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# THE ZOOLOGIST:

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EDITED BY

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

MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION.

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## PREFACE.

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THOSE who are familiar with the poems of Longfellow—and who is not?—will remember the elegant lines in which the poet, appealing to readers whom he has never seen, thanks them for their appreciation of his work, for their “words of friendship, comfort, and assistance” :—

“ If any thought of mine in writing told  
Has ever given delight or consolation,  
Ye have repaid (he says) a thousand-fold  
By every friendly sign and salutation.  
Thanks for the sympathies that ye have shown,  
Thanks for each kindly word, each silent token,  
That teaches us, when seeming most alone,  
Friends are around us though no word be spoken.”  
\* \* \* \* \*

He alludes to—

“ The pleasant books that silently among  
Our household treasures take familiar places,  
And are to us as if a living tongue  
Spake from the printed leaves or pictured faces.”

And then, referring to the bond of union which exists between author and reader, he thus explains it :—

“ Not chance of birth or place has made us friends,  
Being oftentimes of different tongues or nations,  
But *the endeavour for the self-same ends*,  
With the same hopes, and fears, and aspirations.”

These lines, in a measure, seem fitly to convey the Editor's sentiments when in this, his annual “Preface,” he

tries to express his obligations to his contributors, and thank them for their friendly aid during the past year.

In the "endeavour for the self-same ends," it is pleasing to note the progress which has been made along the paths of science, the additions which have been made to the common store of knowledge.

The concluding stanza of the poem quoted invites a continuation of those happy relations which have hitherto made 'The Zoologist' what it is, and without which it would cease to exist:—

"Therefore I hope as no unwelcome guest  
At your warm fireside when the lamps are lighted,  
To have my place reserved amongst the rest,  
Nor stand as one unsought and uninvited."

J. E. H.

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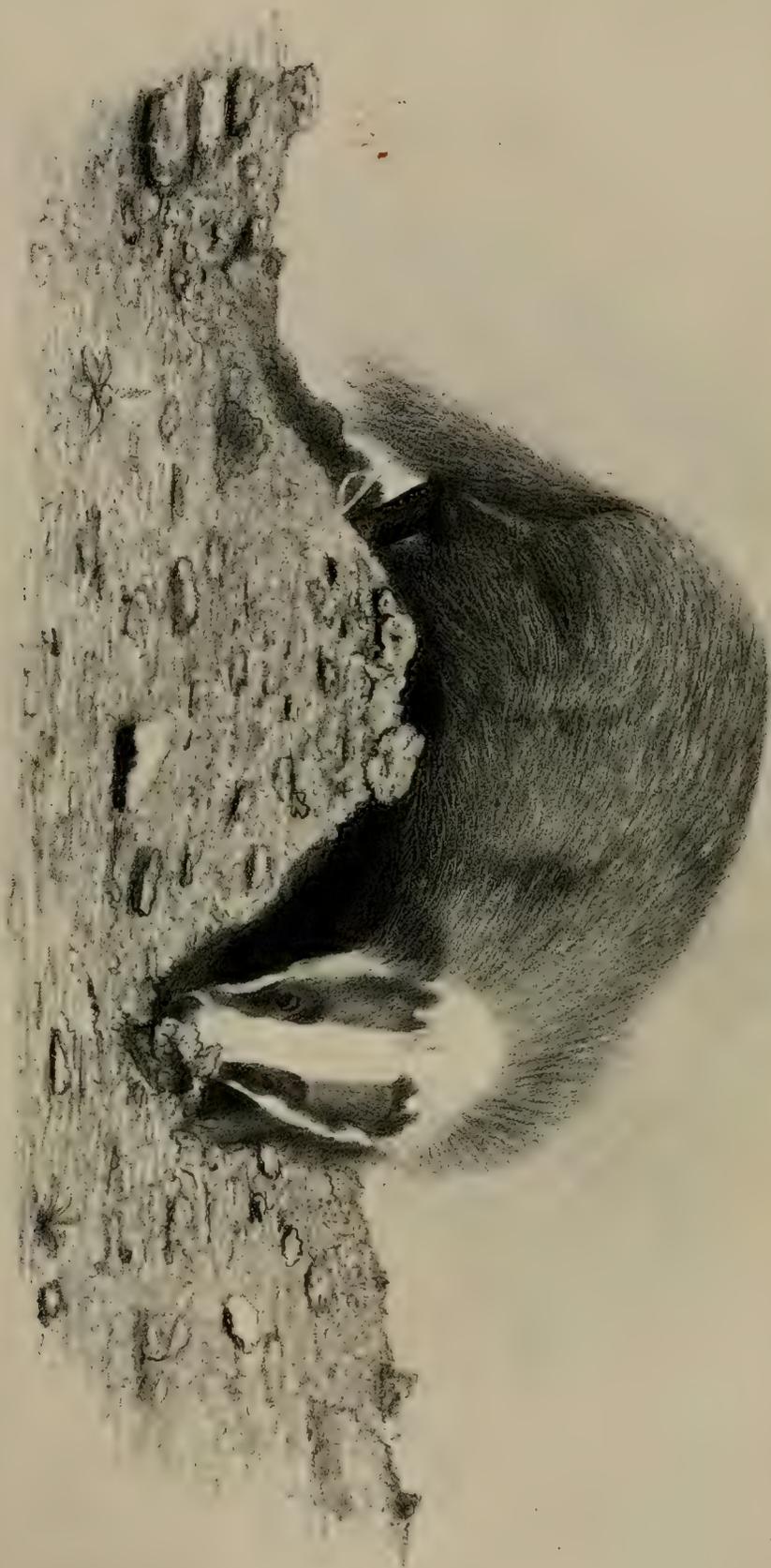
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L. Hutchinson, del.

The Badger. *Meles Thaxus*.

From an instantaneous photograph from life.

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## THE BADGER, *MELES TAXUS*.

BY THE EDITOR.

### PLATE I.

MANY people seem to be under the impression that the Badger, if not actually extinct in the British Islands, is at all events a very scarce animal at the present day. This is far from being the case. In many parts of the country the Badger is still not at all uncommon, and in certain districts which might be named it is even on the increase, owing to the protection afforded it. The reason for its supposed scarcity arises from two causes, firstly, the nature of its haunts, which are generally in the deep recesses of large woods, fox-coverts, and quarries; and, secondly, the nature of its habits, which are shy and retiring, and chiefly nocturnal.

A full-grown Badger will stand about a foot in height at the withers, and measure from 2 ft. 6 in. to 3 ft. in length, weighing perhaps 25 lbs. to 30 lbs. In appearance it may be described as having the head small, with small rounded ears, and tapering towards the snout; white in colour, with a longitudinal black stripe on each side of the face extending backwards from the snout, and widening so as to include the eyes and ears; the tail short and bushy, from six to seven inches in length; the legs robust and short; feet plantigrade, with five toes armed with strong curved claws, well adapted for digging and burrowing. The skin (which is remarkably loose and thick, enabling the animal wherever seized to turn upon its assailant)

is clothed with short fur, interspersed with longer coarse hairs of a brownish grey colour; the lower jaw, throat, and under parts as well as the inside of the legs and feet, being black. A good idea of the animal's general appearance is afforded by the accompanying figure (Plate I.), which has been lithographed from a photograph taken from the life.

The strength of jaw in the Badger and the sharpness of its bite are proverbial. Those who may have the opportunity of examining a skull should note the peculiar way in which the lower jaw is articulated, quite unlike that of any other of our wild animals. The glenoid surface of the upper jaw is so curved round the condyle of the lower jaw as not only to support its weight, but to render its separation almost impossible without fracture. This peculiarity was long ago remarked by Sir Thomas Browne, the celebrated physician of Norwich, who, writing in 1681 to his son Edward, and referring to a Badger's skull which he had given to Dr. Clarke, observed\* :—"The lower jawe needes no tying to the upper, but would move and holde to the upper jawe without any tye." The same writer also has a curious chapter† on the question whether (as the ancients believed) a Badger hath the legs of one side shorter than the other, a fabled peculiarity to which a previous writer and namesake, William Browne, the author of 'Britannia's Pastorals' (1613), has thus alluded in verse :—

"And as that beast hath legs (which shepherds fear,  
Yclept a Badger, which our lambs doth tear),  
One long, the other short, that when he runs  
Upon the plain, he halts; † but when he runs  
On craggy rock, or steepy hills, we see  
None runs more swift or easier than he."

That the Badger was at one time very generally distributed throughout England seems probable, not only from the number of fossil remains which have been found in various parts of the country in deposits which prove it to have been co-existent with the Mammoth and Megatherium, but also from the number of

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\* Sir Thomas Browne's Works, ed. Wilkin, vol. i. p. 310.

† *Op. cit.* vol. ii. p. 408.

‡ Like W. Browne's verses! The Badger was formerly supposed to be destructive to young lambs.

places which have been named after it. Its ancient name appears in Brockhurst, Shropshire; Brockenhurst, Kent; Brockenborough, Wiltshire; Brockford, Suffolk; Brockhall, Northamptonshire; Brockhampton, Oxford, Dorset, Gloucester, and Herefordshire; Brockham Green, Surrey; Brockholes, Lancashire and Yorkshire; Brock-le-Bank, in Cumberland; Brocklesby, Lincolnshire; Brockley, Suffolk, Somersetshire, Herefordshire, and Kent; Brockmoor, in Staffordshire; and Brockworth, in Gloucestershire.

This name for the animal, evidently of Celtic origin, is found in Welsh and Cornish *broch*, in Irish and Gaelic *broc*, and in Danish *broc*, and was bestowed doubtless on account of its striped face. In Gaelic we have *brocach*, meaning "speckled" or "grayish," and the Danish word *broget* has a similar meaning. The less familiar name "Bawson" has much the same signification, *bawsened* meaning "striped with white."

Another old-fashioned name for the Badger, viz. *the Gray*, in French *le Gris*, had likewise reference to its colour. The animal is thus designated in the 'Book of St. Albans,' 1486 (fol. iiij. rev.), and in many early treatises on hunting. In some of the old "Household Books," too, may be found entries of payments made for robes and cloaks *furred with gris*, others being bordered with fox or coney, thus indicating the use to which the Badger's skin was formerly applied. The derivation of the word "Badger" has been variously explained, or, as Bell puts it, is "of very uncertain origin." He quotes Skinner, who derives it from the Teutonic *back*, the jaw, as if *backer*, on account of the animal's great strength of jaw; but this seems very far-fetched. Professor Skeat regards it as "a nickname, the true sense of M. E., *badger* or *bager* being 'a dealer in corn,' and it was, presumably jocularly, transferred to the animal because it either fed or was supposed to feed upon corn." "This fanciful origin," he adds, "is verified by the fact that the animal was similarly named *blaireau* in French, from *blé*, corn." But this is surely quite wrong. The diminutive termination of the word *blaireau*, seen in *perdreau*, *faisandeau*, *lapereau*, &c., suggests some other etymology. Perhaps it would be again too "fanciful" to suggest a derivation from the verb *bleuir*, to turn bluish, or greyish, although it may be remarked that *bleu* is sometimes used in the sense of "blue-gray," or "gray," e. g., in the case of the so-called "blue hound of La Vendée."

But, in regard to our English word "Badger," may it not be a corruption from the French *bêcheur*, a digger, from *bêcher*, to dig. Our language is full of such corruptions from the French (*e.g.*, cray-fish, from *écrevisse*), and our knowledge of the animal's habits renders the suggestion sufficiently plausible.

It is perhaps hardly necessary to trace in detail the present distribution of the Badger in the British Islands, or mention the name of every locality in England where it is still known to exist, but it may be of interest to note that the pages of this journal in different years contain evidence of its occurrence in the following counties:—Berkshire, 1867, p. 631; 1879, p. 263. Cambridge, 1868, p. 1176. Cumberland, 1867, p. 822. Cornwall, 1864, p. 9219; 1882, p. 66. Essex, 1882, p. 303. Hampshire, 1880, p. 252. Kent, 1867, p. 787. Leicestershire, 1884, p. 271; 1885, p. 167. Lincolnshire, 1868, p. 1129. Norfolk, 1864, p. 9016; 1871, p. 2753. Oxfordshire, 1882, p. 146. Shropshire, 1864, p. 9219. Somersetshire, 1870, p. 2017. Suffolk, 1869, p. 1926; 1881, p. 461. Surrey, 1877, p. 251. Warwickshire, 1864, p. 9218. Yorkshire, 1880, p. 251; 1884, pp. 63 and 174.

From other sources of information we learn that it occurs in Derbyshire (Melland, 'The Field,' Jan. 24th, 1880); Devon (Bellamy, Rowe, and D'Urban); Dorset (Mitford); Durham (Tristram, and Backhouse); Glamorgan (Dillwyn); Gloucester (Bell); Isle of Wight (More); Lancashire ('Naturalist,' 1884-5, p. 128, and 1886, p. 36); Middlesex (Harting); Northumberland (Meynell & Perkins, and Cordeaux); Staffordshire (Garner, and Masefield); Wiltshire (Harting); and Worcestershire (Dr. Hastings).

With regard to Scotland, Mr. Harvie Brown's excellent account of its distribution there ('Zoologist,' 1882, pp. 1—9 and 41—45) leaves little or nothing to be desired. He states that it occurs generally throughout the mainland of Scotland, but does not appear to be indigenous to any of the islands, though it has been introduced into Jura, and upon Ailsa Craig.

In Ireland, according to Thompson, the Badger still maintains its ground, "perhaps in every county" (Nat. Hist. Ireland, vol. iv.).

One of the best accounts published of the habits of this animal is that given by Charles St. John, in his 'Wild Sports and Natural History of the Highlands.' It is full of interesting facts derived, in a great measure, from personal observation, and

should be read *in extenso* by everyone desiring accurate information on the subject.

By many people the Badger is regarded as a solitary animal, but in out-of-the-way places, where it is seldom disturbed, it appears to be sociable enough. When staying out at night in the great woods belonging to Earl Bathurst, in Gloucestershire, I have had three in sight at one time, and watched their movements within thirty yards of where I was seated. St. John once counted seven in view at once on the south shore of Loch Ness. The habits of the animal are strictly nocturnal, and it is only in the summer evenings, when the darkness lasts but a few hours, that it is ever met with while it is light. During winter it not only keeps entirely within its hole, but fills up the mouth of it to exclude the cold and keep out any unwelcome intruder.\* It will remain a long time without food in winter, as proved by the absence of its footprints in the snow around its den, and sleeps a great deal, curled up with its head under its breast. If dug out at this time of year it will be found to have the forepaws quite wet, as if they had recently been in the animal's mouth.

Huntsmen are often heard to say that they dislike Badgers because they drive the Foxes away, and dispossess them of their burrows. But this is quite an erroneous idea, for the two species not only live on very good terms, but have been known to occupy the same burrow. An instance of this came under my notice in the woods near Wardour Castle, Wiltshire; and a second case, known to me, occurred in Leicestershire, where, for at least six years, a vixen Fox reared her litter in the same earth with Badgers. This happened on the property of the late Mr. Alfred Ellis, of "The Brand," near Loughborough, who was a great lover of natural history, and took great pains to protect a colony of Badgers which he had established there, solely for the pleasure of studying their habits. In a letter to 'The Times,' of October 24th, 1877, which I have preserved, he gave a most interesting account of his observations; and as the experiment is somewhat unique of its kind, it is worthy of being

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\* In Sweden, according to Ekström, the winter sleep of the Badger generally lasts from the middle of November until the middle of March, dependent upon the season. That the winter sleep is not deep is proved by the fact that if a long thaw sets in they will leave their burrows and come out to seek for food.

again related in his own words, and thereby rescued from oblivion; for 'The Times' is not one of the journals usually consulted by those in quest of zoological information. Mr. Ellis writes:—

“About ten years since the Badger was established here, but it was not until the third attempt that my efforts prospered. The Badgers then introduced, or their successors, have bred every year, and as not more than one pair remain in permanent occupation, it is probable that there are many more of these animals in this country than is generally supposed; but their shyness, their colour, and the short time they require to obtain their food, and the recesses of the woods in which they delight to dwell, make it no easy task to study their life and habits. The deep earth in which our Badgers live is only 150 yards from the window at which I write. The building of this house two years ago did not disturb them, and they have shown an increasing confidence and trust. The Badger breeds later than the Fox, and it was the middle of March this year before the preparations for the coming family were made. These consisted in cleaning out the winter bed and replacing it by a quantity of dry fern and grass, so great that it would seem impossible the earth could receive it. In June the first young Badger appeared at the mouth of the earth, and was soon followed by three others, and then by their mother. After this, they continued to show every evening, and soon learnt to take the food prepared for them. The young are now almost full grown, and, forgetting their natural timidity, will feed so near that I have placed my hand on the back of one of them. The old ones are more wary, but often feed with their family, though at a more cautious distance. Their hearing and sense are most acute, and it is curious to see them watch, with lifted head and ears erect, then, if all is quiet, search the ground for a raisin or a date. But the least strange sight or sound alarms them, and they rush headlong to earth with amazing speed.

“The Badger, like the Bear, treads upon the whole heel, and in its walk closely resembles that animal. They caress each other in the same grotesque manner while they gambol at play, and at times they utter a cry so loud as to startle any one ignorant of its source. It is not unlike the chatter of the Stoat, but many times louder. On fine evenings we can watch them dress their fur-like coats, or do kind offices for each other, and

search for parasites after the manner of Monkeys. No creature is more cleanly in its habits. Over their earth hangs a birch tree, from which grows a horizontal bough 18 in. from the ground. On this they scrape their feet in dirty weather, and keep their house inodorous by depositing their excrement at one place for many months, and covering it with earth. The hybernation of the Badger is not like that of the Hedgehog, continuous and complete, but is irregular and is probably influenced by the character of the winter. I have known the mouth of the earth covered with a coat of snow for fourteen days, and it might have been much longer before they came forth, while they may sometimes be tracked in a thin snow for a long distance.

“As the winter approaches, the old bedding is replaced by dry fern and grass, raked together by their powerful claws. This is often left to wither in little heaps till dry enough for their purpose. Partially concealed, I have watched a Badger gathering fern and using a force in his collection quite surprising.

“Bell, in his ‘Quadrupeds,’ quotes Buffon as stating that Badgers are fond of wasps’ nests. This is true, for, like the Bear, they love honey and sweet food.\* I once heard a pair of Badgers fighting, and crept upon the ground until within a few yards of the angry conflict, but the bracken hid them from view. Next morning I visited the place. A wasps’ nest had been stormed and eaten, very little of the comb remained, and not a dozen homeless wasps. That summer I myself saw the wrecks of seven wasps’ nests taken by the Badgers in one field, and this autumn they are digging out every one they can find.

“The Badger and the Fox are not unfriendly, and last spring a litter of cubs was brought forth very near the Badgers; but their mother removed them after they had grown familiar, as she probably thought they were showing themselves more than was prudent.

“Much of what I have here described has been observed by many of my friends, but now the nights are getting longer we see but little of our amusing and curious neighbours, and shall probably not renew their acquaintance until the early summer of another year.”

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\* There appears to be a slight error of observation in the passage quoted. If Buffon states that it digs up wasps’ nests for the sake of the *honey*, he should have said for the sake of the *larvæ*, as wasps do not store honey.

During the ensuing autumn the following supplementary account was furnished by a relative :—

“ I was on a visit to my brother-in-law in Leicestershire, and on the second evening after my arrival, whilst sitting at the open library window, which opened down to the ground (and to which, of a winter's morning, the Squirrels come quite boldly for nuts put for them every day), watching the sunset, and cooling myself after a good game of lawn tennis, my brother-in-law came on to the lawn with a small basket in his hand, and asked me if I would like to come and see the Badgers fed. Of course I would. So going across the garden, and through a little gate in the iron fence, we stood a few yards from the fence in a thin plantation, on the side of a steep bank overgrown with fern, gorse, and heather. After standing a little on one side, among the bushes, to conceal ourselves, my brother-in-law threw the contents of his basket along the grass path that led to the earth, the main entrance of which we could plainly see, it being only about eight yards from where we were standing. After remaining motionless for about two minutes, I saw the head of a Badger at the mouth of the earth, and after cautiously looking and sniffing around came fully out, and began picking up the food, which consisted of dog biscuits broken up small, and raisins, the latter being most eagerly sought for. Presently another came out, and appeared more courageous than his companion by the way he hunted for raisins in the grass, and by the time they had picked up a few bits they were joined at short intervals by two more, and lastly the two old ones came out and commenced feeding, after assuring themselves that all was safe. It was most curious to watch how, on any unusual sound being heard, they would stop feeding and listen, just like small bears, with head thrown slightly up and ears erect ; and then, as the gamekeeper in the adjoining wood fired his gun at a rabbit sitting outside the cover, the whole lot would shuffle off and tumble into their earth, one over the other, in great haste. But they soon came forth again, looking as though they had been scared without much reason, the young ones to continue their search for raisins, and the old ones, after emerging far enough to reach a bit of biscuit, would sneak back with it into the earth. The young were nearly full grown, and uncommonly pretty they looked with their fine-kept grey coats and curiously-striped faces, all feeding so close together at times

that you might have covered them with a sack. They are a very cleanly animal, and will not take into the earth the mud that clings to their feet after a wet night, but remove it with the aid of a branch of a silver birch-tree that overhangs the entrance. After remaining long enough to satisfy ourselves, we stepped out of the bushes, when, of course, the Badgers scampered down their hole on seeing us. Great pains have been taken to get these animals to frequent the place, my brother-in-law taking the trouble to get some from Gloucestershire some years ago to turn out. He tells me they have bred for some years past in the same place, so that he must have helped to increase their number in the neighbourhood, but I expect they get destroyed in their wanderings.

“The good results of having such animals about are that there are no wasps’ nest about the place, these creatures having hunted out all their nests for the sake of the grubs. I noticed that directly the food was thrown down for the Badgers, several rats made their appearance from the rabbit-holes, several of which were close by, and were great pilferers of the food, much to our disgust, but apparently unheeded by the Badgers. It is difficult to kill the rats, except by poison, and that is too dangerous where there is nearly always a litter of cubs on the place. This lot of Badgers, my brother-in-law tells me, are not nearly so frolicsome as last year’s were. Last year’s, he said, would stand on their hind legs and play with one another, and search each others’ coats for vermin, and otherwise amuse themselves. All this I saw at less than a hundred and fifty yards from the house on most evenings of my stay of a fortnight, so that they do not seem to mind the proximity of human habitations.”

It was after the date of this letter that the vixen Fox above referred to became accustomed to the presence of the Badgers, and brought up her litters annually in the same earth with them.

In April, 1886, as related in ‘The Field,’ of May 15th, 1886, a gamekeeper in Co. Meath, traced a Badger into a Fox’s breeding earth in a small wood. He at once put down three traps at the mouth of each of the two holes leading into the earth the same evening. Next morning early he visited the earth, and, to his astonishment, found the Badger trapped in one hole, and a vixen Fox, suckling young, trapped in the other. The keeper released the vixen into the earth, where she had her

cubs laid up at the time, and left her there. He saw her next day carrying a rabbit to the earth, and she did not seem lame. The Badger, a male, a few days after died, as it appeared, from paralysis of the tongue."

Thus it is clear that the reported animosity between Badgers and Foxes is erroneous. Wild animals of the same order live, as a rule, in harmony, especially as in this case where neither species prey upon the other.

The food of the Badger is of a very miscellaneous nature, animal as well as vegetable. Roots of various kinds, the bulbs of the wild hyacinth, earth-nuts, beech-mast, acorns, fungus, blackberries, birds'-eggs, field-slugs, snails, earthworms, beetles, frogs, snakes, field-mice, moles and young rabbits, have all been ascertained to form part of the Badger's "bill of fare." Even the Hedgehog falls a prey to this omnivorous animal, and is easily killed by a Badger, notwithstanding its defensive armour.

A correspondent writing in 'The Field' of March 23rd, 1872, remarks that "the pitiful wail of a Hedgehog when caught by a Badger is not easily forgotten; for although he will curl himself up and be torn in pieces by a terrier without a cry, the moment a Badger approaches him he commences the most piteous cries, and death seems long and painful, for the Badger sucks the blood before devouring the body." The same writer adds, that both Snakes and Vipers are killed and eaten by the Badger. He says:—"I have often given Badgers both the black and red adder alive and well, and they are quickly killed in the same way that a good terrier performs on them—seizing hold of them in the middle, and shaking them rapidly, after which you quickly hear the crunch, crunch, of the Badger's jaws."

The question is sometimes asked whether the Badger is destructive to game. Keepers have been heard to say that they would rather have half a dozen Foxes in a wood than one Badger, for the latter disturbs the place by working about in all directions. But as the pheasants are all at roost by the time the Badger comes out at dusk, and the rabbits are out of the coverts "at feed," there cannot be much harm done, except when the hen-pheasants are sitting, some of which, or their eggs, very likely fall a prey to Badgers as they do to Foxes. Mr. Edward Elmhirst, of Shawell, Rugby, writing under date, 24th January, 1880, says:—"On a manor I rented for shooting

some few years ago, there were several Badgers in a known earth. Very near to this earth sat a Partridge on her nest, in a furrow of a wheat-field. One day, on going to see whether she had hatched off, I tracked a Badger by the peculiar print of his foot. He had seized the bird on her nest, and there eaten her and her eggs."

No doubt in this way the Badger now and then gets hold of a sitting bird, but winged game, as a rule, can generally keep out of his way; and it is a fact, that in certain places I know, where Badgers are common, game of all kinds is also plentiful. I am aware, however, that the Badger is very fond of young rabbits, and will dig down upon them from above and scoop them out. The holes thus made may often be seen where Badgers abound, with the prints of their feet and the marks of their strong claws—occasionally, too, some of their grey hairs sticking to the soil. They are often taken in traps baited with rabbits. St. John states that he once had a Badgers' hole dug out during the winter season. After tracing out a long winding passage, the workmen came to two branches in the hole, each leading to good-sized chambers. In one of these was stored a considerable quantity of dried grass, rolled up into balls as large as a man's fist, and evidently intended for food; in the other chamber there was a bed of soft dry grass and leaves; the sole inhabitant was a peculiarly large old dog-badger."

In such comfortable quarters as these the young are born, and are usually from three to four in number. They are blind at birth, and remain so for nine days. After being suckled for about three weeks they follow their parent, and are believed to be fully grown in two years. Mr. E. W. Holdsworth has thus described some that were born in the Zoological Gardens, Regent's Park:—

"Four young Badgers were born on March 12th, 1862, but all died in the course of forty-eight hours. The largest of the litter weighed a little more than 3 oz., and measured—extreme length, 7 in.; length of head,  $1\frac{3}{4}$  in.; length of tail,  $1\frac{1}{4}$  in.; height at shoulder,  $2\frac{1}{2}$  in. These young animals were born blind, and after their death there was no appearance of their eyes having opened. They were well covered with short, greyish-white hair, and had the two dark facial stripes faintly marked. The anterior limbs were very stout, larger and better developed

than the posterior. The head was not so much elongated proportionately as in the adult, and altogether there was a striking resemblance between these young animals and the newly-born Polar Bears except in size—the Bears being just double the length of the Badgers. There was no diminution in the appetite of the female Badger about the time of littering, as is the case with the Black, Brown, and Polar Bears, and the young did not resemble those of the Ursidæ in being abnormally small.”

In the case of an animal so shy and retiring as the Badger, and withal so nocturnal in its habits, it is extremely difficult to ascertain the precise period of gestation. The subject has been frequently discussed, and various opinions have been expressed, but a good deal of the evidence adduced has been of a negative character, or at least inconclusive.\*

In ‘The Field,’ of December 20th, 1856, a correspondent states that, while he was staying at a friend’s house, a Badger which had been shut up forty-six weeks and five days gave birth to a young one, much to the astonishment of the owner. In ‘The Field,’ of April 6th, 1861, Mr. H. Shaw, of Shrewsbury, states that a Badger which had been kept in confinement at Haughton Hall, Salop, from April 3rd, 1860, brought forth two young on March 12th, 1861, more than eleven months after she commenced her solitary life. In ‘The Field,’ of June 25th, 1864, Mr. F. Heycock, of Bedford, says that he caught a Badger, and had kept her thirteen months when she brought forth a young one. A correspondent in ‘The Field,’ of July 9th, 1864, says that he had dug out a female in April and kept her till June, when she died, and on opening her she was found to contain three young. This fact is, of course, antagonistic to the belief which is held by many that the pairing takes place in autumn, and that the young are brought forth in the ensuing spring after an interval of only about three months. In ‘The Field,’ of July 23rd, 1864, Mr. F. Allies, of Worcester, mentions two instances—one in which a Badger that had been kept by the ostler at the ‘Bell Hotel,’ in that city, brought forth three young ones ten months after he bought her;† and the other, in which a gentleman of his acquaintance possessed a Badger which pro-

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\* See ‘The Zoologist,’ 1864, pp. 9217—23.

† Confirmed by Mr. D. A. Neilson, of Hundshill, Pontefract, who saw them.—‘The Field,’ January 31st, 1880.

duced young when she had been kept in confinement for more than twelve months. In 'The Field' of September 17th, 1864, Mr. J. Freeland Young, of Hull, states, on the authority of Mr. John Seaman, Superintendent of the Hull Zoological Gardens, that a Badger brought forth young after being shut up in a cage there for fifteen months. In 'The Field' of March 22nd, 1868, a correspondent states that a ratcatcher named Butler, living near Oxford, had had a female Badger in his possession since November, 1866, and had kept her locked up in an iron cage. On the 1st March, 1868, after she had been thus kept in confinement for fifteen months, she gave birth to four young ones. It certainly is a very curious fact if gestation in the Badger does really extend over so much longer a period than in most animals; and if it does not, how are all these occurrences to be accounted for?

The nearest approach to a solution of the question, perhaps, has been made by Captain F. H. Salvin, who has frequently kept Badgers which littered in confinement.

Writing in 'The Zoologist' for June, 1877, he says (p. 251): "My Badger, which had her first family of one (a female) on February 27th last year, presented me with another family on February 16th this year. Naturalists will, therefore, be glad to learn that I can now settle that vexed question, the gestation of these curious animals, for this Badger has gone with young a year all but about seventeen days." After some further remarks, he concludes by saying, "It has been ascertained in Germany that the Roe has the power of suspending the time of gestation, and this seems to be the only way of accounting for the fact of wild-caught Badgers going as long as fifteen months with young."

If Professor Bischoff, of Giessen, would make the same careful researches in the case of the Badger that he has done in regard to the Roe-deer,\* and for which, perhaps, he has better opportunities than any physiologist living, we might expect ere long to have a definite and satisfactory explanation of what at present appears to be a curious anomaly.

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\* 'Entwicklungsgeschichte des Rehes.' 4to. Giessen, 1854.

THE GARDEN DORMOUSE, *MYOXUS QUERCINUS*.

BY DR. F. HELM.\*

HAVING repeatedly kept the Common Dormouse, *Myoxus avellanarius*, in confinement, I resolved to make a similar experiment with the so-called "Garden Dormouse," *Myoxus quercinus*, and chance furthered my intentions. Some "berry-pickers," who brought it to me, happened to capture one that had crept under the roots of a tree trunk. I placed it temporarily in a bird-cage made of wire, for want of a more suitable one; but before I was able to close the door properly, the Dormouse had made its way out between the wires of the cage on to the table, from whence jumping down, it ran across the room, and disappeared amongst some fire-wood that was piled up in a corner.

After fitting up another cage with crossed wires to prevent a further escape of the Dormouse, the bottom being covered with a layer of sand and hay, the wood was carefully removed, and the Dormouse, which had kept quiet all the time, was caught once more with a cloth thrown over it. Being put back into the cage, it climbed about for awhile in a restless manner, but as soon apparently as it had come to the conclusion that further escape would be impossible, it began to nibble the kernels of nuts, and lard, which were offered to it. In a short time it lost a good deal of its original wildness, but never became quite tame, and never tolerated being stroked or otherwise handled; for when seized it struggled hard, and even occasionally bit the hand, which it never did under any other circumstances. Its bite, however, was not more painful than that of any other mouse.

Its usual food consisted of hemp-seed, nuts, and meat (especially lard), but it preferred biscuits and fruit. The presence of strangers did not prevent it from feeding, taking the food it fancied most out of the hand after a little while. Of nuts, which had not been previously opened, it took little notice, seldom making an attempt to gnaw the shell through, in which it never actually succeeded. Possibly it did not consider this trouble necessary on account of the plentiful supply of food lying about in the

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\* Translated from the German of Dr. Helm, in 'Der Zoologische Garten' for July, 1887, pp. 217—219.

cage. It did not sleep much in the daytime, when a slight noise would rouse it. It would then climb about in the cage, and take food out of the hand. In the woods, too, I have repeatedly found this species of Dormouse to be lively in the daytime.

By chance I became possessed of a second specimen of *Myoxus quercinus*, which was also of the male sex. No sooner had I put it with the other one (in the daytime) than a serious fight commenced between them, which, like several others which took place the same day, was soon settled by my energetic interference. The next day, however, they seemed to agree, thenceforth living in tolerable peace, in consequence doubtless of the abundance of biscuits and fruit in the cage. Neither of them ever attempted to secure their liberty by nibbling the wooden bottom of the cage or its angular supports, which were also made of thin wooden strips. In order to cleanse the cage thoroughly from time to time, I put them into a bag made of canvas, in which they climbed about without injuring it.

As soon as I discovered their partiality for fruit and lard, I decided to try and secure a few more specimens by means of the well-known cage-trap used for birds. To effect this I fixed some food on the treadle, and scattered some hemp-seed and pieces of nut-kernels on the bottom of the trap, placing it, well covered with moss, amongst underwood not too dense, at the height of about a yard from the ground. It often happened that a Long-tailed Field Mouse, *Mus sylvaticus*, instead of the Dormouse I wanted, got caught, and nibbled its way through the cover of the trap, which did not quite close when shut, light and air being admitted by the crevice. Trusting to the different habits of the Dormouse, I did not stop up the hole through which the Long-tailed Field Mouse escaped, the result being that none of the many which I caught with this trap during that summer attempted to escape by enlarging the opening already made. They all waited quietly until released, even one which died in the trap—owing to my inability to visit it through illness—made no such attempt.

The tail of this species of Dormouse is very brittle, so to speak; it more than once happened that a piece broke off in my hand while swinging the animal by that organ. Another specimen, which got caught by its tail between the lid and the edge of the trap, managed to get away, owing to my carelessness

in opening the trap, leaving its tail in my hand. In the first specimen which I received, the skin of the tail at the tip had been rubbed off, exposing the vertebræ, but this ugly appendage it removed the first day by gnawing it off.

This species of Dormouse exists not uncommonly in the woods of the "Upper Vogtland" (Saxony), which consist almost entirely of pine and fir. It is known everywhere as "*the Dormouse*," and disliked; for it is believed by the country people that if a cow is breathed upon by a Dormouse its udder will become diseased, and that everything touched by its urine will immediately decay. Moreover the Dormouse is supposed to be as venomous at least as the Viper, *Vipera berus*, which is also common there.

The nests of *Myoxus quercinus* which I have hitherto found in these woods were built sometimes in trees, sometimes—and perhaps more frequently—amongst piles of firewood, fagots, and poles; once only did I happen to find a nest under the roots of a fallen tree trunk.

[If no error has been made in identifying the species, it is curious that the superstitious dread with which, according to Dr. Helm, the Dormouse is regarded in Saxony, attaches in this country to the Common Shrew, *Sorex vulgaris*. See Bell's 'British Quadrupeds,' second edition, 1874, pp. 145—147. In France also it is the Shrew whose bite is supposed to be poisonous. See Rolland, 'Faune Populaire de la France'—("Les Mammifères Sauvages")—1877, p. 19.—ED.]

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## THE AUTUMNAL MIGRATION OF BIRDS IN IRELAND.

BY ALLAN ELLISON.

As a point from which to observe the passage of the numerous flocks of birds which in autumn pour into Ireland from Great Britain and Northern Europe, Shillelagh is very favourably situated. It lies in the extreme south-west corner of the County Wicklow, about eighteen miles from the sea, in a sort of valley between the off-shoots of the Wicklow Mountains on the north, and the hills extending from Croghan Kinsella to Mount Leinster on the south and south-east. This valley, as a glance at the map will show, runs in general north-east and south-west, and is so level that its rivers, the Derry and Aughrim, are joined together at their sources, the former running south-west until

it meets the Slaney, and the latter eastward and joining the Ovoca. Here then is a sort of great high road along which a large part of the migrating birds bound for the south-west of Ireland must pass, as they apparently avoid crossing mountains, and prefer to follow low-lying districts and river basins. For several years I have noticed in the months of October and November the innumerable flocks of birds, principally Starlings, Fieldfares, Redwings, Skylarks, and Golden Plover, which pass by Shillelagh and its neighbourhood, flying towards south-west along this valley or low-lying tract. Of these the most numerous, as almost among the earliest, are the Starlings. Generally in the beginning of October (the 3rd is the earliest I have noted) the first Starling flight is seen; and from that until near the middle of November there is seldom a day that they are not seen passing, always in the same direction, north-east to south-west. Quiet, fine weather, with light easterly or northerly breezes, seems most favourable for their migration; and at such times I have seen as many as twelve flocks of from fifty to some hundred birds on an average passing over one field in the course of the afternoon. They seem, however, to find no difficulty in flying in the teeth of a gale.

Wonderful is the speed with which these Starlings then dash along, far exceeding the greatest powers of flight displayed by them on other occasions. One hears the loud rush of their wings, like the distant sound of a flooded torrent; the flock sweeps by just over the tree tops, and in a moment is lost to sight. I should say their speed often equals 100 miles an hour. For some reason which I cannot explain, the flocks always appear largest, most frequent, and their speed greatest, about four o'clock in the afternoon.

A few days after the commencement of the Starling migration, Redwings generally begin to make their appearance. Their passage is never anything like so noticeable as that of the Starlings. They fly in small and rather scattered parties near the ground, passing leisurely on, apparently stopping to rest from time to time. Redwings are never very common in the district, and only at the periods of migration in autumn and spring are they seen in any numbers. Fieldfares are seldom seen until at least three weeks after the Redwings, and in their migratory habits differ remarkably from them. Instead of flying near the ground,

in frequent small parties, at short intervals, only a few flocks of them are seen passing during the season, although of vast size and at a great height. Generally about the beginning of November I have seen these flocks, at most one or two in the day, coming from north-east, and covering a large part of the sky like a cloud. This year I saw the first flight on October 16th, an unusually early date for the appearance of Fieldfares.

These occurrences are to be observed regularly every autumn, but the migration movement of last autumn has in all respects been a most exceptional one. Some of the migrants have appeared unusually early, and all in much larger numbers than I have ever before observed. On October 8th I saw the first flocks, both of Starlings and Redwings. On the same day, and for about a week after, immense numbers of Golden Plovers were passing over, flying towards the west and south-west in large V-shaped strings. This was about the usual time for Starlings and Redwings, but early for Golden Plover. On the 11th again both Redwings and Starlings were constantly passing.

On the 16th, as above mentioned, I observed a great host of Fieldfares, many thousands in number, winging their way across the sky towards the south-west. From October 17th to the beginning of November the Starling migration was at its height, the flocks being much larger and more numerous than I had ever observed in former years. I saw four within a quarter of an hour on the afternoon of the 18th. At 4 p.m. on the 22nd, the largest flock I ever saw passed over. It was in the form of a column, perhaps nearly a mile long, and must have numbered thousands, spanning the sky from horizon to horizon for more than half a minute, and was followed in a short time by two smaller flocks. All the latter part of October Skylarks were from time to time flying over, generally large straggling flocks or scattered individuals, flying nearly out of sight, but their call notes being distinctly audible.

It would be most interesting to know whether this remarkably large migratory movement has been general. I hope other readers of 'The Zoologist,' who are favourably situated for observing the arrival of winter birds, will report whether they have noticed a similar abundance of migrants this season. It was remarked to me by a friend, that the large number of Starlings and Golden Plover probably indicated the approach

of severe weather; but perhaps it was merely the result of the previous warm and dry summer which had been exceptionally favourable for the young broods.

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## NOTES AND QUERIES.

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The use of the word "feral."—The Rev. H. H. Slater exhibits much indignation (Zool. 1887, p. 461) against the growing use of this word, as signifying that the animal so designated occurs in a wild state. He is right in saying that "feral" is not a classical word, in this sense. But why should naturalists, of all people, restrict their vocabulary to purely "classical" words? Language must grow with knowledge. If Mr. Slater will consult the last edition of Du Cange he will find the word *feraliter* given on the authority of three writers, and explained as meaning *ferarum more*, "in the manner of wild beasts." Now I maintain that this adverb could never have been formed without a pre-existing adjective, *feralis*. The well-known classical word *feralis*, "funereal" (from *fero*), has nothing to do, etymologically, with *ferus*, "wild" (from *ferio*); and it is from the latter that the modern usage of the word has arisen. "Feral" is a very useful variant from "wild," especially in that its connotation is more restricted and definite; and I can see no reason why it should be gainsaid. Words pass out of use for centuries, and turn up again, times out of number, when occasion requires them. Surely scientific nomenclature is sufficient evidence of this.—HENRY T. WHARTON (39, St. George's Road, Kilburn, N.W.).

The word "feral."—In reference to Mr. Slater's remarks, I would point out that "feral" is regularly used by Darwin in the sense of "ran wild," and in the Glossary of Scientific Terms ('Origin of Species,' p. 433) is described as "having become wild from a state of cultivation or domestication." Mr. Slater says, "the adjective derived from *ferus* is *ferinus*." But *ferus* is itself an adjective, and, granting the necessity to coin a new word, I cannot see why we should be restricted to *ferinus*, with its awkward rendering "ferine," instead of the equally available and more euphonious "feral." The latter has, it is true, an old-time meaning of "funereal" (from *feralis*), but that is now quite obsolete.—ABEL CHAPMAN (Roker, Sunderland).

### MAMMALIA.

Monkeys opening Oysters.—On this subject our contemporary 'Nature' prints the following letter:—"So many people have expressed their surprise at hearing that I constantly saw Monkeys breaking open Oysters with a stone on the islands off South Burmah, that it may be of

interest to give a short description of their method of using such a tool. The low-water rocks of the islands of the Mergui Archipelago are covered with Oysters, large and small. A Monkey, probably *Macacus cynomolgus*, which infests these islands, prowls about the shore when the tide is low, opening the rock-oysters with a stone by striking the base of the upper valve until it dislocates and breaks up. He then extracts the Oyster with his finger and thumb, occasionally putting his mouth straight to the broken shell. On disturbing them, I generally found that they had selected a stone more apparently for convenience in handling than for its value as a hammer, and it was smaller in proportion to what a human being would have selected for a proportionate amount of work. In short, it was usually a stone they could get their fingers round. As the rocks crop up through the low-water mud, the stone had to be brought from high-water mark, this distance varying from ten to eighty yards. This Monkey has chosen the easiest way to open the rock-oyster—*viz.*, to dislocate the valves by a blow on the base of the upper one, and to break the shell over the attaching muscle. The Gibbon also frequents these islands, but I never saw one of them on the beach.”—ALFRED CARPENTER (Marine Survey Office, Bombay).

**Identity of the European and American Moose.**—In his “Catalogue of the Mammals of Massachusetts,” published in the ‘Bulletin of the Harvard College Museum’ (vol. i. p. 195), Mr. J. A. Allen remarks of the European and American Moose that their distribution is remarkably alike, reaching the Arctic coast in both continents, and extending southwards to the same isotherm. On the whole, he considers their identity as extremely probable, if not absolutely certain.

**Origin of the name “Lobster” applied to the Stoat.**—As allusion has been already made to this subject (Zool. 1884, pp. 112, 153), it may be of interest to note that the name “lobster” is used by Abraham Fleming in his English translation of Dr. Caius’ work “De Canibus Britannicis.” The word *Mustela*, which is used by the author in its generic sense, is rendered by his translator “the polecat, the lobster, the weasell,” as if enumerating the British species of the genus *Mustela*. Inferentially, then, we get the use of this name for the Stoat in 1576.—J. E. HARTING.

**The early use of Ferrets.**—A statute of 13 Rich. II., reciting that divers artificers, labourers, and others keep greyhounds and other dogs, and on the feast-days when good Christians are at church, go hunting in parks and warrens, to the great destruction of the game, enacts that “no such person who has not lands and tenements to the value of 40s. per annum, shall keep any such greyhound or other dog to hunt, nor shall use *fyrets*, hays, nets, harepipes, nor cords nor other engines to take or

destroy deer, hares, nor conies, nor other gentleman's game upon pain of one year's imprisonment."—J. E. HARTING.

**Weasels for New Zealand.**—Mr. Allbones, of Brigg, sent last week (Dec. 17th) the fourth consignment of Weasels and Stoats for New Zealand, with the view of thinning-down the rabbits. The cargo consisted of no less than 300, which have been collected from all parts of North Lincolnshire at an average cost of about 3s. 4d. each. The animals were to be fed on the way with live pigeons.—‘*The Field*,’ Dec. 24th.

**Habits of the Mole.**—I cannot but think that the account given in ‘*The Field*’ of March 13th, 1875, and reprinted in ‘*The Zoologist*’ for the same year (p. 4493), is in some respects very imaginative. With regard to the Mole's reputed habit of storing up worms in the marshy land, “where they remain alive and wholesome, and fetching them thence to their young as these require them,” I have grave doubts. It is quite true that such accumulations of worms as the writer describes are found in the runs of the Mole, but, without being able to speak with certainty on the subject, it is my belief that the runs in question are disused runs into which the worms having once penetrated, eventually find their way to the depressions referred to, and are unable to escape in consequence of the steepness of the sides of the cavity and the compactness of the soil which lines it. [But if a worm be placed in a basin of water it will be seen to ascend the side, which is much more “steep and compact” than the cavities made by the Mole.—ED.] I have frequently been informed that these imprisoned worms are stored up by the Mole for future consumption, and that they are disabled before being so deposited; but what has been pointed out to me as the supposed injury has invariably proved to be the thickened segments (clitella), and the flaccid, unhealthy appearance of the worms would doubtless arise from the abnormal circumstances under which they are found. In frosty weather the worms, which form the chief food of the Mole, retire to a greater or less depth in the soil, according to the duration and severity of the frost, and are followed by the Moles; but in this country frost seldom penetrates so deeply into the soil as to prevent the Moles from burrowing, and fresh mole-workings are often to be seen when the surface of the land is icebound. Drought is the great enemy to the Mole. During the past summer they suffered severely, and might frequently be seen searching on the surface for food (and perhaps water), the worms having retired to too great a depth for them to follow. Like the Editor, I have been astonished at the rapid progress the Mole is capable of making when surprised outside its run, but if the surface were sufficiently soft to permit of its burrowing it has quickly passed out of sight. English Moles must, however, be a very degenerate race compared with Le Court's Mole, whose speed when frightened “was equal to that of a horse at full trot”; I have never read the particulars of

the "satisfactory experiment" referred to at p. 125 of the second edition of Bell's 'British Quadrupeds' in the original French [Geoffroy St. Hilaire, Cours de l'Hist. Nat. des Mammifères, 18° Leçon, pp. 34, 35. Paris, 1829.—ED.]; but I have always had a shadow of a suspicion that when the "cri effroyable" was blown into the horn which was "introduced into the passage" the momentary effect produced upon the little flags might be due rather to the vibration thus set up in the column of air than to the flight of the Mole along its burrow. [If the horn were employed as a *blowpipe* doubtless a current of air might be transmitted for a short distance along the gallery; but if used to produce a sound—*un cri effroyable*—the peculiar compression of the lips required for this purpose would operate to prevent any such current from being transmitted. The horn employed by Le Court was a cowherd's horn, *un cornet à bouquin*.—ED.] The numbers of young ones in a brood which have come under my notice were in three instances four, and in one instance three. I have more than once seen a Mole crossing a ditch; but last summer some friends of mine, sailing on the Yare ten miles below Norwich, where the river is a considerable width, saw in mid-stream what they took to be a Water Rat swimming towards the yacht, but which, to their surprise,—as they passed close by it,—proved to be a Mole. Albino Moles, in my experience, are rare; but a variety, light cream-coloured or nearly white on the upper surface, the dorsal line slightly tinged with amber, and the under surface—particularly the throat and chin—orange-buff, fading to white, is not at all uncommon. In fact, in some low-lying land in the parish of Oby it may be said to be common. My friend Mr. Frank Norgate, whose opportunities for out-door observation have only been equalled by the excellent use he has made of them, some years ago sent me sketches of three Moles' "nests" which—to use his own expression—he had "dissected." The runs, which he carefully followed up, were of a very complex character, but the general construction and the arrangements of the galleries were very similar to the plan given at p. 122 of Bell's 'British Quadrupeds.' The purpose of these curious structures does not seem to have been at all satisfactorily explained, and I trust that the Editor's article may have the effect of stimulating those correspondents, who may have the opportunity, to endeavour to clear up this and other moot points in the economy of this interesting animal.—T. SOUTHWELL (Norwich).

**Varieties of the Mole in Durham.**—I have often met an old mole-catcher and taken a stroll with him as he went his rounds—"lifting his traps," he termed it. He dropped the dead Mole from each trap, reset it, then placed it in the same or some other run. He caught a good many, for they were very plentiful where I was brought up, a few miles from Durham. I secured a cream-coloured specimen once for preservation, and have it yet.

The old man told me that he caught a cream-coloured one nearly every year, on one particular part of the estate, in some black peaty soil, which he seemed to think had something to do with the abnormal colour. In resetting his traps he was very particular never to touch the pipe or trap part with his fingers, and used to tell me that the Mole's sense of smell was so keen that should he handle the trap it would not enter it, but at once burrow to one side.—JAMES SUTTON (Durham).

**The Bank Vole in Co. Durham.**—I am able to state, from practical experience, that the Bank Vole, *Arvicola glareolus*, is to be found near this city, and no doubt elsewhere in the county. About a dozen years ago I packed some hundreds of ranunculus roots in a box for safety during the winter, and placed it on a shelf in a sort of storehouse in the garden, and near to an old fence. Happening to look at them during the winter, I found that most of them were partly or totally eaten by mice. I blamed the Common Mouse, and at once baited a wire-trap with cheese and placed it near to the box. In a few days, or rather nights, I had secured alive about half a dozen Bank Voles, and I well remember my surprise on seeing the rich rufous-red colour of their fur, so very different to that of the commoner *Arvicola agrestis*.—JAMES SUTTON (Durham).

**Bank Vole in Yorkshire.**—As I am not aware whether the occurrence of the Bank Vole, *Arvicola glareolus*, has previously been noticed in this part of Yorkshire, I forward for your inspection a specimen of what I believe to be that species, and which I found dead upon a footpath cut through furze- and thorn-bushes on the cliffs near Scarborough. Some years ago, before I had any knowledge of the distinction between *glareolus* and *agrestis*, I picked up what I took to be a specimen of the latter, but now feel pretty sure it was of the former species, for I remarked the unusually long tail.—R. P. HARPER (2, Royal Crescent, Scarboro').

[In their 'Handbook of Yorkshire Vertabrata' (p. 14), Messrs. Clarke and Roebuck characterise the Bank Vole as "reported from a few localities scattered irregularly over the whole county; probably more general, but not usually distinguished from the common Field Vole."—ED.]

**Bank Vole in Nottinghamshire.**—When out in the country the other day, near Nottingham, I saw a Bank Vole, *Arvicola glareolus*. These little creatures are not at all common, although rather widely distributed. This is only the second I have been fortunate enough to see; the other was a tame one kept by Mr. W. Rigby, taxidermist to the Natural History Museum. They make very interesting pets, and attain to better appearance in captivity than when wild. They construct a nest of grass and moss, concealed amidst dense herbage. Their favourite haunts are old ivy-covered hedge-banks, especially those from which the soil has been washed away in places, leaving hollows behind the roots which have thus become bared;

banks adjoining woods and plantations seem particularly attractive to them. In spots like this, pleasingly varied by a sprinkling of old mossy stumps, brambles, and bushes, with roots of overhanging trees, backed by deep cavernous recesses, the Bank Vole makes its burrow and forms runs in all directions, partly above and partly below the surface, probably also making use of those of the Mole. The one I saw had made its burrow in the side of a bank facing and sloping down to a small stream, the burrow evidently going into and amongst the roots of a wild rose-bush above it. The appetite of the Bank Vole has caused much trouble amongst naturalists. The one I saw emerging from its burrow slid gracefully down the bank, curled his tail around a projecting root and deliberately dived under water, shortly after emerging with the roots of the duck-weed in his mouth; this he devoured, sitting on the aforesaid root. His repast over, he cleaned himself a little, and then quietly returned to his hole, never having observed me, although I was not two yards distant.—W. FINCH, JUN. (Nottingham).

[The diving and returning with duck-weed is very suggestive of the behaviour of a young Water Vole, but we presume our correspondent is sufficiently well acquainted with both species as to have made no mistake in its identification.—ED.]

**Bank Vole in Sussex.**—Having noticed in recent numbers of 'The Zoologist' several letters on the distribution of the Bank Vole, I send some of my experiences of that little animal in Sussex. I used to catch a fair number of them near Lancing, in a disused chalk pit overgrown with bushes and weeds. I used a strong mouse-trap baited with an unbleached almond, and set it either at the mouth of a hole or near one, and covered the trap up with grass; having caught as many as I wanted, it occurred to me to try to keep one or two alive, so I put the next one that I caught in a larva breeding-cage, and it soon became quite tame; and I could let it run about a table and up my arm. Its powers of jumping were very great; it would jump from my hand on to a shelf quite a foot above it. I also caught one or two young ones nearly full-grown; these differed from the full-grown ones by their fur being of a greyish brown, with none of the red tint. In the above-mentioned pit they seemed to be the commonest of all the mice. I only caught one other species there, namely, the Long-tailed Field Mouse, *Mus sylvaticus*.—F. HEAD (41, Wimpole Street, W.).

**Bats in Middlesex.**—I have lately received, in the flesh, a specimen of the Long-eared Bat (*Plecotus auritus*, Linn.), from Hounslow, which was discovered dead in a loft. An entomological friend of mine was "sugaring" in that vicinity this summer, and, in striking at a *Noctua* which was hovering near one of his trees, secured a small Short-eared Bat (most probably *Vesperugo pipistrellus*), which made a dash at the moth at that moment. After inspecting it carefully he turned it out of his net; he describes it as "squealing pitifully like a Mouse, whilst it was a captive."

I have often noticed the Pipistrelle, flitting up and down High Street, Notting Hill, and in the neighbouring Squares at dusk.—PERCY RENDALL (16, Little Grosvenor Street, W.).

[In addition to these two other species may be named as occurring, not merely in Middlesex, but in the Metropolis—namely, the Noctule, which may be seen any summer evening flying up and down at a good height over the Serpentine, and Natterer's Bat, a specimen of which was shown to us after being captured in Thayer Street, Manchester Square. Outside the Metropolis the rarer Daubenton's Bat has been taken at Kingsbury Reservoir, and the Barbastelle at Hornsey.—ED.]

#### BIRDS.

**Cuckoo in India.**—I have been here for just one month, and during that time have constantly heard the cry of the Cuckoo. Last Sunday (June 12th) I heard it at Lackwar, fifteen miles from here. This would apparently point to Jerdon's not being correct in saying the Cuckoo is rare in India. Mr. Mutzler, the owner of this hotel (the 'Charleville'), tells me the Cuckoo is constantly heard from spring to October.—F. C. CONSTABLE (Mussoorie, June 15).—'Nature.'

[We are informed by Mr. Seebohm ('British Birds,' vol. ii. p. 378) that in India, Ceylon, Burma, and the Philippines, our Cuckoo is only known as a winter visitor, but that a few remain to breed in the Himalayas. He adds that the very nearly allied species, *Cuculus himalayanus*, differs from it in no respect except in size (being constantly smaller), and in its note, "which is not a double one, but a single guttural and hollow-sounding note resembling that of the Hoopoe." If this is the case, the species heard by Mr. Constable at Mussoorie and at Lackwar may very likely have been *Cuculus canorus*.—ED.]

**Position of Swallows' Nests.**—Referring to Mr. Larken's note (Zool. 1887, p. 467), I can answer for a similar position of at least two nests of the Swallow. One nest was observed in a church-porch in Oxfordshire, the owners of which were constantly coming in during the service, and sometimes found considerable difficulty in getting out again. The second nest was in Sussex: in the porch over the door of a village public-house, the hen was sitting, though beer was "consumed on the premises," and the door slammed within a few feet of the nest all day long. Nests of these birds, in my experience, are always "cup-shaped," though they are usually placed at the junction of two beams.—PERCY RENDALL (16, Little Grosvenor St., W.).

**Curious Site for a Swallow's Nest.**—A short time since I heard of a very curious site for a Swallow's nest. It was placed under the flooring of a passage of a house, and the bird had to go through a hole in the boards, and then fly or creep along for some time before reaching it. Two broods were reared there. The house is only partially occupied, but the tenant

kept wood, coals, &c., in a back place, and had to cross the passage referred to often during the day, and sometimes after dark. On such occasions the bird would sometimes come out of the hole and attack the person carrying the light, but he, being fond of our feathered friends, did not resent such treatment, but retreated as soon as possible, and in other ways showed kindness to his visitor.—J. G. HAMLING (Barnstaple).

**The Treatment of Eider Ducks in Captivity.**—I received two ducks and a drake last year (in September) from the Orkneys. They had been reared mainly on earthworms, but would also eat a little oatmeal made into a ball, and bread. When I turned them on to my water (though I had given them opportunities in an aviary of bathing and getting their oil-glands to work) they got miserably soaked, and were all three more or less affected with lung disease afterwards. One duck pined away and died, the others got better. The interior of the duck that died was much affected with tubercle on the vital organs, and immediately after death there was a quantity of green mould within the cavity of the breast. I got the other two birds gradually to eat barley-meal and bread as their main food, with ox-liver, or earthworms, at one meal. I fed them three times a day. During last winter both of them were at times very capricious in their feeding, sometimes one and sometimes the other going amiss for three or four weeks at a time, and I never thought they would survive. Generally they would never touch shell-fish of any kind; but when they were amiss it sometimes happened that they would fancy periwinkles or mussels, and then I got more of these for them, and they became strong again. I never found that my birds would eat the shell-fish in their shells, nor, if the latter were broken and crushed. They always required the “winkle” or mussel to be shelled and thrown to them, or they would not touch them. They “went wrong” perhaps four times, each bird, between October, 1886, and May, 1887. Once or twice they would eat nothing at all for three or four days (*i. e.*, the bird that was unwell at the time), and then it began to feed greedily on maize and barley, and recovered on that diet. When the male began to assume the dull plumage of early summer (I will refer to their change of plumage later) he very nearly died. During June, July, and August both birds did well, mainly upon barley-meal. In September the drake was very bad indeed, and a day or two later the duck was slightly affected,—with “roup,” I believe, a nasty discharge running from the tear-duct of the eye, and eventually the drake lost the sight of one eye, and the other was weakened. This eye is better now. The drake was moulting heavily during this illness, and it went hard with him; but now both birds seem very well. At this moment (Nov. 20th) they are floating in a small pool surrounded by ice, for we have had some keen frosts lately, and both of them look as healthy as possible. I have never got my birds to eat any fish, though I have often offered it to them in various ways. The male eats bread, especially brown

bread-crusts, pretty freely, but the duck seldom. My practice is to give them as much barley-meal as they will eat (very little just now) at 8.30 a.m.; then to let them have some pieces of ox-liver, or—when many rabbits are being killed—of fresh rabbit-liver. At dusk the other water-fowl are fed with maize and barley, and the Eiders dive and work away at this, and get a good deal. After this they have as much liver as they can eat, varied occasionally with earthworms. As to plumage, I feel certain that if my drake had been in sound condition during the past twelve months, and under less unnatural conditions, he would have acquired adult plumage this winter. Some time in October last year the drake began to show a few white feathers on the crop and neck, also on the flanks; while some few of the feathers on the back began to change their colour, and became by March of a silvery white, where they had been black. By that time the crop had become of a pure white. In June this had become speckled with a few dark brown and dark grey feathers, and by the beginning of August it was more dusky than white, and at a hundred yards distance the drake was only distinguishable from the duck by the contrast between her reddish brown colour and his sooty faded brown. It was clearly the nearest approach to the plumage of the duck that he was intended to attain, at least in his second summer. The duck Eider threw all the flight-feathers in her wings in one night, quite at the end of August, and, about a fortnight later, the drake threw almost the whole of his in the course of one day, and their body-feathers came off, and were replaced by new ones in an extraordinarily short space of time. The drake is now in adult plumage, except that the green of the nape is faint and speckled with greyish brown; but it is getting more distinct each week. The cap of the head also, where it should be pure black, is speckled in the same way, the lighter feathers showing amongst the dark ones. The shoulders and back are patched with dark colour, and the scapulars are only just beginning to change to white. The crop, breast, belly, and sides of the bird show the complete adult colouring. I am aware that the Eider has been successfully kept, and even bred, at the Zoological Gardens in Regent's Park. Possibly my birds were mismanaged before they reached me, and may have lost vigour of constitution; but, for whatever cause, they seem to me the most difficult of British ducks to keep in health. I have Goldeneye, Scaup, and Scoter, at this moment, feeding freely on maize and barley, and apparently as thriving, and doing as well, as the commoner ducks which are swimming with them and with the Eiders in the same piece of water. Most of these find their own living during the summer months, only drawing up in the autumn months to resume the grain diet, which they had neglected since the water-weeds began to grow in the previous spring.—W. H. ST. QUINTIN (Scampston Hall, Rillington, York).

