grey Wagtails have nested in the same spot, a recess behind overhanging tufts of grass on the sloping top of a buttress, about six feet above the water, the nest being completely hidden from view. Whenever I have taken this nest the birds have always built again within a couple of weeks, usually in the same place, but occasionally on a different part of the bridge. This year the nest contained five eggs on April 1st; but the eggs are more frequently laid about a fortnight later, and there is a second brood about the beginning of June, a new nest being constructed not far from the site of the old one. A very favourite nesting-place is close to the outfall of a mill, often within reach of the spray of the falling water; and in such a place I have known of a nest every spring for the last ten years, built in a crevice of the masonry, and sheltered by a hanging tuft of grass.

This nest frequently contained six eggs. Another nest was placed among thick ivy, on the face of a bridge, sufficiently near the top to be easily reached by a person leaning over the parapet. In the Glen of the Downs, near Greystones, one of the most charming spots in Ireland, I have seen a nest in a crevice among the roots of a fallen tree, close to a little pond, and within reach of the spray of a small waterfall. The woods and thickets all round are melodious, during the nesting-season, with the songs of numerous Blackcaps; and here, every year, by the side of the secluded pool, a pair of Grey Wagtails rear their young. Nowhere, however, have I seen the Grey Wagtail in greater abundance than along the Dodder, close to Dublin. Even where the river passes through the suburbs of the city many pairs nest annually, and a couple of miles farther up it is one of the commonest birds. In the early summer the young, with their parents, may be seen perching on the stones and reaches of shingle in the bed of the river, which at that season contains but little water, most of it being taken away by mill-streams. They are ever in restless motion, flying from stone to stone, and are exceedingly noisy. The song of the male is a loud but short trill, often very like the cry of the Common Sandpiper. These family parties break up soon after midsummer, for this species does not appear to flock, and all through the autumn and winter it occurs scattered over the country singly or in pairs. At this season it wanders a great deal, and is fond of frequenting moist places in fields where cattle are kept, particularly during frost. During the nesting-time the stream-side and waterfall are essential, but at other seasons it may be found in a great variety of places. It shows a predilection for the neighbourhood of houses, and is constantly to be observed even in the centre of Dublin. It appears to haunt principally the roofs of the houses, and so is not often seen; but in the most frequented streets, and especially along the quays, its note may constantly be heard above the noise of the traffic. In the squares and open places, such as St. Stephen's Green, it may often be noticed; and a curious and interesting sight it is to see one of these elegant birds, in the delicate grey and creamy yellow of its winter plumage, perch for a few moments on one of the dusky hawthorn trees in the squares of Trinity College. Even as I write the loud call-note, "zit-it," frequently reaches my ear. The Pied Wagtail, on the other hand, though fond of the neighbourhood of country towns, and a sufficiently common species in the immediate vicinity of Dublin, is rarely to be seen in the interior of the city.—ALLAN ELLISON (Trinity College, Dublin).

Little Bustard in Norfolk.—The following letter, from the late Mr. J. H. Gurney, refers to the earliest known instance of the occurrence of the Little Bustard in the county of Norfolk. It was not known to Mr. Stevenson when he wrote the article on this species in the second volume of his 'Birds of Norfolk,' but will be found mentioned in some "Extracts

from the Note-book of the late Miss Anna Gurney, of Northrepps," published in the 'Transactions of the Norfolk and Norwich Naturalists' Society" (vol. ii. p. 19). The coloured drawing referred to represents an example "in winter, or perhaps female, plumage." The letter is dated "Northrepps Hall, 10th April, 1890," and possesses a melancholy interest from the fact of its having been written only the day before Mr. Gurney was seized by the attack which ended fatally on the 20th of the same month:—"Dear Mr. Southwell,—I have just been referring to Miss Gurney's drawing of the Pomatorhine Skua, and on looking through the portfolio I observe one (also by her) of a Little Bustard, shot at Mundesley in November, 1820. I do not think that Mr. Stevenson has mentioned this specimen, and possibly you may like to do so in your Appendix.—Yours very truly, J. H. GURNEY."—T. SOUTHWELL (Norwich).

Pomatorhine Skua in Co. Mayo.—On the 24th of October an adult specimen of the Pomatorhine Skua (the black variety) was shot on Lough Conn, by Mr. John Garvey, of Ballina. It was the only bird of the kind seen that day on the lake. The specimen is very black all over, with the exception of an odd white feather appearing on the under tail-coverts, and the long tail-feathers are fully grown to their normal length, showing that the bird is adult.—ROBERT WARREN (Moyview, Ballina).

King Duck at Hunstanton.—On November 3rd, 1890, a young female King Duck, *Somateria spectabilis*, was shot off Hunstanton St. Edmunds, by Mr. S. Brown (for whose collection it is being preserved), and sent the next day to me, for determination, by Dr. Whitty. This bird measured in total length $21\frac{1}{4}$ inches; the wing from the flexure $10\frac{1}{2}$ inches; tibia $1\frac{3}{4}$ inch; middle toe $2\frac{1}{2}$ inches, and the nail of the same toe about $\frac{3}{8}$ ths of an inch. The plumage was very dark, and I believe the bird was mistaken, when alive, for a Common Scoter; the beak, bluish lead-colour at the tip, gradually shading off to a dull pinkish leaden hue at the basal portion; legs and toes yellow-umber, the interdigital membranes dark brown in centre; iris dark brown. From the condition of the feathers I have no doubt it is a bird of the year. It is singular that this bird should have occurred so near the spot at which a previous specimen, recorded by me in 'The Zoologist' for 1889 (p. 383), was killed.—T. SOUTHWELL (Norwich).

Black Redstart in Devonshire.—As I was looking out of the window, on November 2nd, a young male Black Redstart pitched on the grass lawn within a few yards of me, and I had a good look at it. It was almost immediately pounced on by a Sparrow, and got a severe buffeting, which seemed to scare it a good deal, and it soon flew away, and I have not seen it again. It had no white alar patch, but the breast was rather dark. I know of only two other examples which have occurred near this town. Indeed, few specimens have been obtained east of the Exe, though it is so

often seen at Teignmouth and all along the S.W. coast from Torquay to Plymouth.—W. S. M. D'URBAN (Moorlands, Exmouth).

Gadwall in Leicestershire.—I see that, in 'The Zoologist' for 1886, Mr. Montagu Browne, in his 'List of Leicestershire Vertebrates,' omits the Gadwall, *Anas strepera*, by which I gather that it was unknown to him as a denizen of this county. I am happy to be able to add it to his list, for a fine specimen of that duck was killed last week at Bitteswell Hall, near Lutterworth.—H. T. FRERE (Burston Rectory, Diss).

Change of Plumage in the Jackdaw.—When does the Jackdaw acquire a black head? Every winter I meet with examples in which the hood is so dark as to be scarcely distinguishable from the rest of the plumage unless the bird is closely examined. All very young Jackdaws which I have seen had the grey hood well marked, though not so clearly defined as in old birds, the rest of the body plumage being more or less grey. I cannot recollect ever having met with dark-headed birds in North Wales, though the Jackdaw is a very abundant species there.—G. H. CATON HAIGH (Great Grimsby).

Pine Grosbeak in Nottinghamshire.—A beautiful specimen of this rare British bird was shot on October 30th by Mr. Dixon, near Watnall, in this county. It is a male bird, and in perfect plumage. When first seen it was drinking beside a small pond, and on the approach of Mr. Dixon (who was out shooting) it flew up into a tree, where he shot it. It is now set up, and a more perfect specimen I never saw. This is a new species for Notts, and, so far as I can make out, the sixth authenticated British example which has been obtained.—J. WHITAKER (Rainworth, Notts).

Number of Eggs laid by the Shag.—With reference to the number of eggs laid by the Shag and Cormorant, my idea was that locality had something to do with this, as it apparently has in the case of the Lark and Curlew, and, according to Mr. Young's experience, the Tawny Owl also, though possibly, as he suggests, the food supply is an important factor in the case. In reply to Mr. Ussher, as regards date, I have seen a nest of young Cormorants (three), taken from the Ramna Stacks on May 31st. They were apparently from eight to ten days old, which would fix the laying about the middle of April. On this date there were nests of the Shag and Cormorant—only a few of the latter—containing eggs in all stages of incubation; and I have also found nests of the Shag, with young, nearly a week previous to this. Fresh eggs are often to be met with in the middle of June, but these are, I think, invariably those of a second laying. The Shag is so much the commoner bird than the Cormorant in Shetland, that I believe there are five hundred of the former to one of the latter.—HAROLD RAEBURN (Romford).