**Birds observed at Rye.**—During the months of September and October large flocks of waders were to be seen on the mud-flats near the

harbour. Prominent among them were Knots (*Tringa canutus*), Dunlins (*T. alpina*), Sanderlings (*Calidris arenaria*), Ringed Plover (*Æ. hiaticula*), while in lesser numbers occurred the Turnstone (*S. interpres*), Kentish Plover (*Æ. cantianus*), Redshank (*Totanus calidris*), Greenshank (*T. glottis*), Sandpiper (*T. hypoleucus*), together with an occasional Little Stint (*Tringa minuta*), and Grey Phalarope (*Phalaropus fulicarius*), the last but one occurring in small flocks of eight or nine, several of which were obtained by local collectors. In the month of November birds were much less plentiful, but with hard work a few could be always obtained, such as Grey Plover (*Charadrius helveticus*), Ringed Plover, Golden Plover (*C. plumialis*)—these latter being far from plentiful, owing to the absence of cold weather. On November 16th I had the unexpected pleasure of seeing a Buzzard (probably *Buteo vulgaris*), but, not having my glasses at the time, could not decide for certain. When first seen it was surrounded by four or five Rooks who were mobbing it. Every now and again one of these would mount above it, and flying downwards would peck at its back, of which the Buzzard seemed not to take the slightest heed. I lay for three-quarters of an hour watching it gradually sailing upwards and seawards, each circle being longer than the last, until it disappeared from sight. The flight of this bird seemed to require no effort. I hardly saw it flap its wings more than once or twice all the time I watched it. No doubt it will sooner or later fall a prey to some one on the look out for rare British birds. Out at sea Scoters (*Ædemia nigra*) occurred in large numbers, but very wild, having been much shot at, with an occasional Velvet Scoter (*Æ. fusca*) and Divers (*Colymbus septentrionalis*), and I one day saw a splendid Great Northern Diver (*C. glacialis*), but could not get near it.—W. H. NEWBERRY (105, Wood Street, London).

**Sale of a Great Auk's Egg.**—On Dec. 13th a number of naturalists were attracted to the Auction Rooms of Mr. Stevens in Covent Garden, by an announcement that a sale of birds' eggs would take place, amongst which was an egg of the Great Auk, *Alca impennis*. This egg, the property of the Rev. Henry Burney, of Wavendon Rectory, Woburn, Bedfordshire, had been purchased by him for £31 10s., in July, 1865, when four eggs of this bird (duplicates from the Museum of the Royal College of Surgeons) were disposed of by auction in the same room. It was now to change hands once more. The biddings commenced at fifty guineas, and, increasing by additional offers of five guineas and ten guineas, quickly ran up to 160 guineas (£168), at which price it was knocked down to Mr. Leopold Field, of Lambeth Marsh, and Harlesden, Middlesex.

**Notes from Western Australia.**—Some months have elapsed since I forwarded my last notes, and I do not even know if they were received, no copies of 'The Zoologist' having reached me from home since then.

[The notes referred to appeared in 'The Zoologist' for September (p. 352). —ED.] The first Emu's eggs were brought in by natives on May 25th. These birds retire to the neighbourhood of the sea to breed, making their nests close to the salt marshes, which extend for some miles in breadth along the coast. The first egg laid is covered by twigs; as more eggs are laid more twigs are added and placed under the eggs. I was on the coast some weeks, and noticed the White-tailed Sea Eagle and Black Oystercatcher commonly. The Wedge-tailed Eagle, *Aquila audax*, breeds near the coast, being least disturbed there. I noted a nest with two eggs on June 2nd, built on the top of a low bush. There being no large trees or crags here, the Eagle's eyrie is an extremely unromantic affair. One nest I saw thirty feet from the ground, formed of about a cartload of sticks. It was in the fork of a gum tree. All others I have seen have only been from six to twenty feet from the ground in bushes or low trees. Sometimes an extremely slight nest is constructed. To show the number of these magnificent birds, I may mention that fifteen were poisoned in one day upon a lamb. I myself had five down in about half an hour from another poisoned carcass. It was a fine sight to see these birds fighting over the meat. I picked one up afterwards, and after standing on his back some minutes concluded he was dead, and shouldered him to my camp, as I wished to skin it. On the road it suddenly revived and attacked my rear so savagely, that I was glad to drop the bird and kill it outright before going farther. Last month I took a trip up the Minilya river, sixty miles north from this. Little Quails were in thousands, and I got a great number of eggs. Some young had hatched. The settlers there were very anxious for me to see some beautiful "Crested Partridges," which they said were common, but I was not lucky enough to find any. The Red-tailed Cockatoo, *C. naso*, occurs there, and the Black Swan breeds there in good seasons; both young and eggs have often been secured: I imagine this is a very long way north to breed. Large flocks of what the settlers term "Nichol Bay Pigeons" were frequently seen, but I was unable to identify them. I cut out a nest of the Nankeen Kestrel, *S. cenchroides*, containing five eggs, from a hollow gum branch. In a bush below was a large snake, which we killed. I find a considerable difference in the nesting here from at home; one has to look out for snakes, poisonous caterpillars, &c., and a colony of serpent-ants in possession of a tree are very awkward customers to go through. The grub of a small moth was eating off a lot of vegetation, and a swarm of Grasshopper-birds or "Swarmer," *Glareola grallaria*, feeding on the grubs. I secured any number of their eggs. Returning here I find birds much later in breeding. I have found at least thirty nests of the Western Brown Hawk, *H. occidentalis*, by far the commonest bird of prey, and an extremely noisy one. The eggs are two or three in number, much like Peregrines. The bird either makes a

new nest or repairs an old one. Some small white eggs with brown spots bother me much. I have found three in different small birds' nests with totally differently marked eggs. They must be the eggs of some parasitical bird, but appear too small for any of the Cuckoos here, being only as large as a Willow Wren's egg. The Pacific Heron, *Ardea pacifica*, and White-fronted Heron, *A. novæ-hollandiæ*, are not uncommon here. I find a difficulty in identifying small birds, not having any plates to compare. Next week, all being well, I start overland to the south, hoping to get as far as Albany, and shall expect to come across many interesting forms,—amongst them the Leipoa, which breeds abundantly along the coast as far as this.—THOMAS CARTER (Gascoyne River, West Australia).

**Peculiarities in Eggs of the House Sparrow.**—Some peculiarities in the eggs of this bird appear to have been overlooked by ornithologists. The eggs forming a set, or clutch, are generally five; occasionally six are met with, but not more than one set in ten has that number—very probably not more than one set in twenty. In every set or clutch containing four, five, or six eggs, one egg—occasionally two—will be found of quite a different type, being, with very few exceptions of a lighter coloured ground than the others, with the colouring laid on in spots and blotches, instead of being diffused in specks more evenly over the whole surface of the shell. An odd egg of a darker colour than the others of the clutch is rarely met with, and in the ninety sets I have now before me there is only one set in which the odd egg has a ground of a slightly darker shade. The ninety sets of eggs to which I refer were all taken under my own supervision, and all blown by myself, so that I know them to be genuine sets and not made up. In every set containing four or five eggs, the odd egg appears, excepting in one clutch of four and one clutch of five. In these clutches the odd egg may have been dropped when the bird was from home. I will now mention the extreme infertility of the "odd egg," which I found last breeding season to be about sixty per cent. In the season of 1886 I found it to be seventy-five per cent. This egg is, I believe, as a rule, the fourth egg laid, for in clutches of five eggs I have found an egg of the usual type laid after the odd egg has appeared. During the last two breeding seasons I have had a very great number of clutches of eggs and also broods under my notice, taken over a considerable area in Hertfordshire, Cambridgeshire, and Essex, and I find the average clutch to be  $4\frac{1}{2}$  eggs, and the average brood to be only  $3\frac{3}{8}$  young birds; these figures show that about 30 per cent. of the eggs are unproductive. From these observations, which I have carefully made, the Sparrow is not so prolific as it is generally supposed to be, and it is quite possible for the "British farmer" to kill them down too close, and to his present troubles he may add worse enemies than the Sparrows to eat his crops.—JOSEPH P. NUNN (Royston).

**Disparity in Size and Colour of Eggs of the same Species.**—Referring to the notes under this head in recent numbers of ‘The Zoologist,’ I can testify that an unusually small egg is not always the last one laid in a set. In April, 1886, I found in a Rook’s nest two fresh eggs, one unusually large, the other a small one, about the size of a Sky Lark’s egg. I took them both; the Rook did not forsake, but laid three more eggs, and in due time hatched two young birds. In this instance the small egg was probably the first of the clutch. Blue bullfinch-like eggs of the Chaffinch are not at all uncommon. I have found some half-dozen clutches of these eggs, and seen many more during the last few years.—E. W. H. BLAGG (Cheadle, Staffordshire).

**Long-tailed Duck and Common Skua in Dorsetshire.**—During the month of November several Long-tailed Ducks, *Harelda glacialis*, made their appearance in Poole Harbour, and five were shot, one of which was a fine adult male, the others birds of the year. In the same harbour a Great Skua, *Stercorarius catarrhactes* (Linn.), was observed in close proximity to a “company” of Wigeon, one of which it had apparently struck down, when a gunner, who was in pursuit of the latter birds, fired and killed it. It is now in the possession of Mr. Robert Burns, of Wimborne.—J. C. MANSEL-PLEYDELL (Whatcombe).

**Long-tailed Duck in Lincolnshire.**—The unusual immigration of the Long-tailed Duck, *Harelda glacialis*, during October and November last noticed by the Rev. H. A. Macpherson, in ‘The Zoologist’ (1887, p. 432), and subsequently in ‘The Field’ (pp. 773 & 852), has been very apparent on the North Lincolnshire coast and on the Humber. On October 24th I killed two at one shot at Tetney. On Nov. 15th three were exposed for sale in a game-shop at Great Grimsby, and on the 29th two more in the same shop. All these were said to have come from Killingholme, a village eight or nine miles above Grimsby. Many more of these ducks are reported to have been killed by wildfowl shooters on the Humber. All those above mentioned were in immature plumage.—G. H. CATON HAIGH (Grainsby Hall, Great Grimsby).

**The Long-tailed Duck.**—Saxby, who was very well acquainted with the Long-tailed Duck, has recorded that in December, 1868, a bird of this species was brought to him “in a very peculiar state of plumage, having a few large black spots upon the breast” (‘Birds of Shetland,’ p. 262). On December 1st, 1887, I obtained a somewhat analogous variety of this duck from a pile of Common Scoters in the Metropolitan Market. This differs from forty others that I have lately examined in the flesh, inasmuch as the upper breast is profusely spotted with dark brown spots about the size of a pea, the rest of the lower parts being pure white. A male that I sent to Mr. O. V. Aplin on November 27th showed a few black feathers appearing

on the breast, but this is, of course, quite normal. If the variation alluded to has been noticed by others, information would be welcome.—H. A. MACPHERSON (Carlisle).

[Is this phase of plumage abnormal? Is it not that of a drake at the end of its second year beginning to assume the spring plumage?—ED.]

**Bewick's Swan in Pembrokeshire.**—An adult specimen of Bewick's Swan was shot on November 10th, on Trevithan Pool, near St. David's, by Mr. C. Harding Harries. The bird was alone, and when the pond was approached it took refuge among some tame geese, swimming into their midst, depressing its body as low as it could in the water, and lowering its graceful neck in its attempts to conceal itself. But all in vain, as Mr. Harries waded out into the pool and shot it.—MURRAY A. MATHEW (Stone Hall, Pembrokeshire).

**Reported occurrence of the Goshawk in Norfolk.**—Mr. J. H. Gurney, jun., informs me that the Goshawk, *Astur palumbarius*, mentioned in my notes as "shot near Yarmouth," October 21st (Zool. 1887, p. 418), was caught in the North Sea on October 19th, and brought into Yarmouth by some smacksmen on the 21st.—T. E. GUNN (86, St. Giles Street, Norwich).

[This is doubtless the bird referred to in the 'Report on Migration' for 1886, p. 39, as "Goshawk, *Astur palumbarius*, caught at sea, and brought in alive to Yarmouth; date uncertain."—ED.]

**Jay in Co. Kildare.**—As the Jay is decidedly scarce and local in Ireland, perhaps it may be of interest to record that one of these birds was met with in Lyons demesne, Co. Kildare, on the 15th October last. The keeper who shot it brought it to me as a rare bird he had not seen before. He said it was alone, and attracted his attention by its notes. I have not known the Jay to occur in this district before. Can anyone say whether it is now a resident anywhere in this county, or in the adjoining counties of Wicklow, Dublin, or Meath? I do not recollect having seen any recent record of localities for the Jay in Ireland.—J. E. PALMER (Lyons Mills, Straffan, Co. Kildare).

[In his 'List of Irish Birds,' 1885, Mr. A. G. More says the Jay is resident but very local, occurring principally in the South and East of Ireland.—ED.]

**Wryneck in Shetland.**—A specimen of the Wryneck, *Jynx torquilla*, was picked up, dead, near Hillswick, Shetland, on the 25th August last. Being a little uncertain as to its species, I forwarded it to Edinburgh, when it was at once recognised by my friend Mr. Andrew Hogg. Only two specimens of this bird have, so far as I am aware, been previously seen in Shetland, both of which are mentioned in Saxby's 'Birds of Shetland.'—CHARLES A. ANDERSON (22, Melville Terrace, Edinburgh).

**Starling nesting in November.**—I have been informed from a reliable source that on the 12th November last a Starling's nest was found in the roof of a cottage in Aylesbury, containing hard-set eggs. Upon their being broken, the young birds were found within alive, which would no doubt have been hatched in a day or so, but in all probability they would not have survived throughout the cold weather.—F. HAYWARD PARROTT (Walton House, Aylesbury).

**Storm Petrel at Ipswich.**—Early in the morning of October 25th a Storm Petrel was picked up alive on the Norwich Road, Ipswich. It was in an exhausted condition, and died a few hours afterwards. It had been driven inland by stress of weather, a sharp and severe snow-storm having occurred the previous night.—E. W. GUNN (89, Prince's Street, Ipswich).

**Grey Phalarope in Lincolnshire.**—The Grey Phalarope is sufficiently rare in North Lincolnshire to render its occurrence worth notice. On December 1st one was shot at Tetney from one of the marsh drains by my man, who happened at the time to be carrying my gun. He had previously noticed the bird flying about a neighbouring stack-yard, but mistook it for a Dunlin until he saw it swimming in the drain. I have only once before met with this species in North Lincolnshire,—*viz.*, in the autumn of 1879,—when one was shot by my father on the Tetney sands.—G. H. CATON HAIGH (Grainsby Hall, Great Grimsby).

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## SCIENTIFIC SOCIETIES.

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### LINNEAN SOCIETY OF LONDON.

November 17, 1887.—Dr. ST. GEORGE MIVART, F.R.S., Vice-President, in the chair.

A paper was read by Mr. Patrick Geddes, entitled "Some Factors of Variation in Plants and Animals." This part of the memoir dealt chiefly with plants and their shortening of the axis in leaf, flower, &c. According to him, the origin of species is to be found in soil and climate, on the one hand, and in a more or less distinct ebbing of the vegetative activities back from the growing point. Modification by descent is seen to take place along a definite line of change within which the action of natural selection can at best somewhat accelerate its journey, when it does not actually retard or exterminate it.

A communication was read on the *Copepoda* of Madeira and the Canary Islands, with descriptions of new genera and species, by Mr. Isaac C.

Thompson. From a pretty thorough examination of specimens obtained at the various islands of the Canaries and Madeira, it seems evident that the Copepodian fauna varies in quantity rather than specifically. Excepting several cases where locally one or two only of a species were found, and which probably indicate rarity of that species, their equal distribution amongst the islands seems general. Sixty-five species in all were obtained. Of these six are new to science, and three probably of generic significance. Of the total number twenty-three are known in British waters, and of these fourteen belong to the family *Harpacticidæ*.

December 1, 1887.—WM. CARRUTHERS, F.R.S., President, in the chair.

The following gentlemen were elected Fellows of the Society:—Mr. K. H. Bennett (Sydney, New South Wales), Lord Egerton of Tatton, Mr. W. Francis, the Rev. F. W. Galpin, Mr. W. G. M'Millan, Mr. A. J. North (Melbourne, Victoria), Mr. J. D. Ogilby (Sydney, New South Wales), Mr. A. S. C. Stuart (Madras), Mr. G. Swainson, Mr. I. C. Thompson, and Mr. C. Topp (Melbourne, Victoria).

There was exhibited, for Mr. O. Fraser, of the India Museum, Calcutta, a specimen of what was supposed to be a weather-worn seed of a palm. In a letter read at the meeting from Mr. Fraser the object in question was stated to have been picked up on the Madras coast, but could not be satisfactorily determined by the Indian authorities. The specimen having been examined by Dr. J. Anderson (late of Calcutta) and Mr. Dendy, of the British Museum, they inclined to regard it as possibly the consolidated roe of a fish, while Prof. C. Stewart surmised that the substance was vegetable in structure; the matter therefore remained *sub judice* pending microscopic and chemical investigation.

Sir John Lubbock read a paper, in continuation of his previous memoirs, on "The Habits of Ants, Bees, and Wasps." He said that it was generally stated that our English slave-making ant, *Formica sanguinea*, far from being entirely dependent on their slaves, as was the case with *Polyergus rufescens*, the slave-making ant *par excellence*, was really able to live alone, and that the slaves were only, so to say, a luxury. Some of his observations appeared to throw doubt on this. In one of his nests the ants were prevented from making any fresh capture of slaves. Under these circumstances the number of slaves gradually diminished, and at length the last died. At that time there were some fifty of the mistresses still remaining. These, however, rapidly died off, until at the end of June, 1886, there were only six remaining. He then placed near the door of the nest some pupæ of *Formica fusca*, the slave ant. These were at once carried in, and soon came to maturity. The mortality among the mistresses at once ceased, and from that day to this only two more have died. This seems to show that the slaves perform some indispensable function in the nest, though

what that is remains to be discovered. As regards the longevity of ants, he stated that the old queen ant, which had more than once been mentioned to the Society, was still alive. She must now be fourteen years old, and still laid fertile eggs; to the important physiological bearing of which fact he called special attention. He discussed the observations and remarks of Graber as regards the senses of ants, with special reference to their sensibility towards the ultra violet rays, and referred to the observations of Forel, which confirmed those he had previously laid before the Society. Professor Graber had also questioned some of his experiments with reference to smell. He, however, maintained the accuracy of his observations, and pointed out that Graber had overlooked some of the precautions which he had taken; his experiments seemed to leave no doubt as to the existence of a delicate sense of smell among ants. As regards the recognition of friends, he repeated some previous experiments with the same results. He took some pupæ from one of his nests (A) and placed these under charge of some ants from another nest (B) of the same species. After they had come to maturity he placed some in nest A and some in nest B. Those placed in their own nest were received amicably, those in the nests of their nurses were attacked and driven out. This showed that the recognition is not by the means of a sign or password, for in that case they would have been recognised in nest B and not in nest A. Dr. Weissmann had confirmed his observations in opposition to the statement of Lespis, that white ants are enemies to those of another nest, even belonging to the same species; the domestic animals, on the other hand, can be transferred from one nest to another, and will be amicably received. In conclusion, he discussed the respective functions of the eyes and ocelli, and referred to several other observations on various interesting points in the economy of the Social Hymenoptera.—J. MURIE.

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#### ZOOLOGICAL SOCIETY OF LONDON.

December 6, 1887.—Professor W. H. FLOWER, C.B., LL.D., F.R.S., President, in the chair.

Mr. Howard Saunders exhibited (on behalf of the Rev. H. A. Macpherson) a specimen of the Isabelline Chat, *Saxicola isabellina*, shot in Cumberland, being the first recorded occurrence of this species in Great Britain.

Prof. Bell exhibited and made remarks on specimens of the tegumentary glands from the head of the Rocky Mountain Goat, *Haplocerus montanus*.

A communication was read from Prof. H. H. Giglioli and Count T. Salvadori, containing notes on the fauna of Corea and the adjacent coast of Manchuria. These notes were founded on a large collection, principally of Vertebrates, made by order of H.R.H. Prince Thomas of Savoy, Duke of Genoa, whilst he was in command of the 'Vettor Pisani,' on a voyage round

the world, 1878—81. The collection was stated to be now deposited in the Royal Zoological Museum at Florence.

A communication was read from Mr. L. Taczanowski, containing a list of the birds collected in the Corea by M. J. Kalinowski between September, 1885, and March, 1887. A Woodpecker in the collection was considered to be new to science, and named *Thriponax kalinowskii*.

Prof. W. H. Flower read a paper on the Pigmy Hippopotamus of Liberia, *Hippopotamus liberiensis*, and its claims to distinct generic rank. The specimen of this animal in the National Collection possesses two incisor teeth on one side of the lower jaw. This and other considerations induced the author to question the advisability of separating it generically from *Hippopotamus*.

Mr. Francis Day communicated a paper by Mr. J. Douglas-Ogilby, of the Australian Museum, Sydney, on a new genus and species of Australian *Mugilidæ*, which he proposed to designate *Trachystoma multidentis*.

Mr. Day also read a second paper by Mr. Ogilby, giving the description of a new genus of *Percidæ* based on examples taken in the Gulf of St. Vincent, South Australia, which the author proposed to describe as *Chthamaloptyx melbournensis*.

A communication was read from Dr. M. Menzbier, of Moscow, describing a third species of Caucasian Wild Goat. This he proposed to call *Capra severtzovi*, being the *C. caucasica* of Dinnik, but not of Guldenstädt.

Mr. Blanford read some critical notes on the nomenclature of Indian Mammals, in which he treated of *Macacus ferox*, Shaw (*M. silenus*, auct. nec Linn.), *M. irus*, Cuv. (*M. cynomolgus*, auct., nec Linn.), *M. rhesus*, *Presbytes thersites*, Blyth, *Semnopithecus chrysogaster*, *Felis bengalensis*, *F. jerdoni*, *Herpestes mungo* (*H. griseus*, auct., nec Geoffr.), *Vulpes vulgaris*, *V. alopeæ*, and the genera *Putorius*, *Mustela*, *Xantharpyra*, *Cynonycteris*, *Hipposiderus*, and *Phyllorhina*.—P. L. SCLATER, *Secretary*.

#### ENTOMOLOGICAL SOCIETY OF LONDON.

December 7, 1887.—Dr. DAVID SHARP, F.Z.S., President, in the chair.

Mr. C. E. Stanley-Phillips, of Shooter's Hill; Mr. H. W. Barker, of Peckham; and Herr E. G. Honrath, of Berlin, were elected Fellows.

Mr. Jenner Weir exhibited, and made remarks on, twelve specimens of *Cicadetta hamatoides*, collected last summer in the New Forest by Mr. Charles Gulliver. Only one of the specimens was a male, from which it was inferred that the males were more active than the females, and quickly retreated when disturbed.

Mr. M'Lachlan exhibited a specimen of *Pterostichus madidus*, F., which he had recently found in a potato. It seemed questionable whether the beetle had been bred in the cavity or had entered it for predaceous purposes.

Mr. M'Lachlan also exhibited two specimens of a species of Trichoptera—*Neuronia clathrata*, Kol.—which occurred rarely in Burnt Wood, Staffordshire, and elsewhere in the Midlands. On enquiry he was informed that the two specimens exhibited had been found in the Tottenham Marshes by Mr. C. J. Boden.

Mr. Porritt exhibited a series of specimens of *Cidaria russata*, from Yorkshire, the Isle of Man, the Hebrides, and the South of England. The specimens from the two first-named localities were almost black.

Mr. Verrall exhibited a specimen of *Mycetæa hirta*, Marsh., which was found devouring a champagne cork. The Rev. Canon Fowler remarked that certain *Cryptophagi* had the same habit.

Mr. M'Lachlan, Mr. Jenner Weir, Dr. Sharp, and others.

Canon Fowler exhibited specimens of *Acronycta alni* and *Leiocampa dictaa*, which came to the electric light on Lincoln Cathedral during the Jubilee illuminations. He also exhibited a specimen of *Harpalus melancholicus*, Dej., from Kingsgate.

Mr. Billups exhibited, for Mr. Bignell, an interesting collection of British oak-galls. He also exhibited the cocoon and pupa-case of a South American moth from which he had bred 140 specimens of a species of Ichneumon.

Mr. O. Janson exhibited, for Mr. C. B. Mitford, a collection of Lepidoptera from Sierra Leone.

Mr. White exhibited a female specimen of *Composia olympia*, Butl., from Florida. He also exhibited a curious structure formed by white ants at Akyab, Burmah.

Mr. Waterhouse exhibited a series of diagrams of the wings of insects, and read "Notes of observations on the homologies of the veins"—a subject to which he had given especial attention for some time past.

Mr. G. T. Baker contributed "Descriptions of new species of Lepidoptera from Algiers."

Mr. Gervase F. Mathew, R.N., communicated a paper entitled "Life-histories of Rhopalocera from the Australian Region." The paper was accompanied by elaborate coloured drawings of the perfect insects, their larvæ and pupæ.

Mr. Frederic Merrifield read a "Report of Progress in Pedigree Moth-breeding, with observations on incidental points." He also exhibited a large number of specimens of *Selenia illuminaria*, &c., showing the results of the experiments he had been making.

Mr. Francis Galton alluded to the close attention Mr. Merrifield had given to the subject, and complimented him on the neatness, ingenuity, and skill with which his experiments had been conducted, and on the results he had obtained therefrom. Mr. Poulton, Dr. Sharp, Prof. Meldola, and others continued the discussion.—H. Goss, *Hon. Secretary*.

## NOTICES OF NEW BOOKS.

*A Vertebrate Fauna of Sutherland, Caithness, and West Cromarty*,  
By J. A. HARVIE BROWN and T. E. BUCKLEY. 8vo, pp. 344,  
with Illustrations. Edinburgh: Douglas. 1887.

THIS volume is understood to be the first of a series on the Vertebrate Zoology of Northern Scotland considered in its physical aspects. Such a spirited venture can hardly fail to enlist the sympathy and support of all working naturalists. Commencing with an elaborate scenic description of the area explored, the writers' experience, extending over eighteen years, has enabled them to supply a very striking narrative. Whether the "great brown saucer" of Caithness, with its dreary monotonous expanse of "flows," or "the birch-clad hollows, sparkling rivers and cascades" of western Sutherland be described, the authors' style is equally felicitous. A single example may suffice to indicate the general character of the earlier chapters. The parish of Assynt is computed to include upwards of 300 lochs:—

"These gems, set in the dark moorland or high on the shoulder of one of the monarchs of mountains, glisten and dance in the joy of summer sunshine, or fade and gleam more darkly in the winter rain and snow drift. . . . Many of these lovely sheets of water are studded over with birch-clad islets, under the branches of which flourish the giant fronds of the great royal fern, *Osmunda regalis*. . . . Nor is life absent here in the bright summer time. The sweet plaintive song of the Willow Warbler, the startling cry of the Common Sandpiper, the trill of the Dunlin, the *Teoch-vingh* of the Greenshank,—from which this last species gets its Gaelic name,—or the wail of the Curlew, and the discontented chatter of the Gulls, are ever constant to the ear. The Heron builds her unshapely nest on birch trees, only a few feet from the ground, and the Hooded Crow flies silently on predatory quest intent, while close to shore, off some green island in the centre, swims a Black-throated Diver, occasionally uttering his hoarse and guttural greeting to his mate, as she sits on her two dark olive eggs, only a few feet from the water's edge."

The avifauna of these counties includes about 116 breeding species, among the most notable of which are the Golden Eagle, Peregrine, Hen Harrier, Ptarmigan, Greylag Goose, Common Scoter, Goosander, and two species of Diver. The White-tailed Eagle, formerly abundant, has dwindled in numbers of late years, no less on the mainland than in the Hebrides, but the Golden

Eagle appears to be on the increase, thanks to the protection afforded by large deer-forests. Incidentally, we may mention that a dozen Golden Eagles were sent, in the flesh, to an Inverness birdstuffer during the present year. The Kite and Osprey have vanished from their wild retreats, and even the Raven requires some grace at the hands of game-preservers. It is difficult to understand why this fine bird should be made the object of ruthless persecution, when we remember how rarely it feeds on other substances than carrion. The Cornish Chough can no longer be included in this region, nor is there any suggestion that it was ever abundant.

Most lamentable as well as inexcusable is the insufficient protection afforded by Highland lairds to the Greylag Goose, which is fast decreasing, many of its former breeding-stations having been abandoned of late years. Sportsmen will regret the decrease of the Ptarmigan on the high mountains. Reference should be made to the partial migration of this species recorded at p. 311, where particulars are given of the occurrence of a party "at a very great distance from their nearest breeding-ground." Nor can we pass over unnoticed the interesting description which is given (pp. 137—143) of the discovery of the nesting of the Snow Bunting on the Scottish mainland, with a coloured plate of the bird, and a view of the locality.

The recent discovery of small colonies of Tree Sparrows in the Hebrides had partly prepared us to expect that this local bird would be reported from Sutherland, nor are we disappointed in the expectation. Of equal interest is the movement northwards of the Stock Dove. Mr. Buckley shot a specimen at Kintradwell on September 22nd, 1887, and, as it is now known to nest on the Morayshire coast, we shall doubtless soon receive intelligence of its breeding in the two most northern counties. Another advancing species is the Chiffchaff. The Tree Pipit, Wood Wren, and Pied Flycatcher breed within this faunal area, as, of course, do the Spotted Flycatcher, and, more numerous, the Willow Wren; but the Blackcap appears to be little more than a chance visitor, as is the erratic Turtle Dove, while the Yellow Wagtail, Lesser Whitethroat, Garden Warbler, and Grasshopper Warbler are absent from the catalogue.

The extensive coast-line appears to be singularly destitute of waders, only excepting such cosmopolitan species as the Whim-

brel, Redshank, Turnstone, and Oystercatcher; the Knot and Sanderling occur only as stragglers, whilst the Grey Plover, Green Sandpiper, and Little Stint have only been detected in one or two instances.

The list of *Laridæ* includes the Glaucous, Iceland, Ivory, Little and Sabine's Gull, a specimen of the latter having occurred in full summer dress—a stage which has been procured in the British Islands only in two or three instances. The Snowy Owl, Iceland and Greenland Falcon, Parrot Crossbill, American Bittern, Rose Pastor, and Waxwing stand on the list; but the evidence as to White's Thrush and the Lapp Bunting is unsatisfactory. The Black Redstart, however, has certainly reached these northern shores, for a specimen was sent to Mr. Harvie Brown from the Pentland Skerries.

Taking into consideration the limited extent to which the coast of Caithness is influenced by external migration, the authors, as well as their able correspondents Messrs. Peach and Reid, deserve to be congratulated on the number of rare species accredited to the county.

Mr. Harvie Brown's researches into the Mammals of Scotland are so well known that detailed reference is unnecessary. While the diminishing numbers of Wild Cat and Marten are much to be regretted, it is gratifying to find that six species of Cetacea are included in the work, considering how little attention has been paid to this order by British naturalists. Perhaps the most important mammalian records refer to the Greenland Seal, two examples of which are recorded on satisfactory evidence.

Reptiles and Amphibians (including the Palmate Newt) naturally occupy a very small portion of the volume; but greater weight attaches to a List of Fishes frequenting the Moray Firth. This comprises 141 species out of a British list of 225; but the American Brook Trout, *Salmo fontinalis*, should have been omitted, for the Duke of Sutherland's attempt to naturalise the species seems to have proved a failure. Amongst the rarer fishes, the Torpedo, Bergylt, Sword-fish, Hair-tail, Opal, and Deal-fish stand pre-eminent.

Of the few misprints which have escaped notice, the substitution of the Black-eared Chat for the Black-throated Wheatear deserves correction. The index is one of the best we have seen, and the illustrations are well chosen and well engraved.



# THE ZOOLOGIST.

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A VISIT TO FERNANDO DO NORONHA.

BY H. N. RIDLEY, M.A., F.L.S.

ON July 9th, last year, the writer and Mr. G. A. Ramage, of Edinburgh, started by the Royal Mail steamer from Southampton for Pernambuco, in order to explore the island of Fernando do Noronha, the Brazilian penal settlement, situate nearly 200 miles east of Cape San Roque. The voyage to Pernambuco occupied fourteen days, the weather being very calm. Nothing of note in a Natural History way occurred during the voyage, excepting the appearance of a small whale in the Bay of Biscay, perhaps one of the last of the Biscay Whales, *Balæna biscayensis*, and when nearing Fernando do Noronha, which we passed at night, a Noddy, *Anous leucocapillus*, flew on board, very wearied, and remained on the ship for a day. Storm Petrels followed the vessel for a couple of days after leaving Portugal, and then disappeared. On arriving at Pernambuco we were met by the Rev. T. S. Lea, an enthusiastic naturalist, who was to join the expedition, and there learnt that the 'Giquia,' a little steamer that plies monthly between Pernambuco and Fernando do Noronha, was to sail on August 10th. We had consequently some time to wait, and occupied the interval in preparing for the expedition and in making excursions in the neighbourhood of Pernambuco. These excursions would have been more extensive had it not been for the irritating stupidity and "red-tapism" of the Brazilian Custom House officials. Under the regulations of the Custom House all books and apparatus used in the exploration of any part of Brazil are

exempt from duty, and one would have thought that nothing would have been simpler than to get our collecting apparatus through the Custom House at once. But no, it was obvious, they said, that the apparatus was for collecting purposes, and was therefore free of duty, but "did it belong to us?" In vain we showed a letter from the Brazilian Ambassador to the President of the province, and pointed to our names on the boxes; we must get a letter from the President himself. On asking this gentleman for a letter he replied politely that *he* had nothing to do with the Customs, and would not even give us a letter to say that we were the party of explorers to whom the articles in question belonged. After some days were spent in endless discussions in which all manner of absurd objections were raised, the Customs' officers, wearied of the matter, agreed to pass the boxes if we got a letter from the Consul, as we had offered to do on the first day of our application. This was accordingly obtained, and the boxes were free, only one other objection being raised—namely, that it was against the rules for the British Consul to write an official document to the Custom House in any language except English, while it was equally impossible for the Custom House officials to receive it if it was not in Portuguese. It must go to the Public Translator to be translated into Portuguese, and he would translate it in a week, before which time our steamer was timed to start! However, a happy suggestion, that it might do as well if the boxes were freed first and the translation made afterwards, was fortunately accepted, and all ended well. But this provoking incident almost entirely prevented our doing anything in the way of collecting for a week, and will give an idea of the annoyance to which a naturalist is liable on his arrival in that country. Even then our difficulties were not over, for a letter to the Governor of Fernando do Noronha, some days after we had discussed the matter with him, suddenly discovered that he had never heard of the expedition *officially* from the Government at Rio de Janeiro, though he had been in correspondence with the Government there since the previous May! This fresh difficulty necessitated telegraphing both to England and to Rio, and when this was finally settled it was nearly time for the boat to start! On the 10th of August we had everything on board, and the steamer was to start in a few hours, when the President telephoned to say that he did not wish the boat to leave for ten days! We were in despair,

but a certain Captain Roma, who was going to work and export guano from Fernando do Noronha, having persuaded Captain Farrell, of the 'Nasmyth' (a steamer trading to Liverpool), to take him and some of his men to the island, kindly introduced us to Capt. Farrell, who took us also on board, and in two days we were landed on Fernando do Noronha. Here we were well received and housed by the Director of this group of islands, and at once began the work of exploring and collecting.

The islands form a chain of about eight miles long, the most western of which is the largest, and here is the establishment of convicts, 1400 in number. The other islands are not inhabited, with the exception of Rat Island, the most eastern of the group, where there is the immense deposit of guano, which is being worked by Captain Roma. The main island has a rich vegetation of creepers and other plants, with dense wood at the further end, although there are no trees of large size. This district is called the Sapate. The whole island is both hilly and rocky. The cliffs of basalt are draped with a dense growth of Cactus and other plants, and near the village rises the Peak, a lofty rock of phonolite, inaccessible even to the boldest alpine climber, and the nesting-place of the Tropic-bird, *Phæton æthereus*, one of the most conspicuous and beautiful birds to be found here.

When the island was first discovered by the Portuguese sailor whose name it bears it was tenanted by immense flocks of sea-birds, and it was the sight of these that led to its discovery. They have now well nigh disappeared, although not from extermination, and all that remains to indicate their former abundance is the immense deposit of guano, estimated at two million tons, on the two easternmost islands. Perhaps the commonest bird here is the Noddy, *Anous leucocapillus*; it nests on the cliffs in many places, and in the Sapate, where there are two or three colonies of them in the trees. They live chiefly on the Sardinha, a small and excellent fish which occurs in large shoals near the shore. A young Noddy was brought to me, taken from the nest, and I endeavoured to rear it, but it very soon died. The convicts were skilful at snaring these sea-birds, and brought us besides live Boobies, *Sula fusca*, and Tropic-birds. The Boobies are likewise very common, and may often be seen diving from a considerable height into the surf for Sardinhas. They nest on the cliffs at Egg Island, and also on St. Michael's Mount. The

Frigate-bird, *Tachypetes aquila*, is constantly to be seen soaring at a great height over the sea. It only nests, as far as we could see, on the higher parts of St. Michael's Mount. We saw one suddenly dart to the ground on the sand-hills at the eastern end of the mainland, and hastened to see what it was attempting to catch, but on our approach it rose and sailed away, bearing the dry stem of a convolvulus in its beak, which was doubtless destined for its nest. On one or two occasions a small species of Albatross was seen, but not near enough to identify it. The beautiful White Tern, *Gygis candida*, the "Viuva branca" of the Brazilians, frequents certain parts of the island. Elsewhere, as for instance in the Keeling Islands, this bird deposits a single egg on the base of a leaf of the cocoa-nut palm. Here, however, it was laid on the branch of one of the native trees, although there were plenty of cocoa-nut trees at hand. As these were comparatively recently introduced, however, it had probably not learnt to take advantage of them. It was very curious to see this bird nesting (if one may call it so) in the middle of a tree absolutely devoid of leaves; but this was a not uncommon proceeding also on the part of the island Dove, *Zenaida noronhæ*, which takes no pains to conceal its nest. The fact is these birds have no enemy to fear except the rats, which cannot conveniently creep along the slender branches on which they place their nests. The White Tern, like the Noddy, also formed colonies in the Sapate, and were more commonly seen flying over the woods than near the sea.

Besides the species already named there are also several land-birds. A Tyrant—which looks very much like a hen Chaffinch at a little distance—proves to be a new species. It is very common all over the island, and good specimens were shot in the Governor's garden. Its nest is placed in a tree, and somewhat resembles that of a Chaffinch in shape. It was made of the silky pappus of a curious Asclepiadaceous plant peculiar to the islands. This bird had hardly commenced to breed when we were on the island, but we found one nest with a single egg in it, on St. Michael's Mount: unfortunately, in endeavouring to get the nest, which was in a most inaccessible spot, the egg fell out and was broken. It was white, with large dark red blotches.

Another common bird here is a Greenlet (*Vireo*), which frequents the cashew-nut tree and the cocoa-nut palms. It is a

small green bird, like a Willow Wren, very active, but by no means difficult to shoot. We never succeeded in finding its nest. The dove above mentioned was particularly abundant and tame. It makes a small nest of sticks lined with roots, in the branches of trees, in which it deposits two white eggs. Specimens of the nest, with eggs, on the entirely bare branches of the burra-tree, a curious endemic tree, were brought home, and are now in the Natural History Museum. This dove is found on all the islands large enough for it, and flies from one to the other. It has, I believe, played an important part in the distribution of plants in the islands. The crops of the specimens we shot were often crammed with seeds of the small wild melons, which are abundant on the islands, and we found them very excellent eating. The convicts often keep these birds in cages. They have rather a harsh note, that seems disproportionately loud for the size of the bird. One specimen that was shot on the nest, in order to prove a certain point, was found to be a male.

Towards the end of our stay on the island, some small wading birds made their appearance. A pair, about the size of Curlews, were seen on the sand-hills. They were very wary, and it was with difficulty that Mr. Ramage got a shot at them, but they were almost out of range and escaped, going out to sea. On the same day a Sandpiper of some kind was seen at a small pond, made for the goats to drink at, near the same sand-hills; but it was disturbed by a convict, and flew to the shore, where we made an unsuccessful attempt to stalk it. It is very possible that these birds had come across from the mainland, which might account for their shyness.

There are no indigenous Mammalia on the islands. The Black Rat, which has been introduced, is exceedingly abundant and destructive, climbing the cocoa-nut palms and papaw-trees and devouring the fruit, and haunting the melon patches, where it does much mischief. Equally abundant is the common Mouse, which is so tame that it may sometimes be caught in the hand, and quite easily with a butterfly-net; they live on the seeds of the Cassias and other *Leguminosæ* which abound in the island, and I have seen one on the very top of a flower-spike of *Crotolaria*, a kind of yellow lupin, the seeds of which it was nibbling. It is this animal—and not the Rat—that has given the name to Rat Island, which is a translation of the Portuguese

*Ilha de Ratta*, *ratta* being Portuguese for both rat and mouse. Albinos of both species occur, but those of the former are rare. Once a month the convicts have a *battue* of rats and mice, certain men having to bring in fifty a-piece. They go out with dogs and sticks, and at the end of the day the slain are displayed in a large pile. One of these hunts took place while we were on the island, and three thousand nine hundred and odd rats and mice of all sizes and ages were placed in a heap in the square after the evening service. This was a tolerably good capture for that time of year; but in the dry season, when the vegetation is all burnt up, and both food and shelter are scarce, the animals are easier to catch, and as many as twenty thousand have been caught in one day. The domestic cat has run wild in some of the islands. There was one on Rat Island which had escaped from an Italian vessel wrecked there, and was living on the mice and doves.

It is curious that no Bats occur on any of these islands, although they are so abundant on the neighbouring mainland. There are three species of terrestrial reptiles—a Skink, *Mabuia punctata*; a new species of *Amphisbæna*; and the Common House Gecko. The Skink is very common, and occurs on all the islands; it is about six inches in length, and of an iridescent-brown colour; it is very tame, and if the observer remains motionless will approach very close: it is apparently omnivorous. On one occasion when I had blown some doves' eggs, a Skink ran forward and drank up the yelk; another time, on throwing away the skins of some bananas we had been eating, the lizards ran up and carried them off, or ate them on the spot. The *Amphisbæna* lived under stones and in the soil, as is the general habit of these animals; a number were found in digging sweet potatoes on Rat Island. The House Gecko was very common in the houses, where it did good service against the mosquitos, and it also lived during the day between the petioles of the bananas. We found its eggs on one or two occasions, either lying loosely on the ground in the garden or in a hole in the stem of a papaw-tree: they were perfectly globular and white, about the size of a pea, and rather large for the size of the animal.

Turtles were sometimes to be seen in the quiet sandy bays, lifting their heads from time to time out of the water; they are not eaten here, but their eggs are much sought after at the breeding

season, certain bays being more frequented than others by the females. The sea swarms with fish of all sizes, forms, and colours; in fact, the islands have been known as a good fishing-ground for nearly two hundred years. The convicts employ much of their time in fishing from the rocks and from little catamarans. Among the most conspicuous fish are those of the genus *Muræna*, which attain an immense size; one of the biggest we saw was black, and about ten feet long, much resembling a large eel. There is said to be also a blue one. A black and yellow one of comparatively small size, and not eatable, was often caught under stones. One day two boys caught an immense *Serranus*, as large as a good-sized pig: it was sold for about seven shillings. Sharks are very common round the island, but do not attack the bathers. On one occasion we saw a very fine White Shark, about thirteen feet long, cruising about under a rock from which a convict was fishing, much to the latter's annoyance, as it was devouring the fish attracted by his bait. Some very large Rays used to frequent the bay at the foot of the Peak, where we used to bathe; they would come in quite close to the shore, and their presence was announced by a rush of small fish on to the sand, seeking to escape them. They never molested us, though on one occasion one came within a few yards of me as I was swimming in the surf. The convicts harpoon them.

The rock-pools swarm with fish of many colours—crimson, red, blue and orange, grey, black, yellow. Of these we caught a considerable number, partly with a hand-net, and more easily by the unsportsmanlike but eminently satisfactory process of beating up with a club the stem and roots of a wild vetch with silky grey leaves and pink flowers, and stirring up the rock-pools with the fragments. The result of this was that the fish became stupefied and were quickly caught. It not only saved a great deal of time, but also enabled us to procure many fish which at low tide lay hidden in crevices of coral in the rock-pools, and would otherwise have been quite unprocurable. Of course the pool was only spoiled for fish for one day, for the next tide would wash out all traces of the poison vetch.

The coral-reef, it need hardly be said, abounds also in invertebrate life. Mollusks are plentiful; Chitons, Mussels, Cones, Limpets, Trochi, and many other beautiful shells were

obtained. One species of Cuttle-fish is very common, and possesses a marvellous power of alteration of colour. It frequents the rock-pools, and is hunted by the convicts, who on catching it turn the mantle inside out and tear off the ink-bag; it is then dried, and makes an excellent soup when boiled. Several species of *Echinodermata* were taken, but no novelties. A *Cidaris* was common, and so was a beautiful *Echinus*, which sometimes almost filled up a small rock-pool, so closely were the animals crowded together. Several Star-fish were also caught. Among the Crustacea, a small blue Cray-fish and several species of Crab proved excellent eating. One kind of Crab is exported to Pernambuco, in wooden boxes filled with dry leaves, where it fetches a large price. The convicts are very skilful at cleaning out the insides of these Crabs and Lobsters, and stuffing them to make Natural-History specimens. A species of *Grapsus* abounds on the rocks, keeping just above the sea-water, usually green and grey, but it was sometimes ornamented with brilliant red. It is very active, and can leap from stone to stone in an astonishing manner. There is also a white Crab which lives in burrows in the sand, and when dug out runs rapidly on the extreme tips of its hind claws in a most ridiculous manner.

Of the lower animals, Sponges of all colours, Corals green and brown, two kinds of Sea Anemone, one large claret-coloured species, and another smaller, of a dull red, were met with. Worms also are tolerably numerous, and many were obtained by breaking up the reef with a hammer. The most objectionable was a splendid scarlet worm, about four inches long, ornamented with large tufts of white bristles on the sides and back. When touched these bristles, like thread of blown glass, enter the skin and sting horribly, the effect lasting for a couple of hours. The natives call it the "Lagarticia do Mar."

Among the terrestrial invertebrates collected were one small Scorpion and two or three Myriopods, including a large Centipede which usually lived under cow-dung and stones, but sometimes invaded houses, and bites rather badly. Amongst several kinds of Spider, one of large size and nocturnal habits plays havoc with the large American Cockroach, which also frequents the houses. Several species of land Mollusks were obtained, one being a curious new *Bulimus*. Lepidoptera were rare; one species of

butterfly, a small blue one known also from Brazil, was common. A few Noctuæ, Geometers, and Pyrales were also taken. Beetles were not common; it was probably too early in the year, but a number of specimens of a curious grey Longicorn flew to the lights, and several smaller kinds were taken. Some large brown and green Grasshoppers made a great noise at night; and a peculiar black and brown Field Cricket, inhabiting the fields in the middle of the island, was very common. The most important Hymenopterous insect collected was the *Marimbondo*, a small brown Hornet, which makes little pendulous nests containing about a dozen cells, hung from the underside of a slab of rock, or, more commonly, to the branch of a tree; the cashew-nut tree is an especial favourite; I have seen one full of nests in all stages of structure. The *Marimbondo* can sting a little, but is not so bad as an ordinary wasp. Together with a small black Bee it plays an important part in the fertilization of the plants of the island as so many of these belong to the orders *Leguminosæ* and *Cucurbitacææ*, of which a very considerable proportion require the aid of Hymenopterous fertilization.

After six weeks' residence on this island, we embarked in the little trading steamer, and after a tedious and uncomfortable passage of three days we arrived at Pernambuco, where, the mail-steamer having just left, we were obliged to wait for another fortnight. A part of the time we remained at the little village of Iquarassa, twenty-one miles north-east of Pernambuco, where there is a fine field for zoological and botanical collecting. Here we left Mr. Ramage to pursue the study of Natural History, in the dense forests and open heaths of this part of Brazil, and returning to Recife, caught the mail-steamer, and arrived in England in the beginning of November, to find that all the collections made in Fernando do Noronha and Pernambuco were safely housed in the Natural History Museum.

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## PEARLS AND PEARL FISHERIES.

By M. WEBER.\*

MANY Mussels cover the inside of their shell with a layer consisting of animal membranes and carbonated lime. Thereby a peculiar lustre is produced on the inside of the shell, which is called "mother-of-pearl." A smaller portion of this secretion often forms excrescences shaped like drops or kidneys, which either are imbedded more or less firmly in the inside of the shell, or lie loose in the soft parts of the animal, especially in its so-called "beard." These are what are generally known as "pearls."

The formation of mother-of-pearl is no doubt a natural process taking place in certain Mussels. The formation of pearls, on the other hand, is ascribed to accident, and probably is caused by a sickness of the Mussel, or by some wound inflicted on it. This view has been reached by noticing the circumstance that, when the shells are large, and the inside smooth, clean, and without holes, so that the mollusks can fully develop, pearls are but rarely found; while the formation of pearls is very frequent when the shells are irregular. Sometimes hundreds of pearls are found in the last-mentioned shells; but frequently scarcely one of them possesses any commercial value.

Real pearls are found only in bivalves; but a useful product is found in some univalves. The products of the following species are known in commerce:—

(1) *Avicula margaritifera*.—Which produces the most valuable pearls, but whose shell is worthless.

(2) *Meleagrina margaritifera*.—Principally valued on account of the mother-of-pearl. The shells are often 6 to 18 inches long. Its pearls are also of great value.

(3) *Strombus gigas*.—The conch-shell of the West Indies.

(4) *Tridacna gigas*.—The Giant Clam, with open white pearls of a subdued lustre.

(5) *Pinna squamosa*.—With black and red pearls.

(6) *Placuna placenta*.—Translucent, with lead-coloured pearls.

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\* "Om Perler og Perlefiskerierne." From the 'Norsk Fiskeritidende,' Bergen. Translated from the Danish by Herman Jacobson (Bull. U.S. Fish Commission, 1887, pp. 321—328).

- (7) *Ostrea edulis*.—The Common Oyster.  
 (8) *Modiola vulgaris*.—The Horse Mussel.  
 (9) *Turbinella scolymus*.—The Chank-shell; pale-red pearls.  
 (10) *Turbo olearius marmoratus*.  
 (11) *Turbo sarmaticus*.  
 (12) *Haliotis* (different varieties).—Found in the North Sea, New Zealand, the Cape of Good Hope, and Japan.  
 (13) *Anodonta herculea*.  
 (14) *Alamodon, Unio, &c.*—Found in Scotland, Ireland, Lapland, Bohemia, Bavaria, Saxony, and Canada.

The sea-pearl fisheries are principally confined to the Persian Gulf, the coasts of Ceylon, the Eastern Archipelago, Australia, the lagoons of many islands in the Pacific, and to Central America.

Fresh-water pearls have, as a rule, but little lustre, and are consequently of no great value; although one occasionally finds pearls having a value of from 50 to 70 crowns (13·40 to 18·76 dols.), and sometimes, 1800 crowns (482·40 dols.). For awhile the Scotch pearls enjoyed a great reputation. From 1761 to 1764 more than 180,000 crowns' (48,240 dols.) worth of pearls are said to have been brought to London from the rivers Tay and Isla. During the dry summer of 1862 a surprising quantity of pearls was found in Scotland. The average value of these pearls varied between 40 and 45 crowns (10·72 to 12·06 dols.), but those valued at 100 crowns (26·80 dols.) were also quite frequent. Statisticians estimate that the total value of pearls found in Scotland in 1865 was 216,000 crowns (57,888 dols.). Since that time pearls have advanced considerably in value.

During the summer months the Arabs carry on a sort of pearl fishery on the coast of the Red Sea. They catch the mollusks and lay them in the sun, so that they may open quickly. Jedda is the principal place where these fisheries are carried on. The exportation of mother-of-pearl from Jedda *via* Alexandria annually amounts to 1,200,000 pounds avoirdupois, half of which quantity goes to Birmingham.

The pearl fisheries in the Persian Gulf, especially on the coasts of the Island of Bahrein, are also in the hands of the Arabs. The best beds are said to be on fine white sand and in clear water. Nearly 5000 boats are employed in these fisheries, and their annual value is estimated at 1,080,000 crowns (289,440

dols.). Beds of pearls are found at various depths as far down as eighteen fathoms. The general depth at which they are found is, however, from four to eight fathoms. The season lasts from April to September. Most of the shells are brought to the little harbour of Lingah; thence a considerable quantity of mother-of-pearl is shipped direct to London, only a small quantity going to the continent of Europe. Many pearls, especially those of a yellow colour and those having a complete cone-shape, are sent to Bombay. Bagdad is a considerable market for white pearls. The shells which come to England from Persia are mostly small and have a subdued lustre; but, as a rule, they have higher prices than the Panama and Tahiti shells. The annual quantity imported is rarely less than 300,000 pounds. The total value of the pearls exported from the Persian Gulf during 1879 was 7,500,000 crowns (2,010,000 dols.).

The Ceylon pearl fisheries are carried on on the west coast of Ceylon, in the Gulf of Manaar, south of the island of the same name, and also on the west coast of India, near Tuticorin. The beds lie in groups. One of these is opposite the town of Arippu, and comprises the so-called Paria-par, Paria-par Karai, Cheval-par, Kallutidel-par, and Modaragam-par. The famous Karaitivu bed is opposite the town of that name. Other well-known beds are the Karakupanai-par, and the Jekenpedai-par. All these beds lie at a distance of at least six to eight miles from the coast, and at a depth of five and a half to eight and a half fathoms from the surface. They have a rocky bottom protruding from the sand, and are exposed to the currents of the sea. The beds are under the supervision of an inspector appointed by the local government, which has the exclusive working of them. The labourers and divers are natives, who as wages receive 25 per cent. of all the pearls they find. Experience has shown that few pearls, and these of little value, come from Mussels which are not older than five years. During the fifth and sixth year the value doubles, and in the seventh year it becomes fourfold. The pearls are not fully matured if they are not taken out too soon; and on the other hand, the animal dies, if the pearls remain too long in the shells. For these reasons pearl fishing is prohibited at certain seasons.

Up to the year 1863 there was no system in these fisheries. In 1863 there were caught on twenty-two fishing days 11,695,000 pearl-oysters, yielding pearls to the value of 918,324 crowns

(246,110·83 dols.). The next fisheries were in 1874, when 1,700,000 pearl-oysters yielded 182,160 crowns' (48,818·88 dols.) worth of pearls. In 1877 there were caught on thirty fishing days 6,850,000 pearl-oysters, yielding pearls to the value of 341,136 crowns (91,424·45 dols.). The yield in 1879 was unusually good, as twelve fishing days yielded 7,650,000 pearl-oysters. In 1880 the fisheries lasted from March 19th till April 2nd, and during these eleven days 11,000,000 pearl-oysters were caught. In 1881 as many as 60,000,000 were caught, yielding pearls to the value of 1,080,000 (289,440 dols.). These fisheries are now carried on according to a well-regulated system. The divers receive their wages as soon as they reach the coast.

When the pearls have been gathered, they are classified in the following manner:—

- (1) "Anie," pearl-eyes; that is, pearls of perfectly round shape and pure lustre.
- (2) "Anathorie," that is, pearls which have a slight defect in either of these respects.
- (3) "Masengoe," pearls which have defects in both these respects.
- (4) "Kalippo," pearls which are flat, and have other great defects.
- (5) "Korowel," faulty pearls, especially double pearls.
- (6) "Peesal," misshaped pearls.
- (7) "Codwee," misshaped pearls of tolerably fine form.
- (8) "Mandongoe," split pearls.
- (9) "Kural," very small misshaped pearls.
- (10) "Thool," seed-pearls.

In sorting the pearls they are first passed through a row of baskets, ten or twelve in number. The eighth basket in the row has twenty holes, and the pearls which do not pass through these are said to have the "twentieth measure." The following baskets have 30, 50, 80, 100, 200, 400, 600, 1000 holes, &c., and each basket has its special name. After the pearls have been sorted in this manner, they are weighed, and their value is noted.

China has pearl fisheries near Pakhoi. The beds are divided into four districts which lie between the south coast of the peninsula of Pakhoi, the island of Weichow, and the peninsula of Leichow. In 1875 these fisheries yielded pearls to the value of about 162,000 crowns (43,416 dols.). Cochin China carries on an extensive trade in mother-of-pearl, most of which comes to the Bay of Tirwar. On the north coast of Japan considerable quan-

tities of *Haliotis gigantea* are caught, which is highly prized by both the Japanese and Chinese.

The Philippine Islands produce large quantities of mother-of-pearl. In 1877, 155 tons were exported; in 1878, 152 tons, valued at 307,314 crowns (82,360·15 dols.); in 1879 the yield amounted to 288,810 crowns (77,401·08 dols.). The entire region from the island of Tawi-Tawi and Sulu to Baselan is one continuous bed of pearl-oysters. Here the Malays and Chinese fish in common. The Sulu fisheries, near Tawi-Tawi, are, according to the statement of an Englishman (Mr. Moore), the largest and most productive of all the pearl fisheries in the East Asiatic seas. The pearls which are caught here have always been famous, and the mother-of-pearl is distinguished by its yellow lustre, which makes it suitable for many purposes. Labuan is the principal market for the produce of Sulu. In 1868 the value of these pearl fisheries was 207,972 crowns (55,736·50 dols.); in 1870 it fell to 102,348 crowns (27,429·26 dols.); and up to 1878 it fell still more. Macassar is the principal market for the natives from Bayos. In the Kau Bay there are found pearl beds belonging to the Sultan of Ternate. Pearls and mother-of-pearl are found near the island of Aru, and are brought to market at Debbo. The principal place where these fisheries are carried on, however, is Blakong Tanah, opposite the island of New Guinea; and these are really the most important fisheries in the entire archipelago. The yield in 1860 amounted to 133,000 crowns (35,644 dols.). The island of Timor has pearl beds, but the yield is small.

The most important pearl fisheries in Queensland are in the hands of Sydney capitalists. The fisheries are carried on by Malays, who dive to a depth of six fathoms. The pearl-oyster from Torres Strait generally weighs from three to six pounds, and sometimes as much as ten pounds.

The pearl fisheries on the north-west coast of Australia employ a large number of Malays and natives as divers. The fisheries last from the end of September till the end of March. It has not yet been possible to ascertain the extent of the beds; it is supposed, however, that they extend as far as the Gulf of Carpentaria. The fisheries are carried on for the shells, but frequently yield pearls of considerable value. These shells are the best which are known. They weigh from  $1\frac{1}{2}$  to 6 pounds a pair. The export duty is 72 crowns (19·30 dols.) per ton. The oldest

fisheries in West Australia are carried on in Sharks Bay. The shells which are caught here are those of the *Avicula margaritifera*. They are very thin, but their inside surface is transparent, and has a beautiful pearl-like lustre. At present they fetch a good price at Havre. Formerly they were but little esteemed on account of their thinness, and for this reason they were taken principally on account of their pearls. These have a brilliant lustre, although they are not larger than a pea. The Oysters are caught with a wire drag-net, which is drawn across the beds, and which piles them in a heap; thereby the mollusk is killed, and the shells are easy to open. The West Australian pearl fisheries increase from year to year. In 1874 mother-of-pearl was exported to the value of 1,060,707 crowns (284,269·48 dols.), and pearls worth 108,000 crowns (28,944 dols.). In 1876 there were exported to London 140 tons, and to Singapore 67 tons, the price varying from 4500 to 4840 crowns (1206 to 1297·12 dols.) per ton. Recently the English papers have reported the discovery of pearls and mother-of-pearl near New Zealand.