Hawfinches and Green Peas.—The Hawfinch seems to be steadily gaining ground in Cheshire, or, at any rate, in the northern part of the county, for which I can best speak; and I trust it may become firmly established in Wirral, where your correspondent, Mr. E. Comber, records it as nesting this year, in spite of the havoc it has caused among the green peas. I fear the fondness of the Hawfinch for this food will militate against its ever becoming a common species in this neighbourhood, as the market gardeners are sure to kill the robbers, whenever an opportunity occurred, should they become sufficiently plentiful to attract general attention. In the few instances in which the bird has come under my own notice, it has been connected, and to its disadvantage, with green peas. On May 21st, 1888, I found a nest in Higher Peorar Park, near Knutsford, which was built in a somewhat exposed situation, in a large wood composed principally of oaks and beeches, and was easily seen from a distance of fifty or sixty yards; it was placed on a lateral branch of a small birch, growing at the edge of an open space in the wood, about six feet from the trunk of the tree and fifteen feet from the ground. The sitting bird did not leave the nest until I struck the tree with a stick: the nest, a slight structure of twigs lined with roots, contained one fresh egg, and at the foot of the tree the broken shell of another egg was lying. The keeper informed me that the Hawfinches frequented the Hall garden every year for the sake of the young peas, and not unfrequently forfeited their lives in consequence. On July 30th, 1888, an adult female was sent to me from Wythenshawe, Northenden, where it had been trapped in the pea-rows on the previous day; its stomach contained some broken pieces of maize, and there were a few green peas in its crop. Another bird had been trapped a few days before, but I was unable to obtain it. Some Hawfinches were noticed at Wythenshawe in 1884. In the summer of 1888 a man named Joseph Bell showed me an adult bird and a young one, which he shot "five or six years ago, this green pea time," in a market garden at Didsbury, just on the Lancashire side of the county boundary. The old bird was feeding the young one with peas when both were shot. A second young bird was picked up in a garden close by, about the same time, where it was fighting with a Song Thrush. I heard the other day from a friend that he had trapped two birds in his pea-rows, at Hanwood, Salop, in the summer of 1889.—CHARLES OLDHAM (Ashton-on-Mersey).

Hawfinch in Lincolnshire.—Is not this bird more common now than it was a few years ago? I fear it will become rare again if it is shot down so mercilessly by gardeners. Within a mile of this place two gardeners shot no fewer than five, three of which they told me were old birds, and two young. They were shot early in August, during the close season; but how can one inform against one's neighbours' gardeners?—HENRY F. ALLISON (Beckingham, Newark).

Description of a Hybrid Pheasant.—A curiously-marked Pheasant which I secured in the Market Hall, at Birmingham, in October, 1889, presents at first sight the appearance of the isabelline variety at one time known as the Bohemian Pheasant, but an examination of the curious markings on all the feathers gives to the bird a most distinct appearance. Whatever the supposed hybrid Partridge I described last month (page 384) may prove to be [an immature Red-leg—ED.], it appears to me that there is an admixture of blood of some kind in the Pheasant under notice. I will endeavour to describe the markings on all the feathers as clearly as possible. Commencing with the head, I may at once state that the bird had not completed its moult, and the greater portion of the head and neck are undeveloped pin-feathers, but those on the top of the head and back of the neck appear to be a faded French grey for the greater portion of their length, followed by a narrow line of brownish, a broader band of buff, and terminated with an edging of dark brown; lower down the neck, approaching the interscapulars, the feathers have a brownish buff centre, surrounded with a band of grey, edged with dark, and terminated with pale washed brown; interscapulars French grey, broadly tipped with brownish buff, a narrow wave of dark brown, and fringed with washy drab; rib dark brown, which shows very distinctly running through the French grey: scapulars, centre French grey, followed by clouded brownish buff, and bordered round with pale fawn, rib dark brown; rump wedge-shaped, centre of grey, terminating with wavy fawn-brown and a darker tint; tail-coverts somewhat similar, but clouded with grey, buff, and a darker tint; tail buffish drab, with a warm tinge of brown, barred and clouded with a darker tint. Going back now to the wings, the primaries and secondaries are a very pale greyish buff, clouded with darker; tertiaries delicately marbled with grey, buff, and brown; lesser wing-coverts greyish brown, margined with pale buff; middle wing-coverts pale buff, with two bars of greyish margined with darker; greater wing-coverts pale buff, with five bars of pale grey, and marblings of brown and buff. Breast warm brownish buff, grey centre, shadowed with brown, and terminating with brown pepperings; flanks buff, with wavy bars of greyish, and darker shadowings; abdomen buff. Irides stone-drab. Bill and legs horn-brown. I was unable to positively determine the sex, as the shot appeared to have lodged in that part of the bird, and destroyed all traces; but I believe it to be a female. The body was slender and purely Pheasant-like, without any of the thicker build of domestic poultry, with which the bird, I thought, might possibly have been crossed.—F. COBURN (7, Holloway Head, Birmingham).

Abnormal nesting of the Sand Martin and Swift.—During the excursion of the Dublin Naturalists' Field Club to Poulaphuca Waterfall, on May 24th, Mr. E. Williams and I found a large colony of Sand Martins

nesting in the bank of the Liffey, about a mile above the Falls. We dug out three or four of the burrows, and found most of them to contain eggs. One of these nests consisted merely of a large handful of the dry, brown scales from the expanding buds of the beech, without the admixture of any other material. A quantity of these had been dropped about the entrance of the hole, and strewed the entire bottom of the burrow, which was about two feet deep. Why was this bird so eccentric in its choice of building materials, while its neighbours all round had their nests constructed, as usual, of straws and large white feathers? I have examined very many Sand Martins' nests, but never came across a similar instance. In the lofty bridge which spans the glen over the waterfall we noticed numbers of Swifts nesting in company with Jackdaws and Starlings in crevices in the crown of the arch. In Kildavin Bridge, over the Slaney, near Newtownbarry, Co. Wexford, I have seen Swifts flying in and out of their nests, which were situated in holes under the arches, not more than six feet above the water. The House Martin sometimes nests in the arches of bridges.—ALLAN ELLISON (Trinity College, Dublin).

Supposed Occurrence of the Orphean Warbler in Devonshire.—On April 16th last there was a great rush of Warblers arriving all along the South Coast,—Willow Warblers, Blackcaps (males), and Wheatears,—and whilst watching a Blackcap feeding on ivy berries in my garden, at 10, Claremont Terrace, Exmouth, where I was then residing, another bird, with a jet-black head, but *pure white throat* and under parts, and with a slender beak, longer and larger in proportion than in the Blackcap, settled on a twig quite close to it, and I was able to compare the two birds. The sun was shining very brightly at the time, and I did not notice the white tail-feathers. It was certainly smaller than the Blackcap, but nevertheless I have little doubt that it was a male Orphean Warbler.—W. S. M. D'URBAN (Moorlands, Exmouth).

MOLLUSCA.

Observations on *Vitrina pellucida*.—We have in this country a single representative of a large and well-distributed genus of land molluscs known as *Vitrina* (Draparnaud), viz., *V. pellucida* (Müller), which forms the subject of this communication. Towards the end of summer or the beginning of autumn little clusters of eggs may be found secreted under decaying leaves, logs of wood, &c. These hatch out in about twenty-eight or thirty days, the animal attaining maturity in about four months. The shell is very thin and fragile, transparent, and of a delicate green colour, faintly striate in the line of growth and spirally; of 3—4 whorls; the body whorl being very large, the spire short, apex obtuse, and no umbilicus. The animal is of a light pinkish grey, slightly transparent, mantle finely spotted with black, tentacles ashy grey, foot yellowish. This interesting mollusc is

generally found beneath dead leaves, moss, fallen trees, stones, &c. It is exceedingly hardy, and has been observed by Nilsson crawling upon the snow. I have often collected it during a hard frost, and it is much commoner in winter than in summer. As several conchologists hold contrary views, I give below a list of places in which I have observed this species, both in summer and winter:—