Diving for pearls is one of the principal employments for the natives of the Pacific Ocean. Here, likewise, mother-of-pearl is the principal object of the fisheries. The Oysters live in large colonies, close together, and are firmly attached to each other; they are attached to the bottom by a ligament or band, starting from their body and running through the shell. In the live animal this band is of a dark green, and sometimes gold-bronze colour, and the fishermen can tell from its colour whether the shells contain pearls or not. The shells reach their full size when they are seven years old. The average weight of the empty shell at that time is about one pound, and the length varies from ten to eighteen inches. When the animal has reached maturity, it tears itself loose from the stones, opens its shell, and dies. The shells are then covered with corals and parasites. They become worthless and the pearls are lost. These mollusks also have a number of enemies, the most dangerous of which is a kind of *Scolopendra*, which opens the shells and eats the mollusks. All grown Mussels are, moreover, infested by crustacean-like parasites, which penetrate into the shells and there lay their eggs.

After the Oysters have been caught and brought ashore by the divers, they are sorted. The shells are opened with a steel knife.

A skilled hand can open a ton per day, and not miss a single pearl. The mother-of-pearl is laid in a shady place, that the colours may not fade. When there is a famine, the mollusks are eaten by the natives. The pearls are generally found in the place where the band before mentioned starts. In shells where many pearls are found, they are generally small and misshaped. Occasionally pearls are found loose in the shells. These are always of a very fine quality, perfectly round, and often very large. But there is hardly one in a thousand Oysters which contains such pearls. The natives often lose them, owing to the careless way in which they open the shells.

Fine and calm weather is most favourable for pearl-fishing. The divers wear no special suit, but simply rub their body with oil, that the sun may not blister their skin. They remain under water one to two minutes, and bring up Oysters from a depth of twenty fathoms. They rarely go to such a depth, but the finest Oysters are found there. Thus in many fishing-grounds, which were supposed to be exhausted, a great many pearl Oysters are found in deep water.

In the Southern Pacific, pearl fisheries are principally carried on near the Navigator's Islands in the Paumotu Archipelago. Many of these fishing grounds are partly and some are entirely neglected. Thus the island of Manihiki twenty years ago yielded 100 tons of shells in eighteen months; but since that time no pearl fisheries have been carried on there. The Hogolen Lagoon is also known as a vast unexplored pearl-oyster bed. So far the Paumotu Archipelago is said to have produced 25,000 tons of mother-of-pearl, valued at 18,000,000 crowns (4,824,000 dols.). Nearly the entire quantity goes to Tahiti, to be exported thence. In 1873, 2000 tons of shells were exported; the pearls having a value of about 140,000 crowns (37,520 dols.). In 1878 Tahiti exported 591 tons of shells, valued at 638,280 crowns (171,059·04 dols.), and pearls valued at 108,000 crowns (28,944 dols.). In 1679 there were exported 470 tons of shells, valued at 507,600 crowns (136,036·80 dols.), and pearls valued at 72,000 crowns (19,296 dols.). In 1875 an export duty of 30 crowns (8·04 dols.) per ton was levied; this duty, however, was abolished in 1878, and since that time the exportation has again increased.

On the islands of the Pacific the pearls are classified as follows (see Simmonds's 'Commercial Products of the Sea,' p. 425):—

(1) Pearls of a regular form and without faults; in value those weighing a decigram, are worth only 2·7 crowns (0·72 dol.); those weighing from  $1\frac{1}{2}$  to  $2\frac{1}{2}$  grams, from 1800 to 2600 crowns (482·40 to 696·80 dols.).

(2) Round white pearls of great lustre; 30 grams, containing 800 pearls, would be worth only 72 crowns (19·30 dols.); while the same weight in 50 pearls would be worth 1080 crowns (289·44 dols.).

(3) Irregularly formed pearls, not without faults; 30 grams of this kind would be worth 55 to 75 crowns (14·74 to 20·10 dols.), according to their condition.

(4) Pearl-bulbs, which are found attached to the shells; 30 grams are worth from 25 to 36 crowns (6·70 to 9·65 dols.), according to their regularity of form and brilliancy.

(5) Seed-pearls, which are worth from 36 to 55 crowns (9·65 to 14·74 dols.) per pound.

Mother-of-pearl fetches from 25 to 50 öre ( $6\frac{1}{2}$  to  $13\frac{1}{2}$  cents.) per pound. The principal markets for pearls from the Pacific are Hamburg, Amsterdam, London, and St. Petersburg.

Besides the pearl-oyster, there is often found in the lagoons of the Pacific Ocean a kind of *Venus* shell, which often contains pearls of great value. The fishermen do not look for these pearls at all, but it is presumed that it would pay to examine these shells more systematically.

In the Pacific there is found another pearl-producing mollusk, whose shells greatly resemble those of the common Oyster. They are always found attached to rocks, invariably one by itself; and they are quite rare. Their pearls are always perfectly round, with a fine lustre and a gold colour, of about the size of a pea.

The Central American pearl fisheries are carried on on both sides of the Isthmus of Panama. In the Bay of Panama are located the Pearl Islands, of which San José is the most important, yielding every year from 800 to 1000 tons of mother-of-pearl. In 1869 the English imported pearls valued at about 800,000 crowns (214,400 dols.) from New Granada and St. Thomas; while the average annual yield of the Panama fisheries is about 500,000 crowns (134,000 dols.). In the lower part of the Bay of Mulege, in the Gulf of California, and near Los Coyntes, pearls of great value have been found. It is generally supposed that a row of pearl-beds extends from the Gulf of Darien to California. In the last-mentioned bays, and on the coasts of Costa Rica and Central

Mexico, pearl fishing has long been a remunerative employment. The principal fisheries on the Mexican coasts are carried on between Mulege and Cape San Lucas. Near the *Islas tres Marias* and in the neighbourhood of Acapulco the fisheries are not nearly so important. The mollusks found are *Meleagrina margaritifera* and *Haliotis rufescens*.

The fisheries are carried on from July till October; during the rest of the year storms and cold weather prevent fishing. Diving suits are generally used. The mother-of-pearl from the Gulf of California is white, with bluish-black or yellow bands. The fisheries were carried on to such an excess that the size of the shells decreased from year to year; fishing is therefore now permitted only every fourth year. The Californian shells are sent almost exclusively to Hamburg, whence they go to England, Austria, and France. The largest quantity goes to Paris, but a great deal also to Frankfort-on-the-Main. The entire Californian fisheries are said to produce from 600,000 to 700,000 pounds of mother-of-pearl per annum. In 1879 Costa Rica exported 3540 pounds. In the same year Panama sent pearls to the value of 126,000 crowns (33,768 dols.) to the New York market. Guayaquil, in 1871, exported thirteen to fourteen tons of mother-of-pearl. In the Bahamas the snail fisheries form an important industry. The pearls found in them are rose-coloured, yellow, or black; the first mentioned alone possess any value. The market for these pearls is Nassau, in the Bahamas; and it frequently happens that a pearl fetches as much as 400 crowns (107·20 dols.). The average annual yield is 180,000 crowns (48,240 dols.). In the State of Ohio pearl fisheries are carried on in Little Miami River. The season lasts from June till October. Men and boys wade in the river and bring up the pearl-oysters with their feet. The shells are opened with a knife; and seldom are more than two pearls found in 300 Oysters. Pearl fisheries are also carried on in the rivers of Norway, Bavaria, and Bohemia.

[An account of the Pearl Fisheries of Australia, by Mr. G. W. Griffin, U.S. Consul, Sydney, N.S.W., will be found in 'The Zoologist,' 1887, pp. 289—292.—ED.]

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## ORNITHOLOGICAL NOTES FROM NORTH LINCOLNSHIRE.

BY JOHN CORDEAUX.

THESE notes have reference to occurrences in the district in 1887. I regret they are not continuous, as I have been much from home and for considerable intervals.

January 5th. Hard frost, and about four inches of snow on the level. Noticed five or six Stonechats on the sides of our main drain, and along the Humber embankment, perched on dead plants of ragwort and teasel or the tall withered stalks of the cow-parsnip, *Heracleum sphondylium*—a favourite perching-place of these little birds. All were in the reddish-brown livery of autumn, and I believe adults. Saw also a single Snow Bunting: they have been remarkably scarce in the autumn and winter in our marshes, but are reported as very plentiful in stubbles in the Trent district. A small flock of ten Wild Ducks, *Anas boschas*, also about one hundred and fifty Wigeon swimming in the river off our main sluice. I was watching them through a glass when seven White-fronted Geese passed inland, almost within range.

Jan. 7th. Severe frost and snow. Noticed three pair of Meadow Pipits in the sheep-fold on turnips; directly a frozen root is dragged they rush into the cavity to search for any small insects or larvæ concealed between the bulb and soil, and totally regardless of the near proximity of men, or of the shower of turnips cast in from the outsides to the central heap. Pied Wagtails and Stonechats in severe weather also haunt sheep-folds, the only place where they have any chance in prolonged snow-storms of obtaining insect-food.

Jan. 12th. I saw to-day at the birdstuffer's nine Kittiwakes in the flesh, brought from sea in one of the smacks. Some were young with black beaks, the back of the head and nape with smoky-grey patches; old birds with yellow-green beaks. Counted forty-two Scaup, *Fuligula marila*, off the sluice; some are old males and a few old females, but the latter not easily, through the glass, distinguishable from the remainder,—young of both sexes in about equal proportions,—except by the greyer back and more conspicuous frontal patch of the older bird. On the muds are some Grey Plover, besides Ringed Plover, Knot, and Dunlin, and near the tide-edge—now covering half the flats—a cluster of

Brown-headed Gulls, *Larus ridibundus*, one of which had completely got his' dark-brown head dress. Another showed a most peculiar state of change; the head, the ground-colour of which was white, was crossed with two narrow dark bands, one in front of the eye extending across the forehead to beneath the lores, the other across the occiput to below the auriculars. Several Pochards, *Fuligula ferina*, were shot on the Humber in January, and amongst them some old males, which I always consider quite an exceptional occurrence on our waters; the majority of those obtained here in the winter are females or young of both sexes.

Jan. 26th. Two pairs of Mistletoe Thrushes came to the lawn to-day, their first appearance since they left in the autumn.

February 4th. Examined three Bar-tailed Godwits shot on the coast near Cleethopes. Comparatively few remain after the autumn migration in August and September.

Feb. 8th. There are thirty-eight Scaup off the sluice, males and females in exactly equal proportion—nineteen and nineteen—and swimming in pairs; the former have glossy dark heads and necks shot with green, their wives with the same parts a rich-looking velvet-brown with a frontal band of white, and these contrasting colours as they swim side by side have a very pretty effect.

Feb. 24th. Out of some Knot brought up from the coast to-day I found one which had the breast and abdomen marked with large detached spots of a faded red, evidently the remains of the plumage of the previous summer.

Feb. 25th. Lapwings are paired; first Pied Wagtails seen; many Meadow Pipits in Humber Marshes.

April 5th. Wheatears very numerous, but all appear to be males; several I noticed perched on old stalks of brussels-sprouts and cauliflowers cultivated in the open field.

April 7th. Observed both Redpoles and Coal Tits searching for food amidst the green tufts and rosy plumes of the opening larch. A pair of the former nested with us this summer, high up in the corner of an old hedgerow abutting on one of the large marsh drains.

May 10th. The Dunlins on the foreshore have now got their summer livery and the black pectoral patch. There are about a score of Grey Plovers left, more or less in summer plumage, and a few Whimbrels and Curlews. Carrion Crow in marsh sitting on

nest in the centre of a rough thorn; the nest is just too high to look into, and the bush much too thick and scratchy to get at the eggs. There are now, within a two-mile radius of the house, four Nightingales to be heard. The Nightingale haunts chiefly those places in woods and plantations where the blackthorn grows the closest and strongest.

May 12th. Godwit, Ringed Plover, Dunlin, Whimbrel, and Curlew on the foreshore.

August 6th. Many Curlews in the marshes on pasture land.

August 7th. Wind strong S.W. Early this morning I noticed an unusual number of Willow Wrens in the garden, chiefly on the rows of peas, where it was pleasing to watch them creeping up and down, now showing their olive-green upper plumage and then the delicate lemon-tinted throat and breast. I have no doubt they formed part of some migratory band, as I looked in vain for them a few hours later.

August 18th. Warm and very close, with thunder impending. At 10 p.m. there was a very large flight of Wild Geese over the house, apparently circling round with much noisy clamour.

August 25th. The last fortnight in August and early in September were remarkable for the very unusual number of Curlew Sandpipers. Near Spurn, on this day and the following, I saw several hundreds, also about half a dozen Little Stints, the two species having migrated at the same time as on previous occasions. A few examples of the former were all young birds, having the under parts suffused with buff; so also have young Knots and Godwits, birds the adults of which in summer have the lower parts chestnut-red. Sept. 2nd was an important migration day, commencing with a gale from S.S.E., but at mid-day from S.W. Knot in summer plumage arrived in flocks, Little Stints in large flocks,—one hundred together,—many Black Terns also with the commoner species, some of the former being mature birds. On this night at 9.30, in my own garden here, I distinctly heard the note of the Little Stint passing overhead amongst those of other waders. Both Curlew Sandpiper and Little Stint were fairly plentiful at Spurn up to the middle of September.

August 26th. I saw both the Redstart and Pied Flycatcher near Kilnsea to-day, also, on the Humber side of the Spurn, Knot, Curlew, Whimbrel, Common Godwit, Curlew Sandpiper, Sanderling, Ringed Plover, Dunlin, Turnstone, eight Golden Plover

with black breasts, and two Grey Plover also in summer plumage, also Green Sandpiper and the Common Sandpiper on the ponds near Kilnsea Beacon; on the Warren the Greater Whitethroat and many Wheatears.

Sept. 6th. Redstart on passage through this parish; and on the 7th great numbers of Wheatears.

Sept. 23rd. First Woodcock seen. Under date of Nov. 10th, a curious note comes to me from the Swin Middle L.V.: when the lantern was lowered at sunrise a fine Woodcock was found dead on the top. Now if the bird had struck the lantern in flight it would either have fallen on deck or into the sea; the probability therefore is that it alighted on the lantern top, and simply died from exhaustion.

October 2nd. Large numbers of Redbreasts appeared about this date; they are particularly plentiful in the hedgerows near the coast. A young friend who was fishing, on October 1st, ate in the evening, at Croxby Pond,—a lone sheet of water surrounded by plantations, in the heart of the North Wolds,—first heard and then saw a pair of Ravens. He is well acquainted with the birds, having watched them in their haunts in Norway, and I have not the least doubt of the correctness of his observation.

Oct. 12th. Driving this morning along the straight road from Tetney to the coast, in a field to the left, next to the coast-guard station, my attention was attracted to a large handsome high-standing Pipit, which I am only able to identify with *Anthus richardi*, an Heligoland example of which I obtained this year. There were several Larks on the ground near it, several also on the wing, small numbers coming in at intervals during the morning and passing inland; compared with these, it appeared larger and stood considerably higher; the breast was very distinctly marked with numerous elongated spots. During the short time I was able to observe it the bird seemed shy and wary, stretching out its neck, and the moment I attempted to get down it was off, keeping on the wing till lost sight of. Richard's Pipit is also supposed to have been seen at Spurn this autumn. I saw one Greenshank to-day on the Tetney "fitties," and heard another calling; Mr. Caton Haigh told me he had seen more of them in September than in any previous year: on a flat coast it is an extremely difficult bird to approach, rising a long way

out of shot, and I always consider it quite an event to shoot a Greenshank.

December 1st. I have seen about six examples this autumn of the Long-tailed Duck, *Harelda glacialis*, shot in this neighbourhood or at sea; one of these was a female, very distinctly marked about the head and neck, the rest young of the year. They are seen far out at sea, also in shallow waters near the coast, and near the mouths of sluices and havens where the tide mixes with the fresh land-water. In the evening, at flight time, I have known them fly inland to pitch in "flashes" on open fresh waters near the coast. I have seldom known the adult male as far south as the Humber mouth.

Dec. 8th. I saw weighed to-day a Curlew which was slightly over forty ounces.

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## NOTES AND QUERIES.

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The word "feral."—I quite agree with Mr. Wharton that knowledge ought to contribute to the growth of language, but the word "feral" looks like an addition to language from the very opposite to knowledge. The state of the case is this; that "feral" (or *feralis*) means simply "funereal," or "relating to the Feralia Festival" (I do not deny that it had certain other secondary meanings, as "*ferale bellum*," a war productive of funerals, but "wild," or anything like it, was not one of them); that certain writers have used it carelessly, supposing that it was connected with "ferus," which Mr. Wharton admits that it is not, being, as he says, from a totally different root; and that other writers have adopted it without sufficient examination. It is hardly worth while saying anything from the "useful variant" point of view, for it would be quite possible for an ingenious person to argue that chalk and water would be a useful variant for milk. And I see every reason, therefore, including simple accuracy, why this absurd etymological blunder should be gainsaid. I cannot admit Mr. Chapman's plea of euphony for confusing two distinct and unrelated words. It would be adding insult to injury were we to persist in calling a man "Tom" whose real name was "John," and, on his remonstrating, attempt to console him by saying that it was for the sake of euphony, and that his real name was practically obsolete. It was not "much indignation," as Mr. Wharton suggests, which moved me to protest against this base-born term, but a consideration of the far greater precision which botanists have brought to bear on the same question—partly, if I remember right, at the

instance of the late H. C. Watson. They have the following terms;—“*Escape*,” which would satisfy the conditions of our Egyptian Geese and Purple Gallinules, and implies human agency; “*Alien*,” comprising what we call “accidental visitors,” not imported by man. These may become, by establishing themselves, “*Colonists*,” like the Rabbit in Australasia, or the Sparrow in America; the Capercaillie in Scotland is now also, strictly speaking, a colonist. [In this we cannot agree.—ED.] Botanists also use the word “denizen,” the exact shade of meaning of which I cannot at present recollect. It seems to me that some such arrangement might be introduced into Zoology, without violating the unities by adopting such words as “feral.”—HENRY H. SLATER (Irchester Vicarage, Wellingboro’).

#### MAMMALIA.

**Wolves in France.**—Five years ago the increase of Wolves in France had become so serious that the Government found it necessary to increase the rewards for killing them. In 1882, 423 Wolves were killed; in 1883, 1316; in 1884, 1035; in 1885, 900; and in 1886, 760. The rewards are now 200 francs for the killing of a Wolf which has attacked human beings; 150 francs for one with young; 100 francs for a male Wolf, and 40 francs for a cub.

**The derivation of the name “Badger.”**—As supplemental to the Editor’s interesting remarks on the origin of the word “Badger” (pp. 3, 4), it may be well to refer to the conclusion arrived at by Dr. Murray, in the elaborate ‘New English Dictionary upon Historical Principles,’ which is now issuing from the Clarendon Press, Oxford. He there cites the use of the forms “Bageard” (in 1534) and “Badgerd” (in 1598). He cannot find “Badger” in print earlier than in 1523, and he allows that its etymology is doubtful. But Dr. Murray thinks it probable that E. Müller’s suggestion is the right one, and that the name clearly comes from the substantive *badge*, with the termination *-ard*; in reference to the white mark borne like a badge on the animal’s forehead. He gives a number of reasons why this derivation should be accepted, the chief of them being that another name of the badger, “Bauson,” obviously refers to its piebald face.—HENRY T. WHARTON (39, St. George’s Road, Kilburn).

**The Badger in Buckinghamshire.**—In the article on this animal which appeared in ‘The Zoologist’ for January, no mention is made of its occurrence in the county of Buckingham. There are several of its strongholds in this neighbourhood. On one farm about four miles from this town seven Badgers were captured in one night. On another farm Badgers have taken possession of a piece of ground which is of a loose stony nature, and are extremely difficult to get at with dogs, for upon an alarm the animal within its burrow immediately begins to block up the passage with loose

stones and soil. By the time the dog has removed this obstacle, if it has the perseverance to do so, the Badger has made its way into another burrow and escaped.—F. HAYWARD PARROTT (Walton House, Aylesbury).

**Antiquity of the name "Lobster" for the Stoat.**—In Gairdner's edition of the 'Paston Letters' (vol. iii. p. 365), there is a letter from Sir John Paston, written about 1490, asking for "vj corspyll blake conyes or rennyng rabbettys or some blake and some whyght . . . to store with a newe grownd . . . at Oxenhed" (Norfolk), and referring to the practice of warreners in hanging up "mysdoers and forfaytours, as wesellis, lobsters, polkattys, bosartys and mayne currys." The above may be of interest as giving an earlier date for the term "Lobster" than that quoted at p. 20 of the last number of 'The Zoologist.'—J. H. GURNEY (Northrepps Hall, Norwich).

**Squirrel eating Small Birds.**—A friend of mine near Oxford captured a wild Squirrel, and having an aviary containing Canaries, turned his newly-found pet in with them. All went well for some days, and he fed the Squirrel with such food as it delights in. However, on coming down one morning, imagine his horror at finding two of his Canaries gone, and only feathers left strewed about. Keepers have often told me of Squirrels sucking Pheasants' and Partridges' eggs, and of their catching them in traps set for Jays, baited with eggs of small birds, but I have discredited their stories, though I now admit the probability of such acts on their part. Is it an uncommon thing? Perhaps some of your readers may have something to say on this, to me, new food for the Squirrel.—G. T. PHILLIPS (Wokingham, Berkshire). [See a note by Capt. Saville Reid, Zool 1885, pp. 229.—ED.]

**Bank Vole in Leicestershire.**—In my "Notes on the Vertebrate Animals of Leicestershire" (Zool. 1885, p. 219), I wrote:—"I have not yet met with this species in Leicestershire, but it doubtless occurs, as Mr. Ingram, writing on February 7th, 1885, and enumerating the mice and voles, says, 'and another, also short-tailed, but of a light fox-coloured skin.'" Since then, this little animal has, as I imagined it would, turned up quite commonly at Belvoir, from whence, through the kindness of Mr. John Ryder, I received several specimens—*i. e.*, out of nine Field Voles sent to me on 2nd and 3rd July, 1885, four were of the rarer species, which, with others, were exhibited on the 6th at a meeting of the Zoological Section "E" of the Leicester Literary and Philosophical Society, and upon which I made the following remarks, afterwards published at p. 27 of the 'Transactions of the Leicester Literary and Philosophical Society,' October, 1886:—"I should not imagine this species to be very rare, but to be merely confounded with *A. agrestis*. Colour I found to be of little aid in discriminating one from the other, especially when not fully adult, and I do

not think the hard-and-fast colour test, as laid down by Bell, to be of much assistance." The external points which struck me as of importance are:—(1) Tail of greater length than in the common Field Vole, *Arvicola agrestis*, being about one half the length of the body; (2) Tail more hairy above and whiter below than in *A. agrestis*; (3) The paws are whiter, or not so dusky, as those of *A. agrestis*; the bare parts around the mouth are also a little whiter, or purer in tone, and of greater extent; (4) A slightly purer, or more silvery grey tint (certainly not *white*, as stated by Bell) pervades the abdomen, than in *A. agrestis*; and, lastly, the fur is everywhere longer, and a trifle finer, than in *A. agrestis*, but the chestnut colour on the back is not so marked a difference between the two species, as stated. Internally, all is perfectly clear, and if the greater length and less breadth of the skull is not quite so easily seen, the presence of double roots to the molars—leaving out the pattern of the cusps—distinguishes it at once from *A. agrestis*, in which, as with the Water Vole, the molars have single roots.—MONTAGU BROWNE (Leicester).

#### BIRDS.

**Long-tailed Duck and Common Skua in Dorset.**—During the month of November several Long-tailed Ducks frequented Poole Harbour, five of which were shot. One was a fine adult male in full plumage, which is a rare occurrence so far south; the other four were birds of the year, and therefore in more sombre plumage. A Common Skua was shot by a gunner in Poole Harbour on November 19th, and is now in the possession of Mr. Robert Burns, of Wimborne. This bird when first observed was in company with a lot of Wigeon, one of which it had struck down, when the gunner, firing into the flock, killed the Skua as well as several Wigeon.—J. C. MANSEL PLEYDELL (Whatcombe, Blandford).

**The Long-tailed Duck.**—In my note on a Long-tailed Duck with a curiously spotted breast (p. 31) I omitted to state that the bird was a young one, with dark scapulars, and the trachea of the female. This prevents me from accepting your suggestion that the bird was a male of the second year. In point of fact, the variation I allude to seems to occur at intervals among young Long-tailed Ducks, for Temminck seems to hint at it, though neither Yarrell nor Seebohm do so. Judging from my experience of Long-tailed Ducks, the variation can hardly occur in any high percentage, but I should be glad to hear from others. Amongst forty-two birds killed during the last few months, and since examined by me, the majority were females, but the specimen under discussion was the only bird spotted on the breast. I may add that the spots extend over quite half of the inferior surface of the body. No doubt the variation is due to immaturity; but as it stands unnoticed in the text-books above mentioned, your readers will forgive this second reference to the subject.—H. A. MACPHERSON (Carlisle).

**Hobby taking Insects on the Wing.**—Recently, when residing at Kursali, in the Himalayas, I used to notice in the evenings a flock of small hawks hunting round the top of a hill; they appeared to be taking something on the wing. To make quite sure, I took my gun and shot one, and on picking it up found it was a Hobby. On opening it, its stomach was crammed with legs and wing-cases of beetles. These little falcons appear particularly active in feeding at sunset when various insects are on the wing; their movements are as graceful as those of the Swallow. I see Dr. Jerdon, in his 'Birds of India,' mentions this fact. Prof. Newton also, in 'Yarrell's British Birds' (4th ed.), remarks that their food appears to consist less of birds than of coleopterous insects, and that the stomachs of two specimens examined by Mr. Henry Doubleday were filled with the common dung-chaffer.—W. WILFRID CORDEAUX (Queen's Bays, Umballah, Nov. 10, 1887).

**The Whimbrel in Somersetshire.**—Referring to my note respecting the Whimbrel in this county (Zool. 1887, p. 466), I find my informant was in error. I saw these birds on the moors about the 15th May, and my companion, who lives near, said they were there "during the summer." A few days ago I had the opportunity of talking to a young sporting moor farmer, and he says that they arrive in greater or less numbers about the end of April or the first or second week in May, and remain about three weeks, which coincides with your foot-note. In his village they are called the "cowslip bird," as their numbers are supposed to be greater or less, according to the good or bad cowslip year.—H. ST. B. GOLDSMITH (Bridgewater).

**Jay in Co. Wexford.**—With reference to Mr. J. E. Palmer's enquiry as to whether the Jay is resident anywhere near Kildare, it may perhaps interest him to know that it is abundant near New Ross, Co. Wexford. About thirty years ago Jays and Squirrels were introduced at Stonestown (near New Ross, and since that time they have hardly spread through the county at all, though they are common and resident at Stonestown. Squirrels, on the contrary, are now quite common at a distance of seven or eight miles from New Ross.—G. E. H. BARRETT-HAMILTON (Kilmanock, New Ross, Co. Wexford).

**Autumn Migration of Birds in Co. Waterford.**—Being further removed than Mr. Ellison from the sources of migration, I could not observe the arrival of such large and unbroken flocks as he mentions (p. 18); but in corroboration of his statement as to the abundance of winter migrants this season, I may mention that whereas Starlings (which with us are winter visitants) seldom settle here before December, or later, I have this season observed them feeding in flocks all over the country since the 23rd

October, or earlier, the abundance of these birds being unusually great. They generally pass inland in October from Dungarvan Bay, flying swiftly without alighting along the line of this valley, which stretches towards Co. Kerry. They often settle in the low-lands near the coast for weeks before they do so in this inland locality. In October I observed unusually large flocks of Sky Larks in the stubbles, which swarmed with them, evidently an immigration. Redwings appeared in October, but until December were not numerous, probably owing to the dryness of the soil having caused a scarcity of their insect-food. On the 21st and 22nd of December we had a hard frost, with a north wind blowing over snow-covered mountains. During those two days Redwings continued to pass constantly westwards, in flocks of all sizes and singly, with a few Blackbirds. Some small flocks of Fieldfares, keeping apart from the rest, passed in the same direction. This species is usually uncommon here, though they become numerous in very severe frosts. On the 23rd December there was a thaw, and the wave of migration appeared to cease.—R. J. USSHER (Cappagh, Waterford).

**Varieties of Common Wild Duck.**—Two pretty varieties of the Common Wild Duck were taken in the decoy at Park Hall, during the first week of the New Year. They were both of a pale slate-colour on the back, wings light grey, speculum very pale grey, and shafts of wing-feathers white; breast pale sandy; the feathers on back were edged with sandy brown, here and there being one of normal colour; one had the wing-coverts of a sandy buff.—J. WHITAKER (Rainworth Lodge, Notts).

**Swifts laying in Martins' Nests.**—This is probably not a very rare occurrence. Several pairs of Martins build almost every year under the eaves of my house. They are almost uniformly dispossessed by the House Sparrows. The Sparrow waits till the nest is nearly finished, then, after a great deal of chattering on the nearest window-moulding, he suddenly pops in when the Martins are away, and sits chirping maliciously on the edge. The Martins never make any fight, but submit meekly to eviction and go elsewhere. At intervals I get the nests cleared of the straw and feathers brought in by the Sparrows, and it has happened more than one year that after the intruders have been thus ejected a nest has been taken possession of by a pair of Swifts. Whether by address or force, the Swifts seem much better able to hold their own against the Sparrows, and sometimes succeed in rearing their young. I have seen a Sparrow chased vigorously away from the nest by a Swift; but have never seen a Martin make any resistance. One year we watched the Swifts all through the season in the nest in which they had succeeded the robber Sparrows. The nest was close to a window, and we could see the wings of the Swift projecting as she sat on her eggs.—F. W. PRICE (Blackrock, Co. Dublin).

## MOLLUSCA.

**A new List of British Mollusks.**—We are pleased to bring to the notice of conchologists a new list of Mollusks which has lately reached us. It is printed in clear type on one side of the page only, post octavo, and is entitled “A Complete Catalogue of British Mollusca, compiled from Gwyn Jeffreys’ ‘British Conchology,’ with alterations and additions to date, by Charles Jefferys.” Recent though it be, it is nevertheless not quite up to date, for many of the species added in the second edition of Sowerby’s ‘Illustrated Index’ do not here find a place; genera in many instances have not been altered or revised; whilst it is a matter for regret that Fischer’s more recent classification has not been considered; but this of course would have necessitated the omission of Gwyn Jeffreys’ name—a potent talisman with many. Handy as this Catalogue undoubtedly is, a greater desideratum would be a list brought thoroughly up to date, with sufficient space left between the names in which to write the locality, when a complete label could be cut out and used. To save space, we would readily forego the innumerable and worthless varietal names with which the present Catalogue is interspersed, to the delight, it may be, of the tyro, but to the amusement not unmingled with vexation, of the experienced conchologist. The new list may be obtained of Mr. H. W. Marsden, of Gloucester.

## PROTRACHEATA.

**Peripatus in New South Wales.**—It may interest your readers to know that during a visit which I recently paid to Cassilis, a small town situated on one of the tributaries of the Hunter River, and some 120 miles from the coast, I had the good fortune to find *Peripatus* (presumably *P. Leuckarti*, Sanger) under a stone at the foot of a grey gum tree. As yet, I believe, there is no record of the occurrence of *Peripatus* in this colony, nor has it previously been found so far from the sea-coast. My specimen agrees in every particular with the one from Gippsland, Victoria, which Mr. Fletcher exhibited at the July meeting of the Linnean Society of New South Wales.—A. SIDNEY OLLIFF (Australian Museum, Sydney, Nov. 5, 1887).

[Mr. Fletcher’s specimen is stated (Proc. Linn. Soc. N. S. W.) to have been found under a rotten log at Warragul, Gippsland, Victoria. Others from Cardwell and Brisbane were exhibited by Mr. H. Tryon at a meeting of the Royal Society of Queensland in April last, and Prof. Jeffery Bell has recorded (Ann. Mag. N. H. 4887, p. 252) the receipt of specimens from the Queensland Scrubs, Wide Bay. The above note, therefore, from Mr. Olliff indicating a new and intermediate locality, shows the wide range of *Peripatus* on at least the eastern side of the Australian continent.—ED.]

## SCIENTIFIC SOCIETIES.

## ZOOLOGICAL SOCIETY OF LONDON.

December 20, 1887.—Professor 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 November, 1887.

Mr. Sclater read a letter from Dr. H. Burmeister, containing a description of a supposed new Humming-bird from Tucuman. Mr. Sclater proposed to call this species, of which the type was in the National Museum of Buenos Ayres, *Chatocercus burmeisteri*.

The Secretary exhibited, on behalf of Major Yerbury, a pair of horns of the Oorial, *Ovis cycloceros*, which formerly belonged to the Royal Artillery Mess at Fort Attock, and were stated to have been originally obtained in the Chitta Pahar Range, a few miles south of Attock. These horns were apparently of the form lately described by Mr. A. O. Hume as *Ovis blanfordi*.

An extract was read from a letter received from Mr. H. M. Phipson, of the Bombay Natural-History Society, offering some living Snakes for the Society's collection.

Mr. F. E. Beddard read a paper on Hooker's Sea-lion, *Otaria (Arctocephalus) hookeri*, based upon the specimens of this species recently received by the Society, one of which had lately died. The author called attention to the external features, visceral anatomy, and osteology of this Sea-lion, in comparison with the corresponding characters of other species of the group.

Mr. G. A. Boulenger read the description of a new genus of Lizards of the family *Teiidae*, founded on a specimen presented to the British Museum by Mr. H. N. Ridley, who had obtained it in the Forest of Iguarasse, Pernambuco. The author proposed to name this lizard *Stenolepis ridleyi*.

A communication from the Rev. H. S. Gorham, entitled a "Revision of the Japanese species of *Endomychidae*," was read. In this paper three new genera and thirteen new species were characterised and described. Additional observations were made upon the species previously known to inhabit Japan. The new species were based on specimens obtained by Mr. George Lewis during his last journey to the islands in 1880-81.

Mr. G. A. Boulenger gave an account of the fishes obtained by Surgeon-Major A. S. G. Jayakar at Muscat, East Coast of Arabia, which had been presented by him to the British Museum. The collection contained specimens of 172 species, many of which were unrepresented in the National Collection, and 15 of which were apparently new to Science.

Mr. H. Druce read a paper containing descriptions of some new species of Lepidoptera Heterocera from Tropical Africa.

January 18, 1888.—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 December, 1887, and called attention to a small Fox from Afghanistan, presented by Lieut.-Col. Sir O. B. C. St. John, which should probably be referred to the species shortly noticed by Blyth as *Vulpes griffithi*. It was, however, somewhat doubtful whether the species was really distinct from *Vulpes leucopus*, Blyth, the small Desert Fox of Western India.

Mr. Francis Day exhibited and made remarks on some hybrid fishes from Howietown, and on a British specimen of the Spined Loche.

Mr. Oldfield Thomas read a report on a collection of Mammals obtained by Emin Pasha in Central Africa, and presented by him to the Natural-History Museum. The collection contained 115 specimens belonging to thirty-nine species. The great mass of the collection had been obtained in a district called Monbuttu, just within the Congo Basin. A new Flying Squirrel, of small size, was named *Anomalurus pusillus*, and a new Tree-Hyrax, *Dendrohyrax emini*, after its discoverer.

Capt. G. E. Shelley read a paper on a collection of birds made by Emin Pasha in Equatorial Africa. The series had been formed partly in the Upper Nile district and partly in the Monbuttu country in the Congo Basin, and contained examples of four species new to Science, proposed to be called *Indicator emini*, *Spermospiza ruficapilla*, *Ploceus castanops*, and *Glareola emini*.

Dr. A. Günther read a report on a collection of Reptiles and Batrachians from Monbuttu, sent by Emin Pasha. The author enumerated seventeen specimens, of which nine were almost generally distributed over the African region; of the remainder, seven were known from various parts of West Africa. One Tree-snake was described as new, and called, after its discoverer, *Ahatulla emini*.

Mr. Edgar A. Smith read an account of the Shells collected by Dr. Emin Pasha on the Albert Nyanza, Central Africa. Of the five species of which examples were obtained, three were referred to new species. It was stated that fifteen species of Shells were now known from Lake Albert, of which seven were peculiar to it.

Mr. Arthur G. Butler gave an account of the Lepidoptera received from Dr. Emin Pasha. The collection contained examples of 155 species, of which thirteen butterflies and two moths were new to Science.

A communication was read from Mr. Charles O. Waterhouse, containing an account of the Coleoptera from Eastern Equatorial Africa received from Emin Pasha. One of the species was new to Science, and six of them had previously been received at the British Museum from West Africa only.—

P. L. SCLATER, *Secretary*.

## ENTOMOLOGICAL SOCIETY OF LONDON.

*Fifty-fifth Anniversary Meeting, January 18, 1888.*—Dr. D. SHARP, President, in the chair.

An abstract of the Treasurer's Accounts, showing a balance in the Society's favour, was read by Mr. H. T. Stainton, F.R.S., one of the Auditors; and Mr. H. Goss read the Report of the Council.

It was announced that the following gentlemen had been elected as Officers and Council for 1888:—*President*, Dr. David Sharp, M.B., F.Z.S.; *Treasurer*, Mr. Edward Saunders, F.L.S.; *Secretaries*, Mr. H. 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. H. J. Elwes, F.L.S.; Sir John Lubbock, Bart., M.P., F.R.S.; Mr. Robert M'Lachlan, F.R.S.; Mr. P. Brooke Mason, M.R.C.S., F.L.S.; Mr. E. B. Poulton, M.A., F.L.S.; Mr. Osbert Salvin, M.A., F.R.S.; Mr. H. T. Stainton, F.R.S.; and the Rt. Hon. Lord Walsingham, M.A., F.R.S.

The President delivered an Address, for which a vote of thanks to him was moved by Mr. M'Lachlan, seconded by Mr. F. Pascoe, and carried.

A vote of thanks to the Treasurer, Secretaries, and Librarian, was moved by Mr Kirby, seconded by Mr. Waterhouse, and carried. Mr. Saunders, Mr. Goss, Canon Fowler, and Mr. Grut made some remarks in acknowledgment. Mr. Waterhouse proposed a vote of thanks to the Council, which was seconded by Mr. White, and carried. Mr. Stainton replied—H. Goss, *Hon. Secretary*.

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## NOTICES OF NEW BOOKS.

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*The Forest of Essex: its History, Laws, Administration, and Ancient Customs.* By W. R. FISHER, of Lincoln's Inn. Barrister-at-Law. 4to. London: Butterworths. 1887.

THE *raison d'être* of this handsome quarto, briefly alluded to in the Preface, is fully explained in the last chapter, which embodies a detailed account of the events which led to the purchase of all the waste lands of the Forest of Essex, and their ultimate dedication to public use by the Corporation of London to remain unenclosed and unbuilt upon for ever. Mr. Fisher acted as counsel for the Corporation, and in this capacity had to examine an immense amount of documentary evidence, ancient and modern, which occupied him for four years. Having successfully enabled the Corporation to attain their object, it

happily occurred to him that by the publication, in book-form, of the most material facts collected during this laborious research, he might place on record much that would be worth preserving, and much probably that could never again be collected once the documents in question were returned to their respective owners. As a result, we have in this volume a most interesting account of the ancient Forest of Essex, which was once so large as to cover the greater part of the county, but which has gradually been reduced to its present dimensions,—the fragment now known as Epping Forest. The full-page maps which are given, dated respectively 1225, 1292, 1301, 1641, and 1774, enable the reader to trace the successive alterations which were made in the forest boundaries.

As a lawyer, Mr. Fisher has naturally most to say on the forest-laws and their administration, and, incidentally, on ancient customs connected therewith. These do not here concern us so much as the remarks which follow on the *feræ naturæ* of the forest, past and present, the Wolf, the Boar, the Wild-deer (and the hounds that were used for hunting them), the Wild Cat, Marten, and Roe; the series of Goshawks and Sparrowhawks. On these and kindred topics Mr. Fisher discourses with the spirit of a naturalist, in which capacity he is no stranger to the readers of 'The Zoologist'; for do we not remember his 'Account of the Birds found in Norfolk,' written in conjunction with Mr. Gurney, and published many years ago in the pages of this Journal? It is pleasant now to find that, although the severer study of the law has so long occupied his close attention, it has not extinguished, but only interrupted, the prosecution of a taste for Natural History. His chapter on the Wild Animals of the Forest of Essex is both long (pp. 186—229) and interesting. The title is a little misleading, for he calls it "The Wild Deer"; and we are so accustomed to the use of the word "deer" in its restricted sense applying to the *Cervidæ*, that not until reading the chapter do we discover that Mr. Fisher employs it in its original and more extended sense applying to any wild animal. In this sense we have the Anglo-Saxon *deor*, Dutch *dier*, Danish *dyr*, Swedish *djur*, and German *thier* or *tier*.

Considering the former extent of this great forest, and the statements made by Fitzstephen in regard to the wild animals

which inhabited it in the 12th century, we are surprised to learn (p. 189) that there are no entries about the Wolf in any of the records of the forest seen by the author. But that it was once common there is shown by the discovery of its remains during the construction of the reservoirs at Walthamstow; and there is satisfactory evidence of its presence in the forest and in other parts of the county during the historical period, though none of the time at which it became extinct.

The Wild Boar, says Mr. Fisher (p. 188), though a beast of the forest, was not usually considered to be a beast of venery. This last is a remarkable distinction. The Fox has in England always been held to be noxious, the Roe of inferior rank, and the Rabbit of little consequence; even the Hare has not always had the position given to it by Coke. But the Wild Boar was in Norman times one of the principal objects of the chase, and Coke says that his flesh is as much venison as that of the Deer. It must, however, be remembered that the laws of Canute refer to and probably embody laws still more ancient than themselves, and made at a time when both the Wolf and the Boar were too common and destructive to be the objects of preservation, or of the special care of the foresters.

The Red and Fallow Deer have for many centuries been the only representatives in the Forest of Essex of those larger beasts of chase which were the principal object of the Forest-laws, and of the care of the Forest officers. In the spring of 1884, however, a number of Roe-deer were introduced. These were captured in Dorsetshire, in the woods belonging to Mr. Mansel-Pleydell, of Whatcombe, and Col. Hamboro, of Milton Abbey, and, travelling all night from Dorsetshire into Essex, were liberated the following morning in Epping Forest. An interesting account of their capture and transport was published in 'The Field' of April 5th, 1884.

While on the subject of Deer we may note what Mr. Fisher says on the subject of "deer-leaps" (p. 217):—"The owners of enclosed parks in the Forest also made 'salteries' or 'deer-leaps'; contrivances by which the deer could easily leap into the park over a fence of moderate height, but were prevented from returning by a steep upward slope, and sometimes a ditch, inside the park-wall or fence. Four 'deer-leaps' in the pale of Wanstead Park, three being against Leyton Walk and the fourth

against that of West Hainhault, were presented at the Court of 21st September, 1630; and the making of such leaps was the subject of one of the enquiries with which the Grand Jury were charged at the judgment seat."

The duties of the "Foresters" are explained in detail (p. 148), so also are those of the "Regardors" (p. 153). These continued to be exercised until 1817, when all the Forest offices were abolished by Act of Parliament passed in that year, from which date, until the disafforestation of Hainhault in 1851, and Epping in 1878, the duties of supervision and general management were vested at first in the First Commissioner of Woods and Forests, and afterwards in the Commissioner of Works and Public Buildings, without salary or fee. The disastrous effect of this change in the government of the royal forests as regards Epping is shown in subsequent chapters.

The Forest records contain but few notices of the hunting in it by royalty in person, but it is well known that from the time of Edward the Confessor, and probably much earlier, they frequented it for that purpose. The sovereigns mentioned by Mr. Fisher (p. 197) are Edward VI., Queen Elizabeth, and James I. He might have added Henry VIII., concerning whose hunting in Epping Forest there is an anecdote in Nott's 'Memoirs of the Earl of Surrey'; and Queen Mary, who, when princess in 1538, used to course with greyhounds in the forest of Waltham, as we learn from her 'Privy Purse Expenses,' edited by Sir Frederick Madden (p. 73).

The use of the word "buck" in place-names, such as Buckhurst Hill, raises an interesting question whether the Fallow-deer or the Roe originally suggested its application. From the circumstance that no fossil-remains of the Fallow-deer have been met with in England (while those of the Roe and Red-deer are common), it has been generally inferred that the Fallow-deer was not indigenous to this country, but was introduced by the Romans, but when and where for the first time there is no evidence to show. The dark-coloured variety of the Fallow-deer in Epping Forest is generally asserted to have been originally introduced there by James I., as stated in Bell's 'British Quadrupeds'; but, although James I. undoubtedly imported some Fallow-deer in 1612, which were turned out in Epping Forest and Enfield Chase, it has been conclusively shown

(Harting, Trans. Essex Nat. Field Club) that there were dark-coloured Fallow-deer in England long before that date, as early, in fact, as 1465.

The Wild Cat, or "Wood Cat," is mentioned in several of the ancient forest claims and grants. Edward Elrington and John Forest, lords of Theydon Hall, and others, claimed a right to hunt it in 1630 and 1670, though it is possible the animal referred to may have been the Marten, which was recognised as a beast of chase.

The name Hainhault is said (p. 15) to occur in the records for the first time in 1719-20, and is regarded as a comparatively modern corruption of a word variously written in the 13th and 14th centuries as "Hineholt" or "Hyneholt," in the 16th as "Inholt" or "Heinholt," and later as "Henault" or "Heynault." "The same name of 'Hyneholt,'" says Mr. Fisher, "was borne by part of the King's Wood at Colchester, in the 14th century; the Anglo-Saxon 'holt,' a wood, evidently forms the last syllable; of the first I can offer no satisfactory explanation" (p. 15). We take it that the first syllable is the Anglo-Saxon "Hean," signifying "high," and that the original spelling must have been "Heanholt." Compare in other counties the names "Heanor" and "Heanwood."

We have noted very few typographical errors in this work, showing the care with which it has been revised. On page 6, line 5, for *brooke* we should read *brocke*, i. e., the Badger, which was vermin in law, though it was reckoned a trespass to dig one out of another man's land without license (p. 187, note). In the footnote on p. 14, for *ancipitruum* we should read *accipitrum* "of Sparrowhawks"; on p. 26, for *Manduit* read *Mauduit*, i. e., the old form of *Maudit*; and for "blowing the *rechase*" (p. 167), the word *recheat* should be substituted. But slips such as these often escape the most experienced proof-reader, and, as we have said, they are comparatively few in number.

On the whole Mr. Fisher's work is full of interest, and if not, strictly speaking, a Natural History book, it at all events contains so many allusions to forest animals that our readers may be glad to have their attention directed to it.

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*The Solomon Islands and their Natives.* By H. B. GUPPY, M.B., F.G.S., late Surgeon R.N. in H.M.S. 'Lark.'

*The Solomon Islands: their Geology, General Features, and suitability for Colonisation.* By the same Author. 2 vols., 8vo. London: Swan Sonnenschein & Co. 1887.

THE most interesting feature in the history of the discovery of the Solomon Group, in the Pacific Ocean, is the circumstance that during a period of two hundred years after it was first discovered, in 1568, by the Spaniards, it was lost to the world, and its very existence doubted, until rediscovered by Carteret in 1767. The fancied existence of the precious metals suggested to Mendana, the original Spanish discoverer, the name "the Isles of Solomon," to the end that the Spaniards, supposing them to be the islands whence Solomon obtained his gold, might be induced to go and inhabit them. Various difficulties arising to postpone their colonisation, and in order to prevent the English from obtaining any knowledge of these islands, the publication of the official narrative of Mendana's voyage was purposely delayed. So strong a pressure was brought to bear upon Gallego, the chief pilot of the expedition, that he was afraid to publish his journal, which has not only remained *in manuscript* up to the present day, but was not brought to light until the second quarter of the present century. Thus it happened that for nearly half a century after the return of Mendana there was no account of the expedition, no chart preserved its discoveries, it being considered better, as things were then, to let these islands remain unknown.

The story of this lost archipelago is capitally told by Dr. Guppy in the twelfth chapter of his first volume, and reads almost like a novel. From a copy of the original MS. of Gallego's journal, preserved in the British Museum, Dr. Guppy has made a translation, which is now in great part printed by him. "In undertaking this translation," he says (p. 193), "I have been greatly assisted by my acquaintance with these islands, and I have thus been able to avoid the pit-falls into which the somewhat careless copyist might have led me."

During the last thirty years there has been greatly increased intercourse with the natives of these islands; the Melanesian Mission has firmly established itself; numerous traders have

resided in the more friendly districts; and the visits of men-of-war and trading ships have been very frequent. Thus opportunities have been at length afforded to enterprising naturalists like Dr. Guppy to investigate the general features of the islands, and to learn something of the geology, fauna, and flora of this remote group.

We do not clearly appreciate the suggested advantage of presenting his work to the world in two not very thick volumes, when one would have sufficiently answered the purpose. But however this may be, the value of the work is not thereby impaired. In the volume first above quoted, besides the journal of Gallego and the narrative of the discovery of the islands above alluded to, we find the anthropology and ethnology of the group carefully treated, and illustrated with photographs; and, in addition, a detailed account of the fauna and flora. Passing over the "Botanical Notes" and "List of Plants" (pp. 280—307), we find chapters on the Reptiles and Batrachians (pp. 308—318), and Land and Fresh-water Shells (pp. 336—351), with useful lists of the species collected, the most interesting chapter, perhaps, in this volume being that headed "General Natural History Notes" (pp. 319—335). In this we have an account of the Cocoa-nut-eating Crab, *Birgus latro*, from which it appears that this curious crustacean feeds only on the fallen cocoa-nuts, and does not climb trees for them, as has been hastily asserted by some writers (p. 322). Then follows a description (p. 323) of the Nicobar Pigeon, so instrumental in transporting seeds from place to place. To this succeeds some notice of the "Bush-hen" (*Megapodius brenchleyi*), a familiar bird in these islands, which buries its eggs in the sand to a depth of between three and four feet.

"Edible Birds' Nests," "Millipedes," and "Hermit Crabs" are dealt with in turn, and the last chapter in this volume is on "Climate." It is said that the climate is damp and debilitating, the rainfall unusually heavy, and fever and ague prevalent on the coast; the dry season with north-west winds lasting from December to May.

In the second volume, which might well have been incorporated with the first, Dr. Guppy deals with the geology of these islands, which, it appears, are slowly rising, and traces of ancient upheaval are readily observable. Some of the smaller islands

are of recent calcareous formation. Barrier and fringing reefs occur, as well as atolls. A comparatively shoal sea surrounds the archipelago, and, including the New Britain and Admiralty Islands, stretches to New Guinea, and thence to Australia, sufficiently accounting for the Papuan character of its fauna.

Dr. Guppy's narrative of his researches will awaken a new interest in this long-neglected group of islands, and encourage, as we may hope, the further investigation of its Zoology.

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*A Manual of Zoology for the Use of Students, with a General Introduction on the Principles of Zoology.* By H. A. NICHOLSON, M.D., Regius Professor of Natural History in the University of Aberdeen. Seventh Edition, rewritten and enlarged, with numerous illustrations. 8vo. Edinburgh and London: Blackwood & Sons. 1887.

THE appearance of a seventh edition of Professor Nicholson's 'Manual' testifies to its popularity, and to the continued demand for a comprehensive Introduction to the study of Zoology. To supply this in one volume of a portable size is by no means an easy task, nor is it possible where such a work is written by one hand to attain a uniform standard of excellence.

For beginners, as it seems to us, Prof. Nicholson has written too much, and for advanced students not enough. He probably flatters himself he has hit upon the happy mean, but this is a case where there ought not to be any middle course; the book should be one thing or the other, either an elementary manual or an advanced text-book.

With regard to the classification which he has adopted, opinions no doubt will differ, and Prof. Nicholson is assuredly entitled to his own; but in certain respects it strikes us as being not quite in harmony with the most recent views published by specialists.

One commendable feature should not be unnoticed—namely, the bibliographies which are printed at the end of each division of the work. But here again we regret our inability to bestow unqualified praise, and for this reason:—the works recommended are arranged neither alphabetically under authors' names, nor chronologically to enable the reader to trace the growth of literature on any given subject. The titles seem to have been

written down at random: several of the works, from the way in which they are quoted, can scarcely have been seen by the compiler; and in several instances old editions are quoted instead of new and improved ones.

To take a very few examples in the literature relating to Vertebrates only, the following separate works and memoirs dealing with Mammalia find no place in Dr. Nicholson's list:—Flower, 'Osteology of the Mammalia' (3rd ed. 1885), and article "Mammalia" (Encycl. Brit. 9th ed. 1883); Dobson, 'Monograph of the Insectivora,' and 'Catalogue of Chiroptera in British Museum;' Bell, 'British Quadrupeds' (2nd ed. 1874); and Heilprin, 'Geographical Distribution of Animals.' No recent literature is referred to on the Cetacea; Gray's List of 1868 is quoted, but not that of Flower, 1885; nor the "Recent Memoirs on Cetacea"; nor the paper on the *Delphinidæ* (Proc. Zool. Soc. 1883). We look down the list in vain for something recent also on the *Monotremata*, though we must do Dr. Nicholson the justice to add that recent researches (*e. g.* those on *Ornithorhynchus* by Mr. Caldwell) are duly noticed in the body of the work (pp. 734, 735), although no reference is to be found in the list of works on Mammalia quoted on pages 872—875.

In regard to Ornithology, Prof. Newton's article "Birds" in the 'Encyclopædia Britannica,' 9th ed., is duly quoted, but not his equally important article "Ornithology" in the same work. The contributions of Prof. Selenka to Bronn's 'Thier-Reich' are noticed, but not those of Dr. Hans Gadow. The all-important Monographs of Gould, Sclater, Sharpe, Marshall, Shelley, Elliot, and Dresser are ignored; nor is there any allusion to such necessary works of reference as those of Baird, Brewer, Ridgway, Salvin and Godman, Tweeddale, and Legge. The 'Birds of New Guinea' are not alluded to, and the Humming Birds—notwithstanding the labours of Lesson and Elliot, and Gould's magnificent Monograph—are left entirely out in the cold. From Dr. Nicholson's list of "Bird-books" it would appear that the majority of ornithologists must have been for many years asleep.

This portion of Prof. Nicholson's 'Manual,' therefore, stands in need of revision to make it that useful adjunct which undoubtedly it would then be to a modern course of Zoology for students. The numerous illustrations with which the book is interspersed, although not equal in merit, add materially to its utility.



# THE ZOOLOGIST.

THIRD SERIES.

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## ORNITHOLOGICAL NOTES FROM NORFOLK.

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

IF Norfolk has not produced any startling novelties during the twelve months which have just elapsed, it has at all events maintained its character as a great resort of migratory birds, and the side of the county to which these notes chiefly refer has had its fair share of them.

The wind, which so materially affects the movements of migratory birds, blew persistently from the east in the spring, and still more steadily from the west in autumn. No one who has paid attention to the subject can have failed to observe that the feathered visitants to this county will always, if possible, fly against the wind. According to Mr. Preston's annual return, we had twenty-one days of west wind in October—a sufficient reason for the east-to-west migration of Woodcocks, Hooded Crows, Redwings, and Larks, which as usual marked November. If it had been for the same period in the east we should not have seen a tithe of them. There was a gale on October 30th, but both autumn and winter were free from destructive winds.

I have long thought that the subject of migration over the North Sea is complicated by the frequent passage, and return passage, *between tides*, of many species of Gallatorial birds from the estuaries and mud-flats of England to Holland. Dr. Jenner, on the authority of the Rev. N. Thornbury, has noted daily excursions from Holland to Norfolk made by tame Pigeons. It is easy to show the possibility of both Waders and Pigeons

crossing and returning from shore to shore in a very short time if there be very little wind. Mr. Tegetmeier says the speed of a Pigeon, flying under favourable circumstances, is from fifty to sixty miles an hour ('The Field,' August 25th, 1883), and he considers the rate of flight of a wild Rock Dove and a Homing Pigeon to be about the same.\* If Pigeons can fly at fifty miles an hour, Curlews, Knots, and Dunlins can fly at forty. From Norfolk to Holland is little over a hundred miles. Given a suitable day, and a head wind or no wind, two and a half hours would suffice to transport a bird from shore to shore. I have often at Blakeney Harbour, on the coast of Norfolk, observed that many (occasionally almost all) of such species as the Dunlin, Knot, Turnstone, Whimbrel, and Curlew disappear at high tide, having been abundant a few hours before when the tide was low, and a search along the shore has failed to reveal any trace of them. The same has been noticed at Breydon, near Yarmouth.† But this is merely a suggestion, for inasmuch as there is a difference of two hours between high tide at King's Lynn and Great Yarmouth, they may merely move from Blakeney to one or other of these places. According to a "time-table" which I have consulted, there is about the same difference between Yarmouth and Heligoland.

A young Sea Eagle, *Haliaeetus albicilla*, was shot on Nov. 16th at Hoveton, and stuffed by Mr. J. A. Cole, who found it to be a male on dissection. It had been seen in the neighbourhood for a week or more, and was shot in a field by the railway.

On Sept. 15th, the keeper of Cromer lighthouse discovered by the light of his lamps, at three o'clock in the morning, an adult Osprey, *Pandion haliaetus*, perched on the flagstaff which stands about fifty yards from the lighthouse. His assistant shot

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\* This opinion he has doubtless seen reason to modify in consequence of the more recent experiments made by Mr. Griffiths, from which it appeared that the average speed of Partridges and Pigeons is about thirty-seven miles an hour. See 'The Field,' Feb. 19th, 1887.—ED.

† It does not follow from the disappearance of the birds from the shore at high tide that they cross to Holland, though possibly some may do so. At Breydon Harbour, as well as on the coasts of Essex, Kent, and Sussex, we have repeatedly at high tide found them in the marshes, or resting in close order on the dry shingle beaches.—ED.

it, and it was taken to my father the same afternoon. It had probably been attracted by the light.

On May 26th, a female Sparrowhawk, *Accipiter nisus*, allowed herself to be caught with the hand while sitting on four eggs, which were hard set, but not at the point of hatching. A somewhat similar case of a Sparrowhawk allowing herself to be touched on a cold winter's night happened to Mr. E. C. Phillips (Zool. 1881, p. 407).

About the end of November five live Barn Owls, *Strix flammea*, were brought to my father from Gunton, two of which had been taken out of a hollow tree, and three caught in a pole-trap. The keeper who caught them stated that he had recently taken fourteen others in the same trap. There are several manors in Norfolk where a Barn Owl is never intentionally killed; there are, unfortunately, a still greater number where the birds are indiscriminately slaughtered. Tubs have been put up for them at Northrepps for years. On one occasion, having taken ninety-eight pellets out, I had the curiosity to have them soaked in water, when they yielded twenty-one small birds, all Sparrows or Finches, eight Rats, many Field Mice, and a few Shrews. On another occasion the same tub yielded remains of a Thrush, eight young Rats, one Shrew, and about twenty Field Mice; and on another, one bird (apparently a Thrush), six young Rats, four Shrews, and three Field Mice. This gives a pretty good idea of their general food, and never on any occasion was any trace of game met with. The Norwich birdstuffers say the taste for Barn Owls is dying out; they used to receive a great number, now Kingfishers and Squirrels are all the rage. I fear this is from no spirit of leniency to the Owls, but because they are getting really scarce. In days when they were plentiful, I have counted nearly fifty Barn Owls in a Norfolk birdstuffer's shop, but hope never to see such a sight again. Four of the Owls above mentioned were turned out at Keswick, and a few days afterwards one of them was found clinging to a pony's tail, quite dead! the pony having most probably lain on the Owl, or trodden upon it, when its long shaggy tail was the most likely thing for the death-grip of those sharp claws to fix in.

Mr. G. Smith, of Great Yarmouth, writes that on January 6th, thousands of Redwings, Fieldfares, Missel Thrushes, Larks, and Linnets were passing Yarmouth, that the flight lasted all day,

and that the birdcatchers soon had their cages full, and had to "take up" and go home. Next day he noticed the churchyard full of Redwings. On Jan. 10th I found among the scrubby salt-wort bushes which border the sea at Blakeney a good many Redwings, too feeble to keep up with the advanced guard, and a few Blackbirds and a Thrush with them. The Blackbird certainly stands frost and snow better than any of the Thrush family; but they all seem to be aware that the vicinity of the sea thaws the ground a little, and that there, if anywhere, is a chance for procuring food.

Mr. Smith reports that on July 29th hundreds of Swifts were seen going south at Yarmouth, flying only three or four feet from the ground. As late as Nov. 3rd a dozen or twenty House Martins were flying high at Keswick.

A great number of Greenfinches came on board the *Leman* and *Ower* light-vessel on the afternoon of October 26th. Some died, and the next morning the rest joined some passing Rooks and flew away to the N.W. The mate forwarded a wing for identification, as he was not sure of the species.