			Summer.	Winter.
Adel, near Leeds	...	...	20	54
Do.	...	...	10	104
Do.	...	...	12	83
Meanwood, near Leeds	...	...	19	31
Broughton (Oxford)	...	...	5	16
Wroxton	„	...	11	19
Little Bourton	„	...	23	57

It is very active and constantly on the move, and were it not for some special contrivance with which Nature has endowed this mollusc, it would soon become extinct. To crawl abroad in mid-winter, when all food for birds is so scarce, would certainly be very risky were it not for these special means of defence, if I may so term them. Gray observed that *Vitrina pellucida* possesses the power of jumping an inch or two from the ground, an observation which I think has not until now been confirmed. I have observed that when crawling on the edge of some stone or leafless twig, it will sometimes suddenly give its tail a jerk, sufficient to throw shell and owner to the ground, where it is soon lost to sight amongst surrounding vegetation; at other times it will roll away a few inches, and repeat the jumping motion. Another means of protection which it possesses is that of attaching to itself bits of leaves or soil, which entirely cover the shell and animal, thus causing it to resemble the natural surroundings. Müller long ago described how “when placed under water (where it is capable of remaining for a considerable time without injury) it drew in its tentacles, at the same time making itself rigid, in order that it might appear to be dead. Having remained for a few hours in this position it crawled slowly out of the water, and, cautiously protruding its tentacles to make sure that the way was clear, it hastened to a safe hiding-place and retreated within its shell.” The animal is capable of being entirely contained within its shell. I mention this as in a recent addition to conchological literature it is stated that this is not so. It is both herbivorous and carnivorous, its food consisting mainly of decaying vegetable matter; but it is not averse, should opportunity present itself, to make a meal of its own kind, or other molluscs or worms. I have tried a number of times to get the species to suspend itself by its slime, but have not been successful; its slime appears to be not sufficiently tenacious. Although at times it travels far away from its original patch of leaves, or log of wood, it generally returns to the spot it has left.—W. E. COLLINGE (41, Springfield Place, Leeds).

SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

November 6, 1890.—Prof. STEWART, President, in the chair.

Mr. Alfred Taylor was elected a Fellow of the Society.

Mr. E. M. Holmes exhibited and made remarks on some little-known sea-weeds, including *Monostroma Blyttii* and *Capsosiphon aureolus*, from Taymouth, and *Oscillaria Corallinae* and *Schizothrix lardacea* from the Devonshire coast.

Mr. George Murray exhibited and described the peculiarities of some galls of *Rhodymenia*, caused by a crustacean.

Prof. G. B. Howes exhibited a specimen of *Lima hians* with a bissus "nest," which it had spun in twenty-one days in a vessel of sea-water in which it had been placed. Although constantly watched by day and night the act of spinning had not been observed.

On behalf of Mr. J. W. Willis Bund, Mr. Harting exhibited and made some remarks upon a South Pacific Petrel, *Æstrelata torquata*, Macg., which had been shot in Cardigan Bay in December last.

On behalf of Prof. Martin Duncan, who was unable to be present, Mr. P. W. Sladen exhibited two microscopic preparations of the ambulacral ampullæ of Echini, showing that each ampulla is supplied by one offshoot from the main ambulacral water-vessel.

Mr. Harting exhibited a specimen of the Baltimore Oriole, *Icterus Baltimore*, obtained in September last at Balta Sound, Shetland.

A paper was then read by Rev. Prof. Henslow entitled "A Contribution to the study of the relative effects of different parts of the solar spectrum on the assimilation of plants." The paper was illustrated by diagrams, and a discussion followed in which the President, Prof. H. Marshall Ward, Dr. D. H. Scott, and others took part.

ZOOLOGICAL SOCIETY OF LONDON.

Nov. 4, 1890.—Prof. W. H. FLOWER, C.B., LL.D., F.R.S., President, in the chair.

The Secretary read a report on the additions made to the Society's Menagerie between the months of June and October, 1890, and called special attention to a young bull of the so-called Wild Cattle of Chartley Park, Staffordshire, presented by Earl Ferrers; a Water-Buck, *Cobus ellipsiprymnus*, from the Somali Coast, presented by

Mr. George S. Mackenzie; a Horned Screamer, *Palamedea cornuta*, obtained by purchase: and a young doe of Speke's Antelope, *Tragelaphus spekii*, presented by Mr. James A. Nicolls.

The Secretary exhibited, on behalf of Dr. A. B. Meyer, a coloured photograph of a variety of the Rose-coloured Pastor, *Pastor roseus*, with a red head, obtained near Sophia; and read a note from Dr. Meyer on this subject.

Mr. G. A. Boulenger made some remarks on an early reference to the Syrian Newt, *Molge vittata*, in Shaw's 'Travels,' which had been erroneously recorded as British.

Mr. J. J. Lister gave an account of his recent visit to the Phoenix Islands, Central Pacific, and exhibited specimens of the birds and eggs obtained there, chiefly Petrels and Frigate-birds, with four specimens of Peale's Curlew, *Numenius femoralis*.

Mr. Smith Woodward exhibited and made remarks upon the frontal bone with horn-cores of an adult male Saiga Antelope, *Saiga tatarica*, from the pleistocene deposits of the Thames Valley. The specimen had been obtained by Dr. J. R. Leeson from recent excavations in Orleans Road, Twickenham, and was the first trace of this Antelope discovered in Britain.

Mr. W. T. Blanford read a paper on the Gaur, *Bos gaurus*, and its allies, with especial reference to the exhibition of the first living Gaur ever brought to Europe, in the Society's Gardens. He described the characters and geographical range of the three allied species of flat-horned Bovines—the Gaur or Sladang (Bison of Indian sportsmen), the Gayal or Mithan, *Bos frontalis*, and the Banteng, *Bos sondaicus*,—and discussed the question whether *B. frontalis* is ever found in the wild state.

A communication was read from Dr. A. B. Meyer, containing the description of a new species of Squirrel from the Philippine Islands, which he proposed to call *Sciurus cagsi*.

Mr. R. Lydekker read a paper on a Cervine jaw from pleistocene deposits in Algeria, which indicated the former existence in that country of a large deer allied to *Cervus cashmirianus*. For this form Mr. Lydekker proposed the name *Cervus algericus*.

A communication was read from Dr. A. Günther on the skull of the East African Reed-buck. He described the skull of an Antelope obtained by Mr. H. C. N. Hunter in Masai Land, which he identified with *Cervicapra bohor* (Rüppell) from Abyssinia, and pointed out the differences from the skull of the South African species, for which the name *Cervicapra redunca* (Pallas) is generally employed.

Mr. P. Chalmers Mitchell described a graphic formula, designed for the purpose of representing geographical distribution. The regions

were indicated by lines, the subregions by symmetrically placed numbers. This formula could be drawn rapidly and printed without engraving.

Mr. W. L. Sclater read the description of a Jerboa from Central Asia, which he proposed to refer to a new genus and species of *Dipodina* under the name of *Eucoreutes naso*.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

November 5, 1890.—The Right Hon. Lord WALSHINGHAM, M.A., F.R.S., President, in the chair.

Mr. Francis H. Barclay, of Knott's Green, Leyton, Essex; Miss M. Kimber, of Cope Hall, Enborne, Berkshire; and Mr. John E. Robson, of Hartlepool, were elected Fellows; and Major-General Carden, Mr. J. E. Eastwood, and Mr. A. E. Hall were admitted into the Society.

Lord Walsingham announced the death of Mr. Atkinson, of the Indian Museum, Calcutta.

Mr. A. H. Jones exhibited a number of Lepidoptera collected in June last near Digne, Basses Alpes, including *Papilio Alexanor*; *Parnassius Apollo*, larger and paler than the Swiss form; *Anthocharis tagis* var. *Bellezina*; *Leucophasia Duponcheli*; *Thecla spini*; *Thecla ilicis* var. *cerri*; *Lycæna argiades* var. *corretas*; *L. argus* var. *argyronomon*; *L. bellargus* var. *ceronus*; *Melitæa deione*; and *Argynnis Euphrosyne*.