On January 31st, Mr. Lowne received from a bird-fancier in Yarmouth a *Serin* supposed to have been caught on the denes; but winter is a most unlikely time of the year at which to find any species here which breeds to the south of us. The specimen in question is recorded in the 'Transactions of the Norfolk and Norwich Naturalists' Society,' under date Feb. 5th (pp. 392, 432).

In 'The Zoologist' for 1885 (p. 67) it is stated to be unusual for Tree Sparrows to nest under tiled roofs. About two dozen nestlings of this species were taken in the summer of 1887 from the roof of a cottage in Keswick which stands near a river, and some old ones were shot at the same time. It is evidently increasing in numbers in the Eastern Counties.

About the last day of the year a small yew bush was clipped at Horstead Hall, and a few of the twigs were left under the bush. A covey of Partridges had been in the habit of feeding on the lawn, and on the following day the gardener found five of them dead in the vicinity of the bush; the crops were all examined and contained yew leaves. There was snow on the ground at the time, which perhaps prevented the birds from getting their usual food, but I never before heard of birds being poisoned by yew; indeed the red berries are eaten greedily by various kinds,

and even by men, with impunity. The poison lies in the leaf, especially when it is a little sear.\*

A Lapwing shot near Yarmouth in May had an unusually fine crest, the longest feathers measuring  $5\frac{1}{4}$  inches, and the next  $4\frac{1}{2}$  inches. I have shot one with a crest 4 inches long, but never saw one equal the first mentioned bird, which is quite unique in its way.

A Redshank, *Totanus calidris*, was shot at Cley, on Sept. 13th, which had an occipital tuft, or crest, of feathers half an inch in length. This singular growth was pure white, and composed of about fifteen feathers; there was apparently no injury of any kind under the skin, and the bird was in excellent condition. Some years ago there appeared in 'The Field' a figure of the head of a Golden Plover which had been shot in Tipperary, and which had a considerably developed occipital crest. In the Norwich Museum there is a Sparrow with a similar growth, and a Wood Pigeon with a crest three-fourths of an inch high has also been reported (Zool 1881, p. 332).

The extraordinary number of Little Stints and Pigmy Curlews at Cley and other places on the Norfolk Coast at the beginning of September last was quite unprecedented, but only young birds were obtained. A season which produces one of these species in abundance generally produces the other, but it is six years since any considerable number of these birds appeared. For a week or two anyone who wanted specimens had only to go to the mud-flats; but they decreased in numbers towards the end of the month, and soon all had passed on. About Cley, on Sept. 14th, were two or three Temminck's Stints, but, although I was on the shore there, they did not come my way. Mr. Dack, however, shot one.

Grey Plovers were unusually abundant throughout the autumn, and Knots were more plentiful at Cley and at other places along the coast than they had been for years. Forty-seven were killed on one day by Mr. A. B. Farn and some friends, and I met with a great many myself. Mr. O. V. Aplin, who was staying at Cley from October 4th to the 14th, described them as being then much less plentiful. On the other side of the county,

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\* Several instances have been reported of Pheasants being poisoned by yew. See 'The Field,' Nov. 25th and Dec. 2nd, 1876.—ED.

Mr. H. A. Macpherson saw a Knot, "in full breeding plumage," and some Dunlin and Ringed Plover, on Stamford Mere,—a locality twenty-five miles from the sea,—on the 23rd of May.

Mr. G. Smith informs me that a Pectoral Sandpiper, *Tringa maculata*, Vieillot, was shot on the Bure marshes, near Yarmouth, on Sept. 8th, and is now in the collection of Mr. R. W. Chase, who has already recorded it (Zool. 1887, p. 433). On Sept. 24th I picked up, at one of our poulterers, a Solitary Snipe sent from Blickling; from the dark colour of the back it appeared to be an adult bird, as was another sent to Mr. Gunn from Barton.

Mr. Southwell obtained a good view of a Spoonbill, *Platalea leucorodia*, at Cley, on July 19th, and as neither of us ever heard of its capture it is to be hoped that it escaped destruction. One evening, about the first week of July, Mr. W. B. Monement saw a curious bird sitting on the roof of a building used as a studio in the village of Weybourne, three-quarters of a mile from the sea; it proved on being shot to be an immature Night Heron. On June 30th a pair were released by Lord Lilford at Lilford Hall, and, as the distance is not much over sixty miles, it is probable that this was one of them.

A Pink-footed Goose, which had evidently been shot in the wing, was picked up on the shore at Overstrand on December 20th, and taken to my father. Though very thin and wasted, it soon got better on his pond. Three or four others were killed in the county between that date and Christmas.

Mr. Cordeaux wrote that he received from Cromer Lighthouse the wing of a Tufted Duck, which had struck against it on November 18th; some were offered in Norwich Market during the same month. Two Shovellers were shot at Hempstead in December, and one or two others seen. Colonel Feilden found a young Glaucous Gull and a Guillemot dead on the shore at Wells on October 19th. Eight Great Crested Grebes and two Red-necked ones were hanging up in Leadenhall Market on November 21st, and were said to have come from Norfolk.

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## WOLVES NURTURING CHILDREN IN THEIR DENS.

A RECENT enquiry for information on this subject has led to a fruitless search in a great number of books for some trustworthy account of what has been hinted at and believed in by many people since the days of Romulus and Remus, but concerning which there appears to be very little reliable evidence on record. The best account we have been able to find is contained in a pamphlet printed at Plymouth in 1852, with the following title: "‘An Account of Wolves nurturing Children in their Dens.’ By an Indian Official. Plymouth: Jenkin Thomas, Printer, 9, Cornwall Street, 1852." A copy of this pamphlet, long out of print, and now very scarce, is in the Zoological Library of the Natural History Museum at South Kensington, and on the wrapper of this, in the handwriting of the late Colonel Hamilton Smith, is the following important memorandum:—  
 “This account, I am informed by friends, is written by Colonel Sleeman of the Indian Army, the well-known officer who had charge of the Thugg enquiries, and who resided long in the forests of India.” This endorsement adds value to the account which deserves to be rescued from oblivion, and which is accordingly here reprinted to ensure a more permanent record of the facts narrated than is afforded by the precarious existence of a pamphlet now so difficult to procure.—ED.]

WOLVES are numerous in the neighbourhood of Sultanpoor, and, indeed, all along the banks of the Goomtree river, among the ravines that intersect them; and a great many children are carried off by them from towns, villages and camps. It is exceedingly difficult to catch them, and hardly any of the Hindoo population, save those of the very lowest class, who live a vagrant life and bivouac in the jungles, or in the suburbs of towns and villages, will attempt to catch or kill them. All other Hindoos have a superstitious dread of destroying or even injuring them; and a village community, within the boundary of whose lands a drop of wolf’s blood has fallen, believes itself doomed to destruction. The class of little vagrant communities, above-mentioned, who have no superstitious dread of destroying any living thing, eat jackalls and all kinds of reptiles, and catch all kinds of animals, either to feed upon them themselves, or to sell them to those who wish to keep or hunt them.

But it is remarkable that they very seldom catch Wolves, though they know all their dens, and could easily dig them out as they dig out other animals. This is supposed to arise from the profit which they make by the gold and silver bracelets, necklaces,

and other ornaments, which are worn by the children, whom the Wolves carry to their dens and devour, and are left at the entrance of these dens. A party of these men lately brought to our camp alive a very large Hyæna, which was let loose, and hunted down by European officers and the clerks of my office. One of the officers asked them whether this were not the reason why they did not bring Wolves to the camp, to be hunted down in the same way, since officers would give more for brutes that ate children than for such as fed only on dogs or carrion. They dared not deny, though they were afraid or ashamed to acknowledge that it was; I have myself no doubt that this is the reason, and that they do make a good deal in this way, from the children's ornaments, which they find at the entrance of the Wolves' dens. In every part of India a great number of children are every day murdered for the sake of their ornaments, and the fearful examples that come daily to the knowledge of parents, and the injunctions of the civil authorities, are unavailing against this desire to see their young children dressed out in gold and silver ornaments.

There is now (Feb. 1850) at Sultanpoor, a boy who was found alive in a Wolf's den, near Chandour, ten miles from Sultanpoor, about two years and a half ago. A trooper, sent by the native governor of the district to Chandour, to demand payment of some revenue, was passing along the bank of the river, near Chandour, about noon, when he saw a large female Wolf leave her den, followed by three whelps and a little boy. The boy went on all fours, and seemed to be on the best possible terms with the old dam and the three whelps, and the mother seemed to guard all four with equal care: they all went down to the river and drank, without perceiving the trooper, who sat upon his horse watching them; as soon as they were about to turn back, the trooper pushed on to cut off and secure the boy; but he ran as fast as the whelps could, and kept up with the old one. The ground was uneven, and the trooper's horse could not overtake them. They all entered the den, and the trooper assembled some people from Chandour with pickaxes, and dug into the den. When they had dug in about six or eight feet, the old Wolf bolted with her three whelps and the boy. The trooper mounted and pursued, followed by the fleetest young men of the party; and, as the ground over which they had to fly was more even, he

headed them, and turned the whelps and boy back upon the men on foot, who secured the boy, and let the old dam and her three cubs go on their way.

They took the boy to the village, but had to tie him, for he was very restive, and struggled hard to rush into every hole or den they came near. They tried to make him speak, but could get nothing from him but an angry growl or snarl. He was kept for several days at the village, and a large crowd assembled every day to see him. When a grown-up person came near him he became alarmed, and tried to steal away; but when a child came near him, he rushed at it with a fierce snarl, like that of a dog, and tried to bite it. When any cooked meat was put near him he rejected it in disgust; but when any raw meat was offered, he seized it with avidity, put it on the ground under his hands, like a dog, and ate it with evident pleasure. He would not let any one come near while he was eating, but he made no objection to a dog's coming, and sharing his food with him. The trooper remained with him four or five days, and then returned to the Governor, leaving the boy in charge to the Rajah of Hasunpoor. He related all that he had seen, and the boy was soon after sent to the European officer, commanding the First Regiment of Oude Local Infantry, at Sultanpoor, Captain Nicholetts, by order of the Rajah of Hasunpoor, who was at Chandour, and saw the boy when the trooper first brought him to the village. This account is taken from the Rajah's own report of what had taken place.

Captain Nicholetts made him over to the charge of his servants, who take great care of him, but can never get him to speak a word. He is very inoffensive except when teased (Captain Nicholetts says), and will then growl surlily at the person who teases him. He has come to eat anything that is thrown to him, but always prefers raw flesh, which he devours most greedily. He will drink a whole pitcher of butter-milk when put before him, without seeming to draw breath. He can never be induced to keep on any kind of clothing, even in the coldest weather. A quilt, stuffed with cotton, was given to him, when it became very cold this season, but he tore it to pieces, and ate a portion of it, cotton and all, with his bread every day. He is very fond of bones, particularly uncooked ones, which he masticates apparently with as much ease as meat. He has eaten half a lamb at a time without any apparent effort, and is very fond of

taking up earth and small stones and eating them. His features are coarse and his countenance repulsive, and he is very filthy in his habits. He continues to be fond of dogs and jackalls, and all other four-footed animals that come near him; and always allows them to feed with him if he happens to be eating when they approach.\*

At Chupra, twenty miles east from Sultanpoor, lived a cultivator, with his wife and son, who was then three years of age. In March, 1843, the man went to cut his crop of wheat and pulse, and the woman took her basket, and went with him to glean, leading her son by the arm. The boy had lately recovered from a severe scald on the left knee, which he got in the cold weather, from tumbling into the fire, at which he had been warming himself, while his parents were at work. As the father was reaping, and the mother gleaning, the boy sat upon the grass. A Wolf

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\* Captain Nicholetts, in letters dated the 14th and 19th of September, 1850, tells me that the boy died in the latter end of August, and that he was never known to laugh or smile. He understood little of what was said to him, and seemed to take no notice of what was going on around him. He formed no attachment for any one, nor did he seem to care for any one. He never played with any of the children around him, or seemed anxious to do so. When not hungry, he used to sit petting or stroking a pariah, or vagrant dog, which he used to permit to feed out of the same dish with him. A short time before his death, Captain Nicholetts shot this dog, as he used to eat the greater part of the food given to the boy, who seemed, in consequence, to be getting thin. The boy did not seem to care, in the least, for the death of the dog. The parents recognised the boy when he was first found, Captain Nicholetts believes, but when they found him so stupid and insensible they left him to subsist upon charity. They have now left Hasunpoor, and the age of the boy, when carried off, cannot be ascertained; but he was, to all appearance, about nine or ten years of age when found (in Aug. 1874), and he lived about three years afterwards. He used signs when he wanted anything, and very few of them except when hungry, and he then pointed to his mouth. When his food was placed at some distance from him, he would run to it on all fours, like any four-footed animal, but at other times he would walk upright occasionally. He shunned human beings of all kinds, and would never willingly remain near one. To cold, heat, and rain he appeared to be indifferent, and he seemed to care for nothing but eating. He was very quiet, and required no kind of restraint after he was brought to Captain Nicholetts. He had lived with Captain Nicholetts' servants about two years, and was never heard to speak till within a few minutes of his death, when he put his hands to his head and said, "it ached," and asked for water. He drank it and died.

rushed upon him suddenly from behind a bush, caught him up by the loins, and made off with him towards the ravines. The father was at a distance at the time, but the mother followed, screaming as loud as she could for assistance. The people of the village ran to her aid, but they soon lost sight of the Wolf and his prey.

She heard nothing more of her boy for six years, and had, in that interval, lost her husband. At the end of that time, two sipahees came, in the month of February, 1849, from the town of Singramow, which is ten miles from Chupra, on the bank of the Khobae rivulet. While they sat on the border of the jungle, which extended down to the stream, watching for hogs, which commonly came down to drink at that time in the morning, they saw there three Wolf cubs and a boy come out from the jungle, and go down together to the stream to drink. The sipahees watched them till they had drank, and were about to return, when they rushed towards them. All four ran towards a den in the ravines. The sipahees followed as fast as they could, but the three cubs had got in before the sipahees could come up with them, and the boy was half way in, when one of the sipahees caught him by the hind leg and drew him back. He seemed very angry and ferocious, bit at them, and seized in his teeth the barrel of one of the guns which they put forward to keep him off, and shook it. They, however, secured him, brought him home, and kept him for twenty days. They could, for that time, make him eat nothing but raw flesh, and they fed him upon hares and birds. They found it difficult to provide him with sufficient food, and took him to the bazaar, in the village of Koeleepoor, and there let him go, to be fed by the charitable people of the place, till he might be recognised and claimed by his parents. One market-day, a man from the village of Chupra happened to see him in the bazaar, and on his return mentioned the circumstance to his neighbours. The poor cultivator's widow, on hearing this, asked him to describe the boy more minutely; when she found that the boy had the mark of a scald on the left knee, and three marks of the teeth of an animal on each side of his loins. The widow told him that her boy, when taken off, had lately recovered from a scald on the left knee, and was seized by the loins when the Wolf took him off, and that the boy he had seen must be her lost child.

She went off forthwith to the Koelee Bazaar, and, in addition to the two marks above-described, discovered a third mark on his thigh, with which her child was born. She took him home to her village, where he was recognised by all her neighbours. She kept him for two months, and all the sporting landowners in the neighbourhood sent her game for him to feed upon. He continued to dip his face in the water to drink, but he sucked in the water, and did not lap it up like a dog or wolf. His body continued to smell offensively. When the mother went to her work the boy always ran into the jungle, and she could never get him to speak. He followed his mother for what he could get to eat, but showed no particular affection for her, and she could never bring herself to feel much for him; and after two months, finding him of no use to her, and despairing of even making any thing of him, she left him to the common charity of the village. He soon after learnt to eat bread when it was given to him, and ate whatever else he could get during the day, but always went off to the jungle at night. He used to mutter something, but could never be got to articulate anything distinctly. The front of his knees and elbows had become hardened, from going on all-fours with the Wolves. If any clothes are put on him, he takes them off, and commonly tears them to pieces in doing so. He still prefers raw flesh to cooked, and feeds on carrion whenever he can get it. The boys of the village are in the habit of amusing themselves by catching frogs and throwing them to him, and he catches and eats them. When a bullock dies and the skin is removed, he goes and eats of it like a village dog. The boy is still in the village, and this is the description given of him by the mother herself, who still lives at Chupra. She has never experienced any return of affection for him, nor has he shown any such feeling for her. Her story is confirmed by all her neighbours, and by the head landholders, cultivators, and shopkeepers of the village.\*

The Rajah of Hasunpoor Bundooa mentions, as a fact within his own knowledge, besides the others, for the truth of

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\* In November, 1850, Captain Nicholetts, on leaving the cantonments of Sultanpoor, where he commanded, ordered this boy to be sent to me, with his mother, but he got alarmed on the way, and ran to a jungle. He will no doubt find his way back soon if he lives.

which he vouches, that in the year 1843 a lad came to the town of Hasunpoor, who had evidently been brought up by Wolves. He seemed to be twelve years of age when he saw him ; was very dark, and ate flesh, whether cooked or uncooked. He had short hair all over his body when he first came, but having, for a time, as the Rajah states, eaten salt with his food, like all other human beings, the hair, by degrees, disappeared. He could walk like other men on his legs, but could never be taught to speak. He would utter sounds like wild animals, and could be made to understand signs very well. He used to sit at a *bunnea's* shop in the Bazaar, but was at last recognised by his parents, and taken off. What became of him afterwards he knows not. The Rajah's statement regarding this lad is confirmed by all the people of this town, but none of them know what afterwards became of him.

About the year 1843, a shepherd of the village of Ghutkoree, twelve miles west from the cantonments of Sultanpoor, saw a boy trotting along upon all-fours by the side of a Wolf, one morning as he was out with his flock. With great difficulty he caught the boy, who ran very fast, and brought him home. He fed him for some time, and tried to make him speak, and associate with men or boys, but he failed. He continued to be alarmed at the sight of men, but was brought to Colonel Gray, who commanded the First Oude Local Infantry at Sultanpoor. He and Mrs. Gray, and all the officers in cantonments, saw him often, and kept him for several days. But he soon after ran off into the jungle while the shepherd was asleep. The shepherd afterwards went to reside in another village, and I could not ascertain whether he ever recovered the boy or not.

Zolfukar Khan, a respectable landholder of Bankeepoor, in the estate of Hasunpoor, ten miles east from the Sultanpoor cantonments, mentions that about eight or nine years ago a trooper came to the town with a lad of about nine or ten years of age, whom he had rescued from Wolves among the ravines on the road ; that he knew not what to do with him, and left him to the common charity of the village ; that he ate everything offered to him, including bread, but before taking it, he carefully smelt at it, and always preferred undressed meat to everything else ; that he walked on his legs like other people when he saw him, though there were evident signs, on his knees and

elbows, of his having gone very long on all-fours; and when asked to run on all-fours, he used to do so, and went so fast that no one could overtake him; how long he had been with the trooper, or how long it took him to learn to walk on his legs, he knows not. He could not talk or utter any very articulate sounds. He understood signs, and heard exceedingly well, and would assist the cultivators in turning trespassing cattle out of the fields when told by signs to do so. Boodhoo, a Brahmin cultivator of the village, took care of him, and he remained with him for three months, when he was claimed, and taken off by his father, a shepherd, who said that the boy was six years old when the Wolf took him off at night—some four years before. He did not like to leave Boodhoo. The Brahmin and the father were obliged to drag him away. What became of him afterwards he never heard. The lad had no hair upon his body, nor had he any dislike to wear clothes while he saw him. This statement was confirmed by the people of the village.

About seven years ago, a trooper belonging to the king, and in attendance upon Rajah Hurdut Sing, of Bondee, alias Bumnotee, on the left bank of the Ghagra river, in the Bahraetch district, was passing near a small stream which flows into that river, when he saw two Wolf cubs and a boy drinking in the stream. He had a man with him on foot, and they managed to seize the boy, who appeared to be ten years of age. He took him up on the pommel of his saddle, but he was so wild and fierce that he tore the trooper's clothes, and bit him severely in several places, though he had tied his hands together. He brought him to Bondee, where the Rajah had him tied up in his artillery gun-shed, and gave him raw flesh to eat; but he several times cut his ropes and ran off, and after three months the Rajah got tired of him and let him go. He was then taken by a Cashmeeree mimic or comedian (*bhand*), who fed and took care of him for six months; but at the end of that time he also got tired of him—for his habits were filthy—and let him go, to wander about the Bondee Bazaar. He one day ran off with a joint of meat from a butcher's shop, and soon after upset some things in the shop of a *bunneea*, who let fly an arrow at him. The arrow penetrated the boy's thigh. At this time, Sanaollah, a Cashmeer merchant of Lucknow, was at Bondee, selling some shawl goods to the Rajah, on the occasion of his brother's mar-

riage; he had many servants with him, and among them Janoo, a khidmutgar lad, and an old sipahee, named Ramzan Khan. Janoo took compassion upon the poor boy, extracted the arrow from his thigh, and had his wound dressed, and prepared a bed for him under the mango tree, where he himself lodged, but kept him tied to a tent-pin. He would at that time eat nothing but raw flesh. To wean him from this, Janoo, with the consent of his master, gave him rice and pulse to eat. He rejected them for several days, and ate nothing; but Janoo persevered, and by degrees made him eat the balls which he prepared for him; he was fourteen or fifteen days in bringing him to do this. The odour from his body was very offensive, and Janoo had him rubbed with mustard-seed, soaked in water, after the oil had been taken from it (*khullee*), in the hope of removing this smell. He continued this for some months, and fed him upon rice, pulse, and flour bread, but the odour did not leave him. He had hardened marks upon his knees and elbows, from having gone on all-fours. In about six weeks after he had been tied up under the tree, with a good deal of beating and rubbing of his joints with oil, he was made to stand and walk upon his legs like other human beings. He was never heard to utter more than one articulate sound, and that was "Aboodeea," the name of the little daughter of the Cashmeer mimic, who had treated him with kindness, and for whom he had shown some kind of attachment. In about four months he began to understand and obey signs. He was, by them, made to prepare the hookah, put lighted charcoal upon the tobacco, and bring it to Janoo, or present it to whomsoever he pointed out.

One night, while the boy was lying under the tree near Janoo, Janoo saw two Wolves come up stealthily and smell at the boy. They then touched him, and he got up; and instead of being frightened, the boy put his hands upon their heads, and they began to play with him. They capered around him, and he threw straw and leaves at them. Janoo tried to drive them off, but could not, and became much alarmed; and he called out to the sentry over the guns, Meer Akbur Allee, and told him that the Wolves were going to eat the boy. He replied, "come away, and leave him, or they will eat you also;" but when they saw them begin to play together his fears subsided, and he kept quiet. Gaining confidence by degrees, he drove them away; but

after going a little distance they returned, and began to play again with the boy. At last he succeeded in driving them off altogether. The night after three Wolves came, and the boy and they played together. A few nights after four Wolves came, but at no time did more than four come; they came four or five times, and Janoo had no longer any fear of them; and he thinks that the first two that came must have been the two cubs with which the boy was first found, and that they were prevented from seizing him by recognising the smell; they licked his face with their tongues as he put his hands on their heads.

Soon after, his master, Sanaollah, returned to Lucknow, and threatened Janoo to turn him out of his service, unless he let go the boy; he persisted in taking the boy with him, and his master relented. He had a string tied to his arm, and led him along by it, and put a bundle of clothes on his head. As they passed a jungle, the boy would throw down the bundle, and try to run into the jungle; but on being beaten, he would put up his hands in supplication, take up the bundle, and go on; but he soon seemed to forget the beating, and did the same thing at almost every jungle they came through. By degrees he became quite docile. Janoo was one day, about three months after their return to Lucknow, sent away by his master for a day or two on some business, and before his return the boy had gone off, and he could never find him again. About two months after the boy had gone, a woman, of the weaver cast, came with a letter from a relation of the Rajah, Hurdut Sing, to Sanaollah, stating that she resided in the village of Chureyrokotra, on his estate, and had had the son, then about four years of age, taken from her, about five or six years before, by a Wolf; and from the description which she gave of him, he, the Rajah's relation, thought he must be the boy whom his servant Janoo took away with him. She said that her boy had two marks upon him, one on the chest of a boil, and one of something else on the forehead; and as these marks corresponded precisely with those found upon the boy, neither she nor they had any doubt that he was her long lost son. She remained for four months with the merchant Sanaollah, and Janoo, his khidmutgar, at Lucknow; but the boy could not be found, and she returned home, praying that information might be sent to her should he be discovered. Sanaollah, Janoo, and Ramzan Khan, are still at Lucknow, and, before me,

have all three declared all the circumstances here stated to be strictly true. The boy was altogether about five months with Sanaollah and his servants from the time they got him; and he had been taken about four months and a half before. The Wolf must have had several litters of whelps during the last six or seven years that the boy was with her. Janoo further adds that he, after a month or two, ventured to try a waistband upon the boy, but he often tore it off in distress or anger. After he had become reconciled to this, in about two months he ventured to put upon him a vest and pair of trousers. He had great difficulty in making him keep them on, with threats and occasional beatings. He would disencumber himself of them whenever left alone, but put them on again in alarm when discovered; and, to the last, often injured or destroyed them, by rubbing them against trees or posts like a beast, when any part of his body itched. This habit he could never break him of.\*

It is remarkable that I can discover no well-established instance of a man who had been nurtured in a Wolf's den having been found. There is, in Lucknow, an old man, who was found in the Oude Tarae when a lad, by the hut of an old hermit, who had died. He is supposed to have been taken from Wolves by this hermit. The trooper who found him brought him to the king some forty years ago, and he has been ever since supported by the king comfortably. He is still called the "wild man of the woods." He was one day sent to me at my request, and I talked

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\* Rajah Hurdut Sewae, who is now in Lucknow on business, tells me (28th January, 1851) that the sowar brought the boy to Bondee, and there kept him for a short time as long as he remained; but as soon as he went off, the boy came to him, and he kept him for three months; that he appeared to him to be twelve years of age; that he ate raw meat as long as he remained with him, with evident pleasure whenever it was offered to him, but would not touch the bread and other dressed food put before him; that he went on all-fours, but would stand and go awkwardly on two legs when threatened, or made to do so; that he seemed to understand signs, but could not understand or utter a word; that he seldom attempted to bite any one, nor did he tear the clothes that he put upon him; that Sanaollah, the Cashmeeree merchant, used at that time to come to him often with shawls for sale, and must have taken the boy away with him, but he does not recollect having given the boy to him. He says that he never himself sent any letter to Sanaollah with the mother of the boy, but his brother, or some other relation of his, may have written one for her.

with him ; his features indicate him to be one of the Tharoo tribe, who are found only in that forest. He is very inoffensive, but speaks little, and that little imperfectly ; and he is still impatient of intercourse with his fellow-men, particularly with such as are disposed to tease him with questions. I asked him whether he had any recollection of having been with Wolves ; he said, " the Wolf died long before the old hermit ;" but he seemed to recollect nothing more, and there is no mark on his knees or elbows, to indicate that he ever went on all-fours. That he was found as a wild boy in the forest there can be no doubt ; but I do not feel at all sure that he ever lived with Wolves. From what I have seen and heard, I should doubt that any boy who had been many years with Wolves, up to the age of eight or ten, could ever attain the average intellect of men. I have never heard of a man who had been spared and nurtured by Wolves, having been found ; and as many boys have been recovered from Wolves, after they had been many years with them, we must conclude that, after a time, they either die from living exclusively on animal food, before they attain the age of manhood, or are destroyed by the Wolves themselves, or other beasts of prey in the jungles, from whom they are unable to escape, like the Wolves themselves, from want of the same speed. The Wolf or Wolves, by whom they have been spared and nurtured, must die, or be destroyed in a few years ; and other Wolves may kill and eat them. Tigers generally feed for two or three days upon the bullock they kill, and remain all the time, when not feeding, concealed in the vicinity ; if they found such a boy feeding upon their prey, they would certainly kill him, and most likely eat him. If such a boy passed such a dead body, he would certainly feed upon it. Tigers often spring upon and kill dogs and wolves thus found feeding upon their prey. They could more easily kill boys, and would certainly be more disposed to eat them. If the dead body of such a boy were found any where in jungles, or on the plains, it would excite little interest, where dead bodies are so often found exposed, and so soon eaten by dogs, jackalls, vultures, &c., &c., and would scarcely ever lead to any particular inquiry.

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## NOTES AND QUERIES.

**Memoir of the late Mr. G. R. Waterhouse.**—A well-known name has been removed from the roll of living naturalists by the recent death of Mr. George Robert Waterhouse. Born at Somers Town on March 6th, 1810, he commenced his career as an architect, for which profession he had been educated; devoting his spare time to the study of Natural History, some articles in the 'Penny Cyclopædia' on Fishes and Insects being among his earliest writings. In 1833 the Entomological Society of London was founded, with Mr. Waterhouse as its first Curator, and with his decease that Society loses the last of those who were present at its first meeting. In 1835 he accepted the appointment of Curator to the Museum of the Royal Institute at Liverpool, which appointment he in little more than a year exchanged for the Curatorship to the Zoological Society of London. By the spring of the following year he had prepared a Catalogue of the Mammals in the Museum. This, however, was not published until 1838, owing to his having introduced his own classification, which was strongly opposed by some members of the Museum Committee, who clung to the quinary system hitherto adopted in the arrangement. About this time he wrote the volume on Marsupials in Sir W. Jardine's 'Naturalist's Library,' and also the account of the Mammals collected by Darwin during the voyage of H.M.S. 'Beagle,' as well as several papers on the Coleoptera collected during the same voyage, including an account of the Coleoptera of the Galapagos Islands. In November, 1843, he was appointed an Assistant in the Geological Department in the British Museum; and in 1844 commenced his work the 'Natural History of Mammalia,' which occupied all his available spare time until the completion of the second volume in 1848, when, chiefly owing to the outbreak of the French Revolution, the publisher was unable to continue the work. He was President of the Entomological Society in 1849 and in 1850, and in the latter year he had the honour of being elected an Honorary Fellow of the Zoological Society. In December, 1851, he succeeded Mr. König as Keeper of the Mineralogical Branch of the Natural History Department in the British Museum, the geological collections being at that time associated with the minerals. In 1855 he prepared an article on the geographical distribution of the Rodentia for Keith Johnston's 'Physical Atlas.' From 1858 until 1861 he was engaged in the preparation of his 'Catalogue of British Coleoptera,' which gave such an impetus to the study of this order of insects among English entomologists. He was Vice-President of the Zoological Society in 1862-3. Besides the works already alluded to, he was the author of some 120 articles in various scientific journals. He was an excellent draughtsman, many of his papers being illustrated by himself. Latterly he occupied himself with literary

researches, and in his official capacity was much engaged in the preparation for the removal to South Kensington of the Geological Collections, which since 1857 had been separated from the minerals. By his advice, which his early training as an architect qualified him to give, the basement and ground-floors of the right wing of the new Museum were considerably modified so as to increase the accommodation for the collections. This work harassed him much, and feeling unequal to the anxiety consequent on the approaching removal he resigned his appointment in 1880. In 1885 he had a paralytic stroke, from which he never entirely recovered, and died Jan. 21st, 1888, in his seventy-eighth year.

The use of the word "feral."—If "English as she is spoke" is to be reduced to those words only which are correctly formed, the language will suffer a considerable diminution, but in many cases undoubtedly no loss. However, the elimination of the word "feral," on whatever ground, until some other conveying precisely the same meaning be introduced and accepted, would be a serious deprivation to naturalists; and before parting with it the subject needs calm consideration from more than one point of view. "Colonist," as suggested by Mr. Slater (*suprà* p. 64), would not at all meet the requirements of the case. It might apply in New Zealand to *Zosterops lateralis*, which has lately of its own accord settled in that country, but to few more—certainly not to the numerous animals of species once domesticated that have, so far as circumstances permit, resumed in new lands the habits of their wild and remote ancestors. The first application of the word to animals under these conditions, and to such animals alone, seems due to Colonel Hamilton Smith, who, writing in 1839 of wild Dogs and Dogs that had run wild, says:—"On this subject our language is deficient in a sufficiently correct terminology. The French have adopted a clear distinction, by naming the dog considered as a genuine wild species, *wild dog* (*chien sauvage*), and the dog run wild from a domestic state (*chien maron*), *maroon dog*, or more properly, perhaps, *errant dog*; but as this word is again a Gallicism, it might be better to adopt a native term and call it *Feral dog*." (Naturalist's Library, Mammalia, vol. ix. pp. 91, 92). This suggestion, as everyone knows, has been generally adopted by zoological writers, to the great convenience of all concerned. If occasionally, as would seem lately to have happened, some one has used the word in a wrong sense the blame lies with him and not with the word. Though Colonel Smith does not expressly give the derivation, the context evidently shows that he had the Latin *fera* in his mind, and therefore "feral" is as well formed an English adjective as are many others in constant use. But then it is objected that there is no Latin word *feralis* from *fera*, as there ought to be, while there is a Latin word *feralis* with a wholly different meaning and derivation. The existence of the last is undoubted; but then we must please to remember that this is *fēralis* with the first vowel long, while if there

were an adjective from *fera* it would be *fēralis* with the first vowel short, and that in Latin, as in other languages, we may have two words absolutely alike in spelling, but differing in pronunciation, meaning, and derivation—witness *pōpulus*, a poplar tree, and *pöpulus*, the people. Moreover, though *fēralis*, with the short vowel, may not be found in writings that have come down to us, we certainly have (not, I admit, in what is called classical Latin, but for all that in Latin) the adverb *feraliter*, as Mr. Wharton has already pointed out (*suprà* p. 19), and explained, as he says, by Du Cange as *ferarum more*, “in the manner of wild beasts.” In this Du Cange is supported by Facciolati, while Adelung goes even further and recognises a Latin adjective *feralis*, which he translates by the German *wild*, *grausam*, and then adds, naturally enough, *tödlich*, *traurig*. A man must be confident of his scholarship who demurs to these three authorities. I have had, however, the curiosity to examine the passages cited by Du Cange in support of his rendering. They are three in number, one from the Benedictine Annals (iv. p. 577) may be ambiguous, but another, and the earliest, from Fulgentius, who died A. D. 550, and wrote “*Dum enim amor noviter venit, ut leo feraliter invadit*” (Mythol. lib. iii. 1), seems to show that the lion’s onset was merely “in the manner of a wild beast,” and not necessarily “fatal”.\* The third passage, however, I hold to be conclusive. It is from the Pisan Chronicle (as given by Muratorius (vi. col. 105), and runs thus:—“*contra Pisanos fremebant illico feraliter et dentibus frendebant*”—*i. e.*, “There they roared against the people of Pisa in the manner of wild beasts and gnashed with their teeth.” To translate *feraliter* in this sentence by “fatally” would be to spoil the metaphor, and quite inadmissible. I am all for purity of language, but those who object to “feral” must be very careful how they write. To be consistent they must never use “biology” in the sense generally attached to it; “binomial” and “terminology” must be still more hateful, and they had better beware of “avine” or “avian”—both of which I observe are creeping into use. I trust they will at least avoid the still more barbarous phrase of “collecting a specimen” and then of “sexing” it. For my own part I feel indebted to Colonel Hamilton Smith not only for giving us a word that was very much wanted, without which, indeed, we could not conveniently get on, but, as I consider, for making that word exactly what it ought to be. The beasts to which it applies are not truly wild, yet they live “in the manner of wild beasts”—they are “feral” not “ferine”; but by all means in pronunciation let us keep the first vowel short, and we shall then be able to read our Blyth, our Darwin, and I know not how many other writers, with no fear of “fatal” effects.—ALFRED NEWTON (Magdalene College, Cambridge, Feb. 4).

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\* This is the more important, since modern dictionary-makers refer to Fulgentius, apparently without having looked at the passage, and translate the word “fatally.”

**Definition of the term "British" as applied to the Marine Fauna and Flora.**—A Committee of the British Association, consisting of Canon Norman, Mr. Brady, Mr. Carruthers, Prof. Herdman, Prof. M'Intosh, Mr. Murray, Prof. Newton, Mr. Sclater, and Prof. Haddon (Secretary), appointed for the purpose of considering the question of accurately defining the term "British" as applied to the Marine Fauna and Flora of our Islands, reported as follows:—"A circular giving in detail alternative boundaries for a British marine area, and maps and sections illustrating the same, were distributed to the members of the 'British Marine Area Committee,' as well as to a large and representative number of naturalists interested in marine zoology. As was to be expected, the replies showed that great diversity of opinion exists not only as to the desirability of limiting a British marine area, but also as to how far such an area should extend. A tabulation of the replies was subsequently forwarded to the members of the Committee, and the following statements appear to express the views of the majority:—It may be desirable, for the convenience of curators of museums and the compilers of faunistic works, to limit a marine area which may be more particularly described as 'British.' The British Marine Area may be conveniently subdivided into a shallow-water and into a deep-water district. The 100-fathom contour is a natural boundary line for the former off the north and west coasts of the British Islands for the following reasons: (1) It is defined on all charts; (2) The Admiralty soundings are very complete down to that depth; (3) The 100-fathom line roughly corresponds with the beginning of the declivity of the continental plateau; (4) There is a marked change in the fauna about that limit; (5) Most of the dredgings of British naturalists have been taken within that contour. The only boundary on the south and east is the half-way line between Great Britain and the Continent; this should include the Dogger Bank. The above district may be termed 'The British Marine Shallow-water District.' The deep water district of the British Marine Area may be regarded as extending from 107 to, say, 1000 fathoms—that is, to the commencement of the abysmal floor of the ocean. As these depths occur only off the north and west coasts, this region may be termed 'The British Atlantic Slope District.' The Channel Islands lie outside the British Marine Area proper."

**Antiquity of the name "Lobster" for the Stoat.**—In my note on this subject (p. 65) there is a misprint, which I should be glad to have corrected. For "vj corsspyll" read "vj coupyll blake conyes."—J. H. GURNEY (Northrepps Hall, Norwich).

#### MAMMALIA.

**Equine Mules in Paris.**—It may interest some of your readers if briefly describe the appearance of some equine Mules which I saw in

Paris during the autumn of last year. With two exceptions, noticed below, they were exhibited at the Jardin d'Acclimatation, at which place much attention is paid to hybridization, the results being very successful. I have compared my impressions of these Mules with the coloured plates of those figured in the 'Gleanings from the Menagerie at Knowsley,' and in order the better to identify those which I saw, I give the stud names. "Persans," a Mule between a Jack Ass and Zebra, is not so much striped as might have been expected, and in this respect resembles the figure in the 'Knowsley Menagerie,' the shoulder stripes and those on the legs being very well defined. "Neptune," a Mule between the Horse and Burchell's Zebra; in colour a bright bay; stripes on body very faint, shoulder stripe hardly visible; legs nearly black, with very faint indications of stripes; dorsal stripe well defined. "Fatima," a Mule between a white Egyptian Ass and Burchell's Zebra, characterised by three well-defined shoulder-stripes; otherwise very faintly marked; in the paucity of markings it agrees with a similar Mule figured in the 'Knowsley Menagerie'; the latter, however, has but one shoulder-stripe. A Mule between a Hemione, *Equus ouager*, and Burchell's Zebra (Jardin des Plantes) is faintly striped over the face, fore part of the body, and legs to the hoofs; dorsal stripe very broad, and the colour from the middle of the body to the tail dappled. A Mule between a Hemione and a Tarbes mare (Jardin des Plantes): shoulder stripe absent; dorsal stripe broad, but faint; I could not perceive any sign of corns on the hind legs. "Sanspareille," Mule between a Hemione and Mare; a very beautiful animal, similar to the last named. "Catherine," an Arab Mule, remarkable for having produced foals both with the Horse and the Ass. [In the opinion of Mr. C. L. Sutherland, than whom there is no better authority on the subject, it is extremely doubtful whether this animal really is a Mule. Its history is not forthcoming, and if this were unimpeachable, Mr. Sutherland states that it would be the sole authenticated case of the kind which he has heard of in an experience of thirty years on the Continent of Europe and in the United States. He adds that in Poitou (where some 50,000 mares are kept for Mule breeding) all the experienced breeders disbelieved in this Parisian so-called fertile Mule, there being no record in Poitou of a female Mule having produced a foal.—ED.] "Kroumir" is a dark grey male Mule three-quarters horse. "Constantine" and "Hippone," two grey female Mules three-quarters horse; these three animals are so like horses that the difference can be perceived only by a very close scrutiny; the corns are plainly visible on the hind legs. "Salem," Mule from an Arab Mule and a white Egyptian Ass; this animal is nearly white, and closely resembles an Ass. "Athman," Mule from an Ass and fertile Mule (?); a darker animal than the last-named, and more closely resembling an Ass.—J. JENNER WEIR (Cherbury, Beckenham, Kent).

**The Extinction of the Bison.**—The Report of the Secretary of the Smithsonian Institution at Washington for the year 1887 refers to the

extraordinary difficulty with which specimens of the American Bison were obtained for the Museum. In 1886 it was noticed that the representatives of the species in the Museum were very defective, and it was decided to secure at once, before the animal was wholly exterminated, a complete series of fresh skins and skeletons. The chief taxidermist was directed to set to work forthwith; but his enquiries were met by the assurance that the "Buffalo" were all gone except in the Yellowstone Park. Eventually reports were received that a few remained in Montana and a few in Texas. It was decided not to wait for the ordinary hunting season, but to start without delay. About seventy-five miles N.W. of Miles City, Montana, a herd of fifty to sixty "Buffalo" was discovered. The residents along the Missouri and Yellowstone Rivers were quite ignorant of the existence of the herd in these wild and uninhabited regions, and it had found safe shelter there ever since the destruction of the great northern herd in 1881—83, and was breeding in fancied security. But the settlement of the country by ranchmen which had just taken place doomed every one of these animals to destruction, and the sequel showed that the Smithsonian officials were only just in time to secure a few specimens. Three were taken in this expedition, and later in the year twenty-two more were killed and preserved. The skins and skeletons thus secured are described as being now "of almost priceless value" when the last of the *Bos americanus* is practically destroyed. So rapidly are the great game animals of the United States disappearing, that "it is a sad certainty that in a very few years the Elk, or Wapiti, Mountain Sheep, Goat, Deer, Moose, and other forms will have totally disappeared."

**Hybrid between Goat and Sheep.**—It has always been a matter of surprise to me that hybrids between Goat and Sheep have not been produced in this country, but I have sought for them in vain for many years. In the Jardin d'Acclimatation in Paris there are several such hybrids, presented by the Government of Chili; I saw four females and one male there. They are said to be a cross between a he-goat and an ewe, and the intermediate appearance which they present both in pelage and horn (the females are hornless) seems to confirm this report of their origin. The ram and two of the ewes are of a grey colour; the other three ewes are much darker, in fact nearly black; all have the legs black; the hair-like wool is divided into locks after the manner of that of long-woolled sheep; tails tolerably long and pendant, more resembling those of a Goat than Sheep.—J. JENNER WEIR.

[Mr. C. L. Sutherland, to whom we showed this note, has favoured us with the following addition to it;—"These hybrids are reported to be quite common in Chili and Peru, where they are called 'Chabins.' At Philadelphia in 1876 I was assured by the Commissioner of the Argentine Republican Government that they were commonly bred all through the Republic, and that the hybrids are perfectly fertile."—ED.]

**Squirrels robbing Birds' Nests.**—In reply to the enquiry of Mr. G. T. Phillips (p. 65), I can state from personal experience that Squirrels are among the worst enemies of small birds, devouring both their eggs and young ones. The gamekeepers at Coollattin unanimously agree in condemning them on account of their egg-eating propensities. The work of a Squirrel may be always distinguished from that of a Magpie. The latter almost invariably makes a clean sweep of the contents of a nest, either swallowing the eggs on the spot if they are small enough, or else carrying them away to a distance, one by one, and sucking them. If there are young ones in the nest they are taken in the same way, no remains in either case being left about or near the nest, unless the parent birds offer a valiant resistance, and the eggs get broken in the struggle. But a Squirrel is not nearly so adroit in the management of a robbery, and generally contrives to spill some of the contents of the eggs, besides leaving the broken shells in the nest, or portions of the young birds, if they happen to be the victims. Nevertheless, I am of opinion that Squirrels do not make food of this kind a regular object of search, as the Magpie does when it has a family to support.—ALLAN ELLISON (Trinity College, Dublin).

**Bank Vole in Suffolk.**—The following fact relating to the Bank Vole may perhaps be worth recording:—Last spring, being in want of a pair of these animals, I accordingly set some traps in their haunts; and during the month of May and part of April caught twelve males in succession, before a single female could be induced to enter any one of the traps. Nor is it at all likely that any of them were caught more than once, for though nearly all were set at liberty, they were taken to a distance before being released.—G. T. ROPE (Blaxhall, Wickham Market).

#### BIRDS.

**Linnet nesting in October.**—An instance of the late nesting of the Common Linnet, *Linota cannabina*, has lately come to my knowledge. A keeper was ferreting on the downs near Brighton on October 28th, when a small bird flew from a piece of furze near him, and upon looking into the bush he was surprised to find a nest of the Linnet containing four eggs. As the bird appeared to be sitting he did not disturb it, but visited it again in a few days, when he found the bird still sitting. At this date there was some very rough weather, and on going to the place a few days later he found the nest had been forsaken, and one of the eggs broken. He then brought the nest to me. It was a well-built nest, but the eggs are small.—C. BRAZENOR (Brighton).

**Parrot Crossbill in Devonshire.**—I have had an opportunity of examining two specimens of the Parrot Crossbill, shot out of a large flock at Marley, near Exmouth, during the first week of the current month

(January, 1888). Their large size and thick beaks at once attracted my attention, and, having carefully measured them, I have no doubt of their being examples of *Loxia pityopsittacus*. Their dimensions agree exactly with those of this species given in Yarrell's 'British Birds' (4th ed. vol. ii. p. 210). Their bills at the base are quite one-fifth of an inch higher than those of some half-dozen specimens of *L. curvirostra* which I have measured, and coincide perfectly in form and size with that of a specimen of *L. pityopsittacus*, said to have been obtained in Kent, forming part of the collection of Mr. Bower Scott, of Chudleigh, now in the Albert Memorial Museum, Exeter. They are both in fine red plumage, though one has some bright yellow feathers sprinkled over it. The only previously recorded occurrence of this species in Devon is that given by Dr. Moore, in his list of Birds published in Rowe's 'Perambulation of Dartmoor' (page 232), where Mr. Newton is said "to have shot nine near Millaton in 1838.—W. S. M. D'URBAN (10, Claremont Terrace, Exmouth).

**The Distribution of the Jay in Ireland.**—The restricted distribution of the Jay in Ireland is very curious. Kilkenny and Queen's County, with parts of the adjacent counties of Carlow, Kildare, King's County, and Tipperary will perhaps include the whole of its range in the island. In Kilkenny, Inistioge and Gowran; in Queen's County, Portarlinton and Abbeyleix may be mentioned as localities much frequented by this bird. In Kildare, where a correspondent in the January number of 'The Zoologist' (p. 32) asks whether it is to be found, it is common in the neighbourhood of Monasterevin. There can be little doubt that the Jay was formerly more numerous and widely distributed in this country than it is at present, and it may possibly at no very distant date become extinct as an Irish species. In this neighbourhood, and I think in any part of Wicklow, it only occurs as a rare visitor, some six or seven specimens only having been shot or observed here within the last ten years, though within the memory of the present generation it was a regular inhabitant of our woods. Reports of the occurrence of Jays must be accepted from the country people with caution, as the name is constantly misapplied by them to the Missel Thrush.—ALLAN ELLISON (Shillelagh, Co. Wicklow).

**Starlings in Ireland.**—With reference to Mr. Allan Ellison's observations (p. 16) on Starlings and other birds last year in Ireland, I may say that Starlings have never been so abundant here in South Wexford as they are this year. Every evening between 4 and 6 o'clock they fly over, in large and numerous flocks, on their way to a favourite roosting-place close to this. The noise of their wings is, as your correspondent remarks, like the "sound of a distant torrent." The flocks often come over almost continuously, and the other night I counted about twenty-five flocks in about ten minutes. They may be seen gathering together and starting at places seven miles from

this. Redwings, on the contrary, are not very abundant, and I have seen only one large flock of them this year. Golden Plover are decidedly scarce.—G. E. H. BARRETT-HAMILTON (Kilmanock, New Ross, Co. Wexford).

**The Great Black Woodpecker in Berkshire.**—I have much pleasure in recording what I take to be an undoubted occurrence of this rare British bird, *Dryocopus martius*, in Berkshire. My friend Capt. F. G. Coleridge, of Twyford, recently informed me that about seven years ago the attention of his wife and himself was suddenly called to the presence of a large black bird with red head in a fruit tree in his garden. Capt. Coleridge got within twenty yards or so of the tree, and had a good opportunity of examining the bird. He describes it as of the size of a Jackdaw, black with red crown. It was tapping away at a dead bough on the fruit tree. I have not the slightest doubt that it was a veritable Great Black Woodpecker. Captain Coleridge is acquainted with all our common British birds, and knows the other Woodpeckers perfectly well. He is also most unlikely to have made a mistake on this occasion, as his father's collection—familiar to him from boyhood—contained two stuffed specimens of *D. martius*.—SAVILE G. REID.

**Food of the House Sparrow.**—The following remarks on some of the points mentioned in the notice of Mr. J. H. Gurney's pamphlet on the "Misdeeds of the House Sparrow" (Zool. 1887, p. 390), may perhaps be worth publishing:—When collecting insects I have frequently seen Sparrows eagerly chase moths that were disturbed, and pick them from fences and other places where they rest during the day. For several years some gardeners have taken their meals in a tool-shed, from whence they have been accustomed to scatter crumbs to a number of House Sparrows that collect around the entrance. When the fire was lighted the smoke drove out the moths, often a considerable number, which had taken shelter there, and as they flew out a great many were captured and eaten by the Sparrows waiting outside, who seemed to look out as much for them as for the crumbs. Several times some moths that were caught and pinned for me were carried off by the Sparrows, and on one occasion a Poplar Hawk Moth, *Smerinthus populi*, that I had killed and pinned on the window-frame was carried off by a Sparrow, leaving the pin sticking in the wood. Once I saw a Sparrow trying for some time to dislodge a full-grown larva of the Eyed Hawk Moth, *S. ocellatus*, and had nearly killed it when I disturbed it. A friend of mine once saw a Sparrow making repeated visits to a gooseberry-bush, returning to its nest with something in its beak, which on closer examination proved to be small caterpillars with which the bush was infested. In answer to Mr. Gurney's request for evidence of their eating the Crane-fly (or "daddy-longlegs"), I have often seen Sparrows with these insects in their beaks with which to feed their young. In the Cemetery here the Sparrows destroy a great number of these insects, and I have often seen several birds at a time confining themselves solely to the pursuit of Crane-

flies, chasing them over the long grass, and picking them off the stones and places where they rest, some of the birds carrying away the bodies to feed their young ones.—JOSEPH VINE (11, Chester Road, South Highgate).

**Addition to the Avifauna of the Færoe Islands.**—Herr H. C. Müller, of Thorshavn, informs me that a male example of the Caspian Tern, *Sterna caspia*, was shot on Sorvaag-vatn, Island of Vaagoe, on the 10th May, 1887. The specimen has been reserved for my collection.—H. W. FEILDEN.

**Cuckoo in India.**—Referring to the note under this heading (p. 25), I may state that I resided many years in Ceylon, and drew most of its birds, but never saw or heard of the English Cuckoo visiting that country. There are several species of Cuckoo in Ceylon, but the call of none of them resembles that of our Cuckoo.—E. L. MITFORD (Henfaes, Dolgelly).

**The occurrence of *Serinus canicollis* near Brighton.**—On Jan. 27th a second example of *Serinus canicollis* was obtained at Ovingdean, near Brighton. The present specimen is a male, in perfect plumage, with sharp claws, and showing no signs of captivity whatever. As this species has again been taken it seems to indicate that it does occasionally reach our shores; that two birds should have escaped and both been retaken is most improbable. The question is, to find out, if possible, the line of passage from its distant African home.—R. W. CHASE (Edgbaston, Birmingham).

**Little Bustard in Co. Mayo.**—It may interest the readers of 'The Zoologist' to hear that another Irish specimen of the Little Bustard, *Otis tetrix*, Linn., has recently been obtained. It was shot last December in Co. Mayo. This is the third time the bird has been caught in Ireland. The two previous records were both from the southern counties, while this is its first occurrence in any of the northern ones. The bird is at present in the Irish collection of the Science and Art Museum.—ROBERT F. SCHARFF (Curator Nat. Hist. Department, Science and Art Museum, Dublin).

**Varieties of the Brambling.**—We have some Bramblings alive, two of which were in the normal plumage when netted. One has since assumed a white chin, and many white feathers about the head and neck; the other has some brown patches on the breast, apparently a case of incipient melanism. They are both hens.—J. H. GURNEY, jun. (Keswick, Norwich).

**Correction of an Error.**—In 'The Zoologist,' last year (p. 113), I stated that a hybrid between a Bullfinch and Canary had been exhibited at the Crystal Palace. Although such a bird was entered, it was not exhibited. This oversight on my part has been courteously pointed out to me by the Rev. H. A. Macpherson.—J. JENNER WEIR (Beckenham).

#### FISHES.

**Flounder coloured on both Ventral and Dorsal Surfaces.**—On Jan. 16th last I received from Sennen Cove, near the Land's End, a specimen

of *Pleuronectes flesus*, taken in deep sea-water, which was coloured on both surfaces, and of a more mottled appearance than usual. The only peculiarity I observed was that the lateral line was much more highly arched over the pectorals than is generally found to be the case.—THOMAS CORNISH (Penzance).

#### PROTRACHEATA.

**A forgotten Species of Peripatus.**—In no account of the species of *Peripatus* does any writer ever make a reference to a species described by Prof. Schmarda, in his 'Zoologie,' under the name of *P. quitensis*; in the second edition of this Handbook, which is now lying before me, the species is figured on p. 76 of vol. ii. It is stated to come "vom äquatorialen Hochland Südamericas," and with a total length of 26 mm. it has thirty-six pairs of appendages. It is much to be desired that attention should be called to this species, so that travellers in or near the neighbourhood of Quito may make a careful search for it. It is only by repeatedly directing attention to the existence of these rare and not always easily found creatures that we can hope to obtain them. My persistency in appealing to Mr. E. P. Ramsay has been lately rewarded by the arrival of *P. leuckarti*, which has been found near Wide Bay, Queensland.—F. JEFFREY BELL (*in Report of the British Association, 1887*).

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## SCIENTIFIC SOCIETIES.

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### LINNEAN SOCIETY OF LONDON.

February 2, 1888.—W. CARRUTHERS, F.R.S., President, in the chair.

Dr. William Schlich, Mr. Isaac Thompson, and Mr. W. S. M'Millan were formally admitted Fellows of the Society.

The President called attention to the loss which the Society had sustained by the deaths of Professor Asa Gray, Professor Anton de Bary, and Mr. Irwine Boswell (formerly Syme), which had occurred since the last meeting, and gave a brief review of the life and labours of each.

Mr. C. T. Druery exhibited a collection of abnormal British Ferns, and made some remarks on the extraordinary number of named varieties which had been recognised, and which now required to be carefully examined and compared with a view to some systematic arrangement of them.

Dr. Amadeo exhibited and made some observations on a new species of *Tabernaemontana*.

A long and interesting paper was then read by Mr. Henry T. R. Blanford on the Ferns of Simla, based upon a collection which he had himself

made there "not much below 4500 feet, nor above 10,500 feet." His remarks were illustrated by a map, and by the exhibition of a number of the more noticeable ferns collected, many of which were extremely beautiful. Criticisms were offered by Mr. C. B. Clarke, Mr. J. S. Gamble (Conservator of Forests, Northern Circle, Madras), and Dr. William Schlich (Inspector-General of Forests to the Government of India).

A paper was then read by Mr. J. H. Veitch on the fertilization of *Cattleya labiata*, var. *Mossia*, in which he detailed the results of experiments he had made, illustrating the various stages by a series of delicate drawings executed by Mr. Berjeau, several of which were enlarged and treated diagrammatically for the better explanation of the observations made.

The next paper, by Mr. J. S. Baly, contained descriptions of new species of *Galerucinae*, and being of a technical nature was taken as read.

Feb. 16, 1888.—WM. CARRUTHERS, F.R.S., President, in the chair.

Announcement was made of an acceptable donation of books to the Library by the widow of the late Dr. John Millar, Fellow of the Society, recently deceased, and a unanimous vote of thanks was accorded.

Mr. Spencer Moore exhibited, and made some remarks upon, specimens illustrative of the *Palmella* state of *Draparnaldia glomerata*.

Mr. D. Morris (Royal Gardens, Kew) exhibited a piece of wood of *Hieronyma alchorioides* received from Trinidad, showing in its fissures mineral deposits which on chemical analysis proved to be calcic carbonate. For comparison Mr. Morris also exhibited and commented upon some deposits of calcic phosphate in teak. Some of these (described by Sir Frederick Abel, Quart. Journ. Chem. Soc. xv. 91) are 6 ft. in length, 6 in. in breadth, and from  $\frac{1}{8}$  in. to  $\frac{3}{8}$  in. in thickness. Deposits in bamboo known as "tabasheer" (silicate) were shown; as also pearls (carbonate of lime) from cocoa-nuts, received from Dr. Sydney J. Hickson (see 'Nature,' vol. xxxvi. p. 157). All these specimens were from the Museum of Economic Botany at Kew.

Dr. Burn Murdoch exhibited and offered remarks upon the intra-marginal (so called) veins in the section *Areolata* of the genus *Erythroxyton*, of which *E. coca* is the most familiar species. These lines are due to a thickening of the parenchymatous tissue which takes place in the bud stage, and are in no way connected with the venation of the leaf.

Mr. G. F. Sherwood exhibited a collection of photographs taken in Samoa, illustrating the scenery and people, together with a number of necklets formed with strings of various bright-coloured seeds.

The first paper of the evening was by Mr. H. N. Ridley on self-fertilization and cleistogamy in Orchids. Three common methods of self-fertilization were explained:—(1) by the breaking up of the pollen mass and falling of the dust either directly upon the stigma, or into the

lips, whence it comes into contact with the stigma; (2) by the falling of the pollen masses as a whole from the clinandrum into the stigma; and (3) by the falling forward of the pollinia from the clinandrum or the anther cap, the caudicle and gland remaining attached to the column. An interesting discussion followed, in which Prof. Marshall Ward, the Rev. G. Henslow, and Mr. A. W. Bennett took part.

A paper was then read by Dr. John Rae, entitled "Notes on some of the Birds and Mammals of Hudson's Bay Territory." Dr. Rae, whose long residence in Northern and Arctic America enabled him to speak authoritatively from personal observation, gave an interesting account of the migrations of the Canada, Snow, and Blue-winged Geese, and of the habits of the American Hare and Lemming. He particularly referred to the belief entertained by some of the Indian tribes he had met with (and to which he himself gave credence) that certain species of small birds are assisted on their migrations by being carried on the backs of Canada Geese.

Mr. J. E. Harting, in criticising this paper, gave an exposition of the views held by American ornithologists on the subject of the American, Canada, and Snow Geese, their relationships and nomenclature, and pointed out that the story of small birds being carried by larger ones is not confined to North America, but is current in South-Eastern Europe, Palestine, and Arabia, where reliable evidence has been obtained that Wagtails and other small birds travel on the backs of Cranes. He added that one instance was known to him of such an occurrence in England, a Short-eared Owl having been seen to arrive on the north coast of Yorkshire carrying on its back a Golden-crested Wren, which was secured by the observer (see 'Zoologist,' 1882, p. 73). The meeting then adjourned to March 1st.

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#### ZOOLOGICAL SOCIETY OF LONDON.

February 7, 1888.—Professor 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 January, 1888.

Mr. E. G. Loder exhibited and made remarks on a large tusk of the African Elephant, which measured 9 ft. 5 in. in length, and weighed 184 lbs. It was, he believed, the largest Elephant's tusk hitherto recorded, and its extraordinary size might perhaps be accounted for on the supposition that the animal which carried it had (as sometimes happens) only one tusk.

Mr. A. Thomson exhibited a living specimen of the larval form of Stick-Insect, *Empusa pauperata*, from the Insect House.

Mr. G. A. Boulenger read the third of his series of contributions to the herpetology of the Solomon Islands. The collection now described had been

obtained by Mr. C. M. Woodford during a visit to the islands of Guadalcanar and New Georgia. The author observed that though the collection contained over 200 specimens, only four species were thereby added to the herpetological list of the Solomons, showing that our knowledge of the fauna was approaching completion.

A communication was read from Mr. Arthur G. Butler, containing descriptions of some new Lepidoptera from Kilima-njaro. Some of the specimens described had been collected by the late Bishop Hannington, and others by Mr. F. J. Jackson.