Mr. W. E. Nicholson also exhibited a collection of Lepidoptera, formed near Digne last June, which included very large specimens of *Papilio Machaon*; *P. Podalirius*; *Thais rumina* var. *medesicaste*, larger and redder than the Mediterranean specimens; *Apatura Ilia* var. *Clytie*; *Argynnis adippe* var. *cleodoxa*; *A. Daphne*; *Melanargia galatea* var. *leucomelas*; *Vanessa egea*, bred from pellitory; *Satyris semele*, and many others.

Mr. C. O. Waterhouse exhibited the upper and lower membranes of a wing of a species of *Attacus*, which had been separated without removing the scales, and mounted on glass so as to show the internal surfaces.

Dr. D. Sharp exhibited a photograph he had received from Prof. Exner, of Vienna, showing the picture obtained at the back of the eye of *Lampyrus splendidula*. He stated that this picture is continuous and not reversed, and shows the outlines of lights and shades of objects at a distance as well as of those closer to the eye.

Mr. H. Goss exhibited a specimen of *Zygæna filipendulæ* var. *chrysanthemæ*, which he had taken at Rhinefield, in the New Forest, on the 15th July last. Dr. P. B. Mason said this variety was known on the Continent of Europe, and was figured by Hübner in his 'Sammlung,' a copy of which work he exhibited. He added that he possessed a similar specimen of this variety taken by Mr. Nowers in Wyre Forest, Worcestershire.

Colonel Swinhoe stated that he possessed a similar variety of a species of *Syntomis*.

The Rev. Dr. Walker exhibited a number of Diptera, Hymenoptera, and Coleoptera recently collected in Iceland, also some drawings illustrating the various forms of *Crymodes exulis* occurring in Iceland which he had shown at the October meeting of the Society; he also exhibited seven varieties of *Melanippe thuleana*, nine of *Coremia munitata*, and a few of *Noctua conflua*, illustrating the varied forms of these species occurring in Iceland. Dr. Mason said that the only British specimens of *N. conflua* which he had seen resembling the Iceland form of the species were taken at Wolsingham, Durham.

Mons. A. Wailly exhibited and remarked on a number of Lepidoptera from Japan. The collection comprised about thirty species, eleven of which, it was stated, were not represented in the British Museum collections.