Mr. Frank E. Beddard read a paper upon certain points in the visceral anatomy of the *Lacertilia*. The paper dealt principally with *Monitor*, in which the presence of a peritoneal fold covering the abdominal viscera and separating them from the lungs was referred to; this membrane was compared with a corresponding structure in the *Crocodylia*.

Mr. D. D. Daly gave an account of the Birds'-nests Caves of Northern Borneo, of which no less than fifteen were now known to exist in different parts of the North-Bornean Company's territories. Most of these were situated in limestone districts in the interior, but two of them were in sandstone formations near the sea-coast.

A communication was read from Mr. R. Bowdler Sharpe, containing the description of a new species of Tyrant-bird of the genus *Elainea*, from the Island of Fernando Noronha. This was proposed to be called *E. ridleyana*, after Mr. H. N. Ridley, who had obtained the specimens described during his recent exploration of that island.

Mr. Osbert Salvin read a note on *Ornithoptera victoriæ*, from Guadalcanar Island of the Solomon group, and pointed out the characters which separate this species from a closely-allied form of the Island of Maleite, proposed to be called *O. reginæ*.—P. L. SCLATER, *Secretary*.

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#### ENTOMOLOGICAL SOCIETY OF LONDON.

February 1, 1888.—Dr. DAVID SHARP, F.Z.S., President, in the chair.

The President nominated Sir John Lubbock, Bart., M.P., F.R.S., Mr. Osbert Salvin, M.A., F.R.S., and the Rt. Hon. Lord Walsingham, M.A., F.R.S., Vice-Presidents for the Session 1888 to 1889.

Mr. Henry F. Dale, F.R.M.S., F.Z.S., of Miserden, Gloucestershire, and 2, Savile Row, W., was elected a Fellow.

Mr. F. Pascoe exhibited two specimens of a species of the Hemipterous genus *Ghilianella*, one of which he found crawling over a low bush at Pará with the young larva securely riding on its back. He said it was the only occasion he ever saw the species with the larva, which was new to Mr. Bates.

Dr. Sharp exhibited some insects forwarded to him by Mr. Kidston, of Stirling, collected by Mr. Alexander Carson on Kavalla, an island in Lake Tanganyika: they were sent in spirit, and unfortunately were much damaged in transit. The Coleoptera were nearly all well-known species, exemplifying the fact that many of the commoner insects of tropical Africa have wide distribution there, some of these species being common in Natal and Senegal. The most remarkable of the insects received from Mr. Carson was a large lepidopterous caterpillar, which Dr. Sharp had given to Mr. Poulton; it was covered with very thick sharp spines, all pointed except the terminal one in the mesial line, which was furcate.

Mr. Champion exhibited specimens of *Casnonia olivieri*, Buq., *Ædichirius unicolor*, Aubé, *Paussus favieri*, Fairm., *Colydium elongatum*, Fab., *Endophlæus spinulosus*, Latr., *Heterius arachnoides*, Fairm., *Pseudotrechus mutilatus*, Rosenh., *Singilis bicolor*, Ramb., *Phyllomorpha laciniata*, Will., all recently collected by Mr. J. J. Walker, R.N., of H.M. ship 'Grappler,' at Gibraltar, Tetuan, and Tangier.

Mr. R. South exhibited a remarkable variety of *Polyommatus Phlæas*, caught by him in North Devon in 1881.

Mr. R. W. Lloyd exhibited a living specimen of a species of *Ocnera* taken in London amongst merchandise imported from Ispahan.

Mons. A. Wailly exhibited, and read notes on, a number of cocoons of *Antheræa assamensis*, *A. roylei*, *Actias selene*, *Attacus ricini*, &c., lately received from Assam; also a number of nests of cocoons of *Bombyx rhadama*,—the silk of which is used by the Hovas in the manufacture of their stuffs called "Lambas,"—from the island of St. Mary, Madagascar.

Mr. H. J. Elwes read a paper on "the Butterflies of Sikkim," the result of many years of collecting in that wonderfully rich district of the Himalayas. He said he had been enabled to complete his observations during the enforced delay at Darjeeling of Mr. Macaulay's Mission to Tibet, of which he was a member. He stated the number of species occurring in this small district to be about 530, which is greater than the number hitherto found in any locality in the Old World. Of these the greater part only occur in the hot valleys at an elevation of 1000 to 3000 feet, and these are for the most part of a purely Malayan character, whilst those found in the middle zone are in many cases peculiar to the Himalayas; and the few species from the alpine parts of the country at 12,000 to 16,000 feet are of a European or North Asiatic type. An important feature in this paper was the numerous observations taken on the habits, variation, seasons of appearance, and range of altitude at which the various species occur, for which Mr. Elwes said he was largely indebted to Herr Otto Möller, of Darjeeling. The paper concluded with an analysis of the species and genera as compared with those found in the North-West Himalayas and in the Malay Peninsula.—H. Goss, *Hon. Secretary*.

## NOTICES OF NEW BOOKS.

*The Birds of Wiltshire: comprising all the Periodical and Occasional Visitants, as well as those which are Indigenous to the County.* By the Rev. ALFRED CHARLES SMITH, M.A., Rector of Yatesbury. 8vo, pp. 588. London: R. H. Porter; and Devizes: H. F. Bull. 1887.

BETWEEN the years 1857 and 1869 the author of the present volume contributed to the pages of 'The Wiltshire Magazine' a series of articles on the Ornithology of Wiltshire. Separate copies of these collected into a bound volume we have long possessed, and frequently consulted; but so many years have elapsed since their publication, that we have often wished for their republication in a revised and improved shape. Our wish has at length been gratified, and we have now before us a goodly volume, containing more than double the number of pages which originally appeared. Upon this we think Mr. Smith is to be heartily congratulated; for although in his Preface he has modestly characterized his book as "a plain account of the Birds of Wiltshire, written by a Wiltshire man and for Wiltshire people," it is to be hoped, and indeed expected, that it will find its way far beyond the confines of the county in which it has been written.

When the author expressed a fear (Preface vii) lest he may be thought to have "put forth a treatise which might have been written fifty years ago," and be considered "somewhat old-fashioned," he has, consciously or unconsciously, indicated one of the weak points in the volume. For his views on classification must be admitted to be somewhat "behind the age," and his long disquisition on the structure of birds seems to us to be out of place in a county avifauna. On several very well-known species he has written at too great a length, and on others of much rarer occurrence he tells us less than might well be told. But on the whole we have a very pleasantly written volume, in which are noted many details respecting the occurrence in Wiltshire of sundry rare British birds, which cannot fail to be of interest to ornithologists generally. Some of these have, perhaps, been included on too slender evidence; as, for example, the Roller, *Coracias garrula* (p. 293), which

is stated to have been only seen once, and not procured; and the Capercaillie, *Tetrao urogallus*, which is included in the list (p. 325) on the strength of the occurrence of a single specimen at Winterslow, in 1841, which was supposed to have escaped from Mr. Baring's park, where several have been introduced. Two other species should be expunged from the list, namely, the King Duck, *Somateria spectabilis* (p. 485), and the Cayenne Rail, *Aramides cayennensis* (p. 445).

The records of the former nesting haunts of the Kite in Wiltshire are interesting now that this bird has ceased to breed there, and has become so scarce in other parts of England. At one time it would seem to have been not uncommon in the county, and is known to have nested in Clarendon Woods, at Lavington, Martinsell, Fiddington Down, and West Lavington. At Lydiard Millicent, the seat of Lord Bolingbroke, there was a tree, perhaps still in existence, called the "Kite-tree," where these birds had a nest from time immemorial, and where they might always be seen in the spring only "a few years ago." There is also a wood lying between the villages of Erchfont and Potterne, still known as "Kite Wood," which doubtless was originally so-called from its having been formerly a breeding haunt of this fine bird.

The nesting of Montagu's Harrier in Wiltshire is another fact of interest to which due importance is attached (p. 96). The author was informed by Mr. Tyndall Powell that a pair of old birds of this species, and two young ones now preserved at Hurdcott, and other young birds preserved at Sutton Veny, were taken from his rabbit-warren above Fifield Bavant, and had their nest in the gorse where they were shot and trapped.

That very local little bird, the Dartford Warbler, is noted (p. 166) as remaining throughout the year in Wiltshire, where it has been observed, and specimens procured, at Amesbury and Chippenham, as well as on the downs at Mere, where some are almost certain to be roused from the gorse when the hounds are drawing cover.

"Seen against a dark hill-side or a lowering sky, a flock of Snow Buntings presents an exceedingly beautiful appearance; and it may then be seen how aptly the term 'Snow-flake' has been applied to the species. No more pleasing combination of sight and sound can be afforded than when a cloud of these

little birds, backed by a dark grey sky, descends, as it were, in a shower to the ground, to the music of their own sweet tinkling notes." According to Mr. A. C. Smith, the Snow Bunting "seldom comes so far south as Wiltshire;" but it would perhaps have been more correct to write that it has been "seldom observed in Wiltshire," for in Devonshire it is frequently met with in winter on the Dawlish Warren, and on Dartmoor, and is a regular winter visitant to many parts of Cornwall. In Dorset, Hants, and Sussex also, it is equally well known at that season of the year.

The Cirl Bunting, as might be expected, has been found to occur all over Wiltshire; and to breed in many parts of the county; and Yarrell is undeservedly taken to task for stating that "it is generally found on the coast, and does not often appear to go far inland." But this statement, which occurs in the third edition of the 'History of British Birds,' is not to be found in the fourth and latest edition of that standard work, a reference to which would have saved Mr. Smith the trouble of penning this and similar criticisms which are no longer applicable, and from repeating *ipsisimis verbis* stories which have long ago been shown to have been founded in error. As an example of this, we may refer to his repetition of the story that Sir Thomas Monson, in the reign of James I., gave £1000 for a cast of falcons, a misapprehension of the facts which has long ago been explained. (See 'The Zoologist,' 1880, p. 282).

On the subject of that commonest of all birds, the House Sparrow, Mr. Smith writes:—

"In many of the Churchwardens' Account Books may be seen as a considerable item of the Church-rate annually, and for very many years past, so many dozen Sparrows destroyed at so much per dozen, the price varying according to the maturity or immaturity of the victims. Thus in an old 'Churchwardens' Book' belonging to my small parish, dating from above 100 years ago, I find the items every year of from 20 to 90 dozen old Sparrows at fourpence the dozen, and from 10 to 70 dozen young birds at twopence the dozen; and these, with an occasional shilling for the capture of a Fox, a groat for a Polecat, and an occasional sixpence given to a sailor, seem to have formed the principal part of the church expenses of the good parish of Yatesbury for above 100 years,—so lightly did the church-rate sit upon our forefathers,—and this continued to within forty years ago, when my predecessor considered Sparrow-killing scarcely

a legitimate church expense. \* \* \* \* Two observations strike me in perusing these pages, *viz.* the great abundance of Foxes, Polecats, and such like vermin, and the paucity of Sparrows 100 years ago as compared with later entries; for whereas in the middle of the last century 4 Foxes, 6 Polecats, and 30 dozen Sparrows seem to have been the annual tale of the slain, at the beginning of the present century 2 Foxes, 1 Polecat, and 60 dozen Sparrows form the average sum total. But the last entry recording such items, *viz.* A. D. 1840, shows that whereas Foxes and Polecats are exterminated from the parish, as far as their persecution by church-rate is concerned, no less than 178 dozen Sparrows met with an untimely end in that year; proving that, notwithstanding the persecution raised against them, Sparrows still increase upon us, and have enormously increased since the universal destruction of so many of our birds of prey, for whose behalf they seem in great part to have been provided."

Is there any satisfactory evidence to support the statement (pp. 39 and 199) that the Hawfinch feeds on the kernels of haws and stonefruits, plums, cherries, &c.? Knowing from experiment how difficult such stones are to crack between strong sound teeth, we are somewhat sceptical as to the asserted superior powers of *Coccothraustes vulgaris*. This bird, according to our author, breeds in Savernake Forest, and at Earlstoke and Warminster, notwithstanding the statement of Mr. Seebohm ('British Birds,' vol. ii. p. 57) that "no reliable accounts of its nesting in the western counties are to be found."

The occasional appearance of the Chough in Wiltshire (four instances of its occurrence are mentioned) is noteworthy, and shows that this bird, if not in the strict sense migratory, at all events wanders sometimes to a considerable distance from its natural haunts. An excellent account is given of the Raven (pp. 218—232), concerning which bird the author has made careful enquiry in every part of the county, and has received a good deal of information, negative as well as positive, from no less than 110 correspondents. The evidence of two generations of keepers is adduced to show that Ravens do not destroy the eggs of game.

The former existence of Black Game in Wiltshire (p. 327), and the occasional appearance in the county of wandering Red Grouse, supposed to be stragglers driven before the wind from Wales (p. 329), are matters of interest to sportsmen as much as to naturalists. So also is the information given about the Red-

legged Partridge, which is by no means a common bird in the county, but which is gradually extending its range westward. Mr. Smith expresses satisfaction at its scarcity, because he believes that its encouragement in some districts of England has ended in driving away its more valuable congener, the Grey Partridge; but although we have often heard this statement made, we have had no personal experience of the fact. On the contrary, we have so often found the two species together in the same field of roots during the shooting season, and have so frequently heard of their laying in the same nest (one such case is mentioned in the book before us), that we entertain a better opinion of the "Red-leg" than it is said to deserve. Every sportsman, of course, knows how these birds will run on being approached, and how sorely on this account they try the patience of men and dogs; but every experienced Partridge shooter must also admit that when, later in the season, recourse is had to "driving," the Red-legs show undeniable sport. On this account, if on no other, we would discourage the destruction of their eggs, which some people choose to advocate. We fail, moreover, to note the alleged inferiority of flavour which this bird is said to possess in comparison with the Grey Partridge. When both are roasted the difference is certainly perceptible; but in a properly made game-pie, or stewed with celery, or in a *salmi aux champignons*, the Red-leg is a game-bird not by any means to be despised.

But to return to our author. We can scarcely say that we are disappointed at finding no evidence to support a previously made assertion that the Curlew (*Numenius arquata*) breeds on the Wiltshire Downs; for we have long ago recorded our dissent from such a view ('Zoologist,' 1877, p. 38), and expressed the opinion that the bird in question must be the Stone Curlew, *Ædicnemus crepitans*. But inasmuch as the Rev. A. P. Morres, of Britford Vicarage, Salisbury, professed to have good reasons for believing the story to be true ('Zoologist,' 1877, p. 106), we have been content to wait for satisfactory proof, and in search of it have naturally turned to the volume before us. But the author, although quoting Mr. Morres's views, admits that he himself has "no positive proof to bring forward," and has unaccountably overlooked the more recently published statement by Mr. Morres in one of a series of articles on "Birds in the Neighbourhood

of Salisbury”;\* wherein he says, “I had been often told that these birds bred occasionally on our downs, and was promised some eggs by a person who unhesitatingly affirmed so; but when they were sent, they turned out to be the eggs of the Stone Curlew or Norfolk Plover, as I had all along imagined they would be found to be.” †

But the Wiltshire bird, *par excellence*, around which the greatest interest centres is, of course, the Great Bustard, now, alas! extinct in this country as a breeding species, but once not uncommon upon the open downs of Wiltshire and Berkshire, the wide heaths of Norfolk, and the wolds of Lincolnshire and Yorkshire. Dr. Thomas Muffett, who lived at Bulbridge, in Wiltshire, in Elizabeth’s time, and died in 1590, tells us in his quaintly written work, ‘Health’s Improvement,’ that “in the summer, towards the ripening of corn, he has seen half a dozen of these great birds lie in a wheat field (as a deer will do) with ease and eating; whereupon they would grow sometimes to such a bigness that one of them would weigh almost fourteen pounds.” Chafin, also, in his ‘Anecdotes and History of Cranbourn Chase,’ describes very graphically how, in 1751, he encountered on the Wiltshire downs, near Winterslow, a flock of twenty-five Great Bustards, which he pursued for some distance on horseback in an unsuccessful attempt to overtake and shoot one. Strange to say, neither of these authors are referred to in the volume before us. This is to be regretted; for such positive evidence as theirs, on the subject of a species now so rarely seen in Wiltshire, is too important to be omitted in a book dealing exclusively with the birds of that county.

At page 4 of his “Introduction,” Mr. Smith gives a comparative table of the number of species observed in different counties (Cornwall, Lincolnshire, Lancashire, Somersetshire, Middlesex, Sussex), and remarks that out of 199 different kinds of British land-birds mentioned in the latest edition of Yarrell, 133 have been met with in his county, while out of 176 water-birds accredited to the British Islands, Wiltshire (with no sea-coast) can claim to have harboured at one time or another no less

\* ‘Wilts Archæol. & Nat. Hist. Mag.’ 1883.

† Mr. Morres by this time (1883) had forgotten his former anxiety to include *Numenius* as a breeding species amongst the Birds of Wiltshire, *cf.* Zool. 1877, p. 106.

than 102; the total number of species for the county being thus raised to 235, or about twenty more than have been met with in the adjoining county of Somerset, washed by the waters of the Severn and the Bristol Channel. This may, perhaps, be considered to prove that Wiltshire lies right in the course taken by most of the birds which migrate to and from countries further north; but it also testifies very plainly to the powers of observation exercised by the men of Wiltshire, and by none more successfully than the author of this agreeable volume.

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*The Journal of Morphology.* Edited by C. O. WHITMAN, with the co-operation of E. P. ALLIS, JUN. Vol. I., No. 1, pp. 226. Boston: Ginn & Co. 1888.

AMERICAN morphologists are to be congratulated on the appearance of a journal especially devoted to their new science in their own country; though we have no right to complain that such has not existed before, for it is owing to its absence that the 'Philosophical Transactions,' the 'Quarterly Journal of Microscopical Science,' and the 'Journal of Anatomy and Physiology' have been enriched by valuable communications from American workers. Patriotism, however, is by no means incompatible with a devotion to scientific pursuits, and Americans themselves must have felt ashamed of being without a periodical of this character. The appearance of the first number is very handsome, and the plates are good. Prof. Ramsay Wright and Mr. Macallum, of Toronto, lead off with an interesting account of the remarkable Trematode Worm, *Sphyranura osleri*, which is parasitic on the Menobranch (*Necturus lateralis*); there are then communications on arthropod eyes, two of which are by Mr. Patten, who is by no means in accord with some preceding observers; embryology is represented by an account of the germ-layers of *Clepsine*, by Prof. Whitman, and a preliminary notice on the development of *Lumbricus* by Prof. Wilson; these are very important contributions. Dr. Baur has an essay on the phylogenetic arrangement of the Sauropsida, which, to the eye of a purist, is disfigured by the term Sauromammalia; Therosauria has, indeed, been used by Haeckel for a group of Dinosaurs, but as we have the terms Eutheria, &c., might we not have Saurotheria?



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NOTES ON THE SEAL AND WHALE FISHERY OF 1887.

BY THOMAS SOUTHWELL, F.Z.S.

BAD as the season of 1886 proved to be, that of the past year was still worse, and although only fourteen vessels left Dundee and Peterhead, as compared with twenty-one in the first-named season, the result was even more unsatisfactory. In fact, the time when the Seal and Whale Fishery in the Greenland Seas and Davis Straits will no longer prove remunerative appears to have arrived, and it is probable that next season will see a further considerable reduction in the fleets.\* This result has long been predicted by thoughtful men, but it has been greatly accelerated since the introduction of steam by the reckless way in which the whales have been harried from place to place, as well as by the immense advantage which this powerful adjunct gives the whaler of the present day over the sailing vessels of the past; (and

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\* I am informed that only the 'Hope' and 'Windward' will leave Peterhead this season for the young Sealing, and that the 'Eclipse' will, as last year, confine her efforts to the Whale fishery only. The 'Erik' is sold to the Hudson's Bay Company. From Dundee the 'Pole Star' and 'Earl of Mar,' and 'Kellie,' go to Greenland; the 'Maud' and 'Chieftain' to Labrador and Davis Straits; and the 'Active' and 'Nova Zembla' will sail direct to Davis Straits. It is also reported that, in consequence of the heavy losses sustained by the underwriters, eight vessels having been lost in the Arctic Seas in the past four years, the rate of insurance will be greatly increased, in fact almost doubled; and this alone, in the present critical state of affairs, will probably deter some from taking part in a venture so unpromising.

this applies with equal force to the Seal Fishery). It is not that the whales are exterminated, for Capt. Gray saw fourteen of these animals in Greenland, and Capt. Adams is reported to have seen seventeen in Davis Straits; but, from long persecution, they are simply unapproachable; in addition to which in the past season in Davis Straits the state of the ice was most unpropitious: the frost was so severe in the spring that the "banks" were covered with ice, rendering fishing impossible, and later on the "North Water," which is usually free from ice, was frozen over, so that the vessels, after passing through Melville Bay, had to cut their way through young ice while performing their passage westward to Lancaster Sound, which locality they did not reach till the 17th July, when the summer fishing was virtually over. In the fall some fine "fish" were seen, but the season was so unfavourable, in consequence of the state of the ice, and the whales so difficult of approach, that it was impossible to secure them.

It is the opinion of some of the whalers that the fish which were usually met with on their passage up Lancaster Sound, but which for the last two seasons have apparently been absent, have changed their route and gone round to Behring's Strait, where the Americans are said to have been very successful. In the Greenland Sea the ice was farther west last season than Capt. Gray has known it for a period of at least ten years—a state of things always accompanied by a scarcity of whales in the Greenland North Water.

According to Capt. Gray's observations, there seems to be a curious periodicity in the movements of the Greenland ice; it appears to attain its maximum and minimum easterly extensions in periods of about five years, so that about every tenth year may be expected to prove an "east-ice year" and *vice versa*. Thus the years 1847, '56, '66 and '67, '72 and '81 were east-ice years, whereas in 1851, '68, '76 and '87 it receded to its fullest west. In all the former years "south-east packs" occurred; that is, the margin of the Greenland "west-ice" was so far east that it met the ice lying south of Spitzbergen, which has its origin in Barent's Sea, thus producing the so-called S.E. pack; in the latter series of years the swell of the ocean was felt almost to the shores of Greenland. Of course due allowance must be made for exceptional seasons and prevalent winds, and to this cause is probably due the S.E. packs of the two consecutive years of 1866 and 1867.

A chart of the Greenland west-ice, showing its position at various dates in the summer of 1881, will be found in the 'Proceedings of the Royal Geographical Society' for that year, contributed by Capt. D. Gray, than whom perhaps no man living has had greater experience of the Greenland Seas.

Comparatively mild southerly and south-easterly winds act very rapidly upon the ice-margin, eating into its edge, and aided by the accompanying swell the floes are quickly disrupted and borne south by the prevailing currents, soon to be dissipated in the warmer waters of the open sea. Owing to these causes, in 1886, in two summer months the breadth of the border of ice on the shores of East Greenland was reduced from 400 to considerably less than 100 miles. On the other hand, in severe weather, even though accompanied by northerly winds, the lanes of water between the "floes" become rapidly covered by young ice, which prevents their disruption and southerly drift, thus compacting the pack and preventing its disintegration.

It would be interesting to watch the effects which the greater or less extension eastward of the ice which borders the eastern shores of Greenland may be supposed to have upon the climate of the northern portion of our island, but my statistics are too imperfect to admit of any reliable deductions.

To return to the Whale Fishery: it seems probable that so far as the expensively equipped Scotch vessels are concerned,—if not already so,—it will soon prove unremunerative, and that if better prices for produce are not speedily forthcoming, of which there is at present no prospect, it will revert to a small and inferior class of vessels such as those now sent out by the Norwegians, and that, as a British industry, the Northern Seal and Whale Fishery will become a thing of the past.

The only casualty reported last season was the loss of the 'Arctic,' so long and successfully commanded by Capt. Adams, and the same vessel in which Capt. A. H. Markham accompanied him in a whaling voyage to Baffin's Bay and Gulf of Boothia in 1873. Capt. Adams has left the 'Arctic,' in which he was succeeded by Capt. Guy for some years, and now commands the 'Maud.' It appears that the 'Arctic,' in endeavouring to get up Fox Channel, was damaged by the ice so seriously as to render her subsequent abandonment in Cumberland Gulf necessary.

Twenty British vessels which took part in the Newfoundland

Sealing captured 177,733 seals (compared with 195,396 for eighteen vessels in 1886); of these the 'Terra Nova' took 25,575; the 'Eagle,' 19,960; the 'Leopard,' 15,331; and the 'Ranger,' 15,201. The remaining sixteen vessels secured between them 101,666, or an average of 6354 each; the average of the whole twenty vessels was 8886. It will be seen that only four or five of the steamers had paying cargoes. The value of the oil was about £22 per ton (252 gallons), and that of the skins ranged from 4s. 6d. for young, to 15s. for old ones. Six Dundee vessels are included in the above, which captured 51,504 seals between them, but only one, the 'Terra Nova,' had more than 7000 seals, the remaining five having 25,794 between them—a number about equal to that secured by the 'Terra Nova' alone.

The young sealing in the Greenland Sea was practically a failure. Three Scotch vessels and about twenty-two Norwegians were present; the 'Polar Star' killed about 1100, but the 'Hope' and the 'Erik' missed them altogether. About 15,000 young seals are believed to have been killed, only the 'Magdalena' securing a fair number (3500), all the others being very poorly fished. The failure of the Greenland young sealing was mainly due to a heavy gale of wind from the N.W., which blew with great force during the last few days of March; on the 31st, the point of ice in lat. 73° on which the young seals were pupped became detached, and by the force of the gale drifted south to 70° 35', 4° 30' W., some seventy miles S.E. of Jan Mayen, where the breeding pack was eventually found by the sealers; but it is possible many of the young ones perished by being washed off the ice; the small number killed is therefore no indication that a larger number than usual escaped to increase the breeding pack.

At Newfoundland and the Greenland old and young sealing together, ten Scotch vessels killed 57,240 seals (against 49,570 last season, that number being greatly helped by the 'Terra Nova's' very successful Newfoundland catch of 25,575. These at an average price of 6s. per skin would represent a sum of £17,172, and 720 tons of oil at £19 per ton a further sum of £13,680, gross total £30,852, against a similar estimate for 1886 of £26,511. Included in the Seal oil is the produce of about 500 Walruses brought home by the Davis Straits vessels.

As already stated, the Davis Straits whaling voyage was virtually a failure. There were present eight vessels from

Dundee, one of which, the 'Arctic,' was lost in September, the remaining seven returning with eleven whales and three suckers, the whales, with one exception which produced  $21\frac{3}{4}$  cwt. of bone, being all very small. A feature in the voyage appears to be the capture of three "suckers," old females followed by their young, although formerly frequently reported, being now rarely met with, or if met with seldom recorded; 1931 White Whales were also procured, and twenty Bottle-noses, the whole producing 438 tons of whale oil and 110 cwt. of bone.

Five vessels went to Greenland, four from Peterhead and one from Dundee; of these the 'Hope' and the 'Alert' returned unsuccessful, so far as Whales were concerned; the 'Polar Star' and 'Erik,' each with a very small Whale, producing 2 and 1 cwt. of bone respectively; and the 'Eclipse' with one very fine Whale which yielded 27 tons of oil and 25 cwt. of bone. The total produce of the Greenland voyage was three Whales, yielding 37 tons of oil and 28 cwt. of bone. The high price of bone will insure the 'Eclipse' from actual loss, but the result of the voyage to the other four vessels must have been a very considerable deficiency.

The total quantity of whaling produce brought home by the Dundee and Peterhead vessels consisted of 475 tons of oil, about 283 tons of which was White Whale, 23 tons Bottle-nose, and 168 tons Right Whale oil, and 6 tons 18 cwt. of bone. The oil, at the present price of £20 per ton, represents a sum of £9500, and the bone, now selling at £1200 per ton (17 per cent. of which, however, would be under size and worth only half-price), would represent, say, another £7560—together £17,060, against a total of £29,890 for the season of 1886. The low proportion which the bone bears to the oil (about 127 cwt. of the former to about 168 tons of the latter) is due to the small size of the whales captured.

The only whale killed by Capt. Gray was a remarkably large female, measuring 57 feet in length, and the longest slip of bone, including the portion inserted in the gum, 12 ft. 4 in.; it produced 27 tons of oil and 25 cwt. of bone. From experience derived from the comparison of 200 Greenland Whales, Capt. Gray estimates the average length of an adult male at from 48 to 50 ft., and that of the female from 53 to 54 ft.; so great a length as 57 ft. is seldom reached and very rarely exceeded. The longest Whale which Scoresby ever measured was 58 ft., and of 322 individuals which he assisted in capturing, he does not believe

one exceeded 60 ft.; 70 ft. in length and 15 ft. bone are given as the dimensions of one killed near Spitzbergen about the year 1800, but for the accuracy of the statement Scoresby does not vouch, and probably it is an exaggeration. Years ago large solitary whales were occasionally met with in the open Greenland Sea, and from that circumstance known as "Blue-water Whales," they have been known to yield 28 to 30 tons of oil, with 12 ft. 6 in. bone, weighing 30 cwt., but Capt. Gray has not known one of these monsters to occur since the year 1875. Capt. Gray's Whale was killed on the day following her Majesty's Jubilee (June 21st), which he celebrated in lat.  $74^{\circ} 10' N.$ , long.  $15^{\circ} W.$

I have no particulars of the Norwegian Bottle-nose fishery, but an extract from a Swedish paper quoted in the 'Board of Trade Journal' for January, 1888, states that during the last two years the fishery has been unusually flourishing, and that in 1886 the catch was 1311 fish; also that it is chiefly Norwegian, Russian, and English vessels that take part in the fishery, but that a Hamburg firm has five whaling steamers in Spitzbergen, all of which sail under the Norwegian flag.

Mr. Robert Gray has, as usual, kindly allowed me to see his private "log," which contains a large number of interesting observations. On the 27th April the 'Eclipse' captured a Bottle-nose Whale in  $71^{\circ} 30' N.$ ,  $3^{\circ} 10' E.$ , of which Mr. Gray gives some accurate measurements; its stomach contained numerous Cuttle-fish, which proved to be *Gonatus fabricii*, and its skin was infested with *Cyamus thompsoni*. When harpooned it remained under water thirty-five minutes; although when struck, no other whales of this description were in sight, on its return to the surface it was accompanied by a number of others of the same species. This curious circumstance has been frequently remarked with regard to the Sperm Whale, with which in many other respects the habits of this species are very similar. A Norwegian walrus-hunter was spoken, and is thus described by Mr. Gray:—"The 'Flora' is a sloop of forty-five tons, manned by ten hands, all told. She is here [ $78^{\circ} 28' N.$ ,  $0^{\circ} 12' E.$ ] hunting old Seals; afterwards she goes to Spitzbergen to hunt Walrus. Last year [1886] she went the same round, capturing 400 old Seals at the "west ice," and 160 Walrus at Spitzbergen. Capt. Jansen says that last year in the far north the ice was unusually open; he himself reached the high latitude of  $81^{\circ} 30'$  in August off North-

East Land, the sea being entirely free from ice to the northward; other walrus-hunters were forty miles north of Nova Zembla in open water, the sea being also clear of ice, and an unusually large land-water intervening between the shores of Nova Zembla and the ice to the eastward. Capt. Jansen also informed me that the majority of the Norwegian Bottle-nose whalers are similar to the 'Flora,' each carrying two guns in the bow, two in the stern, as well as two boats with a gun each. . . . This year thirty craft will prosecute the trade." It is probable that such vessels as these will pick up what Whales they can when the expensively equipped vessels now pursuing the Whale Fishery have ceased to do so, and it is evident that comparatively a very small amount of success will amply reward them.

Amongst the birds seen, a Falcon (probably *Falco candicans*), in lat.  $79^{\circ} 7'$ , and a Wheatear, in  $77^{\circ} 56'$ , were the most noteworthy; a single specimen of the curious fish, *Scopelus mulleri*, was seen but not captured, and a small fish which proved to be *Gadus fabricii*, was found on the ice in  $74^{\circ} 12' N.$ ,  $14^{\circ} 48' W.$ ; a Walrus was shot feeding upon a Ringed Seal, *Phoca hispida*, its stomach being full of seal-flesh. The 'Erik' brought home a live Bear which was lassoed by the crew, a previous attempt to take one alive in this manner not having proved successful; and Capt. Adams, of the 'Maud,' succeeded in capturing a live Walrus in a similar manner in Exeter Sound, and also brought home a young Bear.

Mr. Gray was kind enough to bring me a diatomaceous gathering from the surface of the sea in lat.  $74^{\circ} 29' N.$ ,  $14^{\circ} W.$ , which Mr. Kitton tells me consisted almost entirely of *Thalassiosira nordenskioldii*; and on a previous occasion a similar gathering determined by the same authority was found to consist of *Chaetoceras wighamii*, *C. lauderi*, *Bacteriastrium shrubsolii*, *B. varius*, and *Coscinodiscus minor*.

Mr. Gray wishes me to state that the bird referred to by him (Zool. 1887, p. 27), and recognised by the crew of the 'Eclipse' as the "Cape Hen," was probably *Puffinus major*, a species well known under that name by the Davis Straits whalers, and which is met with off Cape Farewell and on the American coast from Belle Isle to Resolution Island.

I have, as on previous occasions, to express my indebtedness to Messrs. W. Grieve & Co., of Greenock, for statistics of the New-

foundland Seal Fishery, and to Mr. David Bruce and Mr. Kinnes, of Dundee, for general information with regard to the Davis Straits and Greenland Whale Fishery; the frequent mention of Capt. D. and Mr. Robert Gray will show how much I owe to their kindness.

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INJURIES TO THE FISHERIES IN THE BALTIC  
BY SEALS.\*

BY MR. HINCKELMANN,  
Royal Superintendent of Fisheries.

THE constantly increasing number of Seals on our Baltic coasts has become so serious a danger to our coast fisheries, that it appears high time to find ways and means to keep these injurious animals away from our shores. Ten or fifteen years ago, when our fishermen still underrated their destructiveness, and at best were amused to see one of them, it was hardly thought possible that these animals would one day endanger the fisheries on the coast of Schleswig-Holstein, where they formerly appeared only in small numbers and at places where there was not much chance of their injuring the fisheries.

Those fiords suffer most where Cod fisheries are carried on with nets and bow-nets during the months of October, November, and December. The damage done to the fisheries by Seals in Eckernförde and Neustadt alone is very considerable, as they frequently tear about a hundred nets in one day. Unfortunately the fishermen are very slow in making such cases public, and bringing them to the knowledge of persons interested.

Hunting Seals on our east coast has so far had little or no result. This sport offers too few attractions, for the Seal when mortally wounded invariably sinks to the bottom, where, at least in deep water it cannot be reached. It might be said that the purpose is fully answered if the Seals are killed. But who will do this? There is no use in the fishermen carrying firearms, as they have often done, because they can engage in Seal-hunting in time left over from their proper employment. Moreover, firearms are rather in the way in a boat where fishing is being carried on, because there is constant danger that the crew will come in

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\* 'Schädigungen der Fischerei in der Ostsee durch Seehunde.' (Mittheilungen des Deutschen Fischerei-Vereins, 1886.) Translated from the German by HERMAN JACOBSON. Bull, U.S. Fish Commission, 1887.

dangerous contact with these weapons. Seal-hunting from a boat is not very pleasant for sportsmen, because it can be done only in winter, and even then is very uncertain. An effective protection against Seals, therefore, cannot be obtained in this way, and even the granting of rewards for killing them would not answer the purpose, because the hunter can only in very rare cases prove that his shot has been successful, as the dead Seal cannot be taken from the surface of the water, but sinks to the bottom.

Even if the fisherman should succeed in keeping these animals at bay by firearms, this would be possible only while they were working their nets in the fishing-grounds; but as soon as the boats were gone the Seals would do as much injury as before. In favourable weather nets and bow-nets remain in the water from twenty-four to forty-eight hours before they are hauled in and the fish taken out, while in stormy weather four or five days may pass before a boat will venture out to haul in the nets. Such a period, when, owing to the power of the elements, fishing is at a standstill, is made good use of by the Seals, so that, after such pauses, torn nets and half-devoured fish are found in the fishing-grounds instead of nets full of fish.

Such occurrences are exceedingly common during the season when the Seals visit our coasts, and no one who has not seen the damage done to the fishing apparatus by the Seals can have an adequate idea of the extent of the calamity, especially during last winter. Among the rest, a number of bow-nets for catching Cod in the Neustadt Bay had been repeatedly torn to such a degree that it took weeks, and a considerable outlay of money and labour to repair the damage.

In the neighbourhood of the Schlei, where there were hundreds of flounder-nets, these were so badly injured by the Seals that in a few weeks they had become useless. In the inner portion of the Eckernförde Bay, nets and bow-nets (a particularly large number of the latter) were injured by Seals to such an extent that when they were taken ashore to be dried they had many holes large enough for a man to creep through. In some cases the fishermen were compelled to stop fishing, although there were plenty of fish and the prices were high, simply because the Seals had destroyed their apparatus. The Cod fisheries by means of bow-nets have a still greater attraction for Seals than the fisheries with stationary nets, because in the meshes of

the latter the fish hang quietly while they sport about freely in the bow-nets and thereby attract the attention of their enemies.

Frequently Seals will attack bow-nets filled with fish from the outside by tearing the sides and catching and devouring the fish which try to escape through the openings. But they also know how to find their way through the neck of the bow-net by advancing from one chamber to the other until they reach the fish in the last chamber. But as the last chamber of the bow-net has a narrower entrance than the first, it sometimes happens that the robber is caught and killed by the fishermen. On the whole, however, such cases are rare, because the bow-nets do not possess the necessary power of resistance required to hold the Seals, which are armed with very sharp teeth.

It is not easy to answer the question as to how the evil can best be remedied, for even the use of poisoned fish as bait (apart from the danger connected with this method) would not be of any use, because the Seals are very choice in the selection of their food, and would only take to the dead bait if there was absolutely no chance to get fresh fish, a case which will hardly ever occur in the open sea. It might be recommended to make an experiment with bow-nets made with galvanized-iron wire, painted brown, like the colour of the bow-nets usually employed. The shape of these bow-nets should be that of the common bow-nets used for catching Cod, but the entrances to the different chambers should be so arranged as to make it easy for the Seals to slip in. Live fish—especially Cod, of which the Seals are very fond—might, if necessary, be put in these bow-nets when they are set; but there would probably be no lack of bait to attract the Seals, as even in wire bow-nets plenty of fish are caught. Such an experiment, which should be made in places frequented by Seals, would not involve any great expense, and would certainly be a step towards solving the question as to the best mode of protecting the fishermen against the Seals.

The chief cause why the Seals infest our fishing-grounds in such large numbers must, however, be sought in the circumstance that in many places they enjoy full protection, so that sportsmen and visitors to watering-places may have a chance to follow the sport of Seal-hunting. Near the Island of Rügen certain districts are leased to Seal-hunters, and the persons owning these districts take good care that the Seals shall not decrease but rather increase, in number.

## ORNITHOLOGICAL NOTES FROM THE NORFOLK COAST.

BY OLIVER V. APLIN.

THE following notes refer to the birds seen by my brother, Mr. F. C. Aplin, and myself, while staying at Cley from the 4th till the 14th October, 1887.

Oct. 4th. Wind N.E., fresh to light. Two or three Grey Crows coming in from the sea in morning. Small parties of Linnets about the marsh, and many Rock Pipits haunting the creeks; also a single white Snow Bunting on the beach. An immature Black Tern was hawking about over the channel some way up, but all the Common Terns had departed. The waders noticed comprised a single Turnstone; large numbers of Ringed Plovers, consorting with Dunlin, of which there were some very considerable clouds; a little party of half a dozen Bar-tailed Godwits and a few single birds; one Curlew Sandpiper flying with some Dunlins; one Greenshank and a few Redshanks; Curlew in only small numbers; a Ruff, which rose from one of the creeks; two Golden Plovers on the beach in early morning; some flocks of Knot, and many Grey Plovers; a big flock of Lapwings about the marsh, and an enormous concourse on the sands at the Harbour mouth—no very large assemblage seen after to-day. Two dark-coloured Skuas (probably Richardson's) near the Harbour mouth were persecuting some Gulls, one or which was forced to disgorge its prey, which was easily caught in the air. Some half dozen Swallows and Martins playing about on the outskirts of Cley on this and the next two or three days. Nothing in the scrub except a Wren, which I flushed at my feet twice, but could not get a shot, as it dropped into the cover again directly: as it was highly probable that this bird was a migrant, it was desirable to obtain it, but I could not find it again.

Oct. 5th. Wind N.E. to E., light to calm. Dropped down the channel on the ebb in morning. One or two Grey Crows seen, and Godwits. A flock of about a score of newly-arrived Snow Buntings, which afterwards frequented a swede-field inside the east bank. Two Twites and one Kestrel seen. Two Herons flushed from the creeks. More Knots about to-day, and a flock of about a dozen Golden Plovers on the mud; two or three lots of Lapwings flying over. A bunch of seven Teal sitting on the

mud-edge in the morning, and two bagged and another shot from a creek in the afternoon, were all still entirely in dark plumage. Five Mallards flying west along the beach. One Kittiwake seen. Two Stonechats in scrub.

Oct. 6th. Wind N. to N.W., light. No Godwit seen, nor any after this date. Perhaps more Grey Plover; a decided increase in Larks, great numbers on the marsh. A small "charm" of Goldfinches among the thistles in a field inside the east bank; one Stonechat in the gorse; no small birds about the scrub. An old Ringed Plover shot to-day, from a small party of these birds and Dunlin, proved to be an example of the small dark race (*Ægialitis intermedia*); it was the only fully adult bird shot; most of them were assuming the black on the breast. A Great Black-backed Gull, hard hit at flight time last night, was secured by a gunner further along the bank, and purchased a day or two after; it is an exceptionally large bird, although not quite in adult plumage, the first primary having a subterminal white bar, and the bill wanting the full colours.

Oct. 7th. Wind W.N.W. to W., moderate, going to calm at sundown. Quite a choppy sea in the channel as we dropped down on the ebb. Passing down close to the Blakeney side a large Peregrine rose from the marsh. Increase of Meadow Pipits, many about the drier parts near the Watch-house; one shot was rather warmly tinted on the under parts. The gunner with us shot at a Purple Sandpiper on Morston flats. A bunch of sixteen Golden Plovers and another little one of four or five passing east, rather high, in morning. A large flock of Curlew, about a hundred, on the Morston side. Grey Crows more numerous, twelve seen flying in from sea about 10 a. m.—the first day any number seen. About sixty Black-headed Gulls flying down the Harbour in the afternoon, and three Wigeon came in earlier in the day and remained for some time about the Harbour. Seven Mallards passing west. Two or three Reed Buntings in the scrub, the first seen there.

Oct. 8th. Close morning. Wind then to E. and fresher, much colder and showers. Three Wheatears among the gorse on Blakeney side, also two "charms" of Goldfinches of twenty-five and ten. A single Golden Plover on the marsh. A flock of Knot and with them nine Grey Plovers. Some more Crows coming in. A Curlew Sandpiper, in company with a Dunlin, flew past the

boat as we sat at lunch in Morston Creek. Fewer Ringed Plover about.

Oct. 9th. Cromer. Wind W., light, going to calm. Several small lots of Scoters flying west low over the sea, also one lot of Mallard in the morning. A flock of about a hundred Chaffinches, looking like recent arrivals, on the Lighthouse Hills.

Oct. 10th. Calm morning, but soon after we got back to Cley, about 10 a.m., it came on to blow hard from N.E., and we were able to do very little with a boat—the best chance of getting near birds—during the rest of our stay. Squally rain during the day. Some lots of Duck and Wigeon about, and one Mallard came along the east bank at evening flight time. A Skua right up the channel. A tired Golden-crested Wren, very unwilling to rise, in the scrub just inside the pebble-bank; also a few Reed Buntings.

Oct. 11th. Blowing very hard from W., cold. Some Song Thrushes and a Redwing in the scrub: two Robins, one on the sand-hills, the other in the scrub, and a Chiffchaff near the Watch-house. About a dozen Twites feeding among the starwort (*Aster tripolium*). Two Turnstones seen about the "beaches." A single Snow Bunting near the Point, a fine old bird, which I shot, and as I was kneeling down packing it up as well as I could, in spite of the wind and the sand which drifted along in a blinding manner, filling gloves, gun-locks, box, and everything else, I saw three Sanderlings running very fast along the tide-edge. I picked up my gun and shot one, when the other rose, but settled again almost instantly for a second or two before going off; their tameness, as compared with Dunlin, is wonderful. We got one of the others the next day; the third had disappeared. One of them was a young bird assuming the winter dress, the other was in full winter plumage (though I have seen some a little white), which seems early, considering the condition of other waders at that time. Old Snow Buntings, so conspicuous in some situations, are very difficult to see when sitting on this beach, as they are almost exactly of the same colour as the stones of which it is formed—a blackish grey, fulvous, and white. The Falcon was again disturbed from a bit of drift-wood, but lost sight of among the sand-hills. A bunch of Wigeon migrating west along the coast in the afternoon, and a small dark Goose, doubtless a Brent, also going in the morning. A gunner saw

about a hundred Crows coming in about daylight; these and all the others seen coming in were flying in a south-westerly direction. Some Larks from east late in the day.

Oct. 12th. Wind W., strong to light and calm in evening. Saw a Woodcock flying in from the sea in the morning. Great increase in the number of Twites; a large flock on the flats where the glasswort (*Salicornia herbacea*) grows. Several Red-wings in the scrub; two shot. A Turnstone sitting with a flock of Dunlin on the beach at high water. In the afternoon a Great Crested Grebe came some distance up the channel. The Peregrine was seen again, and unfortunately shot by a man near Morston; it proved to be a female. A few Gulls passing west early in the day. Perhaps more Rock Pipits, but they were always plentiful in the creeks; of those procured all but one were young birds, with a strong yellowish green cast. An immature Common Tern was shot at Blakeney to-day.

Oct. 13th. Wind W., fresh to strong and squally with rain. Two or three tame Blackbirds in the scrub. A large flock of Twites. Two or three Knots with Dunlin and Ringed Plovers. Gulls flying in from the sea in flocks to escape the squalls. A young Kittiwake shot as it was flying singly. In this dress, according to Messrs. Gurney and Southwell, it is less common on the Norfolk coast than in adult plumage (Trans. Norf. & Norw. Nat. Soc. vol. iv. p. 411). Two more shot from a flock flying in for shelter were apparently young of the Black-headed and Great Black-backed species, but as we also were running before the wind for the shelter of Morston Creek and expecting to swamp every minute, we could not stop to pick them up. A large flock of Curlews about, and a bunch of a dozen Wigeon. The gunner saw a score of Grey Geese fly over in the early morning.

Oct. 14th. Wind N., blowing very hard, with squalls of hail, sleet, and rain; very high tide. Two Woodcocks in the sand-hills.

Curlew Sandpipers, so common earlier in the autumn, had moved on. Knots were much less plentiful than in September, and decreased during our stay, as also did Ringed Plover. Godwits soon disappeared. Grey Plovers appeared to be unusually abundant, but Redshanks were certainly less plentiful than in November, 1886. Twites, save two on the 5th, clearly arrived while we were there, and Reed Buntings reached the

scrub on the 7th. No Shore Larks were seen, though carefully searched for on the ground where we saw a great many in November last. I took from the stomach of a Purple Sandpiper (one of two forwarded to me after we left) a small crab entire, with the legs on, measuring fully .25 in. across the carapace. I hear that a Fulmar, an immature Long-tailed Duck, and a Red-necked Grebe were procured between Oct. 17th and 21st, and a Rough-legged Buzzard soon afterwards. A Stork was seen on the marsh on November 17th, but fortunately escaped.

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### ORNITHOLOGICAL NOTES FROM REDCAR.

BY T. H. NELSON.

FROM an ornithologist's point of view the most noticeable features of the year 1887 in this district were the great abundance of waders, principally Pigmy Curlews, Little Stints, Knots, and Grey Plovers, in the early autumn, and, later, the unusual numbers of Long-tailed Ducks, which frequented the sea off Redcar and the Tees mouth. With regard to Pigmy Curlews and Little Stints, they appear to have been noticed in many different places; correspondents of mine who were shooting on the coasts of Wales, Northumberland, South Yorkshire, and Norfolk all commented on the large numbers of these small shore-birds which they met with; while, as for Long-tailed Ducks, the pages of 'The Zoologist,' and the Natural-History columns of 'The Field,' testify to the fact of this usually uncommon sea-duck having been noticed by different observers all round our coasts.

Throughout January and February, 1886, Guillemots and Razorbills were numerous. Out of about a dozen Guillemots killed, six were of the ringed variety; on the 14th January I secured one Common and three Ringed Guillemots at a double shot. On April 12th a white Guillemot was seen at sea by several of the fishermen; another Guillemot with a white head, probably the same bird, was reported on the 28th.

On May 7th, Mussell, the Middlesbro' taxidermist, had a female Peregrine and a Hen Harrier, *Circus cyaneus*, which had been trapped at Egton Bridge, near Whitby, at the latter end of April. The first Terns were noticed on the 17th. On the 24th

I saw two Sanderlings in summer plumage on the East Sands; and on June 9th a large flock of birds, including Sanderlings (*Calidris arenaria*), Knots (*Tringa canutus*), Turnstones (*Streptilas interpres*), Grey Plover (*Squatarola helvetica*), &c., were observed at 3 a.m. No doubt these birds would be on their way north to their breeding-grounds.

On July 14th the return migration from the north set in. Twelve Whimbrels (*Numenius phæopus*) were observed on East Scar. On the 26th the first Turnstones were seen at the same place, and the first Knots on the 27th. Sanderlings, in faded summer plumage, were plentiful in the estuary. Many Manx Shearwaters, *Puffinus anglorum*, were in the offing in August and September. On August 3rd Mr. Emerson shot one about two miles off Redcar; Mr. W. Pyman obtained another on the 4th; and I shot one on Sept. 22nd. Mussell tells me that my bird is the finest specimen of its kind he had ever preserved.

On August 3rd, in the Tees Bay, a Black Tern, *Hydrochelidon nigra*, was flying in company with a flock of the common species. The first Godwits, *Limosa lapponica*, appeared at the Tees mouth, and a large Shearwater, either *P. major* or *griseus*, was reported by the fishermen, on August 13th. On the 16th I shot a Pigmy Curlew from a flock of about twenty, and saw eight Grey Plovers with black breasts at the Tees mouth. On the 19th and 20th I shot three more Pigmy Curlews on the rocks near Redcar pier.

In the early part of September Richardson's Skuas, *S. crepidatus*, were plentiful in Tees Bay, pursuing the small Gulls and Terns. At this period both Little Stints and Pigmy Curlews abounded at the Tees estuary, several examples of each being shot. On Sept. 6th (S.W. gale, fine), a rush of shore birds took place, chiefly Godwits, Whimbrels, Grey Plovers, Pigmy Curlews, and Little Stints. On the 13th, with a north gale and rain, there was another great migratory flight, consisting of Duck, Teal, Grey Plovers, Godwits, Dunlins, Knots, and Oystercatchers. On the 16th shore-birds were more numerous in the Tees estuary than I have known them to be for several years past; more Little Stints and Pigmy Curlews were shot. On the 17th the first flight of migrant Sky Larks passed over, and the next day the first Snow Bunting was seen in the early morning on the East Sands. The first Shore Larks, *Otocorys alpestris*, were observed on the 20th. A flock of about thirty Richardson's Skuas flew overhead

to the N.W., far out of shot, and making a continuous screaming call. I shot an adult Sandwich Tern at sea on the 22nd: this is a late date on which to meet with this bird, but on Nov. 6th I was very much surprised to see another example of this species about two miles off Redcar. On the 25th the first Hooded Crow passed to the west. At sea, on the 28th, I noticed several Great Northern Divers and two Glaucous Gulls.

On October 1st (N. wind, moderate, dull to rain), a great rush of Ducks, principally Wigeon; fifty or sixty large flocks passed; seven which were shot were all young birds. During the first week in October many Skuas, principally Pomatorhine, were observed in small flocks three or four miles at sea; the majority were adult white-breasted birds.

In the second week of October immature Pomatorhine Skuas passed daily; I did not shoot any myself, but several specimens I examined were of the ordinary type. I killed a fine example of the adult dark variety of Richardson's Skua. On the 4th, Goldcrests, *Regulus cristatus*, appeared on the sand-hills. On the 9th (very stormy, N.E. gale), the first Woodcock and Short-eared Owl, *Asio accipitrinus*, came over. On the 10th (still stormy), three Velvet Scoters, *Æ. fusca*, flew past; one was shot, and proved to be a young male. Two Fulmar Petrels, *Fulmarus glacialis*, one a fine adult male, were picked up alive on the beach, having been driven ashore by the gale. The storm continued till the 16th, and, after it abated, two friends and myself had capital sport with the "Black Ducks." We found an immense flock of these birds on the sea to the east of Redcar, and in seven days—between the 18th October and the 19th November—gathered ninety-three Common and two Velvet Scoters, though a great many wounded birds were lost, owing to their diving capabilities and toughness of skin. The biggest bag in one day was on the 5th November, when Mr. Emerson and I gathered one Velvet and twenty-three Common Scoters.

Long-tailed Ducks, *Harelda glacialis*, were also very plentiful throughout the season; between the 13th October and the end of February at least forty examples have been killed to my own knowledge; even at the present time of writing, a flock of thirty may be seen inside the Redcar rocks. I shot two myself, one on the 31st October and the other on the 17th November; both

were young males; indeed all those which I examined were immature birds.

From the middle of October to the middle of November there was a constant stream of migration, in varying numbers, of Larks, Hooded Crows, Peewits, and various small birds, such as Chaffinches, Blackbirds, Redbreasts, with a few Woodcocks and Short-eared Owls. On several days towards the end of October, Larks, Hooded Crows, and Peewits passed incessantly, from daylight to the middle of the afternoon. The last Terns were seen flying S.E. on October 19th. On the 25th a male Ring Ouzel was shot in Bilsdale. Is not this a very late date for this bird? [They sometimes spend the winter here.—ED.]

On November 9th, at the Tees Mouth, I shot an adult male Red-throated Diver, *Colymbus septentrionalis*, with most of the red feathers on the throat remaining. On the 12th a Great Spotted Woodpecker, *Picus major*, was noticed in some gardens near the Fishmongers' Square.

On December 9th a flock of about one hundred and twenty Geese flew high overhead to the S.W. as I was walking on the East Sands. On the 26th two small herds of Swans, containing six and eight respectively, were seen at sea.

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## NOTES AND QUERIES.

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### MAMMALIA.

**Remains of Red-deer in the Duddon.**—Last autumn whilst netting for Salmon in the Duddon Estuary, the fishermen brought to the surface some massive horns of the Red-deer. One pair, with the skull attached, must have had at least fifteen points; the length of one horn is 40 in.; the distance apart at the top of the horns, 42 in.; the circumference of the burr, 11 in. In another case, a skull was recovered with only a portion of one antler attached; and of a greater size than in the previous example. The horn is broken just above the third tine, the length from the base being 14 in.; the length of one tine, 13½ in.; and the circumference of the burr, 10½ in. A scapula was dredged up and brought to shore at the same time. The weight of each of these specimens was great, the first-named being as much as a man could comfortably carry. Some similar horns were found some years ago, and in the neighbouring estuary of the Esk at various times many such antlers have been discovered, most of

which are preserved at Muncaster Castle. I may add that the channel of the Duddon is shifting and running close into the sides of an old peat moss, from which it seems not unlikely that the horns have been washed.—T. N. POSTLETHWAITE (Hallthwaites, Millom, Cumberland).

[We are obliged for the excellent sketches which accompanied this note, and which indicate the former existence in England of Red-deer with far finer heads than are to be seen at the present day. The animals that carried them may have been wanderers from the great forest of Bowland, in Lancashire, where Red-deer lingered until the early part of the present century (1805); or may have roamed over Martindale Fell, in Westmoreland, where a few of their descendants are still preserved, a pleasing link of association with the past.—ED.]

**The Badger in Breconshire.**—Breconshire may be added to the list of counties in which the Badger occurs. It is fairly common here, but is seldom seen on account of its nocturnal habits. There are at the present time large badger-earths about two miles from the town, where they may be always found together with foxes, and the two seem to dwell together in perfect harmony. Although I have shot in the wood where these earths are for twenty years, I have never seen a Badger there myself, but one of my boys nearly trod on one rolled up in the fern on a bright sunny day not far from its earth, into which it quickly disappeared. I may add that the Welsh for Badger is not “Broch” as stated (p. 3), but “Diarfochyn” or “Diarmochyn,” literally, “earth-pig”; or sometimes “Byrfwch,” “hairy little fellow.” The former name, however, is most generally used here. All old Welsh scholars to whom I have mentioned the word “Broch,” say they have never heard it applied to the Badger.—E. CAMBRIDGE PHILLIPS (Brecon).

**A tame Badger.**—Some of your readers may be interested to have a few particulars of a tame Badger, in the possession of the Rev. G. Blomfield, of Norton-sub-Hamden Rectory, with whom I have lately been staying. It was found on Chissleboro’ Hill (which joins the noted Ham Hill) eight years ago, almost dead from hunger, and was then about eight inches long, and could lie very comfortably in an open hand. It was supposed to have crawled out of its earth and been unable to get up the steep bank again. At first it was taken into the drawing-room, and in a few days it had quite recovered, when it was transferred to the kitchen, but was often about the house, and constantly found up stairs. As it grew to its full size, its sleeping place was a barrel outside the back-door, which, if left open for a few minutes, was certain to admit “Billy,” as his prime favourite was the cook. It struck up a great friendship with the retriever, and could often be seen feeding out of the same dish. It was perfectly clean and free from any offensive smell. Its food consisted almost entirely of bread and milk.

When I first made its acquaintance it was about a year old, and was allowed to run about the garden, and at times followed some of the family into the village. As it was found to be alarming to visitors, and was now and then attacked by strange dogs, a railing was placed around its barrel, and it was only allowed out on occasions. After reading the account in 'The Zoologist' I offered it some raisins, but it would not touch them, nor will it eat any fruit. What it most enjoys is a snail, and the rattle of a shell within the railing is certain to draw "Billy" from his barrel. It has now grown sedate, but when from one to four years old its gambols were most absurd and amusing. It created a sensation at a large tennis party one day by suddenly appearing, through the hedge, in the midst of some ladies, many of whom immediately took to the chairs and seats. It is not shy of strangers, and is perfectly quiet. I have several times taken it up and carried it about when I have been staying at the Rectory, and it has never shown the slightest inclination to bite me.—H. ST. B. GOLDSMITH (The Square, Bridgewater).

**Courage and Sagacity of the Weasel.**—As a nephew of mine was walking through one of his meadows at Springfield, near Dorking, Surrey, about the middle of December last, he saw a Kestrel struggling with something on the ground, and, on getting nearer, the bird rose about thirty feet in the air and let something drop. On going to the spot, he found a Weasel hanging on to a dead Rat about three parts grown. The Weasel immediately made off to the hedge some twenty yards distant. My nephew then picked up the Rat, and removing it to another spot, retired to a ditch to watch. He had not been there more than a minute before the Weasel came out and commenced hunting for the Rat, behaving exactly like a dog working a field. The Weasel was some little time finding it. He repeated the experiment half-a-dozen times, moving the Rat each time to a different spot, and each time with the same result, viz., its eventual discovery by the Weasel. He then left the Weasel and the Rat to settle matters between themselves. This appears to me a remarkable instance of courage and perseverance on the part of the Weasel, especially after his little aerial trip with the Kestrel.—WM. BORRER (Cowfold, near Horsham).

**Weasels killing Frogs.**—Seeing a note in 'Nature' (Dec. 29th, 1887, p. 208) about Weasels killing Frogs, I thought that the following fact would be a further confirmation. I was walking near the village of Clifton Hampden in August last, when I saw a Weasel, carrying a good-sized Frog in its mouth, come cautiously out of the rank grass by the roadside; directly the Weasel perceived me it dropped its prey on the road and retreated to the cover of the grass. The Frog was dead. I kept silence, and the Weasel left its hiding-place, and advanced a few steps, but again retreated. Soon, after several advances and retreats, it rushed out, seized the Frog

with its teeth, and running across the road disappeared in the long grass on the other side.—M. S. PEMBREY (*in* 'Nature').

**On the Assumption of the Ermine Dress in Stoats.**—Sometime ago you expressed a wish for an opinion, founded on observation, as to whether the assumption of the ermine dress in the Stoat is the result of a gradual change of colour in the hair, or an actual growth of new hair (1884, p. 112). Having during this winter examined several Stoats more or less in this dress, I send you the result of my observations. Among those procured in this neighbourhood was a very interesting specimen which was trapped in the second week in February, and was then evidently reassuming the brown garb of summer, the people on whose farm it was taken regretting that they had not been able to trap it earlier, as it had been seen on several occasions and was quite white a month before. In this specimen the brown covers the upper part of the head and extends in a line along the spine to the tail. It is these parts which, as I have often observed before, are the last to turn white, and would, therefore, probably be the first to turn brown again. When the fur lies in its natural position the brown appears dark on the head and nape, paler on the small of the back, still paler on the lower back, and darker again at the root of the tail. On raising the fur the reason of this is apparent. On the head every hair is brown, and brown from tip to base; on the back the hairs have only their distal portion brown, and some even are uncoloured; on the lower back still more are uncoloured, and those that show any brown are merely tipped with that colour. Coupled with the fact that there is no appearance of a "moult" (if I may use this convenient term in the case of a quadruped), or of any loose hairs about the body, I think that the evidence afforded by this specimen goes to prove that the change is effected by a gradual change in the colour of the hairs, and not by a change of coat; and also that the change (from white to brown at all events) commences at the point and not at the base of the hairs. A change of coat during the inclement season would be very inconvenient to the Stoat. Two very nice milky white Ermines were procured in the neighbourhood earlier in the season, and I saw two more at Mr. Darbey's in Oxford. In the case of these the only brown showing was a ring round each eye, giving them a curious spectacled appearance.—**OLIVER V. APLIN** (Bloxham, near Banbury.)

**Hybrid Rats.**—A very curious rat was trapped here in the garden last November, and, as it may possibly have been a hybrid, between a Black and a Brown Rat, I think it may be worth reporting. It was a large rat measuring 18 in. from the tip of the nose to the end of the tail. The predominating colour was brown, but the shoulders, a band running along the whole length of the back, and the tail, were black. The black mark on the shoulders resembled the mark which one sees on the shoulders of so

many donkeys. The white marks on the head seem to indicate relationship with the Black Rat, an animal which in this country is frequently marked with white on the head or breast. The Brown Rat is occasionally marked with white, as I have heard of two white and brown, and two albino specimens. I should be glad to know if anyone has ever met with a similar specimen, and also whether you think it was a hybrid, or merely a "freak" of nature. With regard to the occurrence of hybrid rats here, all the common people say that they are to be met with, and indeed they seem to look upon it as a matter of course. Unluckily their testimony does not carry much weight with it. I myself have seen the half-grown young of both species playing together as if they belonged to one litter, but whether that was really the case, or not, I am unable to say. With regard to the Black Rat it is still found in this county from New Ross to Duncannon, a distance of about fifteen miles along the course of the rivers Barrow and Suir, but it is rapidly becoming extinct, and it is now not found at all in several places, where twenty years ago it was extremely plentiful. Specimens I have had measured were from  $18\frac{1}{2}$  in. to 14 in. in (total) length. One  $17\frac{1}{2}$  in. in length, measured  $2\frac{1}{2}$  in. from the tip of the nose to the ear, 8 in. from the ear to the tail, while the tail itself was 7 in. long, girth 8 in. Our steward, an old Irishman, told me a curious story about one of the albino rats mentioned above, which was killed many years ago at Newtownbarry. He said it was caught and skinned by a gentleman who lived near that town, but that by the time it had been skinned (twelve months) it assumed the colour of an ordinary Brown Rat! Is any belief to be given to this story?—G. E. H. BARRETT HAMILTON (Kilmarnock House, New Ross, Co. Wexford).

[The change of colour referred to was very likely caused by the skin having been imperfectly cleaned, and the fat which ought to have been removed having oozed through and taken up dust.—ED.]

**A Plague of Rats in Mongolia.**—The *Pekin Gazette* publishes a memorial to the Emperor of China from the Governor of Uliassutai stating that, owing to the appearance of swarms of rats, it has been found necessary to alter the routes of the Government courier service in three of the postal stations in the Khalkha region in Outer Mongolia. For two years past the pasturage of the districts in question has suffered severely from the ravages of these vermin, and last year nearly every blade of grass was eaten up. The whole country has been honeycombed with their burrows, the horses and camels are in a famishing state, and there is no means of keeping them alive. The burrows are a source of great danger to the mounted couriers, and the want of forage renders it impossible to maintain a supply of animals for the service.

## BIRDS.

**Sale of another Egg of the Great Auk.**—Only a few weeks ago we had occasion to notice the extraordinary price realised by the sale of an egg of this now extinct bird from a collection of the Rev. H. Burney. This specimen, which was sold by auction on December 13th, realised the unprecedented sum of 160 guineas. On March 12th, there was a large attendance at Mr. Stevens's Rooms in King Street, Covent Garden, to witness the competition for a much finer specimen which was offered for sale in a collection of birds' eggs belonging to Mrs. Wise. This collection she had inherited from her late father, Mr. Holland, and the Auk's egg had been purchased by him many years ago (1851) for £18 from Williams, in Vere Street, the predecessor of H. Ward; Williams having previously obtained it from Lefevre, of Paris. The egg was no sooner exhibited than the biddings at once commenced with an offer of £100, so high an opinion did the judges present form of it. Increasing by additional offers of £10, the price rose to £200, and it seemed at one time as if Mr. Leopold Field, the purchaser of the previous specimen, was likely to become the owner also of this; but, after making it "guineas," he appeared to think he had gone far enough, and it was eventually knocked down for £225 to Mr. J. Gardner, the well-known birdstuffer in Oxford Street, who held a commission for some collector whose name did not transpire. This is the highest price realised by auction for an egg of the Great Auk, and is to be accounted for by reason of the impossibility of procuring one except by sale of one of the comparatively few specimens in the cabinets of collectors, all of which are well known. Some are in a better state of preservation and more handsomely coloured than others, and that which has just changed hands is regarded by good judges as a very desirable specimen.

**Reported occurrence of the Dusky Shearwater in Dorset.**—In my recently published book on the 'Birds of Dorsetshire' it is stated (p. 113) that a specimen of the Dusky Shearwater, *Puffinus obscurus*, was caught alive in Poole Harbour in June, 1887. This, unfortunately, is a mistake, the bird captured having proved to be the Sooty Shearwater, *Puffinus griseus*, and I am anxious to correct it as soon as possible.—J. C. MANSEL PLEYDELL (Whatcombe, Blandford).

**Disappearance of Birds from the Coast at High Tide.**—In his "Notes from Norfolk" (p. 82), Mr. J. H. Gurney remarks upon the disappearance of shore-birds at high tide, and suggests an explanation to which the Editor has appended a footnote. I may remark that during some weeks stay in the neighbourhood of Blakeney in August and September last, I had many opportunities of noticing large flocks of Curlews, Knots, Little Stints, Curlew Sandpipers, Turnstones, Sanderlings, and Ringed Plovers resting

during high water on quiet shingly places on the coast. At very high tides they were on the sandhills or on isolated pieces of the saltings which might not be quite submerged. The Curlews would be packed in dense masses numbering hundreds of birds, jostling one another in their endeavours to escape the water which would occasionally splash over their places of refuge. Some of the Curlew Sandpipers were undoubtedly old birds retaining traces of their breeding plumage; one, indeed, was in nearly perfect summer plumage. Of many Grey Plovers which were shot, one only was in grey plumage, all the others being speckled with yellow, indicating immaturity. Only one Knot, out of many shot, bore traces of the breeding plumage. The Little Stints were in small parties of six or eight, except on one occasion when I saw some forty together. On August 26th I obtained an immature Pied Flycatcher far out on the sands. On September 5th a friend who was with me killed a very nice Ruff—the only one observed on that day. On September 7th immense flocks of Greenfinches and Linnets appeared on the shore. Sept. 11th, I walked with a friend to Wells to make a call, taking my walking-stick gun. On the way a bird rose from a creek, which from its shrill whistle and appearance was evidently something strange to us. It was out of shot without giving a chance. On the way home we again heard the whistle, and, upon cautiously going towards the sound, the bird rose from the same creek some twenty-five yards away, when I killed it as it topped the bank. It proved to be a very nice specimen of the Spotted Redshank, *Totanus fuscus*, a female. It has, with other specimens, been admirably preserved by Mr. Gunn, of Norwich. Sept. 13th, Goldfinches just from the nest were fed by parent bird. Sept. 16th, many Swallows leisurely flying south round the coast, feeding as they flew along; also many Larks going south. Sept. 19th, first Golden Plovers shot. Sept. 21st, a large flock of Ruffs arrived in the afternoon, passing me within forty yards,—unfortunately when my gun was empty,—but moved on before morning. They were very wild, settling in the open marsh, and not permitting me to stalk them up the creeks. One morning I was much amused by watching a Kingfisher chasing a Little Stint away from a tiny piece of marsh which remained above a very high tide.—A. B. FARN (Stone).

**Ornithological Notes from Breconshire.**—The past winter has been specially marked by numerous flocks of Crossbills all over the county, and particularly near this town. There were plenty of red cock birds among them, but I have only seen a few bright yellow ones. This is the first year since 1866 that they have visited us in any numbers, if at all. I have not myself seen one since 1866 until this, but they have now all left us. The frost is severe here and the birds have had a bad time of it; still, except a few duck and wigeon, nothing has been seen in the shape of wild fowl but a male Scaup, and a few red-headed Pochards were noticed on the

Gludy Lake last month. The Herons seem increasing here. A very fine old cock Heron, with very long neck-feathers and crest, was killed by one of my sons. Its weight was unusual, namely 4 lbs., if anything rather over than under, and, although it was evidently suffering from the effects of the severe frost, it was in fairly good condition. Nuthatches are also more plentiful, but my old friend the Barn Owl seems quite to have died out, for it is long since I have seen one. Does the Brown Owl, which is very common here, drive it away? When at Aberystwith last summer I obtained a specimen of the Purple Sandpiper picked up dead on the beach there, which I sent to the British Museum. The past season has been noticeable for the scarcity of Woodcocks, although the first flights were numerous. The most interesting news, however, is that since the snow fell a couple of Kites have been soaring over and near the town; one of them coming into a farmyard on the outskirts of the town after the owner's pigeons. These birds cover a great expanse of country in the course of a day. Being in the train, about four miles from here, I saw both these Kites from the window, and getting out four miles further up the valley I again saw them making their way up the Usk in the direction in which I had first observed them. I had not been out of the train more than five minutes, so that they must have flown those four miles in a very short space of time. I am glad to say I have not heard of any bird of the species being shot, so that I hope the few that we have may be allowed to remain unmolested, and breed somewhere this spring in peace.—  
E. CAMBRIDGE PHILLIPS (Brecon, S. Wales).

[We heartily endorse our correspondent's views on the subject of the Kites lately observed by him, and earnestly appeal to our readers to assist as much as possible, by advice and remonstrance, in checking the practice which unfortunately prevails of making rare birds still rarer by shooting them whenever opportunity occurs.—ED.]

**Plovers and Gulls in Captivity.**—It is perhaps little known how easily different kinds of plovers and waders may be kept in a walled garden with a certain amount of watchfulness and care. The Green Plover very often succumbs to the rigours of English winters when deprived of its power of flight; for this species is one that is usually caught when young and pinioned, sometimes for ornamental, sometimes for useful purposes, in order to keep down destructive slugs and other garden pests. But as yet (I write in the middle of February) I have succeeded in keeping alive and well all through the winter, three Green Plovers and two Grey ones, besides a Curlew and four Black-headed Gulls, sent me from Scoulton Mere in June of last year, when still in nestling down and the flight feathers half grown. These are now in splendid plumage and general condition, having lost nearly all the brown feathers of the first plumage, whilst the bills and legs are assuming a reddish hue. One of the Green Plovers,

evidently a male bird from the length of the crest and the brilliancy of the back, I have had since May of last year, when it was brought to me as a small fluffy bird of about three weeks old. The other two were purchased as full-grown birds of the year (1887) in London. I had three Grey Plovers, but unfortunately the finest of them drowned himself in a deep pan (since removed.) The other two amply make up for the loss by their tameness and interesting ways. During hard frost all these birds would run to me when I made my appearance with the dish of bullock's liver chopped fairly small. The Grey Plovers would be the first to arrive, nimbly tripping across the lawn, and snatching a piece before the Black-headed Gulls, screaming impatiently in the background, could come up; when they did arrive on the scene of their breakfast, they fully made up for lost time by nearly choking themselves in swallowing six or seven large morsels in as many seconds. The Lapwings are the timid ones; they always wait until I have retired a few paces, and their appetites are more easily satisfied than those of the Grey Plovers. But I feel confident that had I not taken great care to throw the liver to them morning and afternoon I should not now have the pleasure of seeing them running over the beds of the kitchen garden, and out on the lawn, for the apparently inexhaustible supply of worms, which are so adroitly extracted from their holes before one would imagine they could quite realize whether they are "on their head or their heels," as the saying goes. The Curlew (a male bird) has quite lost the timidity that he displayed upon first arriving, and will run quickly with a suppressed whistle towards me, for the liver, which he swallows down with gusto. It will be interesting to watch the Grey Plover's assumption of summer plumage, and also to see whether any of the three different kinds (*i. e.* the Gulls, the Green and the Grey Plovers) will show any inclination to incubate in a garden where many a quiet nook may be found. They all delight in their ablutions; indeed the Plovers of both sorts are most pugilistic amongst each other when the time arrives for perhaps three individuals to have a bath in one pan; however, if their cries are too loudly remonstrative, all their washing is put a stop to by the arrival of the Gulls, who quickly settle the question by turning them out and plunging in themselves. I had a female Curlew, but I gave her away to a friend who was about to purchase a male; unfortunately he bought another female as well, which bird simply murdered, first, the one of her own sex in a furious fit of jealousy, for she trans-fixed her through the neck with her long bill, and then her mate, for what she apparently regarded as bigamy; and never rested until the two corpses were left in a mangled condition upon the grass. Of the three Lapwings, two are males, and these also are most pugnacious; screaming at each other, with distended wings and crests erected, in a most menacing manner—a demonstration, however, which generally ends in a harmless tussle.—HUBERT D. ASTLEY (The Rectory, Henley-on-Thames).

**Great Spotted Woodpecker and Grey Shrike at Brighton.**—A great Spotted Woodpecker, *Picus major*, was picked up dead in a garden in this town in the latter end of January, and a good female specimen of the Great Grey Shrike, *Lanius excubitor*, was shot near here on March 5th. —C. BRAZENOR (Brighton).

**Grey Shrike in Cumberland.**—Perhaps it may interest some of the readers of the 'Zoologist' to know that a fine specimen of the Grey Shrike, *Lanius excubitor*, was obtained at Woodside, in county of Cumberland, by one of the keepers on January 28th. It is now in the hands of a local taxidermist for preservation.—EDWARD TANDY (Penrith).

[Mr. Macpherson, in his 'Birds of Cumberland,' p. 24, regards the bird as a rare winter visitant to this county. He remarks that, although it has chiefly been observed between October and March, examples have been unexpectedly met with so late as April 11th, April 14th, and May 10th.—ED.]

**The Note of the Hoopoe.**—I should be glad to know at what season of the year, or in what months, the note of the Hoopoe may be heard. I have seen hundreds of these birds out here during the cold weather; in fact I should call the Hoopoe one of our commonest cold-weather birds, but I have never heard one of them utter a note. They are now (Feb. 12th) leaving us. They are very tame and confidential, but so are most birds out here, because the small boys of India are able to watch a bird without feeling an irresistible impulse to throw a stone at it. In this respect they differ from English boys.—E. F. BECHER, Capt., R.A. (Ahmedabad, India, Feb. 12th).

[In France we have heard the note of the Hoopoe repeatedly during the latter end of May and beginning of June. It sounds like the words "hoop-hoop," "hoop-hoop," and may be heard a very long way from where the bird is sitting.—ED.]

**Ray's Wagtail and Shore Lark in confinement.**—In spite of prophecies to the contrary, the Ray's Wagtail, *Motacilla raii*, which I reported ('Zoologist,' 1884, p. 272) to have been kept in confinement through the winter and fed upon flies, lived three years in the possession of the Hon. Lady Birkbeck, and then escaped. Mr. R. Otty, of Norwich, kept another for nearly a year, but it died the second week in January, 1887. Both of these birds were tended with the greatest care, and were for a long time in beautiful feather. On April 15th a Shore Lark, *Otocorys alpestris*, which had lived through two winters and one summer in my father's possession, died, having for the second time begun to assume the rich tints of the breeding plumage. I have another which has been in confinement more than two years, and was netted on Yarmouth dunes. It seems to do very well on a diet of wild seeds, and always roosts on the floor of the cage. —J. H. GURNEY, jun. (Keswick Hall, Norwich).

**Long-tailed Ducks and Velvet Scoters at Hunstanton.**—The unusual abundance of Long-tailed Ducks, which has been observed elsewhere this winter, has extended to the shores of the Wash. On January 3rd I received a young male of this species showing the white feathers on the top of the head and on the scapulars, and on February 4th a second specimen, also a young male. In a letter received to-day the correspondent to whom I am indebted for them writes:—"You asked me if I could tell how many "Long-tails" I have killed this season. I find the number brought home up to the present date is twenty-seven, and I have shot quite ten or twelve others that I did not get owing to wind and tide. There is one fine old bird about the feeding ground, but up to the present time he has not given me a good shot; he does look a lovely bird. I have seen him several times with some Velvet Scoters and an Eider; the latter was killed by one of the boatmen about a month since. It was a young male bird. This has been a remarkable season for the Black Ducks here, I should like to know how many have been killed. I can account for 284 being brought home in my boats. I think on an average we lose about three in every ten knocked down. They do not appear to have decreased in numbers; there are still thousands here, but they do not decoy quite so well now as formerly."—JULIAN G. TUCK (Tostock Rectory, Suffolk).

**Food of the Hawfinch.**—In your review of 'The Birds of Wiltshire' (p. 117) you ask if there is any satisfactory evidence to support the statement (pp. 39 and 199) that the Hawfinch feeds on the kernels of haws and stone-fruits, plums, cherries, &c.; I think that there can be no doubt of the truth of the statement. On examining the ground under a hawthorn bush, where I had seen one of these birds, I found a number of haws bitten open. None of the pulp had been eaten, but the stones had been split and the kernels extracted. Knowing how very hard these stones are, I thought it wonderful that any bird should be able to crack them, and I kept some of them, a sample of which I send you. In January, 1881, Hawfinches were unusually abundant in this neighbourhood. I took from the crop of a hen bird, which I shot, a number of kernels of cherry stones, and also what appeared to be seeds out of fir-cones, but of this I could not be sure. On the few other occasions on which I have examined the contents of Hawfinch's crops, I have always found kernels of some kind. A very observant keeper, who is well acquainted with these birds, told me some years ago that he had seen them pick up damson-stones under the trees and turn them round in their beaks until they got them "edgeways" and then split them. He volunteered this statement without the subject having been mentioned, as we had been discussing the nesting of the birds. He added that they also feed on yew berries. I have recently seen a caged Hawfinch which, her owner tells me, is very fond of kernels of the haw, cherry, &c., but she cannot crack them herself though she tries hard, turning them

round and round in her beak. As she was caught young, and is rather undersized, she is very probably weaker than her wild relations, and so her inability to crack the stones proves nothing; but her desire to do so is very evident. An example of another species of *Coccothraustes*, the Virginian Nightingale, which appeared and was seen about Bodicote for some weeks in severe weather last winter (1886—87), and was at last shot with great difficulty (it was extremely wild and vigilant, and all the guns in the village had been after it for weeks), had, I found on examining it afterwards, been feeding on the kernels of holly-berry stones, which are also very hard. — OLIVER V. APLIN (Bloxham, near Banbury).

## MOLLUSCA.

How does a Snail crawl?—I suppose Conchologists have oftentimes been troubled by this question. Does a snail wriggle along the ground like a worm or a snake? If this were the case we should be able to see a series of wrinkles appearing upon the sole of the foot. Indeed if we allow a snail to crawl on an inverted sheet of glass, so as to enable us to look at it from underneath, we fancy we perceive a faint indication of these wrinkles in the shape of a number of dark bands or waves travelling slowly from behind forward. The general notion is that the mechanism of locomotion in the snail is essentially the same as that in many footless larvæ of insects, with the difference that the number of wave-motions produced by the foot is much greater, and that the attachment of the sole to the foreign body is much firmer. As I said, the waves which we recognise on the sole seem to strengthen this view at first sight. However, if we examine the phenomenon more closely, we find that the foot of the snail is intimately attached to the glass, and that the waves do not appear between the sole and the glass, but in reality inside the foot, producing no change of form on its surface. Hence we must look for another explanation. There can be no doubt that the locomotion of a snail, such as *Helix aspersa*, for instance, originates in the waves which we see gliding along the foot. The animal moves as long as the waves last. As soon as the play of waves disappears, the motion also ceases. In order to obtain an interpretation of the significance of these mysterious waves, a study of the anatomy of the foot is requisite. Simroth is the only Zoologist, to my knowledge, who has carefully investigated the course of the most intricate system of muscles in the snail. He found, in fact, that there is a net-work of muscles in the foot going in all directions. There are horizontal longitudinal and horizontal cross-fibres, vertical as well as horizontal and inclined oblique muscular fibres. After many experiments, Dr. Simroth discovered that the horizontal longitudinal fibres brought about the movements of the foot. These are the extensile muscles. They produce the wave-motion. By their action the sole of the foot is elongated in front, and shortly after

it is shortened behind to the same extent. The effect of this is that a kind of sliding motion is produced. This motion is materially assisted by the intercalation of a layer of mucus between the foot and the object on which the animal crawls. The fugitive snail's course can always easily be tracked by the marks of slime left behind. Why should it leave this slime behind? Because the skin of the snail is so exceedingly sensitive, that the contact with a rough surface is apparently very repugnant to its tender feelings. It therefore provides itself with an abundant supply of mucus, which in the case of *Helix aspersa* is furnished especially by the large foot-gland, but to a minor extent also by the mucous glands. However, although this mode of locomotion may seem very pleasant, being at any rate quite unique among animals, the snail's lot is not a happy one. When the locomotary muscles are once set a-going, the movement is automatic, that is to say the snail can neither increase nor slacken its pace, nor can it go backwards. In that respect it is like a watch which may be wound up and which we can stop at will, but we cannot force the wheels to change their rate of velocity. Hence when the snail is pursued by an enemy, it is unable to run away or rather slide away. The only possible manner to evade the enemy is to stop the motion of the foot and wind up another series of muscles by means of which the snail is enabled to retire within its shell.—ROBERT F. SCHARFF (Museum of Science and Art, Dublin).—From 'The Journal of Conchology,' October, 1887.

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## SCIENTIFIC SOCIETIES.

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### LINNEAN SOCIETY OF LONDON.

March 1, 1888.—W. CARRUTHERS, F.R.S., President, in the chair.

On a ballot being taken, the following were elected Fellows of the Society:—Messrs. J. T. Baker, J. B. Farmer, H. P. Greenwood, J. F. Maiden, A. G. Renshaw, A. E. Shipley, and J. A. Voelcker.

An interesting collection of Ferns from the Yosemite Valley was exhibited by Mr. W. Ransom, who also showed some admirable photographs of rare plants, taken in America, many of them of the natural size.

Mr. J. E. Harting exhibited a coloured drawing, life-size, of a South American game-bird (the Rufous Tinamu) which has been successfully introduced into this country at Brightlingsea, Essex, by Mr. J. Bateman, and made some remarks on its affinities, peculiarities of structure, and habits. In a discussion which followed, Prof. Mivart, Mr. Christy, and Mr. W. H. Hudson took part, the last named giving some account of the bird from personal observation of its habits in the Argentine Republic.

The first paper of the evening was then read by Mr. E. G. Baker, on a new genus of *Cytinaceæ*, from Madagascar. This curious plant, to which the author has given the name of *Botryocytinus*, grows parasitically on the trunk of a tree of the natural order *Hamamelidææ*. Its nearest ally is *Cytinus*, of which the best-known species grows on the roots of the *Cistuses* of the Mediterranean basin. The Madagascar plant is without any stem, and the sessile flowers grow in clusters, surrounded by an involucre. Each cluster is unisexual, and the ovary is uni-cellular, with about a dozen parietal placentæ, and innumerable minute ovules. It was discovered during a recent exploration of the Sakalava country by the Rev. R. Baron, of the London Missionary Society.

The next paper, by Mr. J. F. Cheeseman (communicated by Sir Joseph Hooker), was entitled "Notes on the Fauna and Flora of the Kermadec Islands," and, as regards the flora, might be considered as supplementary to a paper on the flora of these islands published by Sir Joseph Hooker more than twenty years ago (*Journ. Linn. Soc.* 1856, p. 125). These islands, situated about 450 miles N.E. of New Zealand, between that country and Fiji, were shown to be of volcanic origin, with a fauna and flora resembling to a great extent those of New Zealand. A few land birds were noted as common to New Zealand; and to the list of plants drawn up by Sir Joseph Hooker, from collections made by Macgillivray, several new species were added by Mr. Cheeseman, chiefly ferns. A discussion followed, and in illustration of Mr. Cheeseman's remarks Mr. J. G. Baker exhibited specimens of a new endemic *Duvallia*, closely allied to the well-known *D. canariensis* of the Canary Islands and Madeira. The meeting then adjourned to March 15th.

March 15.—W. CARRUTHERS, F.R.S., President, in the chair.

On a ballot being taken, the following were elected Fellows of the Society:—Messrs. J. W. Taylor, W. Gardiner, and David Sharp. The following were admitted Fellows of the Society:—Mr. A. G. Renshaw and Mr. A. E. Shipley.

Mr. J. E. Harting exhibited the frontal portion of the skull of a Red-deer stag which had never possessed horns, although an adult animal, and made some remarks upon the occasional occurrence of this abnormality. The stag in question was one which had been shot some years ago by the late Emperor of Germany in the royal forest of Gôhrde, in Hanover. A discussion followed in which the President, Mr. Seebohm, and Dr. Hamilton took part.

The first paper of the evening was then read by Mr. George Masee, entitled "A Monograph of the *Thelephorææ*," and drawings of several of these Fungi were exhibited. The paper was criticised by Mr. A. W. Bennett and Professor Marshall Ward.

In the unavoidable absence of the author, a paper by Mr. A. Batters, describing three new Marine Algæ from Berwick-on-Tweed, was then read by the Botanical Secretary, Mr. B. Daydon Jackson, who exhibited the drawings made to illustrate the paper. After some critical remarks from the President, Mr. Harting pointed out the indirect influence of the Gulf-stream in causing a deposition of northern sea-weeds upon the north-east portion of the English coast, where some of the species described had been found.

The meeting then adjourned to April 5th.

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ZOOLOGICAL SOCIETY OF LONDON.

February 21, 1888.—Professor W. H. FLOWER, C.B., LL.D., F.R.S., President, in the chair.

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.

Prof. G. B. Howes read a note on the azygos veins of the Anurous Amphibia. The author described an individual specimen of *Rana temporaria* in which the azygos vein (prerenal portion of the posterior cardinal) had been retained on one side, its relations differing in important details from that observed by Hochstetter in *Bombinator*. By way of supplementing that author's work, he had examined examples of a few genera not dealt with by Hochstetter. He recorded the presence of these veins in the only specimen of *Discoglossus* dissected, and in one of five individuals of *Alytes obstetricans*—facts which lent additional support to the views of Cope and Boulenger of the lowly affinities of the *Discoglossidæ*. He had failed to detect these vessels in the *Aglossa*: while he regarded their total absence in *Pelobates* and *Pelodytes* as fresh evidence of the Pelobatoid rather than the *Discoglossid* affinities of the last-named genus.

Mr. A. Smith-Woodward read the second part of his palæontological contributions to Selachian morphology. The author described appearances of an open lateral line in a cretaceous genus *Scylliida*, supported by half-rings, as in the Chimæroids. He further noticed the pelvic cartilage of the cretaceous *Cyclobatis*, pointing out and discussing the enormous proportions of the iliac process.

Mr. Oldfield Thomas gave an account of the Mammals obtained by Mr. G. F. Gaumer on Cozumel and Ruatan Islands, Gulf of Honduras.

A second paper by Mr. Thomas contained the description of a new and interesting annectent genus of *Muridæ*, based on a specimen which had been in the Paris Museum for some years. This was supplemented with remarks on the relations of the Old- and New-World members of the family.

Dr. G. H. Fowler exhibited and made some remarks on a new *Pennatula* from the Bahamas, the most interesting feature of which was the presence of immature antozooids at the dorsal end of the leaves, devoid of tentacles, but possessing a well-marked syphonoglyphe on the stomatidæum which disappears with the increasing age of the polype. The species was proposed to be named *Pennatula bellissima*.

March 6, 1888.—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; and called special attention to some examples of a Finch from New Caledonia (*Erythrura psittacea*); and to five specimens of a Pheasant (*Phasianus principalis*) from Afghan Turkestan. The Pheasants had been brought home and presented by Major Peacock, R.E., of the Afghan Frontier Commission, at the request of Sir Peter Lumsden, G.C.B., C.S.I.

The Secretary exhibited (on behalf of Lieut.-Col. H. M. Drummond Hay) a specimen of the Desert Wheatear, *Saxicola deserti*, lately killed in Scotland.

A paper by Prof. G. B. Howes and Mr. W. Ridewood, on the carpus and tarsus of the Anura, was read. The authors recorded observations made upon thirty-seven genera and sixty species, in all stages of development, representatives of all but three or four less important families. The authors were at variance with previous writers in points which had necessitated a reconsideration of the morphological value of the leading elements of both carpus and tarsus. They had failed to discover, at any stage, a trace of a third proximal element in either fore or hind foot, while they showed that Born was in error in regarding the *naviculare* as the prehallux tarsal. In the hind foot they recorded the discovery of a fourth tarsal, and in the fore foot that of a fifth carpal, which latter in *Xenophrys* was bony. Consequent upon this they regarded the element hitherto held to be the fifth carpal as a postaxial *centrale*; whence it followed that the Anura are, as a group, unique in the possession throughout of a double *centrale carpi*. The authors discussed the various changes undergone by the pollex and prehallux, and the several views concerning the morphological value of the latter. A second part was added, in which the peculiarities of the several families of the Anura were given in order, and the bearings of the structures in question upon classification briefly discussed. The *Discoglossidæ* were shown to combine most completely the least modified conditions of both fore and hind feet.

Mr. R. Bowdler Sharpe read descriptions of new species of birds of which specimens had been lately received from the island of Guadalcanar, Solomon Group, collected by Mr. C. M. Woodford. These were named;—

*Astur holomelas*, *A. woodfordi*, *A. shebæ*, *Baza guadalcanaensis*, *Ninox granti*, *Graucalus hololius*, *Edoliisoma erythropygium*, and *Pomarea erythrostickta*.

Mr. W. R. Ogilvie Grant contributed a complete list of the birds obtained by Mr. Woodford on the islands of Guadalcanar and Rubiana. These were altogether sixty-six in number, the new ones being *Nasiterna aolæ*, *Myzomela sharpii*, *Phlogænas solomonensis*, *Ardeiralla woodfordi*, and *Nycticorax mandibularis*.—P. L. SCLATER, *Secretary*.

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#### ENTOMOLOGICAL SOCIETY OF LONDON.

March 7, 1888.—Dr. D. SHARP, President, in the chair.

Mr. Frederic Pennington, jun., of Broome Hall, Holmwood, Surrey; Mr. W. Crush, of Westcombe Park, Blackheath, S.E.; and Mr. J. P. Cregoe, of Charleston, U.S.A., were elected Fellows.

Mr. J. H. Leech exhibited, and made remarks on, a number of butterflies forming part of the collection made for him during last summer by Mr. Pratt, at Kiukiang, Central China. The specimens exhibited included examples of *Papilio macilentus* (hitherto only recorded from Japan), varieties of *P. sarpedon*, and a supposed new species of *Papilio*; a series of *Sericinus telanon*; *Acræa vesta* (varieties); *Charaxes narcæus*, and var. *mandarinus* (the latter being the common form at Kiukiang); *Palæonympha opalina*, Butl.; new or unknown species of *Lethe*, *Apatura*, and *Neptis*; and a series of *Argynnis paphia*, with the var. *valezina* of the female. Mr. Leech stated that all the females of *A. paphia* taken at Kiukiang belonged to the var. *valezina*, the typical form of the female being unknown there.

Mr. Poulton expressed his interest in Mr. Leech's statement that *valezina* was the only form of the female of *Argynnis paphia* known at Kiukiang, and said he considered this fact would probably throw a new light on the question of the dimorphism of the species.

Mr. Jenner Weir said he had in the course of some years obtained a series of forms intermediate between the typical female and the variety *valezina*.

Mr. Champion exhibited, for Mr. J. J. Walker, R.N., about 950 species of Coleoptera, recently collected by the latter near Gibraltar. Mr. M'Lachlan called attention to the large number of water-beetles included in Mr. Walker's collection. Mr. Kirby suggested that the attention of the Imperial Institute should be called to the interest attaching to the exhibition of local collections of insects from British Colonies and possessions.

Mr. Verrall exhibited living specimens of *Aspidomorpha sanctæ-crucis*, and another species unnamed, from the caves of Elephanta.

Mr. Slater exhibited specimens of a species of weevil which had been doing much damage to maize sent to the Colonial Exhibition.

Mr. W. White read a paper on "Experiments upon the Colour-relation between the pupæ of *Pieris rapæ* and their immediate surroundings," which comprised a detailed account and discussion of a series of observations carried on, at the author's instigation, by Mr. G. C. Griffiths, of Bristol. The various experiments were intended to act as a further test of the conclusions arrived at by Mr. E. B. Poulton in his paper on the subject recently published in the Transactions of the Royal Society; and to effect this object different and additional influences had been brought to bear on these pupæ, so that an analogy might be drawn between the two sets of results. Mr. Poulton, Lord Walsingham, Mr. Jacoby, Dr. Sharp, Mr. White, and others took part in the discussion which ensued.—H. Goss, *Hon. Secretary.*

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## NOTICES OF NEW BOOKS.

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*The Birds of Dorsetshire: a Contribution to the History of the County.* By J. C. MANSEL PLEYDELL, F.L.S., President of the Dorsetshire Natural History and Antiquarian Field Club. 8vo, pp. 179. With frontispiece and other illustrations. London: R. H. Porter. Dorchester: M. E. Case. 1888.

THE preparation of county catalogues of birds proceeds as fast as the most ardent ornithologist could desire; for it must be allowed that three volumes in the first quarter of the New Year are quite as many as could have been hoped for, if not more than could have been reasonably expected. In our last number (p. 114) we noticed Mr. A. C. Smith's 'Birds of Wiltshire;' we have now before us Mr. Mansel Pleydell's volume on the adjacent county of Dorset; and in our next we hope to review the late Dr. Bull's 'Birds of Herefordshire.'

The more we look at these county "avifaunas," the more we regret that there was not, five-and-twenty years ago, some definite and uniform plan concerted by ornithologists for their publication; so that the volumes might range not only in size and type, but also in the classification and nomenclature adopted, a plan which would have been extremely convenient. In the present instance Mr. Mansel Pleydell has made a start in that direction by following the lines of Rodd's 'Birds of Cornwall'

in regard to size, type, and general "get up" of the book; although some variation in the classification and nomenclature has been adopted, in consequence of the appearance in the interval of the 'Ibis' List of British Birds, and the completion of the fourth edition of 'Yarrell.'

Taking the volume as we find it, we believe that the opinion of ornithologists in regard to it will be distinctly favourable. For it is the outcome of many years personal observation and correspondence with ornithologists in various parts of Dorsetshire, and we happen to know that considerable time and trouble have been bestowed on its preparation.

With the exception of a few typographical errors, such as "poised" for "passed" (p. 4, line 14), and the accidental omission of the synonymy of the Firecrest (p. 32), we have not noticed much that requires rectification, unless it be a mistake which the author himself points out in the current number (p. 143), namely the introduction into the catalogue (p. 113) of the Dusky Shearwater, *Puffinus obscurus*, instead of, as was intended, the Sooty Shearwater, *Puffinus griseus*. The unaccountable omission of a date on the title page may easily be remedied with pen and ink; as a matter of fact which may be here recorded, this book was published on the 1st March, 1888.

Looking through the volume critically, we find many instances noted of the decrease of certain species in ancient haunts, from causes which ornithologists in other counties have had reason ere now to deplore. The Peregrine, the Chough, and the Raven have well nigh deserted the sea cliffs, the last Kite has been trapped in the woods, and the Black Grouse has decreased in numbers as its favourite haunts have been interfered with. Sixty years ago, when the condition of the country was more favourable to the bird's habits, and there was much less shooting than at present, black game was more plentiful in Dorsetshire, especially towards the Hampshire border. See Col. Hawker's account of a day's black-game shooting in Dorsetshire, quoted in the appendix to the present volume (p. 167).

On the other hand, it is gratifying to note that since the passing of the Wild Birds Protection Act there has been an observable increase in the numbers of certain species, for example, the Goldfinch (p. 46), while others, like the Redshank and Black-headed Gull, have returned to nesting-places which

had been long deserted. The occasional nesting in the south of England of so uncommon a bird as Montagu's Harrier is noteworthy, and indicates plainly that this species would probably breed here regularly if only allowed to do so without molestation. The discovery of a nest with eggs, so recently as the month of June last, is thus described by Mr. Mansel Pleydell:—

“At Winterbourne Kingston, on the 24th June, 1887, whilst a carter in the employ of Mr. E. Besent was cutting a field of clover with a mowing-



MONTAGU'S HARRIER.

machine, he disturbed a large hawk from her nest, which was immediately joined by another equal in size, but of lighter plumage. The sudden apparition of so large a bird frightened the horse, but before the machine reached the nest the carter descried it. It was on the bare ground, about the size of a man's hat, composed of grass and feathers, and contained four eggs, which were bluish white, with a few indistinct red spots and streaks, and slightly incubated. On comparing one of these with a series in the Natural History Museum it was apparent that it belonged to Montagu's Harrier,

*Circus cineraceus*. The grass in the neighbourhood of the nest was much damaged and trodden down. The birds frequented the neighbourhood for some days afterwards. Three were seen in a field of sainfoin a quarter of a mile from the clover-field before and after the 24th, and during the course of cutting it, in the month of July, the mowing-machine disturbed 'a large brown hawk.' No nest was found, though Mr. Besent thinks there was one destroyed by the machine. Some time afterwards I saw two Harriers on the wing leisurely beating a stubble-field within half a mile of Kingston; either birds of the year or females."

The Great Black Woodpecker is included (p. 64) on the authority of Pulteney, who writes, "Body black, cap scarlet. Shot in the Nursery Garden, Blandford; also at Whitchurch and other places in Dorset," and Mr. Mansel Pleydell adds:—

"Considering the wide geographical range of this bird, which inhabits the pine forests of Northern and Central Europe, and occurs also in Spain (*vide* Lord Lilford), there seems nothing improbable in its reported appearance in the British Islands; although recent authorities, notwithstanding the numerous records of its appearance and capture, demur to its claim to be regarded as an occasional visitant to this country."

In the last number of 'The Zoologist,' as our readers will have observed, Capt. Savile Reid gives a very circumstantial account of the occurrence of a Great Black Woodpecker in Berkshire, seen by one who is familiar with this bird's appearance from having two stuffed specimens of it.

A curious instance of the instinctive capacity displayed by a pair of Kingfishers in discovering fish which had been introduced in a locality far removed from their usual haunts, and so placed as to necessitate a considerable journey through woods and across downs, is thus described by Mr. Mansel Pleydell:—

"At the Down House, which stands about a hundred and twenty feet above the valley of the Stour, and a mile and a half distant from the river, the water supply being dependent upon a deep well, the owner, Sir William Marriot, remedied the deficiency by a 'ram' erected on the Stour, which pumped up the water and conveyed it by underground pipes to the house. This not only satisfied the requirements of the establishment, but enabled him to have some ornamental waterworks and a fish-culture apparatus, from which the fry as soon as they were hatched were removed to a pond of no very large dimensions. It was to this pond the Kingfishers found their way, and committed great havoc amongst the young fish. It is difficult to account for their presence at a spot so far removed from their natural haunts, unless

we may assume that the new fish-pond was first discovered accidentally by the birds when passing over on migration between the valleys of the Stour and the Winterbourne. For it must be remembered that at the approach of winter a general migratory movement takes place, and the Kingfishers draw down towards the sea. In November, 1884, three were killed at Peveril Point, Swanage, at the extreme end of the ledge."

The Stone Curlew or Thick-knee is a summer visitant, usually frequenting the chalk uplands of the county. Its eggs are not unfrequently found on the winter fallows, where many are unfortunately destroyed by the practice of rolling the wheat in spring. This fate attended two nests at Pimperne in the spring



CREAM-COLOURED COURSER.

of 1885. A chick was brought to the author alive in July, 1873, which he caused to be restored to the field from which it was taken, and not too late, as he hoped, to be recovered by the parents. In the autumn of 1886 as many as thirteen were seen together in a turnip-field at Whitchurch, and one was shot on the sand-banks in Poole Harbour so late in the year as the 10th December. Its occurrence in Dorsetshire in winter recalls the statement of Rodd ('Birds of Cornwall,' p. 83), to the effect that it is known in Cornwall *only as a winter visitant*, that county being regarded as the northern boundary of the area occupied by this species in its winter quarters. The Rev. Murray A. Mathew

testifies to its occasional occurrence in Devonshire, and Mr. A. G. More has noticed the same thing in the Isle of Wight.

One of the rarest birds, not only in Dorsetshire, but in the British Islands generally, is the Cream-coloured Courser. According to our author, the present Lord Digby, when following the hounds in the autumn of 1853, observed one on Batcombe Down, and the next day the Earl of Ilchester sent his keeper Walton, who found and shot it. It is now preserved in the Melbury collection.

In regard to wildfowl, it is interesting to learn that not only Duck and Teal breed regularly in Dorsetshire, but that the nesting of the Pochard, Shoveller, and Tufted Duck there has been also satisfactorily ascertained. The account given of "Decoys" in the county is, naturally, taken from Sir R. Payne Gallwey's work on 'Decoys; their History, Construction, and Management'—that being the latest as well as the most exhaustive book of reference on that subject. Amongst the rarer wildfowl which have been killed from time to time in the county we notice the Red-crested Pochard, Ferruginous Duck, Eider, and Surf Scoter.

In a "Catalogue of the Mammalia, Birds, &c., found in Dorsetshire," contributed by the late Mr. J. C. Dale to 'The Naturalist,' edited by Neville Wood (vol. iii., 1837, p. 181), and which is little more than a bare list of names, the Hooded Merganser, *Mergus cucullatus*, is included. This, says Mr. Mansel Pleydell, is probably a mistake, as no particulars of any kind are afforded, which, in the case of so rare a bird, would scarcely have been omitted intentionally. So far as he is aware, there is no evidence of the occurrence of this species in Dorsetshire.

The account which he gives of Lord Ilchester's Swannery at Abbotsbury will be read with interest, especially as it embodies statistics relating to the number of Swans preserved there in different years, the average number, as he tells us, being about 800. As a frontispiece to the book, we have a view in this Swannery, from a photograph taken there last summer. The other illustrations (of which, with the author's permission, two are here reproduced) have been drawn and engraved by Mr. G. E. Lodge, and are all very characteristic of the birds they represent.

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# THE ZOOLOGIST.

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THE WHISKERED BAT, *VESPERTILIO MYSTACINUS*.

BY THE EDITOR.

PLATE II.

ALTHOUGH this small Bat has a wide geographical range in Europe, extending from Russia to Ireland, and from Finland to the Alps, it remains but imperfectly known; at all events, in the British Islands, where comparatively few instances of its occurrence have been recorded.

Referring to our "Remarks on British Bats" (Zool. 1887, pp. 161—171), wherein diagnoses are given of the genera, it will be seen that the Whiskered Bat belongs to the genus *Vespertilio*. It is the *Vespertilio mystacinus* of Leisler, and derives its specific name from the fringe of fine straight hairs which clothe the upper lip. It is thus carefully described by Dr. G. E. Dobson, whose 'Catalogue of Bats in the British Museum,' and 'Monograph of the Asiatic Chiroptera' afford the latest as well as the most authoritative information upon this order of the Mammalia:—

"Muzzle narrow; skull vaulted, not much elevated above the face line; glandular prominences on the face small. Ears as long as the head; laid forwards the tips extend slightly beyond the end of the nose; internal basal lobe angular, the horizontal margin forming, with the ascending anterior margin, a right angle; lower third of inner margin of the conch faintly convex, upper third straight, tip rounded off; upper third of the outer margin deeply concave, lower half abruptly convex, with a distinct

lobe at the base, separated by a slight emargination opposite the base of the tragus. Tragus narrowed above and subacutely pointed; inner margin straight, or faintly concave; outer margin with a distinct rounded half-horizontal lobule at the base, succeeded by a concavity, above which and slightly above the base of the inner margin the tragus reaches its greatest width, thence upwards decreasingly convex to the tip.

Wings from the base of the toes; calcaneum terminating in a small projecting tooth; last rudimentary caudal vertebra free. Fur above dark brown, with reddish brown tips; beneath dark brown, the extremities of the hair slightly ashy.

The small glandular prominences of the face are clothed with long hairs; and the upper lip has a fringe of fine straight hairs.

The fur of the body extends upon the wing membrane as far as a line drawn from the middle of the humerus to the middle of the femur, and upon the interfemoral membrane as far as the end of the third caudal vertebra; beneath the distribution of hair upon the wings is similar, but the interfemoral is covered only at the root of the tail.

The upper incisors are equal in vertical extent, their extremities strongly diverging. Both upper premolars are drawn inwards; the second very small, about half the size of the first, and about half its vertical extent; lower incisors next the canines much larger than the others.

Length, head and body, 1.5 in.; tail, 1.4 in.; head, 0.55 in.; ear, 0.55 in.; tragus, 0.3 in.; fore arm, 1.25 in.; thumb, 0.25 in.; second finger, 2.1 in.; fourth finger, 1.6 in.; tibia, 0.55 in.; foot and claws, 0.28 in." Some specimens give somewhat larger measurements than these, but the above description will ensure the identification of the species.

Although not very many instances of the capture of this Bat in England have been made known, the recorded localities for it are sufficiently far apart to suggest that it must be commoner than is generally supposed, but is either overlooked, or mistaken perhaps for the *Pipistrelle*.

In England, according to Bell (*Brit. Quad.*, 2nd ed., 1874), specimens of the Whiskered Bat have been procured in Cambridgeshire and Northamptonshire (Jenyns), in Essex at Colchester (Yarrell), in Kent at Chiselhurst, and in Warwickshire at Spornall Park and Welford (Tomes). To these localities several

others may now be added; some in the counties already named, others elsewhere. For example, in Essex the late Mr. Doubleday obtained two examples at Epping, and Dr. Laver has found it near Colchester (Trans. Essex Nat. Field Club). In Kent it has occurred at Dover, whence in January, 1853, Mr. W. Borrer received a specimen (Zool. 1874, p. 4128). The same naturalist has reported (*l. c.*) its occurrence in Sussex, at Cowfold and Lindfield, and in Dorsetshire at Wimborne in August, 1859. In Hampshire it may be looked for about Winchester, whence Macgillivray received a specimen which he supposed to be *V. emarginatus*, Geoffroy (Brit. Quad., 1838, p. 96), as pointed out by Bell (p. 70), though he described *V. mystacinus* in the same volume. Since then, namely, in 1873, Lord Lilford picked one out of the Avon below the bridge at Christchurch, as it was swimming against a moderate stream (Zool. 1887, p. 66); and quite recently Mr. Edward Hart, of Christchurch, has very kindly forwarded another specimen from that locality. Writing on the 15th April inst., he says:—"To-day, a charming bright spring day, I saw *V. mystacinus* flying about the dining-room window, catching flies and insects on and near a chestnut-tree, where I watched it for over an hour at mid-day." From the Isle of Wight Mr. Bond procured two specimens of this Bat; one taken at Sandown by the late Rev. Charles Bury; the other shot at Freshwater by himself; and Mr. Kelsall writes word that Mr. Rogers, of Freshwater, sent him one which was taken at Niton, and which is now in the Rugby school museum.

The record by the Rev. Leonard Jenyns (now Blomefield) regarding the occurrence of this Bat in Northamptonshire, has been confirmed by the more recent observation of Lord Lilford, who has noted (Zool. 1887, p. 66) the capture in 1870 of three or four examples in the belfry of Tichmarsh Church in that county. As supplementing Mr. Tomes's testimony to its occurrence in Warwickshire, we may add that, in 1851, Prof. Flower procured a live specimen at Stratford-on-Avon, from which he made a water-colour drawing, which he kindly placed at our disposal, and which is here reproduced (Plate II.). The specimen lately forwarded from Christchurch by Mr. Hart has likewise been sketched by Mr. G. E. Lodge, and will be utilised later. Replying to an enquiry from Mr. J. E. Kelsall, the Rev. Leonard Blomefield (formerly Jenyns), now resident at Bath, asserts that the

Whiskered Bat is commoner there than the Pipistrelle, contrary to what he found to be the case years ago in Cambridgeshire. His letter on the subject of this and other species of British Bats is so interesting that (thanks to Mr. Kelsall) we think it well to print the information which it contains. He writes (Bath, Feb. 10, 1887):—"Both larger and small Horse-shoe Bats are frequent in this neighbourhood, and we have specimens of both species in our local museum, taken together in stone-quarries near Bath. From the same quarries we have *V. Nattereri*, but it is rare. It is a fact of some interest, in respect of the distribution of our British Bats, that the Pipistrelle—which is so extremely abundant in Cambridgeshire, and common generally—has only occurred to me here in two or three instances, the Whiskered Bat, *mystacinus*, apparently taking its place, and often found in shops and houses. Just the reverse in the Eastern Counties—there *mystacinus* is rare, the Pipistrelle everywhere. When speaking of the Little Horse-shoe, I might have added that many years back I had specimens sent me from churches in Bristol. I see I have added "Wales" in my 'Manual'\* to the habitats of the Lesser Horse-shoe, but I cannot, at this distance of time, remember on what authority. I fear I have not told you much that will be of much use to you—but my work in Natural History is done."

From Garner's 'Natural History of Staffordshire' (Suppl., p. 33), and Sir O. Mosley's 'History of Tutbury' (preface), we learn that the Whiskered Bat has been identified in that county, where a specimen was procured at Burton. In Worcestershire (Zool. 1857, p. 5590) and Cheshire also examples have been obtained. In the last-named county, as reported by Mr. W. D. Roebuck ('Naturalist,' 1886, p. 113), one was found asleep on the top of a stone wall at Fernlee, near Whaley Bridge, in May, 1885.

In Lincolnshire Mr. Caton Haigh has failed to find it, although well acquainted with the species from observation elsewhere (Zool. 1887, p. 144). In Yorkshire Mr. W. D. Roebuck has established its occurrence, having received specimens from three different localities in that county—namely, from Great Mytton, in Ribblesdale; from Harrogate, in August, 1881; and from Eavestone, near Ripon, in March, 1882 (Zool. 1882, p. 147). Writing to the Editor on the 18th April last, Mr. Roebuck says:—"I am sorry

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\* 'Manual of British Vertebrate Animals,' 1835.

that my knowledge of the Whiskered Bat is confined to its geographical range. Of the numerous specimens which I have seen all have been dead, or nearly so, and consequently I have had no experience of its habits. As to distribution, I may say that it is one of our common species in Yorkshire, and well distributed throughout the county wherever anyone has paid attention to Bats at all, either personally, or by sending me specimens. The three species, *Plecotus auritus*, *Vespertilio mystacinus*, and *Scotophilus pipistrellus* are not very far from being equally common, so far as the number of specimens I have received are concerned. I do not know whether you care to cite localities in the county; if so, I will furnish some of them. At present I can say that I have had it from Leeds, Ilkly, Great Mytton, Pateley Bridge, Masham, and Beverley."

Proceeding further north, we find evidence of its existence in Durham, whence a specimen, formerly in the collection of Mr. Raine, is now in the possession of Mr. Bond, who also has an example which belonged to Dr. Heysham, of Carlisle, where it was captured. It is labelled "found adhering to a house-side in 1832." We learn from the Rev. H. A. Macpherson, a specimen was not long since procured on the banks of the river Eden. Messrs. Meynell and Perkins, in their "Catalogue of the Mammalia of Northumberland and Durham" (Trans. Tyneside Nat. Field Club, vol. vi., 1864), include the Whiskered Bat, with the following note:—"Shotley Bridge (Darlington?), W. Backhouse. The lines on the interfemoral membrane are numerous as in *V. daubentonii*, but the parallel lines number 12. It is altogether of a much darker colour, and smaller in nearly all respects."—*W. B.* Until lately this was perhaps the northernmost point of its range in the British Islands; but Mr. Kelsall informs us that he has seen a specimen of this Bat which it was stated had been taken in Scotland. The only three species hitherto recognised in Scotland are *pipistrellus*, *auritus*, and *daubentonii*. The Noctule is said to have also occurred, but the evidence is not satisfactory (Zool. 1887. p. 260).

In Ireland the Whiskered Bat has been identified but once, namely, at Feakle, Co. Clare, by Dr. Kinahan (Proc. Nat. Hist. Soc. Dublin, 1852, and Dublin Nat. Hist. Review, vol. i. p. 248).

In some parts of North Wales it is said to be not uncommon (Zool. 1887, p. 144). Mr. G. H. Caton Haigh states that it is

probably the most abundant Bat in the district of Penrhyn-draeth in Merionethshire, being found in all sorts of situations in company with the Pipistrelle, which it very much resembles in some of its habits. It differs considerably, however, in its choice of a hunting-ground, and in its flight, which is slow and steady as in *Vespertilio daubentonii*. The Whiskered Bat, he adds (*tom. cit.* p. 294), comes abroad earlier in the evening than the last-named species, and usually selects for its hunting-ground the sheltered ends of a high hedge or plantation, or even a cliff, along which it flies to and fro, seldom rising as high as the tops of the trees or rocks nearest to it. When crossing an open space it generally keeps close to the ground, and was never observed frequenting open spaces in woods, as does the Pipistrelle.

The late Mr. Tomes, who assisted in the preparation of the second edition of Bell's 'British Quadrupeds,' had paid special attention to the Bats, and had had opportunities for observing the Whiskered Bat in the neighbourhood of his own home at Welford, near Stratford-on-Avon. He remarked that it is not unusual to see this Bat abroad during the day, even in bright sunlight—a remark, by the way, which confirms the observation above quoted by Mr. Edward Hart. Another point noted by him as a distinctive character of this species is a well-defined black spot at the insertion of the humerus. This, probably, will be found to be dependent upon age, as in some specimens which we examined it was not noticeable.

Towards the conclusion of his chapter on this species, Bell, referring to its extensive geographical range over Europe, observes:—"Finally, we think that the Himalaya Mountains will have to be given as a *habitat*; for the *Vespertilio siligorensis* of Hodgson appears to differ in no important respect from *Vespertilio mystacinus*." This is so; Dr. Dobson, in his 'Monograph of the Asiatic Chiroptera' (1876), regards them as specifically identical.

Whether this species is migratory, as others are believed to be, is an interesting point on which we should be glad to have some information. See Spallanzani (French translation), 'Rapports de l'air avec les êtres organisés,' vol. ii. p. 125; Blasius, 'Naturgeschichte der Säugethiere Deutschlands,' p. 72; and Zool. 1883, p. 173.

## THE ART OF TRAINING PIGEONS IN THE EAST.

The antiquity of Pigeons as domesticated animals has been well shown by Darwin, in his 'Variation of Animals and Plants under Domestication' (vol. i. pp. 204—206). They are known to have been in this condition, he says, for nearly 5000 years; and it is remarkable in how many countries, and during how long a period, many men have been passionately devoted to breeding them.

In a Bibliography of books relating to Pigeons which we noticed some little time ago ('Zoologist,' 1887, p. 319), Mr. T. B. Coombe Williams has given a list of some 140 treatises which have been published on this subject, in English (58), German (including translations, 45), French (21), Dutch (3), Latin (3), Italian (5), Spanish (1), and Arabic (1). His list does not profess to be exhaustive, and, if manuscripts were added, the bibliography might be considerably increased. One such manuscript, or rather an English translation from the Persian original, is now before us, for which we are indebted to Mr. Coombe Williams. He informs us that it was written at the request of Sir Charles Aitcheson, Lieut-Governor of the Punjab, by one Alla-oodeen, of Loharoo, and purports to be a criticism of the remarks on "Pigeon-flying" (*ishqbazi*) of Shaikh Abul Fazl, the minister and friend of Akbar the Great, which are contained in his account (A. D. 1590) of the government of that great Emperor—by far the greatest work in the whole series of Mohammedan histories of India. The *Ain i Akbari*, as it is called, contains that information regarding Akbar's reign, which, though not strictly historical, is yet essential to a correct understanding of the times, and embodies those facts for which in modern times we would turn to Administrative Reports, Statistical Compilations, or Gazetteers. "It contains," says Prof. Blochmann (whose translation of it is before us), "the *Ain* (*i. e.* mode of governing) of Akbar, and is, in fact, the Administrative Report and Statistical Return of his Government as it was about 1590 A. D."

The chapter on the Emperor's Pigeons is very interesting, and as the perusal of it is necessary to a proper understanding of the hitherto unpublished commentary by Alla-oodeen, which we now propose to print, it will be desirable first to extract this,

especially as in all probability Blochmann's translation of the *Ain i Akbari* (roy. 8vo, Calcutta, 1873) will not be accessible to the majority of our readers.\* The two together afford a curious insight into the mode adopted in the East of rearing and training Pigeons, and especially the way in which they are taught at word of command, or whistle, to perform certain evolutions in the air, some of which are very remarkable, and quite unattempted (so far as we are aware) in this country. We have only once seen anything approaching to an exhibition of this kind in England. Many years ago, in London, we came across an itinerant owner of a dozen Pigeons, who carried them across his shoulders in a narrow oblong square cage, slung from a bundle of props, which when properly adjusted formed a support for the cage. His performance was unique of the kind. Opening the door of the cage, he put a long post-horn to his lips, when the Pigeons, issuing forth one by one, ranged themselves in close order along the horn, all facing in the same direction. A blast from the horn, and they all took wing simultaneously, dashing up the street and over the housetops, being momentarily lost to view. On a second blast from the horn, back they came, helter-skelter, pitching one after another on the horn, and after being rewarded each with a few grains of wheat, stepped quietly back into their cage, and their owner, after sending round his hat for contributions, departed to repeat the performance elsewhere. From what we then saw of, and have since read about, the aerial evolutions of Indian and Persian Pigeons at word of command, we have sometimes wondered why Pigeon-fanciers in England have not bestowed attention upon what may evidently be made a very charming pastime. It will be seen from what follows that, in this respect, the Eastern Pigeon-fanciers are far in advance of us. If some of the remarks of Abul Fazl or his commentator appear now and then a little tedious, allowance must be made for the style of Eastern composition, so different to our own, and for the fact that, as the work of the former writer is little known and that of the latter unpublished, it is thought better to print them in their entirety, rather than to make selections which might not be generally acceptable.

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\* Another translation of this work by Francis Gladwin, dedicated to Warren Hastings, was published in 4to, Calcutta, 1783.

From the *Ain i Akbari*,\* then, we take the following :—

“‘ISHQBAZI,” OR PIGEON-FLYING.

“His Majesty calls Pigeon-flying *'ishqbazi* (love-play). This occupation affords the ordinary run of people a dull kind of amusement; but His Majesty, in His wisdom, makes it a study; he even uses the occupation as a way of reducing unsettled, worldly-minded men to obedience, and avails himself of it as a means productive of harmony and friendship. The amusement which His Majesty derives from the tumbling and flying of Pigeons reminds one of the ecstasy and transport of enthusiastic dervishes; he praises God for the wonders of creation. It is therefore from higher motives that he pays so much attention to this amusement.

The Pigeons of the present age (A. D. 1590) have reached a high state of perfection. Presents of Pigeons are sent by the Kings of Iran and Turran; but merchants also bring very excellent ones in large numbers.

When His Majesty was very young he was fond of this amusement; but afterwards, when he grew older and wiser, he discontinued Pigeon-flying altogether. But since then, on mature consideration, he has again taken it up.

A well-trained Pigeon, of bluish colour, formerly belonging to the Khan i 'Azam Kokaltash ('Aziz Akbar's foster-brother), fell into His Majesty's hands. From the care which was bestowed upon it by His Majesty, it has since become the chief of the imperial Pigeons, and is known under the name of *Mohanah*. From it descended several excellent Pigeons, as *Ashki* (the weeper), *Parizad* (the fairy), *Almas* (the diamond), and *Shah'udi* (Aloe Royal). Among their progeny, again, there are the choicest Pigeons in the whole world, which have brought the trained Pigeons of 'Umar Shaikh Mirza (father of Babar Sultan Husain) Mirza into oblivion. Such improvement, in fact, has been made in the art of training, as to astonish the amateurs of Iran and Turan, who had to learn the art from the beginning.