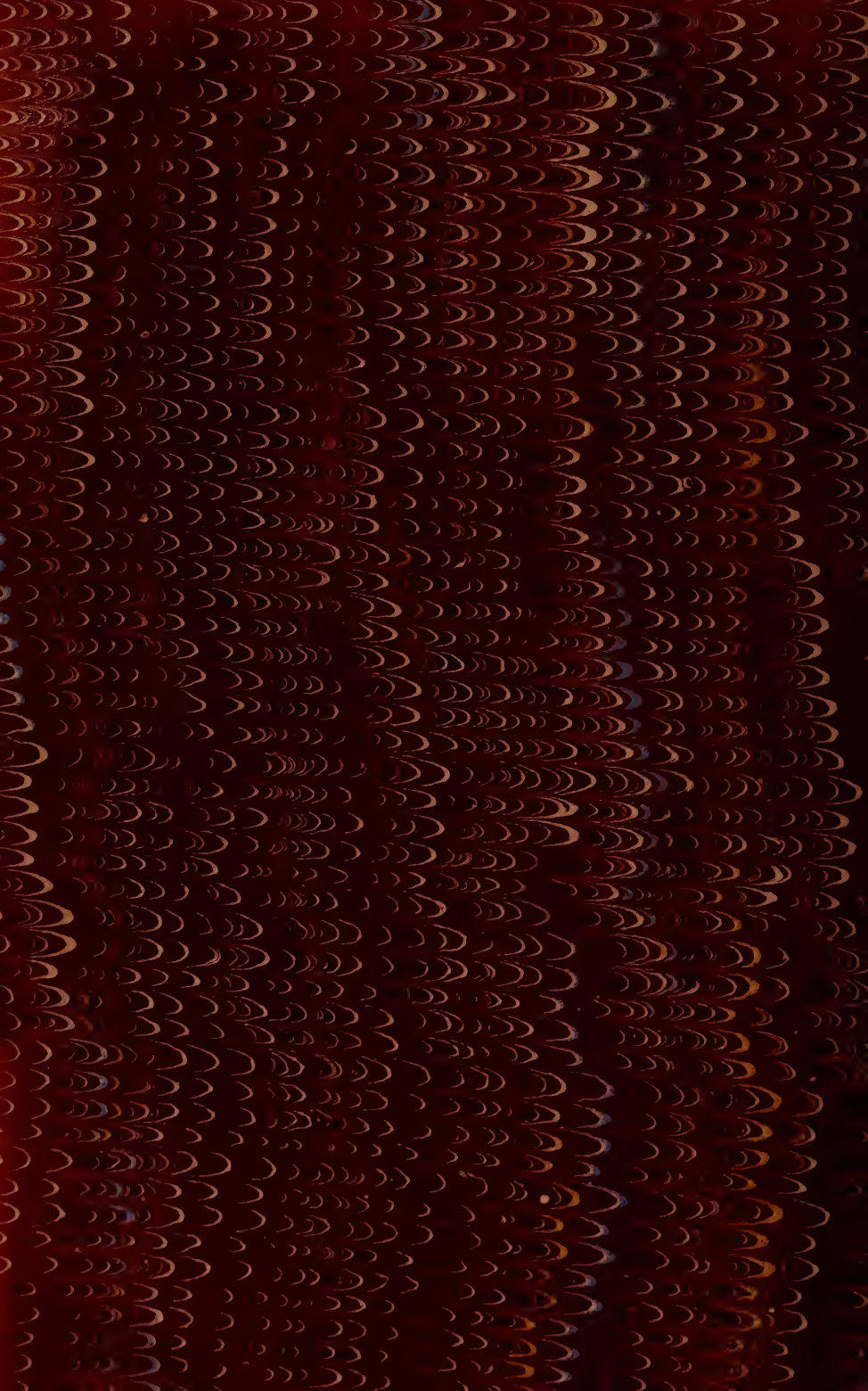
Mr. A. C. Horner exhibited a number of rare species of Coleoptera, including *Homalota crassicornis*, Gyll., *H. fimorum*, Bris., *H. humeralis*, Kr., and *Euryporus picipes*, Pk., collected at Church Stretton, Shropshire; and also *Amara nitida*, Sturm., *Oxyptoda amæna*, Fair., *Homalota testaceipes*, Heer, *Lithocharis apicalis*, Kr., and *Epuræa neglecta*, Heer, from the neighbourhood of Tonbridge.

Mr. Meyer-Darcis exhibited a specimen of *Termitobia physogastra*, Gangelb., a new genus and species of *Brachelytra* obtained in a White-ants' nest from the Congo. Dr. Sharp commented on the interesting nature of the exhibition.

Colonel Swinhoe exhibited a collection of moths from Southern India, which comprised about forty species, distributed amongst the following families:—*Syntomidæ*, *Lithosiidæ*, *Arctiidæ*, *Lasiocampidæ*, *Zerenidæ*, *Fidonidæ*, *Leucanidæ*, *Heliothidæ*, *Acontiidæ*, *Poaphilidæ*, &c. He also read a paper describing these species, entitled "New Species of Moths from Southern India."

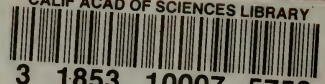
The Rev. T. A. Marshall communicated a paper entitled "A Monograph of British Braconidæ. Part IV."

Lord Walsingham read a paper entitled "African Micro-Lepidoptera," containing descriptions of seventy-one new species, and of the following nine new genera, viz.:—*Autochthonus* (type *A. chalybiellus*, Wlsm.), *Scalidoma* (type *Tinea horridella*, Wkr.), *Barbaroscardia* (type *B. fasciata*, Wlsm.), *Odites* (type *O. natalensis*, Wlsm.), *Idiopteryx* (type *Cryptolechia obliquella*, Wlsm.), *Microthauma* (type *M. metallifera*, Wlsm.), *Licmocera* (type *L. lyonetiella*, Wlsm.), *Oxymachæris* (type *O. niveocervina*, Wlsm.), and *Micropostega* (type *M. æneofasciata*, Wlsm.). Several European and American genera were recorded as new to the African fauna, and the occurrence of one Australian and two Indian genera was also noted.—H. Goss, *Hon. Sec.*





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