In former times Pigeons of all kinds were allowed to couple; but His Majesty thinks equality in gracefulness and performance a necessary condition in coupling) and has thus bred choice

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\* Blochmann's translation, vol. i. p. 298.

Pigeons. The custom is to keep a male and a female Pigeon, if not acquainted with each other, for five or six days together, when they become so familiar that even after a long separation they will again recognise each other. The hen generally lays her eggs from eight to twelve days after coupling, or more if she be small or sickly. Pigeons couple in *Mihrmah* (September—October), and separate in *Farwardin* (February—March). A hen lays two eggs, but sometimes only one. The cock will sit upon the eggs by daytime, and the hen during the night, and thus they keep them warm and soft. In winter they hatch for twenty-one days, but if the air be warm they only take seventeen or eighteen. For about six days the Pigeons feed their young with *falak*, which means grain reduced to pap in the crops of the old ones. Afterwards they feed them from the grain in their crops, which they bring up before it is fully digested. This they continue for about a month, and as soon as they see that the young ones can pick up their own grain the old ones will go away. Eggs, or even young ones, are sometimes given to other Pigeons to take care of. Home-bred young ones are trained. Some are kept in a *tor* (?) till they get stronger, and get acquainted with the place. As soon as these two things have been attained the Pigeons only get one-third or one-fourth of their daily allowance of food. When they have got a little accustomed to hunger they are gradually allowed to take flights. They take daily about forty *hawas* (air)—*i. e.* forty flights. At this period the trainers pay no regard to what is called *charkh* and *bazi* (*vide* below). Of feathers they count ten, and if eight of them have fallen out the keepers no longer allow the Pigeons to fly, but keep them at rest (*khabanidan*). After two months the Pigeons get new feathers, and become very strong; they are then again let off. This is the best time for showing their skill. As soon as the Pigeons learn to perform the *bazi* and the *charkh* they are sent to His Majesty for inspection, and are kept for four months in readiness to exhibit their skill.

*Charkh* is a lusty movement, ending with the Pigeon throwing itself over in a full circle. If this circular turn be not completely carried out the movement is called *katif* (shoulder), and is held in no esteem. *Bazi* is the same as *mu'allaq zadan* (lying on the back with the feet upwards and quickly moving round (in Hind. *kala*). Some thought that the two wings (*katif*) meet, which appears to the observer as if it were a *mu'allaq*; but His Majesty

had one wing of a Pigeon blackened, when the erroneousness of that opinion became evident.

Some Pigeons get confused during the *bazi* and *charkh*, and come stupified to the ground. This is called *gululah*, and is disliked. Sometimes Pigeons hurt themselves and fall down; but often they get all right again when they come near the ground, and, taking courage and collecting their strength, they fly up again. A Pigeon of the *khaçah* pigeon-cots will perform fifteen *charkhs* and seventy *bazis*—a feat which will certainly astonish the spectators. In former times they let eleven or twenty-one Pigeons fly at a time, but now-a-days they let off as many as a hundred and one. From the attention which His Majesty has bestowed upon Pigeons, they are now so carefully trained as to be let fly at night, even to great heights.

At the time of the departure and the breaking-up of the camp, the Pigeons will follow, the cots being carried by bearers (*kuhar*). Sometimes they will alight and take rest for awhile, and then rise again.

It would be difficult to count the Pigeons at Court, but there are more than twenty thousand. Five hundred of them are *khaçah*; they have a great reputation, and remarkable stories are told of their skill.

Pigeon-trainers of former times, in order to determine the value of a Pigeon, used to twist the foot or looked to the slit of the eyes, or the openings on the top of the bill; but they failed to discover more signs of the value of the breed. His Majesty has discovered many more; and fixing the value of a Pigeon—in former times a matter of great difficulty—has now become very easy. *First*.—His Majesty subdivided the three signs of former trainers as follows: the two eyes and their upper and lower signs; the eight claws; the two sides of the beak, above and below. The mutual comparison of these signs has led to many additional means of fixing the value of a Pigeon. *Secondly*.—His Majesty looks to the variety and the colour of the annular protuberances on the feet of Pigeons. A book has been made in which the systematic order of these signs has been laid down. According to them His Majesty distinguishes ten classes, for each of which separate aviaries have been constructed. The price of Pigeons in the first house has not been limited. Many a poor man, anxious to make his way, has found in the training of superior Pigeons

a means of getting rich. A pair of second class Pigeons has a value of 3r.; third class,  $2\frac{1}{2}$ r.; fourth class, 2r.; fifth class,  $1\frac{1}{2}$ r.; sixth class, 1r.; seventh class,  $\frac{3}{4}$ r.; eighth class,  $\frac{1}{2}$ r.; ninth and tenth classes,  $\frac{3}{8}$ r.

When inspections are held, the stock of *Mohanah* first pass in review; then the young ones of *Ashki*. Though the latter belong to the former they are now separately counted. Then come the four *zirih* Pigeons: they are the stock of a Pigeon which belonged to Haji 'Ali, of Samarqand, which coupled with an 'Udi hen, of which I do not know the owner; their stock has become famous. The precedence of all other Pigeons is determined by their age or the time they were bought.

#### THE COLOURS OF KHAÇAH PIGEONS.

*Magasi*, fly-bitten; *zirih*, steel-blue; *amiri* (?); *zamiri*, a colour between *zirih* and *amiri* (His Majesty invented this name); *chini*, porcelain-blue; *nafti*, grey, like naphtha; *shafuqi*, violet; 'udi, aloe-wood coloured; *surmai*, dark grey, like powder of antimony; *kishmishi*, dark brown, like currants; *halwai*, light brown, like *halwa* sweetmeat; *çandali*, light brown, like sandalwood; *jigari*, brown; *nabati*, greyish white; *dughi*, bluish white, like sour milk; *wushki*, of the same colour as the gum called *wushk*; *jilani* (*chilani* ?); *kurai*, brown, like a new earthen pot (?); *nilufari*, bluish white; *azraq*, a colour between yellow and brown (His Majesty applies this name in this sense); *atashi*, black-brown; *shaftalu*, peach-coloured; *gul-i-gaz*-coloured (?) yellow; *kaghizi*, yellowish, like native paper; *zagh*, grey, like a crow; *agri*, a colour between white and brown; *muharraqi*, a dirty black; *khizri*, a colour between greenish and 'udi; *abi*, water-coloured; *surmag*, a name invented by His Majesty to express a colour between *surmai* and *magasi*.

Pigeons of these colours have often different names, as *gulsar*, whose head resembles a flower; *dumghazah*, stumptail; *yakrang*, of one colour; *halqumsafid*, white throat; *parsafid*, white wing; *kallah*, big head; *ghazghazh*, wild chick; *magh*, name of an aquatic bird; *babari* (?); *alpar*, red wing (?); *kaltah par*, short wing; *mahdum*, moontail; *tauqdar*, ring-bearer; *marwaridsar*, pearl-head; *mash 'alahdum*, torch-tail; &c.

Some trainers of the present age give Pigeons such names as indicate their colours. His Majesty rather calls them according

to their qualities, as *baghah qarapilk* (with black eyelids), *abyari*, *palangnigari*, *rekhtah pilk*. There are also many Pigeons which do not perform *charkhs* and *bazis*, but are distinguished by their colours or by peculiar tricks. Thus (1) the *Kokah* Pigeon, the voice of which sounds like the call to prayer; (2), the *Baghah*, which utters a peculiar voice in the morning to wake up people; (3), the *Luqqan*, which struts about proudly, wagging its head, neck, and tail; (4), the *Lotan*: they turn it about, and let it off on the ground, when it will go through all motions which a half-killed fowl goes through. Some Pigeons will do so when the keeper strikes his hand against the ground, and others will show the same restlessness when on leaving the cage their beak is made to touch the ground; (5), the *K'herni*. The cock shows a remarkable attachment to the hen: though he fly up so high as to be no longer visible, if the hen be exposed in a cage, he will get restless and drop himself instantly down to join her. This is very remarkable. Some of them come down with both wings spread, others close one; some close both, or they change alternately the wing which they close in flying; (6), the *Rat'h* Pigeon is chiefly used for carrying letters, though any other kind may be trained to bring letters even from great distances; (7), the *Nishawari* Pigeon will fly up, and follow its cage to whatever place it be taken. It will fly out of sight, and stay away for a day or two, when it comes down and remains in its cage; (8), the *Parpa* (having feet covered with feathers) will inhale air (?), and act as if it sighed.

Some Pigeons are merely kept for the beauty of their plumage, the colours of which receive peculiar names. Thus they are called *shirazi*, *shustari*, *kashani*, *jogiyah*, *rezahdahan*, *magasi*, and *qumri*. Wild Pigeons are called *golah*. If some of them are caught they will be joined by a thousand others; they soon get domesticated. They return daily to the fields, and get on their return salt-water to drink; this makes them vomit the grain which they had eaten in the fields. The grain is collected, and given as food to other Pigeons.

People say that Pigeons will but rarely live above thirty years.

Four *sers* of grain will be sufficient for one hundred of such Pigeons as are made to fly; but for other Pigeons five *sers* are required, or seven and a half if they pair. But flying Pigeons

get millet, not mixed with other grain; the others get a mixture of seven kinds of grain — viz. rice, *dal a nukhud* (grain), *mung dal*, millet, *karar*, *lahdarah*, *juwar*. Though most servants of His Majesty keep Pigeons and show much skill in training them, there are a few that have risen to eminence, as Qul 'Ali of Bukhara, Masti of Sarmaqand, Mullazadah, Puri Mulla Ahmad Chand, Muqbil Khan Chelah, Khwajah Candal Chelah, Mumin of Harat, 'Abdullatif of Bukhara, Haji Qasim of Balkh, Habib of Shahrsabz, Sikandar Chelah, Maltu, Maqעד of Sarmaqand, Khwajah P'hul, Chelah Hiranand.

The servants attached to the Pigeon-houses draw their pay on the list of the army. The pay of a foot-soldier varies from two rupees to forty-eight rupees a month."

Here ends Abul Fazl's chapter in the *Ain i Akbari*. In our next number we will give the commentary by Alla-odeen, in which that writer points out, amongst other things, the particular respects in which the Indian method of training Pigeons differs from the Persian.

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#### ADDITIONS TO THE LIST OF SOMERSETSHIRE BIRDS.

BY CECIL SMITH.

In the review of the Rev. A. C. Smith's 'Birds of Wiltshire' (p. 119) the reviewer compares the total number of species in that county with the total number in the adjoining county of Somerset, making the total number of Wiltshire birds "235 or about 20 more than the adjoining county of Somerset, washed by the waters of the Severn and the Bristol Channel." As this agrees very closely with the numbers in my 'Birds of Somerset,' 216 and one (*Surnia funerea*) in an Appendix, altogether 217, I suppose the reviewer has taken the numbers from my book. He should remember, however, that this was published in 1869, nearly 20 years ago, whilst the 'Birds of Wiltshire' is written up to date. Of course since then a good many species have been added to the Somerset list, and as most of these have been recorded in 'The Zoologist,' the reviewer might have ascertained and stated the additions. That the whole northern boundary of Somersetshire is washed by the Bristol Channel is perfectly true, but unless we use the old archæological name of the "Severn

Sea," which in former times was applied to the Bristol Channel as far down as Lundy Island, I should hardly consider the estuary of the Severn itself as extending beyond the junction of the Bristol Avon, which river forms the boundary of the county as far up as Bristol. But whether we call it the Bristol Channel, or use the older but perhaps more suitable title of the Severn Sea, though its shores and waters have added vast numbers of birds, these like "our enforced sins, stand more for number than account," many of the species occurring in such numbers on our coasts making their appearance as passing migrants and stragglers in Wilts and other inland counties. The reviewer, after comparing the numbers of the Wiltshire and Somersetshire birds adds, "this also testifies very plainly to the powers of observation exercised by the men of Wiltshire;" perhaps it also testifies equally plainly to the greater caution exercised by the men of Somerset in admitting "escapes" and doubtful species. I have not, I am sorry to say, been able yet to read Mr. A. C. Smith's 'Birds of Wilts,' though I hope to do so soon. I have no doubt, however, he has exercised due caution in this matter.

As the records of the new birds added to the Somersetshire list since 1869 are somewhat scattered through the pages of 'The Zoologist,' and a few appear not to have been recorded, I think it may be useful if I collect the records, and add a list giving the date of the record of the first occurrence where more than one. I take them in the order in which I find the records:—

Rose-coloured Pastor, *Pastor roseus*, Zool. 1869, p. 1866.—  
from 'The Field.'

White's Thrush, *Turdus varius*, C. S., Zool. 1870, p. 2018.

Wood Sandpiper, *Totanus glareola*, C. S., Zool. 1871, p. 2441.

Great Bustard, *Otis tarda*, Harting, Zool. 1871, p. 2477.

Iceland Gull, *Larus leucopterus*, C. S., Zool. 1871, p. 2488.

Red-necked Grebe, *Podiceps griseigena*, C. S., Zool. 1871,  
p. 2563.

Sanderling, *Calidris arenaria*, C. S., Zool. 1873, p. 3627.\*

Honey Buzzard, *Pernis apivorus*, C. S., Zool. 1874, p. 3869.

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\* I shot one in May, 1872, the first I ever saw on our coast. Mr. Gurney showed me one he had shot at Minehead seven years ago, but it is by no means a common bird with us.

Marsh Warbler, *Acrocephalus palustris*, C. S., Zool. 1875, p. 4713; Mathew, Zool. 1877, p. 333; and 1880, pp. 265, 306.\*

Black-throated Diver, *Colymbus arcticus*, C. S., Zool. 1876, p. 4804.

Little Owl, *Athene noctua*, Braikenridge, Zool. 1879, p. 32.

Pomatorhine Skua, *Stercorarius pomatorhinus*, C. S., Zool. 1880, p. 19.

Manx Shearwater, *Puffinus anglorum*, C. S., Zool. 1882, p. 433.

Red Grouse, *Lagopus scoticus*, C. S., Zool. 1885, pp. 66, 147.

Little Stint, *Tringa minuta*. Saw one stuffed at Weston-super-Mare, stated, I have no doubt correctly, to have been killed there. Not hitherto recorded.

Tengmalm's Owl, *Nyctala Tengmalmi*. One in Mr. Edwards' collection, shot near Winscombe. Not hitherto recorded.

Parrot Crossbill *Loxia pityopsittacus*. Shot at Clevedon; in Mr. Braikenridge's collection. Not hitherto recorded.

Red-legged Partridge, *Caccabis rufa*. Shot at Kingston, near Taunton, December, 1882; in my own collection. I think Mr. Edwards has also recorded it in 'The Field,' from the Mendips.

White Wagtail, *Motacilla alba*. I have found it common both here and in other parts of the county, though I had not recognised it at the time of publishing the 'Birds of Somerset.'

Possibly to these may be added the Lesser White-fronted Goose, *Anser erythropus* (making the number up to 20 since the 'Birds of Somerset' was published), recorded by Mr. Gynnell, of Wellington, Somerset, in 'Science Gossip' for March last. I have seen the head, wings and legs—all that is left of this bird—and have no doubt as to the identity; but I have great doubt as to whether it ought to be added to the Somerset list on the authority of that specimen, one of the wings showing great signs of its having escaped from confinement. I have sent a note on that subject to 'Science Gossip.'

If the Canada Goose, *Bernicla canadensis*, is to be considered British, it must of course be added to the Somerset list, several specimens having occurred at various times. But I have always considered these to be escaped specimens, or their descendants.

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\* See also Seebohm, "Field Notes on the Reed and Marsh Warblers," Zool. 1880, p. 377.

## OUR COMMON DRAGONFLIES.\*

By W. E. BAILY.

MANY and varied as are the animated objects peopling our streams, ponds, and marshy lands, few place themselves so conspicuously before us as the Dragonflies. Most of us in our summer walks have frequently paused to admire the mazy evolutions of these surpassingly graceful creatures, as they dart, turn, and skim over the surface of some stagnant pool in search of food; or soar far up in the clear air engaged in combats sportive or vindicative. And so distinct a group of insects do they form, that even the usually unobservant rustic knows them by quaint and fanciful names, such as "horse-stang," presumably a corruption of "stinger;" and "devil's darning-needles," a title doubtless conjured up from the slender body, coupled with great powers of flight and most truculent aspect. It is indeed true that, as regards his domestic habits, the Dragonfly must meet with a rather heavy verdict at our hands; for, unlike the butterfly or the "busy bee," he is truly a savage, ferocious fellow—the terror of every peaceful insect that is unfortunate enough to inhabit the locality to which his clear-winged majesty is partial.

But to credit him with a sting is to invest him with a power he does not possess; for although his strong horny jaws will bite viciously if he be captured—and their endeavours are often accompanied by an ominously suggestive curl of the long slender abdomen—no trace of any aculeate organs can be found. The comparison between the Dragonfly and the Eagle is sufficiently striking: the rapacious carnivorous habits, the strong untiring flight, and the great power of vision, being the most prominent characteristics of their respective families.

These insects—although in no way injurious to man—play an important part in the economy of the world; for being absolutely carnivorous, they render great service in thinning out the superabundant insect life, and thus helping to keep within bounds a host of creatures which are themselves obnoxious.

In its larval state the Dragonfly is totally aquatic—living in some stagnant pool or slow-running stream, and drawing, doubt-

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\* From the 'Proceedings of the Penzance Natural History Society,' 1887, pp. 67—69.

less, largely on its weaker brethren for bodily sustenance. Whilst in this state the mouth of the creature is an object well worthy of study, the entire front of the face being covered by a kind of mask, situate at the extremity of a long-jointed arm, and furnished with two enlarged hooks or jaws. With this curious apparatus the insect seizes its prey, throwing off its mask—not figuratively, but actually—and clutching the object with the hooks, which then convey the dainty morsel to its mouth.

The larval form has also a very curious apparatus, which reminds us of that possessed by the cuttlefishes, and which enables the insect to violently eject a stream of water by means of this contrivance, and so to spring or dart along with considerable speed. In common with other insects, the Dragonfly after a certain period assumes the state of pupa or chrysalis; but instead of becoming an inert mass enclosed in a cocoon after the manner of the *Lepidoptera*, this form only differs from the larval state in being larger, and in having the wings a little more developed. But without doubt, whilst in this state, processes are quietly at work altering and transforming the insect so as to fit it for its last great change; and when this is accomplished, the pupa crawls up a friendly reed or other aquatic plant until it emerges from the water. Soon a rent or tear appears in its back, and, lo! there emerges from this horny, unengaging-looking shell the perfect Dragonfly, who, after resting awhile to dry and harden his delicate wings, darts swiftly and gracefully away, leaving us to ponder once again over the inscrutable mysteries Nature is always exhibiting to us.

In spite of their beauty and frequent occurrence the Dragonflies do not appear to have engrossed so much of the attention of naturalists as has been accorded to other sections of entomology, and works on the subject are neither numerous nor extensive, whilst some are not readily accessible.

The most complete monograph of *Libellulidæ* with which I am acquainted is M. Charpentier's '*Libellulidæ Europæ*,' a work written in Latin, and profusely illustrated by excellent coloured plates of every European species then known. A smaller French work, without plates, was published in 1840 by M. E. de Selys Longchamps, and is very valuable on account of the minute specific descriptions and the copious critical notes which are appended.

In 1857 Dr. Hagen published in the 'Entomologist's Annual' for that year a brief monograph of the British species, and also appended descriptions of others which he was of opinion might be found here. And in the early numbers of 'Science Gossip' for 1881 Mr. E. B. Kemp-Welch has re-described our British Dragonflies.

From these works it may be learnt that 46 species have been recorded for Great Britain, and out of these 10 are represented by single examples (or at most by *two* specimens). Besides these, one species (*L. dubia*) is reported to be very rare; so that it seems probable we have about 35 species which are fairly represented.

Now one great requisite of the Libellulæ is water, not necessarily large rivers, but shallow ponds and streams, and these are not very plentiful in West Cornwall as compared with other English counties; besides which must be taken into account the physical conformation of this area, and its situation, almost, so to speak, in mid-ocean.

Therefore we can scarcely hope to find a large number of these insects; and of those which do occur, we should naturally expect a preponderance of the more feeble and sluggish species, rather than of the larger and more powerfully-winged species. And this is exactly what we find to be the case.

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[While on the subject of Dragonflies, we may appropriately quote some curious observations made by Mr. W. H. Hudson on the Dragonflies inhabiting the South-American Pampas and Patagonia, which appeared in 'The Field' of October 9th, 1886.—ED.]

"ONE of the most curious things I have encountered in my observations on animal life relates to a habit of the larger species of Dragonflies inhabiting the Pampas and Patagonia. Dragonflies are abundant throughout the country wherever there is water. There are several species, all more or less brilliantly coloured. The kinds that excited my wonder, from their habits, are twice as large as the common widely-distributed insects, being three to four inches in length, and, as a rule, they are sober-coloured, although there is one species—the largest among them—entirely of a brilliant scarlet. This kind is, however, exceedingly rare.

All the different kinds (of the large Dragonflies) when travelling associate together, and occasionally, in a flight composed of countless thousands, one of these brilliant-hued individuals will catch the eye, appearing as conspicuous among the others as a poppy or scarlet geranium growing alone in an otherwise flowerless field. But the really wonderful thing about them all alike is, that they appear only when flying before the south-west wind, called *pampero*—the wind that blows from the interior of the Pampas. The *pampero* is a dry, cold wind, exceedingly violent. It bursts on the plains very suddenly, and usually lasts only a short time, sometimes not more than ten minutes; it comes irregularly, and at all seasons of the year, but is most frequent in the hot season, and after exceptionally sultry weather. It is in summer and autumn that the large Dragonflies appear; not *with* the wind, but—and this is the most curious part of the matter—in advance of it; and inasmuch as these insects are not seen in the country at other times, and frequently appear in seasons of prolonged drought, when all the marshes and water-courses for many hundreds of miles are dry, they must, of course, traverse immense distances, flying before the wind at a speed of seventy or eighty miles an hour. On some occasions they appear almost simultaneously with the wind, going by like a flash, and instantly disappearing from sight. You have scarcely time to see them before the wind strikes you. As a rule, however, they make their appearance from five to fifteen minutes before the wind strikes; and when they are in great numbers the air, to a height of ten or twelve feet above the surface of the ground, is all at once seen to be full of them, rushing past with extraordinary velocity in a north-easterly direction. In very oppressive weather, and when the swiftly advancing *pampero* brings no moving mountains of mingled cloud and dust, and is consequently not expected, the sudden apparition of the Dragonfly is a most welcome one, for then an immediate burst of cold wind is confidently looked for.

It is clear that these great and frequent Dragonfly movements are not explicable on any current hypothesis regarding the annual migration of birds, the occasional migrations of butterflies, or the migrations of some mammals, like the Reindeer and Buffalo of Arctic America, which, according to Rae and other observers, perform long journeys north and south at regular seasons, “from a sense of polarity.” Neither this hypothetical sense in animals,

nor "historical memory"—as the present phase of Dr. Erasmus Darwin's old tradition theory is called—will account for the Dragonfly storms, as the phenomena of the Pampas might be called, since the insects do not pass and repass between "breeding and subsistence areas," but all journey in a north-easterly direction; and of the countless millions flying like thistle-down before the great *pampero* wind, perhaps, not one solitary traveller ever returns.

The cause of the flight is probably dynamical, affecting the insects with a sudden panic, and compelling them to rush away before the approaching tempest. The mystery is that they should fly from the wind before it reaches them, and yet travel in the same direction with it. When they pass over the level treeless country, not one insect lags behind, or permits the wind to overtake it; but on arriving at a wood or large plantation, they swarm into it, as if seeking shelter from some swift-pursuing enemy, and on such occasions they sometimes remain clinging to the trees while the wind spends itself. This is particularly the case when the wind blows up at a late hour of the day; then, on the following morning, the Dragonflies are seen clustering to the foliage in such numbers that many trees are covered with them, a large tree often appearing as if hung with curtains of some brown glistening material, too thick to show the green leaves beneath.

In Patagonia, where the phenomenon of Dragonfly storm is also known, an Englishman residing at the Rio Negro related to me the following occurrence, which he witnessed there:—A race meeting was being held near the town of El Carmen, on a high exposed piece of ground, when, shortly before sunset, a violent *pampero* wind came up, laden with dense dust-clouds. A few moments before the storm broke, the air all at once became obscured with a prodigious cloud of Dragonflies. About a hundred men, most of them on horseback, were congregated on the course at the time, and the insects, instead of rushing by in their usual way, settled on the people in such quantities that men and horses were quickly covered with clinging masses of them. My informant said, and this agrees with my own observation, that he was greatly impressed by the appearance of terror shown by the insects; they clung to him as if for dear life, so that he had the greatest difficulty in ridding himself of them.

Weissenborn, in Loudon's 'Magazine of Natural History'

(N. S. vol. iii.) described a great migration of Dragonflies which he witnessed in Germany in 1839, and also mentions a similar phenomenon occurring in 1816, and extending over a large portion of Europe. But in these cases the movement took place at the end of May, and the insects travelled due south; their migrations were therefore similar to those of birds and butterflies, and were probably due to the same cause. I have been unable to find any mention of a phenomenon resembling the one with which we are so familiar on the Pampas, and which, strangely enough, has not been recorded by any European naturalists who have travelled there."

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## NOTES AND QUERIES.

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### MAMMALIA.

**The Elk in Galicia.**—At Christmas last an Elk, *Alces machlis*, was shot in Galicia. It is now one hundred and thirty years since the last of these animals was killed in Austria. It is believed that the one referred to had come from Lithuania.—'Nature,' Jan. 26, 1888.

**A new Beaver Colony in Saxony.**—Since the middle of March about thirty Beavers have been found at Gegenwehrsberg, above Ranies, not far from Schonebeck on the Elbe, in the province of Saxony, where, for want of dwellings, they have sought shelter in the bushes covering the Elbe dam. They are now beginning to burrow under the dam, which is consequently liable to be injured, and it seems doubtful therefore whether they can be allowed to remain there permanently.

**Fox and Hare in unwonted proximity.**—I take the opportunity of relating a circumstance of apparent friendship and fraternization on the part of two animals whose habits are as different from each other as possibly can be—the one a Carnivore, the other an Herbivore. A short time ago, just before the last frost, when the South Dorset Hounds were crossing a neighbouring stubble-field between a covert they had just drawn and another, when a Fox and a Hare jumped up out of a bare open pit, only a few yards in diameter, and shallow enough to allow it to be cultivated. The bareness of the pit makes it impossible to suppose that its two occupants were unaware of each other's proximity.—J. C. MANSELL-PLYDELL (Whatcombe).

[It is not unlikely that the Fox was engaged in stalking the Hare, or lying in ambush for it when disturbed.—ED.]

**Otters and Polecats in Suffolk.**—According to reports published from time to time in the local papers, great destruction seems to have been wrought of late among the Otters in Suffolk. No less than eight have been killed during the past winter in the Stour alone—several about Beccles, one was destroyed last January near Blaxhall, and the death of another at Walberswick was reported only a few days back; while in all probability other instances have occurred which have not found their way into the newspapers. The slow-running muddy Suffolk rivers seem to have some special attraction for Otters, possibly from the great abundance of eels; and of late years these animals have, for some reason, been more frequently met with than was the case some twenty or thirty years back. This is hardly what circumstances would lead one to expect, as many of their old strongholds are gone. The venerable pollard-ash trees, hollow with age, which supplied our forefathers with firewood, are year by year disappearing. Ancient alders, too, under whose big spreading boles were admirable retreats for Otters, are gradually dying out without successors, the few trees planted singly for many years back by the river-side, and about the low meadows, being in most places either poplars or willows. Otters would no doubt be fairly common in Suffolk if protected; but, instead of this, they are, as a rule, shot or trapped, if possible, wherever they make their appearance. In the ‘Ipswich Journal’ of March 28th of the present year, a Polecat is reported to have been caught at Mildenhall, in a trap set for an Otter. The account given of its capture is as follows:—“On Saturday night Mr. David Jude (caretaker of the Town Hall) set a trap to catch an Otter which had been making depredations among the fishes in the vicinity of Warmil Staunch, and on Monday morning he discovered a Polecat in the trap, an animal rarely seen in this neighbourhood. The animal is evidently a young one, and it has been handed over to Mr. C. A. Jessup, an amateur taxidermist of this town, to be stuffed.” The Polecat is now a much rarer animal in Suffolk than the Otter, though it existed in some of the larger woods not very many years back, and within the memory of persons still living. About twenty-three years ago my brother obtained from a keeper the skin of a freshly-killed Polecat. This specimen was also from Mildenhall, and I do not think the capture of one of these animals in that neighbourhood was at the time thought to be anything very remarkable. As far as I am aware, the Polecat has been completely exterminated throughout the eastern part of the county, and in the west it is probably very nearly extinct.—G. T. ROPE (Blaxhall, Suffolk).

**Seasonal Change of Colour in the Stoat.**—I have no doubt that the change in colour from brown to white and *vice versa*, during the autumn and spring, is effected much the same as is the plumage of many birds “*minus* moulting”; but such change does not take place with all, as the finest Stoat I have ever caught was in the full brown of the summer,

although trapped in mid-winter. I have also met with it mostly white so late as Easter. Having shot, trapped, and examined a great many, I think the whitest fur will be met with during December and January; those I have caught later have assumed a portion of brown over the head, neck, and near the tail; the tip of the tail is black in all seasons. I consider the Stoat to be the boldest and most destructive member of our native Mammalia—a real little glutton when it enters a well-stocked game-preserve.—J. SUTTON (33, Western Hill, Durham).

**Variety of the Mole.**—I have just found a newly-killed and rather curious variety of the Mole. A line of reddish brown runs down the under surface of the body; and the fur below the forelegs, under the chin, and at the root of the nose above is of the same colour.—E. P. LARKEN (Gatton Tower, Reigate).

**Bank Vole in Shropshire.**—Mr. T. C. Eyton contributed a “Fauna of Shropshire and North Wales” to the ‘Magazine of Zoology and Botany,’ which afterwards became the ‘Annals and Magazine of Natural History.’ At page 397 of vol. iv. of the latter publication he says that the Bank Vole was several times taken near Eyton.—J. E. KELSALL.

#### BIRDS.

**Magpies attacking a weakly Donkey.**—Lieut.-Col. G. M. Morgan, of Biddlesden Park, Brackley, in a letter dated March 8th, sends me the following story, which I trust you will consider as worthy of insertion in ‘The Zoologist’:—“My son, from whom I heard this morning, relates a very curious circumstance; he lives at a place called Doddershall Park, in Bucks, about three miles and a half in a straight line from Wotton House, the seat of the Duke of Buckingham, where the woods are very extensive and not strictly preserved, so that Magpies are tolerably numerous. Jonah George, alluded to by my son, acts as chief woodman and gamekeeper on the Doddershall property, and is well known to me as a most respectable and reliable man. I give the occurrence in my son’s own words:—‘Jonah George tells me that he had noticed in the snow fourteen or fifteen Magpies hovering about his old Donkey, which was turned out in his field with a sore back. He came to me for some cartridges one morning, and told me that the Magpies had killed the Donkey and eaten a great piece out of his back. There was nothing else the matter with the Donkey, and the wound made by the birds was quite sufficient to kill it. He shot two Magpies in the act of eating the Donkey.’” I received another letter from Colonel Morgan this morning (March 19th), in which he tells me that he is informed by his son that the sore was on the spine of the Donkey, and there can be no doubt that the Magpies got at the spinal marrow; he adds that the wound on the dead beast’s back was seven or eight inches across.

I have long been well aware that Magpies are in the habit of frequenting the backs of cattle in search of the grubs known as "bots," and thus acquire a taste for beef, occasionally making hideous sores; but the above is the first well-authenticated instance that has come to my knowledge of the actual murder by these birds of any mammal larger than a weakly Rabbit.—LILFORD (Bournemouth).

**Grey Shrike in Cumberland.**—The example of *Lanius excubitor* recorded from Cumberland (p. 147) by my neighbour Mr. Tandy, is the second obtained in the county during the winter 1887-8. The first was killed near Carlisle on Nov. 29th, and is a mature bird, having two wing-bars and pure white under parts. I recently took the trouble to extract all the records of this bird from 'The Zoologist,' 1843—1887, and an analysis of the results throws some light on the migration of the species to and from the British Isles.—H. A. MACPHERSON (20, Cecil Street, Carlisle).

**The Nutcracker in Kent.**—The accompanying cutting from 'The Standard' of Jan. 28th, 1886, speaks for itself:—"In one of your admirable articles in 'The Standard' of to-day you refer to a great band of Nutcrackers, *Nucifraga caryocatactes*, which invaded Western and Central Europe forty-two years ago. It may interest you to learn that I obtained a fine specimen of this bird on the 17th of November last (1885) in Strode Park, Herne, the seat of Mr. Prescott-Westcar, and that on examination it was found that, although the bird is called a Nutcracker, and presumably is a nut-eater, its stomach contained more specimens of small Coleoptera than vegetable or other matter.—COLONEL WILLMOTT (Eddington Cottage, Canterbury, Jan. 26, 1886).' I do not know whether the occurrence of this specimen of the Nutcracker was recorded in any Natural-History journal at the time; if not, it might be as well to record it now in 'The Zoologist.'—DIGBY S. W. NICHOLL (The Ham, Cowbridge, Glamorgan).

**Albino Sky Lark and Starling.**—I am informed by Mr. J. Cording, bird-preserved, of Cardiff, that he has recently received, for preservation, a cream-coloured Sky Lark, and also a white Starling, both of which were obtained in the neighbourhood. — DIGBY S. W. NICHOLL (The Ham, Cowbridge, Glamorgan).

**Probable Occurrence of the Chough in Suffolk.**—In a migration schedule received this morning (April 14th) from Mr. Owen Boyle, of the Landguard Lighthouse, is the following entry:—"April 2nd, 1888. Two crows put in an appearance, 7.30 a.m., larger than jackdaws; they had red beaks and legs, and went north-west."—JOHN CORDEAUX (Great Cotes, Ulceby).

**Wildfowl at Ringwood, Hants.**—Although the past winter has been somewhat severe, yet the weather has been comparatively open, and

continuous hard frost has been the exception rather than the rule; this, coupled with the extreme lowness of the water in the river, has made the season anything but a prolific one to the local gunners. In the early part of the season three "Wild Swans," and, still more recently, two "Wild Geese," were reported in the local press to have been killed. On inspection they proved to be Mute Swans and Canada Geese, escaped, no doubt, from some ornamental water. Wild Duck, Wigeon, and Teal were, perhaps, as common as usual, with an occasional Pochard, immature Goldeneye, or a stray Pintail; but such species as the Goosander, Tufted Duck, Sheldrake, and Gadwall were entirely absent; and I heard of but one specimen—a female—of the Shoveller having been met with: not that any of the last-named species are ever very common, but hitherto scarcely a winter has passed without my having seen one or more of the species—especially the Goosander—at some age or another, mostly immature, and occasionally a specimen in splendidly adult plumage. As to the Pochard, I am informed on reliable authority that upon a portion of the river where the wildfowl are preserved it was no uncommon occurrence, some twelve or fourteen years ago, to kill eighteen or twenty of these birds in a day's shooting, where now it is seldom met with, some winters not a specimen being seen. It would be interesting to know if such is the case in other places formerly frequented by it. On the 3rd of January a fine specimen of the Common Bittern was killed; I saw it before it was dead, and was struck with the power it had of spreading out the long feathers of its breast and neck, almost like a fan. Two days later (*viz.* on the 5th January), three others were killed within a half-hour of each other; I had not heard of one before or since those dates. Since the shooting ceased on the 1st of March two or three Geese, supposed to be of the White-fronted species, were seen on several parts of the river, and, notwithstanding the inclement weather previously, there is not much doubt but that some Wild Ducks were laying before the shooting was over.—G. B. CORBIN (Ringwood, Hants).

**Herring Gull hatching a Fowl's Egg, and feeding on Mice.**—The following circumstance occurred recently at the west-end of this county:—A Herring Gull had been allowed to run about the garden of its owner for upwards of twelve years, and was supposed to be a male bird until last spring, when it laid an egg, which, being infertile, was taken away and replaced by a hen's egg, upon which the Gull continued to sit, and in due time hatched one chick, on which she bestowed the most tender parental attention. This is the more extraordinary, as she was in the habit of resenting the approach of every fowl, old or young, and on several occasions had killed and eaten chickens that had ventured too near; this practice she still retains. Shortly before her roosting-time she habitually became excited, and, as far as her clipped wing permitted, flew around and

about the chick, which alarmed it, and, to prevent any misadventure, it was brought into the house at night and returned to its foster-parent the following morning, when the two might be seen walking about side by side in the closest bond of affection. As late as January 1st, when the foster-chick was nearly full-grown, their devotedness the one for the other was as intense as at first. Another incident in connection with a Herring Gull, which was in a feral state, and not in quasi-captivity, as in the above instance, occurred only last week, which is worth recording. My keeper, who is an observant naturalist, noticed a Herring Gull unusually near his house, and busily engaged at the remains of a rick, which had been opened the previous day, and many mice (*Mus sylvaticus*) killed and thrown among the surrounding straw. Being at a loss to know what the Gull was feeding upon, he shot it, and found a mouse half down its throat, head first, and three in its stomach, evidently just swallowed. These two instances show how omnivorous the Herring Gull is, and that it is immaterial whether its prey is dead or alive.—J. C. MANSEL-PLEYDELL (Whatcombe, Blandford).

**Food of the Hawfinch.**—A favourite summer food of the Hawfinch is green peas; the quantity they will consume is rather astonishing. In the autumn I found in their stomachs the kernels of a small stone-fruit, which, as the birds had been frequenting bullace trees, and the odour of prussic acid was very strong, I have no doubt they obtained from that fruit. A very favourite food seems to be the fruit of the yew, and I have also found what I have not the slightest doubt were the kernels of the whitethorn. Both the kernels of the bullace and whitethorn were divested of their hard shells.—T. SOUTHWELL (Norwich).

**Food of the Hawfinch.**—As regards Hawfinches feeding on kernels of cherry and plum stones (referred to on page 117), I may note that some years ago I had a pair of Hawfinches sent up from Norwich in the flesh. Upon skinning them, the odour of prussic acid was very marked, and they were found to be crammed with the undigested kernels of plum or damson stones. This was late in autumn, and it should be borne in mind that the stones had doubtless been exposed for weeks to the action of the weather, and were, in consequence, more readily opened than they would have been when fresh from the fruit.—A. B. FARN (Stone).

**Garganey in Co. Carlow.**—In the 'Dublin Evening Telegraph' of March 30th a notice appeared to the effect that a specimen of the "Blue-winged Teal" had been obtained in the County Carlow, and that it was on view at the shop of Mr. Kant, naturalist. On the following day I visited the premises, and was shown the bird. It proved to be a male Garganey, *Querquedula circia*. As a specimen of the true Blue-winged Teal has never, so far as I am aware, been obtained in Ireland, and as hereafter the notice in question may be referred to as evidence of the bird's occurrence, I think

it right to place the real fact on record. A second specimen of the Garganey, a male in fine plumage, was obtained recently in the county of Dublin, and has come into the hands of Mr. Williams, naturalist, Dame Street.—J. J. DOWLING (1, Fingal Terrace, Clontarf).

**The Kite in Glamorganshire.**—Having read Mr. E. C. Phillips' interesting note on the Kite in Breconshire (p. 145), I have referred to some notes of mine respecting the occurrence of the Kite in Glamorganshire, including an interesting communication on the subject which I received some time since from Lord Aberdare, which I send, thinking that perhaps it may interest some of the readers of 'The Zoologist.' His lordship writes:—"One fact may be worth recording, as showing the changes which take place in one man's lifetime. When I was a youth 'Salmon-tailed Kites' were as common in this valley of Aberdare as Buzzards. I remember one day counting no less than twenty-five of both sorts sailing above the Duffryn Graig (a large wood adjoining his house). I once took the nest of a 'Salmon-tailed Kite,' and found in it a drowned puppy, the hind quarters of a small pig, a rat, and a rabbit. Earlier still, about 1800, my father and uncle (the late Dean of Llandaff) borrowed the longest ladder in the parish for the purpose of scaling a grove of oaks at Penrheioceiber (now an important colliery village), with the object of getting the eggs of Herons and Kites, which lived there amicably together. The ladder did not reach the lowest branch of the lowest oak-tree, so they failed in their attempt. Besides a heronry and Kite's nest, there was a rookery in the same grove, which had disappeared before my time, the owner having cut it down, tempted by the high prices given during 'the war' for oak timber for ship-building purposes—seven shillings a foot being a common price." Lord Aberdare goes on to say that he has not seen a Kite in his neighbourhood for the last forty years, nor a Buzzard for about ten years. He adds:—"Rare birds and occasional visitors were always more frequently seen in the Vale of Glamorgan than among its mountains." The following more recent occurrences of the Kite in Glamorgan have come to my knowledge:—One that was shot by the late Mr. Llewelyn at Penllergare, near Swansea; another killed in the Ystead Rhondda Valley in 1873; and a third obtained at Tirphil, in November, 1882. I heartily endorse Mr. Phillips' hope that the birds he saw may remain unmolested and allowed to breed, and also your wish that people would assist as much as possible in checking the practice of making rare birds still rarer by shooting them whenever an opportunity occurs.—DIGBY S. W. NICHOLL (The Ham, Cowbridge, Glamorganshire).

**Gulls on the Thames at Kingston.**—During the third week of March there were several Gulls flying and feeding over the river here. I made out with the glasses the Common Gull (*Larus canus*), the Black-headed

Gull (*L. ridibundus*), and also one large bird, probably the Herring Gull (*L. argentatus*). This is the first time I have seen these birds so far up the river; no doubt they were driven up by the severe weather.—F. V. THEOBALD (The Chestnut Grove, Kingston).

**Crossbills, Bramblings, and Black Redstart in the South of Ireland.**—I see it noted in 'The Zoologist' (p. 144) that Crossbills have been numerous in Breconshire during the past winter. These "gipsy migrants" have also penetrated here. On the 26th December last my servants saw, close to this house, five birds "like Bullfinches, but larger," whose bills they described to be like Hawks' bills, and the plumage of some of them to be red. On February 20th Mr. R. E. Longfield, of Mallow, wrote to tell me of several instances in which Crossbills had been shot near Mallow and Doneraile, Co. Cork, during January and February. During these latter months three Bramblings were obtained near this, and others seen. They were the first Bramblings I ever saw in the flesh, the species being uncommon in the Co. Waterford. On the 28th March last a Black Redstart was disporting itself opposite the window while I was at breakfast. On March 28th, 1880, Dr. Burkitt obtained an immature Redstart at Waterford, probably of this species. This is the latest date in which I have met with this scarce winter visitant. It usually occurs in the early part of the winter, and probably visits us every year. It can no longer be called rare here. Since writing the above I received, on April 6th, a Crossbill, in fine brick-red plumage, shot near Cappoquin while in company with another. On showing it to my servants they all identified it as the species they saw here on December 26th.—R. J. USSHER (Cappagh, Co. Waterford).

**Girl Bunting in Breconshire.**—I saw one of these birds, for the first time in this county, on March 15th. Going out for a walk I noticed a bird just outside my garden fly from a hedge into a tree, where it stayed until one of my boys killed it with a catapult. It was a cock bird, in good plumage. Two practical ornithologists, to whom I have shown the bird, say they have never seen this species here before. This bird was alone, and I expect was but an accidental straggler; still I am pleased to have been able to identify it, for it is a new addition to my list of Breconshire birds. I need scarcely add I am having it preserved.—E. CAMBRIDGE PHILLIPS (The Elms, Brecon).

**Number of Eggs laid by the Cuckoo.**—It is supposed that the Cuckoo lays more than one egg in different nests, and probably more than two, at intervals in the season; Bewick says from four to six; Blumenbach also says six. The following observation came to the knowledge of a friend of mine, and may tend to throw some light on the subject. He knew a case in which a man killed two of these birds at one shot, and

brought them to a bird-preserver, still warm, to be set up, saying how he had killed them, which was the reason why he wished them stuffed. The birds were left, and during the day, when they were skinned, it was found that in one of them was a perfect egg, ready for exclusion, and a number of others in various stages of development, from which it is clear that the hen lays five or more eggs. The perfect egg was broken before its presence was suspected. The other bird was more carefully treated, but was found to be a male. My friend made preparations of both birds, put them in spirits, and placed them in the Cardiff Museum. — DIGBY S. W. NICHOLL (The Ham, Cowbridge, Glamorgan).

**A Morning at the Flight-nets.**—A friend and I had long meditated a visit to some flight-nets set in the Duddon estuary near Hodbarrow, Cumberland. On Jan. 10th, before daybreak, we took the early morning train for Millom, and, as soon as the tide was sufficiently low, set off along the coast for the nets. Our walk was rendered pleasant by the bird-life to be seen and heard upon the gloomy salt-marshes. Many hundreds of wild duck of various species could be observed, by far the most numerous this year being *Anas boschas*, the "grey duck," as it is locally called; we also noticed several flights of Shelduck. The marshes resounded on all sides with the tuneful note of the Redshank, and the somewhat mournful cry of the Curlew. Darting about at the edge of the water were many "sea-pies" (*Hæmatopus*). Unfortunately before we reached the nets a sea-mist came on and hid for a time from view the number of birds swimming on the estuary. In the mist a large bird flew past us, and some doubt existed as to what it was; the owner of the nets declared that it was "what we call a gull, but the proper name is 'cockleyar.'" At length we reached the nets. These were constructed of fine linen twine, a six-inch mesh being employed, and were set loosely on stakes some seven or eight feet high, so that when a bird strikes against them, in its struggles it quickly becomes entangled: the finer the twine the greater is the chance of success. The nets extend for from 80 to 100 yards. On this occasion not a single bird was caught, and the snarer complained that he had never had so poor a season. Although a man of no general intelligence, our guide, like many of his class, was a keen observer of nature. On our return journey he pointed out the small round holes made by the Wild Ducks in the sand when it was covered by an inch or two of water; these marks he called "duck-hunts"; he readily distinguished them from the holes made by the "flukes" or plaice when seeking food, although an uneducated eye could perceive little or no difference. The nets are only set when there is no moon: our guide referred to that period of the month as "the dark." In previous seasons fair success had attended the labours of the netter, to whom all and every kind of bird seem welcome, except, perhaps, the small birds, called by them "sea-mice" (*T. alpina*). Curlews locally fetch 2s., which

is above the London price; Shellduck from 4s. to 5s.; "sea-pies," 4d. each. A Cormorant caught in the nets in 1885 ('Birds of Cumberland,' p. 81) was sold for 8s., and even at that price the netters regretted its capture, as it played sad havoc with their hands. The approved mode of cooking "sea-pies" appears to be first to skin them, then boil them for ten minutes, and finally stuff and roast them. Curlews treated the same way are said to equal Duck. The behaviour of the various kinds of birds after they have been caught is very different: Ducks die with scarcely a struggle, but Curlews, Gulls, and Oystercatchers are game to the last, and are frequently unpleasant customers to handle. We visited the nets again the following week, at 6 a.m., and most weird were the cries of the different birds on the dark marshes; the nets were a second time without wildfowl.—T. N. POSTLETHWAITE (Hallthwaites, Millom, Cumberland).

**Notes from Western Australia.**—My last notes were written, if I remember correctly, from the Gascoyne in August, and chiefly concerned a trip to the Mivalya River. Since then I have made an exceedingly interesting trip overland to Perth, following the coast-line as a rule, at a distance of about twelve miles inland. Leaving the Gascoyne early in September, we passed through flat country covered with one almost dense thicket, at times opening on salt bush-flats, when we were enabled to see a little distance away, this bush not growing more than two or three feet in height. We followed the telegraph line to avail ourselves of the cut road, the thicket on each side being, as a rule, quite impenetrable. Bird life was uninteresting. We picked up many small species killed by striking against the wire, principally the Grasshopper Birds which abounded. An Emu or two was seen when we could get a glimpse of the country further away. Water was very difficult to procure; in fact we only found two pools of mud before reaching the Wooramel River, and had we been a week later should not even have had this. This river is about eighty miles from the Gascoyne, and, like it, is almost invariably a dry sandy bed, but much smaller. There was the usual fringe of white gum-trees along the river-banks, in which were numerous flocks of the Western Long-billed Cockatoo. We now struck across dreary salt-marshes, absolutely bare of everything, vegetable or animal, to the sea-coast, which we followed for a few miles, when we found the thicket running down to the salt water, and abounding in the famous Ngows, or Brush Turkeys, but to my great disappointment it was too early for eggs. I noted the White-tailed Sea Eagle, and with my binoculars could see large flocks of snow-white Egrets feeding along the edge of the sea. There appear to be no fish in this part of the sea; shut in by islands to the west, and the water being shallow, it seems to be too salt even for fish, owing to the intense evaporation. Calling in at Flint Cliff Telegraph Station for stores I noted, in cages, the Bronze-wing Pigeon and Blood-stained Cockatoo or "Joggle-Joggle,"

obtained there. The coast here was rocky and rugged, caves and fissures running up the low cliff and forming homes for the wild dogs. Seven miles after leaving this lonely habitation, the aspect of the country is changed. All at once we entered a belt of dense mallee scrub, and a variety of other shrubs and bushes totally different to those growing in the surrounding country. This belt is about fifty miles broad, and I am told runs out on Dirk Hartog Island. Old nests of the Ngow were encountered every few yards, but we only saw one bird. Their tracks were very numerous. Natives had just come down in anticipation of securing eggs. It appears these birds are much less numerous than formerly, and it is difficult to account for them dying out, as the country is absolutely unsettled. The domestic cat, which is found quite wild and of large size all through the colony, is blamed by some as the destroying agent. There is a small colony of Ngows close to the coast a few miles north of the Gascoyne River. As far as this belt of mallee extends, the country is a succession of steep hills covered with deep loose sand. Water is only obtained from tanks on the telegraph line roofed with galvanized iron, which delivers the rain and dew into the tank below. The dews are exceedingly heavy, and the supply of water is kept up much more by this means than by rain. However, this road is very rarely taken by anyone, excepting the man looking after the line. We emerged from this dense thicket about twenty miles north of the Murchison River, crossing open sand-plains where were numerous Brush Turkeys and Bustards. I was much interested in the movements of a hen bird; while endeavouring to draw us away from her nest, she walked round with her great wings widely spread, uttering a curious croak. One egg appears to be the usual number, and there is really no nest at all. I only secured one egg on the trip, which is exactly like that of the European Bustard. After crossing this plain we came suddenly on the valley of the Murchison River. Deep rocky gorges on either side and a curious conical hill rising from the centre of the valley, with a perpendicular rocky summit rather difficult to scale. The Murchison is the farthest northern river that runs permanently, and it was indeed a treat to see clear running water after such a long experience of the dry sandy rivers farther north. The river is only a few feet in width at places, but opens out into deep lake-like pools abounding with aquatic bird-life. Here we found quantities of ducks; among them the curious Musk Duck, which is a difficult bird to shoot; It dives even quicker to the flash than does the Long-tailed Duck of the northern seas. I omitted to mention finding a nest of a Kingfisher in the mallee thicket. It was excavated in the side of one of the numerous white ants' mounds, and contained five eggs about the size of those of the Belted Kingfisher. I could not see the bird. It reminded me of the Kingfishers' nests in far-off Yorkshire, yet how different the

surroundings! There were numbers of Black Swans breeding on the Murchison, but being much hunted by natives were very difficult to approach. The young were hiding about the rushes; it was apparently too late for eggs (Oct. 4th). Coots and Waterhens were numerous, and there were colonies of the White-faced Heron, all of whose nests contained large young birds. The river abounds in Mullet, and there were plenty of White-bellied Eagles. I climbed to three nests, two of which contained two eggs much incubated. The nests were, as a rule, placed high in the summit of a lofty gum-tree. In the underpart of one of the Eagles' nests was a smaller nest with eggs, built in the larger structure. It appeared to belong to a sort of Java Sparrow (so called here). There was a species of Diver on the river, but I failed to secure specimens. The old oak-tree grows here, and I fancy the black snake finds its northern limit here. I have never seen or heard of a specimen of this species in the dry northern districts. It is a true swamp lover. Rock Wallabies were plentiful on the cliffs, and took a lively interest in our camp. The Blood-stained and Long-billed Cockatoos were numerous, and also the Collared Twenty-eight Parroquet. All the nests I examined contained young of the latter. Young Cockatoos were all on the wing. We first noted here the White-tailed Black Cockatoo. Very large flocks of this bird were feeding on the Banksia seeds. It is a striking-looking bird, and utters a not unmelodious cry. Magpies and "Squeakers" also occurred, and were not met with further north. Immediately the Murchison River was crossed numbers of the Great Red Kangaroo were seen. The river seems to be a natural boundary, only a few individuals crossing to the north side occasionally. The famous black bay-trees are also here met with directly the river is crossed. A long stretch of sandy plain extends to the town of Northampton (about eighty miles), affording no food for stock, and in places covered with poison plant. Though of no use to the settler, these sand-plains are covered with a variety of shrubs and plants bearing most beautiful and interesting flowers. From Northampton to Champion Bay the country is somewhat rugged, this being the mineral district of Western Australia. From Champion Bay we proceeded by way of the Back Flats. About twenty miles north of the Irwin River we found Kangaroos, both red and brown, simply in flocks. They are not much hunted in this district, for it seems the farther north the Kangaroo is found, the thinner its skin, and hence less valuable. Bitterns occurred in all swamps. After crossing the Irwin River the country again changes, swamps are plentiful, Lake Loge being a fine sheet of water. The formation of the country surrounding Lake Loge is limestone, and there are a number of exceedingly large and extensive caves with stalactite. They have never been explored by anyone, and are great strongholds for dingoes. The mouth of one cave we saw we

roughly calculated to be fully fifty feet high and one hundred feet wide; the interior for a considerable distance was even larger, and branched out into numerous other passages. At Henry River, Brush Kangaroos were seen. The timber increases as Perth is approached, and more than one hundred miles distant it is simply one forest, and birds are very little seen. There were quantities of wild bees in the hollow limbs, which frequently afforded us a welcome supply of delicious honey. From Fremantle I proceeded to Vasse by a coasting-schooner, and was surprised to find such a paucity of sea birds. There were none; possibly they might be breeding on some of the islands. I have just returned from a trip to the famous Karri country, in the south-western corner of this colony. So much has been written of these magnificent trees that it is unnecessary to describe them. The country from here is one dense mass of timber, the voice of birds is seldom heard, and shooting specimens on the summits of these giant trees is out of the question—they are far beyond the reach of a gun. Where a house is, however, and especially if surrounded by a fruit-garden, Parrots, Cockatoos, Squeakers, and many fruit-loving species of birds abound. Having left my "Gould" in the north, I noted many birds respecting which it is useless to write, unfortunately, for I only know them as yet by the local or native names. Possibly, however, the above rough notes may give some idea of the fauna on the "overland road" in Western Australia.—THOMAS CARTER (Vasse, Western Australia).

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## SCIENTIFIC SOCIETIES.

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### LINNEAN SOCIETY OF LONDON.

April 5, 1888.—W. CARRUTHERS, F.R.S., President, in the chair.

The following were admitted Fellows of the Society:—Messrs. D. Sharpe, J. B. Farmer, and J. A. Voelcker. Mr. G. B. Sowerby was balloted for and elected a Fellow.

Amongst the exhibitions of the evening, Mr. D. Morris (Kew) showed a curious native bracelet from Martinique. Although formed apparently of seeds, or beads of wood, or bone, its real composition had puzzled both botanists and zoologists, and until microscopically examined could not be determined.

Mr. J. G. Baker exhibited a series of specimens of *Adiantum Fergusoni* and *Capillus veneris*, and offered some remarks upon their specific and varietal characters.

Mr. J. E. Harting exhibited a specimen of a rare British animal, the Pine Marten, which had been trapped in Cumberland, and made some

observations on the present distribution of the species in the British Islands.

Mr. Clement Reid exhibited a series of fruits and seeds obtained by Mr. J. Bennie from interglacial deposits near Edinburgh, affording evidence of a colder climate formerly than that now prevailing in the lowlands of Scotland.

Mr. F. Crisp exhibited some fragmentary remains of a wild goose shot in Somersetshire, which had been reported as the Lesser White-fronted Goose, *Anser erythropus*, Linn., but which was apparently an immature specimen of *Anser albifrons*, Scopoli.

In the absence of the author, a paper by Mr. A. W. Waters, "On some Ovicells of the Cyclostomatous Bryozoa," was read by the Zoological Secretary, Mr. W. Percy Sladen, and after an interesting discussion the meeting adjourned to April 19th.

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#### ZOOLOGICAL SOCIETY OF LONDON.

March 20, 1888.—HENRY SEEBOHM, Esq., F.Z.S., in the chair.

Mr. G. A. Boulanger read a note on the classification of the *Ranidæ*, in which, after speaking of the difficulty hitherto experienced in dividing this large group satisfactorily, he called attention to Peters's discovery that in certain forms a small additional phalanx is present between the ultimate and what is normally the penultimate phalanx. The author therefore proposed to separate the family *Ranidæ* into two groups, according to the presence or absence of this peculiar digital structure.

Mr. G. B. Sowerby gave the description of sixteen new species of Shells, amongst which were two species of the genus *Lima* from Hongkong and Japan: a remarkable species of the rare genus *Malletia* from the Bay of Bengal; a very distinct species of *Cypræa* from Japan; and one of the largest species yet known of the genus *Columbella*.

Mr. F. E. Beddard read some notes on a freshwater Annelid, of which he had obtained specimens from a tank in the Society's Gardens. He referred these specimens to a new species of the genus *Æolosoma*, which he proposed to call *Æ. headleyi*.

Prof. Newton communicated (on behalf of Mr. Scott Barchard Wilson) the description of *Chloridops*, a new generic form of *Fringillidæ*, based on a specimen obtained on the west coast of the island of Hawaii, Sandwich Group, which he proposed to name *Chloridops koua*. Unfortunately the single example yet obtained was of the female sex.—P. L. SCLATER, Secretary.

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## ENTOMOLOGICAL SOCIETY OF LONDON.

April 4, 1888.—Dr. DAVID SHARP, F.L.S., President, in the chair.

The Rev. J. H. Hodson, B.A., of Torquay, Devon; Mr. A. J. Croker, of New Cross, S.E.; Mr. G. C. Griffith, of Cotham, Bristol; and Mr. Albert H. Jones, of Eltham, Kent, were elected Fellows.

Mr. H. Goss exhibited a large number of insects lately received from Baron Ferdinand von Mueller, K.C.M.G., F.R.S., of Melbourne, which had been collected by Mr. Sayer on Mount Obree and the adjoining ranges in New Guinea, during Mr. Cuthbertson's recent expedition there under the direction of the Royal Geographical Society of Australia. The collection comprised about 240 species of Coleoptera, 150 species of Lepidoptera, 48 species of Hemiptera, and a few species of Diptera, Hymenoptera, and Orthoptera. The Lepidoptera included twenty species of butterflies belonging to the genera *Calliplæa*, *Chanapa*, *Hamadryas*, *Melanitis*, *Mycæsis*, *Hypocysta*, *Tenaris*, *Hypolimnas*, *Cyrestis*, *Neptis*, *Acræa*, *Danis*, *Pithicops*, *Appias*, *Ornithoptera*, and *Eurycus*.

Mr. Osbert Salvin, F.R.S., exhibited, and made remarks on, about sixty specimens—no two of which were alike—of a species of butterfly belonging to the genus *Hypolimnas*, all of which had been caught by Mr. Woodford near Suva, Viti-Levu, Fiji, on one patch of Zinnias.

Mr. H. T. Stainton, F.R.S., exhibited, on behalf of Mr. G. C. Bignell, cases of *Thyridopteryx ephemeraformis*, Haworth, collected near Charleston, U.S.A. Mr. Stainton said he hoped Mr. Bignell would not introduce this pest into England.

Mr. W. F. Kirby exhibited, and read notes on, about twenty species of South African dragonflies lately received from Mr. Roland Trimen, F.R.S., of Cape Town. Mr. Kirby said the collection included some new species.

Mr. A. Sich exhibited a bred specimen of a variety of *Plusia gamma*.

Mr. Goss read a letter from Mr. Bignell, correcting a statement made by Mr. Poulton at the March meeting of the Society, to the effect that the variety *Valezina* of the female of *Argynnis paphia* did not occur in Devonshire. Mr. Bignell said that the var. *Valezina* was included in Mr. Reading's 'Catalogue of Devonshire Lepidoptera'; and further that he had himself taken specimens of this variety in Bickleigh Vale, Devon.

Mr. Waterhouse read a paper entitled "Additional Observations on the Tea-bugs (*Helopeltis*) of Java," and exhibited a number of specimens of these insects. He said that the species infesting the Cinchona in Java was supposed to have been introduced from Ceylon in tea, but that he had discovered that the species on the Tea and on Cinchona in Java were distinct, and that both species were distinct from *Helopeltis Antonii* of Ceylon.

Herr Jacoby read a paper entitled "New, or little-known, species of Phytophagous Coleoptera from Africa and Madagascar."

A letter was read from Mr. E. C. Cotes, of the Indian Museum, Calcutta, asking for the assistance of British Entomologists in working out certain groups of Coleoptera, Neuroptera, Orthoptera, Diptera, and Hymenoptera in the Indian Museum. A discussion ensued, in which Mr. M'Lachlan, F.R.S., Dr. Sharp, Mr. Waterhouse, Herr Jacoby, and Mr. Distant took part.—H. Goss, *Hon. Secretary*.

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## NOTICES OF NEW BOOKS.

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*The Geographical Distribution of the family Charadriidæ; or the Plovers, Sandpipers, Snipes, and their Allies.* By HENRY SEEBOHM. 4to, pp. i—xxix, 1—524, with 21 Coloured Plates and numerous woodcuts. London: Sotheran & Co. 1887.

THE subject matter of this important work falls into two divisions, for while the larger share of Mr. Seebohm's energy has been devoted to elucidating the numerous and difficult questions that have from time to time arisen regarding the separation of allied forms, together with their respective geographical ranges, the earlier chapters explain his personal theories. These, while undoubtedly of importance, require, we think, to be received with some amount of caution.

The classification of *Aves* absorbs the first chapter, wherein the author, basing his conclusions on the researches of Sundevall and Huxley, boldly reduces the twenty-six orders proposed by Sclater to no more than five. These five orders are designated (1) *Anseriformes*, embracing Owls, Eagles, Herons, Flamingoes, Ducks, Cormorants, and their allies (1000 species); (2) *Cuculiformes*, viz. Goatsuckers, Cuckoos, Woodpeckers, Parrots, Kingfishers, Hornbills, Rollers, Toucans, Jacamars, Pigeons, and their allies (1900 species); (3) *Passeriformes*, Passerine birds, Hummingbirds, Swifts, and their allies (5980 species); (4) *Charadriiformes*, Penguins, Divers, Grebes, Auks, Gulls, Petrels, Plovers, Snipes, Cranes, Rails, Pheasants, Tinamus, and their allies (1100 species); (5) *Struthioformes*, Ostriches, Cassowaries, Apteryx, and their allies (20); the total number of known species being roughly estimated at 10,000 species.

The order *Charadriiformes* is held to include the *Crypturi* (40 species), *Gallinæ* (310), *Grallæ* (150), *Limicolæ* (280), *Gaviæ* (200), *Procellariidæ* (100), *Impennes* (20). The suborder *Limicolæ* comprises eight families; viz. *Pteroclidæ*, *Turnicidæ*, *Thinocoridæ*, *Dromadidæ*, *Charadriidæ*, *Otidæ*, *Parridæ*, and *Chionidæ*, the number of *Charadriidæ* being 192 species.

Although the writer's views on classification may not be generally acceptable, it is only fair to remark that his exposition of them affords evidence of a due consideration of those of Parker, Garrod, Forbes, and Newton, references to whose papers are furnished in the text.

The second chapter explains Mr. Seebohm's theory (already broached in 'The Ibis' for 1887),—that the *Charadriidæ* originated on the shores of the Arctic Ocean, exemplifying the laws of Evolution, with special reference to teleological variation. Mr. Romanes' theory of "Physiological Isolation," which is discussed and rejected as untenable in the third chapter, paves the way for Mr. Seebohm's conjectures as to the part played by glacial epochs in the subsequent dispersal of types. As regards the successive "ice ages," Mr. Seebohm admits that their dates are at most a matter of mere "guess-work." In any case his views rest on the calculations of Dr. Croll, which, though received on all hands with respect and deference, have not by any means become generally accepted. Mr. Seebohm's suggestion, that the Polar species were driven south by ice, is at least plausible on its own merits; but we fail to understand his assurance that the primitive type of the *Charadriidæ* acquired migratory habits prior to the earliest of the supposed glacial epochs, *i. e.* without any hypothesis suggesting the necessity or advantage of such migration. In Chapter V. the author dwells upon the extent to which the *Charadriidæ* perform long journeys, pointing out that their *double* annual moult is due to the necessity of repairing feathers which have become abraded by long use and exposure.

Mr. Seebohm's experiences of migration at Heligoland are already well known, nor is any new information on this point added in the present chapter, excepting a neat table of observations on certain *Limicolæ* made by Herr Gätke in 1885, showing that the migration of these birds continues even during the depth of winter.

In Chapter VII. Mr. Seebohm states his opinion that the

*Limicolæ* do not conform to the zoological regions of Selater, but must be placed in three zones, governed by the isotherms. Thus we should have first an *Arctic Region*, the prehistoric home of the race, whither more than a quarter of the known species still migrate to breed during the month of July, when the mean temperature would vary from 60° in the lower latitudes to 40° in the higher ones. Secondly, a *Tropical Region* would supply a temperature of from 90° to 77° during the breeding season. The species included in this region are residents. The *Temperate Zone* would supply a third breeding temperature, varying from 77° to 60°. The respective areas of the regions here suggested are well shown on a map, which affords one of many instances in which the author has been careful to anticipate the requirements of the most exacting reader.

Coming to the body of the work, we find that the *Charadriidæ* comprise the subfamilies *Charadriinæ*, *Totaniinæ*, *Scelopacinæ*. Half-a-dozen genera of *Charadriinæ* are next diagnosed by a "Key"; the first of these, *Ædicnemus*, has the tarsus reticulated, with the central tail-feathers exceeding all others by more than an inch. With something bordering on inconsistency, considering the views previously advanced, Mr. Seebohm proceeds to explain the distribution of the species in the Palæarctic, Oriental, Ethiopian, and Neotropical Regions, adding a Key to the species, which deals with their external characters; and here we may remark that a most important feature of the book appears in the pains taken to facilitate the identification of species.

We note with some surprise that the large form of the Ringed Plover breeding in Great Britain is raised by Mr. Seebohm to the questionable position of an insular subspecies, while it is laid down as almost certain that the Eastern and American Golden Plovers are "conspecific," though the American bird is slightly the larger form, varying in length of wing from 6·8 to 7·5, as compared with 6·0 to 6·7. The innermost secondaries of the Nearctic bird are supposed to be relatively shorter than those of *C. fulvus*; "what appear to be intermediate forms, however, occur on the Pacific coast of Asia." Mr. Seebohm points out that the American Golden Plover is identical in both habits and changes of plumage with its Asiatic ally," from which, as he finally concludes, it can only be separated with great difficulty.

We regret to see a repetition of the myth first promulgated

in his work on 'British Birds,' to the effect that the Dunlin breeds on the mountains of the Lake district—a statement which has been already contradicted on good authority.

Among the species included in the European avifauna, but hitherto unrecorded from any British locality, are the Terek Sandpiper (considered by our author, in spite of its recurved bill, to be an arctic form of the Common Sandpiper); the Mediterranean Curlew (*tenuirostris*), distinguishable by its short tarsus, striated crown, and pure white axillaries, and breeding as far north as 50° in Russia; and the Marsh Sandpiper (*stagnatilis*), appropriately named by Jerdon the Little Greenshank, which has been obtained at Heligoland.

The rarer species described include the Asiatic Erman's Sandpiper (of which only half-a-dozen specimens are extant), and the still rarer Magellanic Plover, *Charadrius sociabilis*. This last was discovered in the Straits of Magellan nearly fifty years ago, but the type preserved in the Paris Museum, with another obtained for the British Museum at the same time, remained unique until 1886, when Mr. John Young fell in with a flock of five or six, and secured one of them, on a rocky point in Tova harbour, on the coast of Patagonia, in lat. 45° South.

Another curious species is the Wry-billed Plover of New Zealand, of which Mr. Harting gave so full an account in 'The Ibis' for 1869. This bird is remarkable for the fact that the bill invariably curves considerably to the right—a peculiarity which we are assured is quite perceptible even in the downy young.

Apropos of New Zealand, another fact of interest chronicled from that colony is that many of the museums in New Zealand possess apparent hybrids between the Black Oystercatcher (*unicolor*) and the Pied (*longirostris*), which intermediate forms are supposed to be unfertile.

The beautifully coloured plates (twenty-one in number) by Keulemans, and the numerous woodcuts which adorn the volume, add materially to its utility and value.

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# THE ZOOLOGIST.

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## THE FINWHALE FISHERY OFF THE LAPLAND COAST.

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

THE Finwhaling off the Lapland coasts during 1887 produced one hundred whales less than the total of the previous year. There was a diminution of two in the number of companies engaged in the last season's fishery, and seven vessels. The number of whales per vessel, therefore, was greater (by two and a fraction each) last season than in the previous year.

I have to thank several of the Managers for again sending me returns of their doings, and Capt. G. Sørensen (late Manager of the Haabet Company, now Harbour-master at Vardö) for a list of the numbers killed by most of the Companies; but I was prevented (by a somewhat severe accident) from visiting any of the factories last year, and there are consequently some unavoidable gaps in the returns. These gaps I have ventured to fill up, in the list at the end of this paper, by guess-work, so as to endeavour to arrive at the approximate number of each species obtained. These guesses are distinguished by the use of Roman figures, so that no one is bound to accept them who considers this too imaginative a method of arriving at statistics. I think, however, that the totals so obtained must be accurate enough to allow of the deduction that the take of Blue and Common Rorquals numbered little over two-thirds, and that of Humpbacks not much over one-third of the totals in 1886, while the number of Rudolphi's Rorquals killed was nearly six times the total of 1886.

Nearly half the total of this last-named, however, were obtained by Capt. Bull, off West Finmarken, who captured the extraordinary number of 110, and at the same time obtained the largest number of Blue Whales of any of the companies. The other companies caught an average of seven Rudolphi's Rorquals apiece. As Captain Horn at Jeretiki obtained three, and the easternmost of the Norwegian boats caught just the average number, this species evidently extended itself very generally along the whole coast at least to beyond the Russian frontier.

The whalers always run their passage northwards, "inden-skjærs,"—that is, inside the fringe of outlying islands,—and consequently if they happen to cross West Fjord in the dark, or in rough weather, they frequently see no whales until they are to the eastward of the North Cape, or even throughout the passage.

Capt. Horn first saw whales—Common Rorquals and Humpbacks—on his outward passage, on March 22nd, from the Nordkyn eastwards. Capt. Aloff (of the 'Nimrod') reports that he saw no whales on his outward passage until after they had passed Tanafjord, on April 4th, and then "only very occasionally, but they were probably much farther out to sea."

Capt. Berg, of Syltefjord, who reached his factory on March 26th, observed no whales on his passage north. Two days later he started on his first trip after whales, and captured a Common Rorqual. He found several of that species, as well as Humpbacks, all along the coast from Nordkyn to the eastwards of Vardö, about eight (? English) miles off shore. The latter species soon disappeared, but the Finwhales continued their stay up to the middle of May, mostly close in shore, or in the Fjords. In the Syltefjord they were often seen in large numbers, even inside the village, which is inhabited during the cod-fishing season only. This was especially the case from the 20th to the 30th of April, at the same time as very good catches of cod were being made in the Fjord.

During the fishing season no whales may be hunted within three English miles of the land, but the weather being occasionally pretty good, some stragglers would frequently be found taking an airing outside the boundary, where the whalers speedily pounced down upon them, and succeeded in capturing several. The Capelan (Norw. Lodde = *Mallotus arcticus*) were plentiful off the

Finmarken coast in the month of April; they no doubt were the attraction both to the Cod and the Common Rorquals.

Capt. Aloff (of the Laurvig Co.) writes:—"During the first half of April, many Common Finners remained under the Norwegian coast, from Baadsfjord to beyond Vardö; and during the last eight days of April and the first (few) in May, under the Murman coast as well. During the first half of July many Common Finners were seen off the North Cape, some of them of small size. More Blue Whales were seen congregated, this year, between Tana and the Nordkyn, than during the last couple of years."

About the middle of May the whales disappeared, and Capt Berg did not see a single individual again, until June 21st, when he shot a Rudolphi's Rorqual, about thirty miles north of North Cape.

During the last few days of June there was a great number of Common Finners about thirty or forty miles to the north-east of North Cape, where most of the whalers killed a few. Capt. Berg meanwhile caught two Blue Whales and one Common Finner off the Syltefjord. At the beginning of July there was a shoal of Blue Whales off the Nordkyn, where some were captured. With the exception of the two above-mentioned shoals or schools, Capt. Berg did not notice any number of whales together during the summer; they were generally found in twos and threes.

Blue Whales were rather scarce this season along the East Finmarken coast. Capt. Berg captured one as early as the 10th of May, but this was quite a straggler, and few, if any, others were seen before the middle of June. Vessels bringing out coal from England reported large schools of Blue Whales in July, from the Lofoten Islands up to the North Cape, about forty or fifty miles off shore. There was also a good number of Blue Whales about the same time round Söröen, and to the eastward of Kildin Island on the Murman coast.

Capt. Bull, of Söröen (West Finmarken) also mentions the great number of whales reported by the sailing vessels coming from England, between the Lofotens and the coast of the province of Nordland, but calls them Common Rorquals. Hardly any seamen besides whalers know the different species of whale by sight, but while both kinds may have been present, the latter at

least seems likely to have been there, for as Capt. Bull suggests, their presence may have been connected with the quantity of herrings observed and caught during the same time, from Bodö up to Lödingen.

Capt. Bull reports that from the latter half of June, through July, a number of Rudolphi's Rorquals were seen round Loppen Island, and in Sörö Sound, also by Skjærvö in Kvenangen Fjord, right up to Reisen. A reference to the list at the end of this paper will show that he captured the astonishing number of 110 of this species! Capt. Berg says that in July they were sometimes seen in small numbers to the eastward of the North Cape; the average take of this species for the companies of which I have returns—omitting Capt. Bull's—being about  $4\frac{2}{3}$  per vessel. Of course the fact must not be lost sight of, that these smaller whales are not hunted when bigger game is to be found.

Capt. Bull captured his last Rudolphi, and his last whale for the season, on August 12th; his first Rudolphi was obtained on May 21st. Of the two remaining species, his first Common Rorqual was killed on April 16th, and his last on August 6th; his first Humpback—his first whale for the season—on March 28th, and his last on August 7th.

Capt. Bull sends me an interesting note, in addition to the above, of which the following is a translation:—"In West Finmarken Common Rorquals generally come under the coast in the month of July, at the same time that Rudolphi's Rorquals usually leave the coast. This year, on the contrary, the Rudolphi's were under the land right up to the middle of August, and in July the Blue Whales came under the land, while, meantime, the Common Finners only presented themselves to the extent of a couple of individuals." In former seasons Capt. Bull, in his West Finmarken cruising-grounds, only obtained two or three examples of the Blue Whale each year, but between the 8th and 29th July last he captured no less than seventeen of these leviathans. The above he considers as a (further) proof that Blue Whales and Rudolphi's live on the same kind of "kril" (= *Thysanopoda inermis*).

HUMPBCKS.—Capt. Horn obtained—Males: March 31st, 42 Norw. ft.; April 2nd, 44 ft. Females: April 3rd, 36 ft.; May 22nd, 28 ft.; June 21st, 45 ft. (containing male foetus 1 ft. 1 in. long); July 15th, 44 ft. (containing female foetus 1 ft. 1 in. long); 27th, 37 ft.; and 31st, 41 ft. (the last whale of the season).

Average, two males, 43 N. ft.; six females, 39 N. ft. This sole return for last season concerning this species gives a somewhat unusual result—namely, that the females were more numerous, and smaller, than the males.\*

BLUE WHALES. — Captain Berg (Syltefjord) obtained the following:—Males: May 10th, 77 Norw. ft.; June 28th, 74 ft.; July 26th, 82 ft.—that is, 85½ English feet!† Females: June 27th, 78 ft.; July 20th, 75 ft.; August 7th, 69 ft.: average, three males, 77⅔ ft.; three females, 74 Norw. ft. Capt. Berntsen (Busse Sund, Vardö) only measured a few examples of the different species, and these only approximately, but records of the present species, males, 78 and 75 ft.; female, 70 Norw. ft. Capt. Horn (Murman coast) obtained as follows:—Males: June, 72, 72, 80 ft.; July, 76, 77, 76 ft. Females: June, 80, 68 ft.; July, 76 (killed 7th, contained male foetus 4 ft. 11 in. long.), 68, 77 (killed 10th, contained male foetus 10 ft. 5 in. long), 71, 77, 80 Norw. ft. (much milk, and extremely fat): average, six males, 75½ ft.; eight females, 74⅔ Norw. ft.

COMMON RORQUAL.—Capt. Berg—Males: March 28th, 56 ft., 30th, 61 ft.; April, 72, 67, 64, 56, 66 ft.; May 13th, 58 ft.; July, 62, 62, 58, 61, 66 ft. Females: March 29th, 68½ ft.; April, 69, 69 ft. (killed on 16th, containing foetus 2 ft. 3 in. long), 59, 63, 64 ft.; May 3rd, 61 ft. (containing foetus 2 ft. 4 in. long.); June 29th, 57 ft.; July, 66 ft. (killed on 6th, containing foetus 1 ft. 8 in. long), 62 ft.: average, thirteen males, 62¼ ft.; ten females, 63¾ Norw. ft. Capt. Berntsen—Males, roughly measured, 70, 66, 67, 67 ft.; females, ditto, 68, 66, 65, 68, 70, 67, 58 ft.: average, four males, 67½ ft.; seven females, 66 Norw. ft. Capt. Horn—Males: March 30th, 64 ft.; April, 65, 56, 64 ft.; (“Herring-whale” var.), 53; 56 ft.; (“Hybrid” var.), 68; 58 ft.; (“Hybrid” var.), 62 ft.; (ditto), 63 ft.; (ditto), 62 ft.; 61, 65 ft.; May, 58, 61; (“Hybrid” var.), 62 ft.; (ditto), 59 ft.; (ditto), 60 ft.; (ditto), 61 ft.; (ditto), 66 ft.; 55, 51, 52 ft. Females: April (“Hybrid” var.), 71 ft.; 58 ft.; May (“Hybrid” var.), 65 ft. (killed on 2nd, containing male foetus 2 ft. 11 in. long.); (ditto, var.), 71 ft.; (ditto), 65 ft.; (ditto), 53 ft.; (ditto), 64 ft.; (ditto), 66 ft.; (ditto), 64 ft.; (ditto),

\* See ‘Zoologist,’ 1887, p. 213.

† For two larger, see Capt. Horn’s list for the year before ‘Zoologist,’ 1887, p. 213.

67 ft. ; (ditto), 64 ft. ; 56 ft. (killed on 21st—last of the season) : average, twenty-three males, 60 ft. 1 in. ; twelve females,  $63\frac{2}{3}$  ft. The so-called “hybrids” (=“Bastarder”) average nearly 5 ft. longer than those of the normal type, in spite of the two smallest specimens of this species being included under the former variety.

With respect to the variation in individuals of this species, Capt. Aloff (of the Laurvig Co.) remarks:—“The Common Rorquals captured have varied with respect to colour, build (especially as regards the tail), the size and fashion of the back-fin, but must all be reckoned as included in the common species.” (Translated.)

RUDOLPHI'S RORQUALS. — Capt. Berg killed—Males: June 21st, 44 ft. ; July, 41, 45, 45 ft. Females: July 30th, 46 ft. (containing fœtus 4 ft. 10 in. long) ; August 11th, 48 ft. (his last whale of the season): average, four males,  $43\frac{3}{4}$  ; and two females, 47 Norw. ft. Capt. Horn obtained, males, July 5th, 42 and 45 Norw. ft., and a female, on July 9th, 44 ft. Capt. Berntzen measured three males 45 Norw. ft. each; females, 45, 36, 46, 44 ft. : average of the latter,  $42\frac{3}{4}$  Norw. ft.

Prof. Collett (of Christiania), writing to me some time since, called attention to my doubtful identification of Dolphins in ‘The Zoologist,’ 1887, p. 209, as *D. tursio*, which he says is not known to occur so far north. I did not attempt to do more than doubtfully refer them to this species, but they appeared to me to correspond closely to the description and figures of *D. tursio* (especially Prof. Flower’s beautiful figure, Trans. Zool. Soc. xi. pl. i.), and not to *D. delphis*, or any other species of the genus. Prof. Flower (*op. cit.* p. 5) says “it probably has a more northern range than *D. delphis*.”

In last year’s report the loss of the ‘Vardöhus’ was briefly mentioned (this was the ship a cruise in which I described in ‘The Zoologist’ for 1884) ; further details of this sad catastrophe are as follows:—The ‘Vardöhus’ left Sandefjord about noon on March 22nd, 1887, bound to Finmarken, and had about forty-eight men on board.\* When night fell the wind was blowing fresh from the S.E., and it was very dark, with snow-drifts. About midnight

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\* This number includes the “flensers,” &c., who remain ashore during the whaling season, at the factory.

the Oxö light was seen, as supposed, and the course shaped more westerly to pass the 'Ryvingen' at a proper distance; but about 1 a.m. Mathias Andersen, the harpooner, who was on the look-out, had just reported some suspicious breakers to the pilot and captain on the bridge, when the vessel struck on a rock. Mathias immediately ran to the whale-boat, but he found so many men already there, that he turned to the 'Pram' on the other side, cut it down from the davits, and jumped into it, followed by one sailor. The 'Pram' drifted off from the steamer, nearly full of water, and with no oars in it. The two men thought they saw the big boat smash alongside the vessel; very soon afterwards a scream was heard from the crew, the steam-whistle ceased, and the 'Vardöhus' had sunk. Mathias says that all this passed so quickly that he has only an imperfect recollection of the details. With the assistance of the other man he baled the boat with his hat, and tore a piece of board from the 'Pram,' which helped them to keep it clear of the breakers, and eventually they managed to get into smooth water, and about 6 a.m. they landed near Mandal. The pilot was an old and experienced man, and the accident can only be attributed to strong currents, and possibly an error of the compass. The ship was subsequently raised by divers, who found her lying in eight fathoms water, about four miles to the eastward of Ryvingen. Most of the bodies were recovered and buried at Mandal, and a subscription was got up for the widows (about twenty-eight) and the numerous children, who were left in the poorest circumstances.

Referring to the Table on the next page, I have already (p. 201) explained the use of the Roman figures for some of the items; the new names of Managers are in *italics*. The whole yield of oil, judging by the returns now printed, would be nearly 23,500 petroleum-casksful of all qualities; this at 42 gallons to a cask, would give about 987,000 gallons, which is equal to about 3945 tons. Capt. Castberg, in addition, obtained 4100 sacks of guano; the Haabet Co., 3400; and Capt. Bull, 3400. I do not know the amounts at the other guano factories.

## LIST OF WHALES KILLED, 1887.

COMPANY.	MANAGER.	PORT OF REGISTER.	WHALENS.	BLUE WHALES.	COMMON BORGALS.	RUDOLPH'S BORGALS.	HUMPBACKS.	TOTAL.	PETROLEUM CASKS OIL, ALL QUALITIES.
<i>Murmanski Coast</i> :—									
Yeretiki .....	P. A. Horn ...	Petersburg...	2	14	35	3	8	60	2100
<i>East Finmarken</i> :—									
Kobholmjord .....	Fredriksen ...	Sandefjord...	2	2	13	8	2	25	628
Stokke, Pasvig .....	A. Ellevsen ...	Tønsberg ...	2	11	39	6	1	57	1835
Jarfjord .....	Evensen .....	Do. ....	2	3	31	8	1	43	1270
Do., Madvig .....	Do. ....	? .....	1	2	12	6	1	21	470
Do., Tamasjok .....	C. Bruun .....	Tønsberg ...	1	3	12	5	1	21	470
Busse Sund—Christiania Co.	Chr. Castberg	Christiania...	2	iv	xxxiv	viii	ii	c. 48	1800
Do., Laurvig Co. ....	A. Berntsen ...	Laurvig .....	2	5	20	15	2	42	937
Do., "Thekla" .....	I. Bryde .....	Sandefjord...	1	6	27	6	1	40	1160
Do., Bugten .....	A. Grøn .....	Do. ....	1	5	25	5	2	37	1020
Do., "Haabet" ..	Chr. Sørensen	Do. ....	1	—	3	4	—	7	680
Do., Skjærsmæs .....	H. Ellevsen ...	Tønsberg ...	2	3	42	10	5	60	1586
Syltefjord, Dahl's Exors. ...	L. Berg .....	Do. ....	1	6	23	6	—	35	1200
Do., Bergen Co. ....	M. A. Seliken	Bergen .....	1	2	6	4	1	13	400
Baadsfjord .....	Foden .....	Arendal .....	2	1	5	9	1	16	300
Mehavn .....	S. Foyen .....	Tønsberg ...	2	iv	xxxiv	viii	ii	48	—
<i>West Finmarken</i> :—									
Bøle, on Sørøen .....	Do. ....	Do. ....	2	xii	liii	xii	ii	79	—
Sørvær, do. ....	M. C. Bull .....	Do. ....	2	17	10	110	4	141	2600
Tutjord .....	T. H. Andresen	Do. ....	2	vi	xxvii	vi	i	c. 40	—
Tromsø .....	J. Gjæver .....	Tromsø .....	1	ii	xii	vi	i	21	—
			32	108	463	245	38	854	.

## THE ART OF TRAINING PIGEONS IN THE EAST.

(Continued from p. 174.)

[In our last number we transcribed the curious remarks on this subject, written by the Sheikh Abul Fazl, the minister and friend of Akbar the Great, in 1590, illustrating the mode of keeping Pigeons in Persia at that date. We now give a translation of the hitherto unpublished commentary on this treatise by Alla-ooden, of Loharoo, one of the best authorities on the subject in India, and written by him at the request of Sir Charles Aitcheson, Lieut.-Governor of the Punjab.]

*Kabutar-bazi*, or, as it is also called, *'Ishqbazi*, signifies the art of playing or gaming with Pigeons, which comprises also their training, breeding, witnessing their play or feats of strength, making them lay their eggs and bring up their young ones, and making them fly in the air for amusement. *Urana* and *Larana* are two different things. The one means simply their soaring high in the air; the other implies their mingling together in the air, and not fighting or wrestling, as it would literally seem to denote. When the birds are taught to fly away and return at command, it is called *Kabutar-bazi*. If they simply take a few turns in the air (which in Hindi is termed *Tawa Karna*), and neither meet nor mingle with their kind, it is simply *Kabutar-bazi*; but if they do so with any other set of Pigeons belonging to some other *Kabutar-baz* in the neighbourhood, it is called *Larai*. They are also taught to leave their *Tah* (or keeper's place), and sally forth in a straight line to a certain distance, as their keeper may desire, returning with a rush when called; and this is called the flying or sallying (*lumbi*) of the Pigeons. If they encounter other Pigeons in the air, and do not mingle with them, but, in order to avoid them, rise a little higher, it is called *Bhagna*. Any number of Pigeons flying together is called *Sath*, and the most excellent flight consists in their sallying forth as near to the ground as possible, nay even so low that their wings almost touch the surface of the earth, while in their return from the goal they must rise high in the air, so as to render the sight admirable. In rushing out they should rise in a group, and, when called, come back direct in a straight line, fluttering all the way in the air. This stately evolution is called *Keza atcha far hai*. Both their egress and ingress should be as graceful as those of a *Tulyer*, especially when rushing in to the *Tah* for grain.

In my opinion it is right that they should fly as near to the ground on their departure, for it enables them to keep their breath the whole way, and not lose wind in returning. If they break down in going out they must necessarily stop short on the way, and fall a victim to hawks or falcons. They return flying high in the air, because it enables them to espy and mark their resting-place from afar, as well as to exhibit their feats to all who look at them. They are also thereby enabled to escape other Pigeons of the neighbourhood, which might screen them from view. One object in making them fly is to display their strength of wing, but in reality the wisdom of this diversion is that flying makes them light-hearted and cheerful, and hence swift in flight. As Nizami says, "A merry bird flies swift." Of all birds whose flesh it is not unlawful to eat, the flesh of the Pigeon is the most palatable. Air makes it easy of digestion. When the flesh loses its density the stomach easily receives it.

Now let us see what kind of *Kabutar-bazi* was that of Akbar the Great. It was, I say, this same *Kabutar-bazi*; but the officious courtiers, in order to prevent criticism, described this diversion of their Emperor's in a coloured garb. Abul Fazl says that the Emperor called his fondness for these birds '*Ishqbazi*'; in other words, '*Ishqbazi*' was the name given by the Emperor to his rearing Pigeons. It may be asked, however, why *Kabutar-bazi* was called '*Ishqbazi*': the answer is that *Ishq* literally means "fondness," and *Ishq Hakiki* signifies a true love of knowing God; hence the Emperor's fondness for Pigeons was distinguished by this lofty epithet, which in a way conveys an idea of his love of God. Abul Fazl says that a story, which to other kings and great men serves only as a lullaby, lays open to Akbar's mind the beauties of imagination. Accordingly, this taste of his for taming Pigeons enables him to entrap even wild birds in the snares of his affection, so that, inspired by the Emperor's affection, these birds learn to love and associate with each other, and become as obedient to men as if they were of the same kind with them. Hence great credit to the Emperor, who rendered animals so sociable.

Abul Fazl says that when Pigeons were flown, and tumbled in the air, Akbar, like a theosophist, used to fall into a state of ecstasy. Theosophists, when in a state of ecstasy, are generally so engrossed with their contemplations, and indifferent to all

worldly manners and customs, as to roll and dance about; and Akbar used to witness the feats of his Pigeons with no other object in view than to derive therefrom the pleasures of theosophy. He considered their turnings in the air in the same light as those of fortune, *i. e.*, their rising and falling in the air, their turning from one side to the other, and other feats of strength reminded him of the revolutions of time and the vicissitudes of life. A Pigeon's wheeling round in the air is called *Tava Karna*, and its turning head over heels is termed *Bazi*, which is an attribute of a Kabuli Pigeon, which, without any aid of instruction, naturally performs a few *Bazi* in the air, and is hence sometimes called 'Tumbler.\* Abul Fazl says that the Emperor gave his chief attention to this diversion, and these birds have ever since been held in high esteem. The kings of Persia and Turkestan sent many as presents to the Emperor Akbar, and merchants also brought numerous *saths* or lots from distant countries. I say that several kinds hitherto generally known have derived their names from the places they came from, as Basri, Mukhi (vulgarly called Mukhi), Sherazi, Nesapuri (generally called Nisavra). When Nesapur fell into the hands of the Arabs they called it Nesaboor, and the Hindoos corrupted the term into Nesavra.

Abul Fazl says that Akbar took to this diversion when he was very young, and when he grew up in years and understanding he renounced and gave up the pursuit for some time; but when reason dawned he resumed, with ardour and eagerness, his favourite diversion of Pigeon-flying, and, having procured a skilful *Sabz* Pigeon from Khan Azam Kokultash, put him at the head of all Pigeons, and gave him the name of *Mohna*, so highly celebrated in the world. *Sabz* Pigeon evidently means a Pigeon with greenish-coloured feathers, but at the present day it comprises the following kinds, *Sabza*, *Nila*, *Bhura*, *Kheira*, *Bulra*, *Ghagra*, *Nufta*, &c. It would be inaccurate, however, to call *Sabz Jogya* a *Sabya*, for its proper name is *Rangeen*. *Balra Kheira* is also *Sabya*, provided it is not *Tira*, which has some white feathers in the tail. If it has no white feathers in the tail it is surely *Sabya*.

Syad Kokultash Khan, from whom the celebrated Pigeon

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\* The turnings of his Pigeons reminded the Emperor of the ups and downs of fortune, and elicited his praise of the Almighty.

*Mohna* was obtained, was a surdar of high rank in the service of the Emperor. He was murdered by Adham in 970 A. H., and was buried in the marble burial-ground at Nizam-uddin. *Do Khun Shood* is the Persian phrase, from which the year of his death may be derived. His murderer was executed by order of the Emperor. From this *Mohna*, a cock bird, some young ones were obtained, called *Ashki*, *Parizad*, *Almas*, *Shah-Oodi*, &c. These are not the names of colours, but of the young ones, and, since it is not known what sort of hen was the mother of them, it may be concluded that they were of the same kind with *Mohna*, viz., *Sabya*, and were only so called familiarly.

Abul Fazl says that the offspring of these Pigeons became known far and wide throughout the world, and the fame of their strength of wing, their graceful flight, their swiftness, and their being so highly tractable, soon eclipsed the high-flown accounts of Umar Sheikh Mirza's and Sultan Hosen Mirza's Pigeon-flying.\*

The old methods of taming and training Pigeons were no longer in vogue, and the Emperor and his *Kabutar-baz* invented new ones, which were so good that the Pigeon-keepers of Persia and Turan were all astonished, and at last followed and adopted the same plan. From this it appears to me that at that time this diversion was little known in India, otherwise India would have been mentioned along with Iran and Turan. The date of its introduction, development, and perfection was perhaps that of the Emperor Akbar. Abul Fazl states that in former times, both in Iran and Turan, they used to pair cock and hen Pigeons of the same race and colour, and their young ones were of the same kind accordingly; but the Emperor Akbar adopted a new plan, and took young ones from Pigeons of different breeds and colours. A new and handsome breed was thus originated, and the fame of the Emperor's ingenuity soon spread through the world. It is said that when a cock bird is placed with a hen of a different kind, after being kept together for five or six days,

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\* I understand Umar Sheikh Mirza was the son of Sultan Abu Said Mirza, grandson of Sultan Mahomed Mirza, and great-grandson of Meeran Shah, the son of Ameer Taimur Gorkan. He was father of Babir Badshah, and the Ruler of Farghana, in Turkestan. Ameerzada Sultan Hosen, a descendant of Ameer Taimur Gorkan, was the prince who attacked and defeated Sultan Kbalil Mirza at Samarkund after the year 800 A. H.

they become so familiarised that if they are ever separated they easily recognise each other. Abul Fazl says that after being kept together the hen lays her eggs between the eighth and twelfth days, but if young, or sickly, she takes a longer time to lay. In the *Mahr* month they are put together, and in *Farvardin* they are separated.\*

Abul Fazl says that from *Mohna* and his descendants were obtained *Karnama*. This word literally means *records*, but to me it seems to imply that the young ones descended from *Mohna* were the best of their kind, and so true and faithful that wherever they were sent, there they arrived and returned directly. *Mohna* is a Hindi word, meaning to charm or fascinate some one; hence the name of this beautiful pigeon, whose elegant form and good qualities so readily captivated the mind. I am of opinion that a Pigeon of twelve months old is not capable of laying eggs, but one of two years old is generally selected for the purpose. Three years of age is the flower of a Pigeon's life. Young and sickly Pigeons take twenty days before laying eggs [after pairing]; but, as a general rule, no less than a fortnight is required, even though the Pigeons be strong and in good health. In India the birds are paired at the end of *Ausoj*, and separated in *Besakh*. For six months—*i. e.* from April till August—they live apart; for if they are allowed to live together, the eggs they lay, and the young ones they bring up, are considered weak. Besides this the weather between April and August being hot and rainy, the cock birds, if allowed to remain with the hens, become weak and exhausted. That is also the time of their *cooriez*, which to poor birds is like a disease, and their laying eggs while in ill health is sure to produce weakly young ones.

Abul Fazl says that they lay from one to two eggs at a time; but I say that, by means of certain medicines administered to both sexes, they are made to lay two eggs regularly every time.

Abul Fazl says that the cock bird sits on the eggs in the daytime, and the hen bird at night, to give warmth. I say that this sitting on the eggs is called *seina*, and while thus sitting they never turn sideways; in other words, they keep their neck

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\* *Mahr-mah* corresponds with October and November, the time when winter sets in, called also *Fasl-i-Kharif*, and corresponding with the Hindi months of *Koonar* and *Asoj*. *Farvardin* is the spring season, *viz.*, March and April, or *Bisakh* and *Jeith* of the Hindi calendar.

straight, even when asleep.\* It is now known for certain that the cock bird sits only for five hours on the eggs, while the hen devotes nineteen hours out of the twenty-four to warm and cherish them. If she neglects to sit on the eggs, or fails to impart warmth equally to them, they are sure to be unproductive. If she ceases to sit after five or six days, another hen is engaged, and this substitute is called *daya*, or nurse. When the young ones are hatched the parents do not feed them for want of affection. The nurse feeds them like her own offspring, for Pigeons are not endowed with any discriminative power, and therefore make no distinction between their own and other eggs.

Feeding is called *bharana*, and the Pigeons ceasing to sit on the egg is *zor karana*. A Pigeon leaves its eggs either when it has gone wrong, or when it gets out of time—*i. e.* when the twenty days, or the time for hatching, is past and expired. It is only when there is no hope of hatching that it ceases to tend its eggs.

According to Abul Fazl, twenty or twenty-one days (or three weeks) are generally required for hatching an egg; but if the season be warm, seventeen or eighteen days suffice. I say that the two eggs are never laid in one day, but on alternate days—*i. e.* if one to-day, the second will be laid the day after to-morrow. The same is the case with the young ones. Pigeon-fanciers, however, sometimes remove the first egg, and put it under the Pigeon when the second is laid. This is only done when the young are intended to make their appearance simultaneously. For six days (says Abul Fazl) they are fed on *falah*, but “*falah*” really means *peosi*, or cows’ milk for the first four or five days after calving: it is very thick, and the gentry and nobility abstain from it—only the lower classes use it. As Pigeons have no such thing, I do not exactly understand what the Sheikh means. It is, of course, true that the parents give them grain after having softened it in their own crops, and this soft mixture of grain and water may be called *falah*. Feeding their young ones in this way is called in Hindi *bharana*. Three days after they have swallowed the grain, and before it is digested, they bring it up from their crops and give it to their young. This they continue to do for twenty days. Abul Fazl says that, after a month or so, the young

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\* In the case of birds, sleeping is called *bughlana*.

Pigeons are quite able to pick up grain for themselves, and then they are separated from their parents. I say that in India they are separated after forty days, and this separation in Hindi is called *torana*. If the young ones are intended to be brought up under other Pigeons than their own parents, it can only be done before their first feathers begin to sprout, for should the other Pigeons with whom they are placed discover that they are not their own offspring they are sure to kill them. They will only nourish them under delusion, while mistaking them for their own. In forty days the young ones learn to pick up grain for themselves, and have no difficulty in digesting it. In twenty-four hours they are fed thrice—*viz.*, at 6 a.m., at 12 at noon, and lastly at 6 p.m. A young Pigeon can eat an ounce of grain; a flying Pigeon takes one ounce generally, but one intended to lay is allowed two ounces. Those that are used to fly get a full crop only after they have done their work satisfactorily—*i. e.* after they have been flying in the air for a good while. The pairs receive their food three times a-day.

Abul Fazl states that the young Pigeons of the Emperor were delivered to his Pigeon-keepers, who used to make them bathe in earthen vessels, whereby they increased their strength and became familiar with the place. I say that in India they are kept in narrow-mouthed earthen vessels to shelter them from cold, although this is only in winter, and not at any other season.

According to Abul Fazl, when a young one is three months old, and has gained strength and grown familiar with the place, its food is reduced to a third or fourth part of what it used to get, and as soon as it has got used to hunger, it is made to fly gradually till it can fly forty times a-day, and this is called by Akbar, *bhuree*. Flying once in the air and then coming back he calls *hawa*. I say, however, that flying off, taking a turn, and then coming back wheeling round downwards is called *hawa*. Rising from the nest, perching on a wall, coming back at command, and descending at sight of the grain, is called *bharee*, plural *bharyan*. *Tadyana* is a term applied to the movements on the ground of a young Pigeon, or any other bird not quite grown up. Abul Fazl asserts that the flights or feats of a Pigeon at this stage of life are not trustworthy or reliable. I say that the flight of a young Pigeon is not a *parvaz*, but *bharee* or *tawa*—*i. e.* jumping and making a circular

turn in the air, and then coming back immediately, is at the present time termed *tawa*.

Abul Fazl says that a Pigeon has ten flight-feathers, and that when eight of these drop out, the *Kabutarbaz*, or Pigeon-keeper, ceases to let it fly, and this is called *suladena*. I say that the number of primary feathers in each wing is ten, and in the tail twelve. But two kinds of Pigeons have more than twelve feathers in the tail; *Nisavra* has from thirty-two to forty-two tail-feathers, and *Khal Vilaite*—a very beautiful little Pigeon brought from Persia and Asiatic Turkey—has from sixteen to thirty-two. The colour of a *Kbal* is either yellow, black, red, *kasni*, green or *amiri*—the last colour being a mixture of *kasni* and green. If a *Kbal* has only ten feathers in the tail it is undoubtedly a mongrel. *Shirazi* and *Mukhi* have the same number of feathers as the Indian Pigeons, of which *Laka* is the only kind that has from twenty-four to forty-two. A *Laka* having less than twenty-four is considered degenerate, one or other of the parents being a *Nisavra*. A *Laka* of coloured kind and black, *kasni-sabz*, are very scarce. White *Laka* may be found everywhere. A *Laka* is famous for its strutting movements. It stalks like a champion.

Abul Fazl says that when eight of the ten flight-feathers are moulted the Pigeons are stopped from flying. I say that these ten feathers enable them to fly, and are hence called *shahpur*. They are prevented from flying because otherwise the remaining two feathers will bleed, and become weak through overwork. In Akbar's time [the moult] was called *suladeena*, but now-a-days is called *bithava* and *kureez*, which begins in June and lasts till November. In the summer season the Pigeons are free—*i. e.* they neither let them fly nor make them exercise any feats at all. From May to October they are kept in *koreez*, and from February to April the two large *shahpurs*, called also *kundi-ki-par*, make their appearance. The young Pigeons are taught to fly in the summer, but from July to October they have again to remain in *koreez*, and will only come out with the big ones. Abul Fazl says that within two months they get new feathers and a good deal of strength and renew their flights, and their skilfulness at what is termed *bazi*. As soon as they have learned how to wheel round in the air and perform other feats they are brought before the Emperor; but for the development of these attainments we have to wait four months more. When the Pigeons fly with eagerness,

and return with a flutter it is called *churkh*, but if the evolution is not performed well enough it is called *kataf*, and not *churkh*, and is consequently not reliable. I say that now-a-days *kataf* is called *perch* and *bal warva*, and it is *bazi* when a Pigeon hovers in the air.

The Sheikh (*i. e.* Abul Fazl) says that on one occasion many were of opinion that the Pigeon had made two turns or *bal*, while some of the beholders said that it had remained still in the air. The Emperor thereupon ordered one of its wings to be stained with ink; and when this was done the wing with the black spot appeared to turn. The Sheikh states that sometimes a Pigeon, while turning and revolving in the air, becomes delirious and falls to the ground, and this falling is called *galola*, and is considered a defect or infirmity. I say that the Pigeon which performs a *bazi* high in the air and turns round is *asil*, or well-born, and the *bazi* is called *tund*, which is also a fault. In India the remedy for this is to have the feathers pruned and the bird put into *kureez* (moult); and after this ordeal the bird, through God's omnipotence, will turn out an excellent one, with every accomplishment, flying high and gracefully, making good turns in the air, and performing various feats. The excellence of its flight and skill consists in its making a clear turn in the air, producing a distinct sound with its wings beating against the wind, and not falling to the ground.

The Sheikh says that sometimes a Pigeon, in the midst of its *churkhs*, descends downwards through fear, but soon, recovering its senses ere it touches the ground, again rises in the air. I say that sometimes a Pigeon, in imaginary fear of some bird of prey, like the Lughur or Jughur falcons, Bahri (Peregrine), or Ukab (Eagle), descends downwards to save itself, but discovering its mistake, and that it was only a Kite or some other harmless bird, it immediately stops short, and, ere it reaches the ground, turns back into the air and resumes its flight.

According to Abul Fazl, some of the Emperor's Pigeons were so clever that they used to make fifteen *churkhs* and seventy *bazi*, to the great astonishment of the lookers-on. This is certainly correct. A strong and well-born *Vilaiti* Pigeon in India can perform fifteen *churkhs* in a fixed and limited circuit in the air; but as regards seventy *bazi*, I do not think any kind of Pigeon at the present day can perform so many, the reason perhaps being that the *Kabutar-baz*, or Pigeon-keeper, in India is not acquainted

with the strong medicines and food which those of Persia and Turkestan make use of. This may also be accounted for by the fact that either the Pigeons of the ancient noble race are no longer procurable, or that the climate of this country does not suit them. Abul Fazl says that in ancient times a lot of Pigeons, called a *sath* or *tukri*, consisted only of eleven or twenty-one Pigeons, and that in Akbar's time it consisted of 101 Pigeons. At the present day, however, a *sath* of only eleven or twenty-one Pigeons is absurd and contemptible. Now-a-days a *sath* has no fewer than fifty or one hundred. If the number is less than that it is called a *tukri*, and not *sath*. The native gentry and other *Kabutar-baz* of Delhi and Lucknow have from 100 to 150 in a *sath* designed for *bhagna* work only, and this is the largest number of Pigeons that can safely be kept and flown together without fear of dispersal in the air. But a *sath* intended for *larai*—*i. e.* for meeting and mingling with other Pigeons—may consist of from 150 to 200. These, however, keep close to the ground, and do not fly to any distance; they only fly over and around their *tah* and their keeper's place. Any increase above 150 in a *bhag* flock would result in many being dispersed and perhaps lost. Similarly, in a *larai-ka-sath*, if there are more than 200 birds, many of them are sure to get confused, and would probably lag behind and perch upon the walls and minarets of the neighbouring buildings.

Abul Fazl says that the Emperor's Pigeons fly and make *bazi* at night also. I say that the Pigeons that can fly at night are *Kabuleez* [*i. e.* from Kabul] and *Vilaiti*, which are by far the most sharp-sighted, high-flying, and strong-winged. In the time of the late Akbar Shah II., and also in that of *Bubadur Shah*, the last King of Delhi, a *Kabutar-baz* of Lucknow had a *sath* of nearly 100 Pigeons. Another flock belonging to a certain *Eunveh*, the *Nazir Mahal*, named *Munzoor Ali Khan*, sallied from their *tah*, and proceeding as far as *Agsveri Gate*, nearly a quarter of a mile from their place, made a *fava* there, and the Pigeons of *Meer Baba Ali* (a *Kabutar-baz* of Delhi in the service of the King) encountered them there, intercepted their progress, and brought back seven of the *Eunveh's* Pigeons with them to their keeper's place. This is called *Kabutar-ka-Warlena*. To entice another man's Pigeons to his *tah* in company with his own birds is considered a great credit to a *Kabutar-baz*.

The Pigeons that fly at night have little bells fastened round their feet or ankles. These bells are called *khalkhae*, and have small shot within them to give a jingling sound and indicate the whereabouts of the Pigeon in the air at night, for otherwise the *Kabutar-baz* and the spectators can hardly distinguish in what direction the Pigeon has flown. These pigeon-bells are either of gold, silver, brass, or *morassakar*—*i. e.* set with jewels.

(To be continued.)

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#### ADDITIONS TO THE LIST OF SOMERSETSHIRE BIRDS.

BY THE REV. M. A. MATHEW, M.A.

THE Supplemental List to his 'Birds of Somerset,' sent by Mr. Cecil Smith to the last number of 'The Zoologist,' does not yet include all those species whose capture within the limits of his county has from time to time been recorded. On referring to my notes I am able to add the following ten birds, which will bring the number obtained in Somerset up to 246, counting those which Mr. Smith has already mentioned:—

1. Snowy Owl, *Surnia nyctea*. A very beautiful adult example was trapped on Exmoor in March, 1876, as recorded by me in 'The Zoologist' for 1876, p. 4900.

2. Twite, *Linota flavirostris*. Seen by me several times on sandhills near Weston-super-Mare.

3. Bee-eater, *Merops apiaster*. One obtained many years ago near Bridgwater was in the collection of Mr. Straddling, of Chilton Polden (Zool. 1881, p. 309).

4. Purple Gallinule, *Porphyrio hyacinthinus*. Although the authorities refuse this bird a place in the British list, it has occurred so often in a wild state in all parts of the kingdom as to preclude the idea that all must have been escaped birds, and is as much entitled to be called "British" as any I am now setting down. A very fine example, showing no signs of having been in confinement, was caught by a sheep-dog in a ditch on the farm of Mr. James Burrows of Badgworth, as recorded by me in 'The Zoologist' for 1879, p. 128.

5. Little Crake, *Porzana parva*. Mr. Straddling's collection contained an adult male, which was obtained near Bridgwater (Zool. 1879, p. 128).

6. Collared Pratincole, *Glareola pratincola*. One shot on the Mendip, not far from Weston-super-Mare, was in Mr. Straddling's collection. This bird is now in the possession of Mr. Henry Mathias, of Haverfordwest, in whose house I have seen it. *Vide* 'Yarrell' (4th ed.), vol. iii., p. 234, and Zool. 1881, p. 309.

7. Cream-coloured Courser, *Cursorius gallicus*. In his 'List of the Birds of Devon,' Mr. Brooking Rowe mentions one which had been shot in Somerset, but does not, I believe, give any particulars (Harting's 'Handbook,' p. 133).

8. Black-winged Stilt, *Himantopus candidus*. One, now in the possession of Mr. Henry Mathias of Haverfordwest, was shot near Bridgwater, and was for some time in Mr. Straddling's collection. I remember hearing of this bird so long ago as 1858, from Mr. Wm. Brodrick, at that time residing at Ilfracombe (Zool. 1881, p. 309).

9. Bartram's Sandpiper, *Bartramia longicauda*. A specimen of this American Sandpiper, the earliest, perhaps, obtained in this country, was for a long time unrecognised in the collection of Dr. Woodford, of Taunton, until identified by me. It is now in the county collection of birds at Taunton Castle; it is in almost complete winter dress, and was shot on the bank of the River Parret, now nearly fifty years ago. Recorded by me in 'The Zoologist' for 1877, p. 389. See also 'Yarrell' (4th ed.), vol. iii., p. 441.

10. Night Heron, *Nycticorax griseus*. Mr. Straddling's collection contained one shot near Bridgwater.

The Somerset Rose Pastor shot in the garden of Laverton Rectory, near Frome, is now in my collection. I have notes of another obtained near Axbridge. Sanderlings I have often seen on the sands near Weston-super-Mare.

A complete account of the birds of Somerset, a most interesting county, and most diversified in its physical geography, is still a desideratum. At the time when Mr. Cecil Smith published his useful book he appears to have had little, if any, information respecting the most important districts of his county, *viz.*, the wide expanse of Exmoor Forest to the north-west; the great central turf-moors; and the Mendip plateau to the east. It was a great loss to his work that he possessed no correspondents in these parts of Somerset. The peat-moors in summer time, with their wild growth of sedge and grasses,

suggest great possibilities in the way of aquatic warblers and rallidæ; and the high ground of the Mendip, offering a tempting resting-place for passing migratory birds, must often have been visited by rare and unrecorded species. The Norfolk Plover frequently occurs there, the Mendip being at no great distance from those districts in Wilts where it is still a regular summer migrant.

Since writing the above I have come across the notice of a Woodchat Shrike, *Lanius rutilus*, in the Rev. A. C. Smith's 'Birds of Wilts,' p. 123, which he states is in his collection, and "was killed in the county of Somerset, within a short distance of Bristol."

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## NOTES AND QUERIES.

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### MAMMALIA.

**Wolves nurturing Children.**—I have been much interested by your reprint, in the March number of 'The Zoologist,' of the late General Sir William Sleeman's pamphlet on "Wolves nurturing Children in their Dens." Having myself seen the lad first mentioned in the narrative, and as I think there are those still alive who could endorse what is therein stated about the boy, I take the liberty of addressing you, in the hope that this corroboration may still be procurable through your agency. When I saw this Wolf-nurtured lad I was myself a child, living with my father, the late Colonel Robert Traup, who then commanded the 2nd Oudh Local Infantry Regiment, at Sultanpur, Oudh, and, if my memory serves me aright, the boy was then in the charge of either Major A. P. Orr or Major Douglas Bunbury, both of the King of Oudh's service; I think in that of the former. Major A. P. Orr is still living in London (somewhere about Kensington or Norwood, I think), and Major Douglas Bunbury at Inverness, N.B. Messrs. King & Co., or some of the other India Agents, perhaps know the correct addresses.—NORMAN E. TRAUPE (Mulla-Kuttyoor Tea Estate, "Lockington," Kuttyoor, Kumaon, N.W.P., India).

**Otters and Polecats in Suffolk.**—Referring to Mr. Rope's note under this heading (p. 183), I am afraid he will deem me a very old fogey if I refer him to 'The Zoologist' for 1849, for a note by me on the common occurrence of the Polecat in my old home in those days. Then not a year passed without several being killed, especially in the autumn, when they made their way up from the fen to the high land. True, my notes did not exactly refer to Suffolk, but the parish was only separated from that county

by the Waveney. They had a curious custom of coming every year by the same road, and a trap, unbaited, set in a run under the roots of a certain old oak generally caught one or two each autumn. I remember on one occasion helping to slaughter seven in a barn—two old ones and five nearly full-grown young ones. In fact, they were then and there most annoyingly plentiful. Matters are much altered now; they are not extinct, but decidedly rare. From Roydon and Bressingham, where I knew them formerly, I hear that one is never seen now. The gamekeeper nearest to me says they have killed three or four during the last ten years, but adds that when his father, some twenty years ago, was keeper at Saham in central Norfolk, they used to get a dozen or more every year. I have seen their tracks in the snow not many years ago, and now I hear that there was one this winter within two hundred yards of my house, and this is pretty nearly all I can hear of them. Scarce but not extinct. They are very easy to trap, and make themselves most obnoxious wherever they are, clearing off whole broods of turkeys or emptying a dovecote, so farmers as well as gamekeepers are in arms against them, and will soon exterminate them. I have just learnt from my daughter (May 11th) that a few days ago she saw the bodies of two Polecats on the keeper's gallows at Woodrising, in central Norfolk. As to Otters, I think they are about as common as they used to be—that is, much commoner than is supposed. They are nocturnal, and seldom seen, nor, except where Trout are preserved, is it anybody's business to disturb them, and not one person in a hundred knows an Otter's "seal" when they see it. Then they have all the marshes and wet carrs as breeding-grounds. They are notoriously difficult to hold in a trap, yet I remember a case in which one was caught in a small steel-fall by the tips of the toes, close to the alder-root where he had his holt, and was content to go in, trap and all, and wait till the keeper came, when a very slight pull would have freed him.—H. T. FRERE (Burston Rectory, Diss).

**The Whiskered Bat in Cheshire.**—In your article on the Whiskered Bat, in 'The Zoologist' for May, you mention (p. 164) a specimen found asleep on a wall at Fernilee, near Whaley Bridge. Mr. C. Oldham, the finder of this specimen, caught another near Fernilee on April 26th, 1886. It was flying about at midday, and he managed to knock it down with his hat. On January 7th, 1888, Mr. Oldham and myself visited the disused copper-mines at Alderley Edge, and found two Whiskered Bats hanging from the roof of the workings. The walls and tops of the tunnels were covered with small flies, together with a number of moths, principally *Scotosia dubitata*. We again visited the mines on March 10th, but could find no bats in the tunnels we had tried before; but on examining one, the entrance to which was almost blocked up, we found one Whiskered and one Long-eared Bat. All were 100 yards or more from the mouth of the tunnels. When first

handled the Whiskered Bat uttered a sharp cry, but the Long-eared Bat was quite silent, and seemed very sleepy until let loose in a room, when they all flew about for fifteen or twenty minutes, finally settling on the cornice. None of them would touch food, though we kept them alive for two or three days. Hoping this information may be of some use to you, I beg leave to correct a printer's error in the name "Fernilee," which is spelt without the *i* on the page above referred to.—T. A. COWARD (Higher Downs, Bowdon, Cheshire).

**Hesperomys versus Mus.**—When I returned to West Cliff, Custer Co., Colorado, last autumn, after an expedition to other parts of the State, I found my house swarming with a species of Mouse, *Hesperomys sonoriensis*, LeConte, which is conspicuous for its somewhat yellowish colour and white feet. During the winter, however, specimens of *Mus musculus* appeared, became more numerous, and finally took the place of the *Hesperomys*, which became extremely rare. It was evidently a case like that of *Mus decumanus* and *rattus*, so familiar to everyone, though it is not very easy to conjecture the precise reason that the presence of the *Mus* should be the cause of the extinction of the *Hesperomys*. Later on, I procured a cat, which has proved fitter than *M. musculus*, and has survived at its expense—but that is easier to understand. Dr. C. Hart Merriam, of the U.S. Department of Agriculture, to whom I submitted the *Hesperomys* for identification, states that it is *sonoriensis* as the nomenclature now stands, but suggests that the name may have to be altered when a revision of the group is undertaken.—T. D. A. COCKERELL (West Cliff, Custer Co., Colorado, U.S.A., April 23rd).

#### BIRDS.

**The late Mr. J. P. Wilmot's Egg Collection.**—The collection of British Birds' Eggs formed by the late Mr. Joseph Pratt Wilmot, and by him bequeathed to his friend the late Mr. G. L. Russell, has lately been presented to the University of Cambridge by Lady Caroline Russell and Mr. Cecil Henry Russell, in memory of the husband of the one and the father of the other. The collection is accompanied by many letters, from correspondents of Mr. Wilmot, and other papers, which will materially aid the compilation of a Catalogue of its contents; but, for the better understanding of these documents, an examination of Mr. Wilmot's own letters is much desired. Accordingly I would ask any one who is in possession of such letters to be so good as to submit them to me. I will promise that they shall be duly returned to the senders. It will be remembered that a considerable proportion of the eggs figured by Mr. Hewitson, especially in the last edition of his well-known work, were drawn from specimens in his friend Mr. Wilmot's collection.—ALFRED NEWTON (Magdalene College, Cambridge, May 8th).

**Moult of the Facial Feathers in the Rook.**—Mr. E. T. Booth is, I believe, the latest authority who has directed attention to this subject, and, in his ‘*Rough Notes on British Birds,*’ vol. i. (Rook), he expresses his opinion that the statement that young Rooks lose the feathers over the base of the beak at the first moult can scarcely be correct, or that there must be not infrequent exceptions. The results of repeated experiments with birds reared from the nest, and of his observation of wild birds, are given as reasons for coming to this conclusion. The following facts support Mr. Booth’s views. In a tame male Rook, reared in 1885, a bare patch on the chin and upper portion of the throat appeared at the first autumn moult, the upper mandible being completely covered until the autumn of 1886, when all but two or three bristles disappeared; in the spring of 1887 the facial aspect of this bird differed in no respect from that of adult wild Rooks. Since he was able to fly the freedom of this bird has been complete, while the abundance of food he has enjoyed would probably rather have advanced than retarded maturity. On March 30th last my brother observed near here a small flock of twelve black-faced Rooks, several of which he heard “caw.” April 1st last, fifteen Rooks with black beaks seen by myself in the same locality, and successfully stalked. These birds, into whose midst I almost walked, might, but for their cries of alarm, have been mistaken for gregarious Crows, as they flew off turning their heads from side to side, as is the manner of Rooks when thoroughly frightened. April 7th last, eleven black-beaked Rooks (with one bare-beaked bird) observed by me through binoculars, and April 26th fifteen or so, both flocks being seen in the same district. Thus there is, or was, a small flock of fifteen Rooks near here whose plumage is immature, and which probably are not breeding-birds. On April 2nd last, a black-beaked Rook was seen by me, feeding on the lawn here with other bare-beaked birds belonging to our home rookery; this or another similar bird has been repeatedly seen by my brother carrying sticks and endeavouring to build, but, so far as we know, unsuccessfully. Lastly, on April 20th, a poisoned Rook was brought to me which had the upper mandible completely feathered, but the lower mandible and skin beneath, with the upper throat and lower part of the lores, bare or nearly so. I have preserved the head of this bird. On dissection it proved to be a male, with testes about the size of Linnets’ eggs; but its plumage lacked the bright blue tinge of the adult Rook, and its stomach was gorged with food, which is also against its having been a breeding-bird. Even admitting that the Rooks mentioned above were late-hatched birds of last year, it seems evident that there must be many exceptions to the generally-accepted statement as to the moult of the Rook’s facial feathers. Figures, relatively so small as those given by Mr. Booth, by Mr. Stevenson (‘*Birds of Norfolk,*’ i. 275), and above, are easily under-estimated, for it should not be overlooked that, in this country,

the great majority of young Rooks are shot soon after they are fledged, while those that escape the ordeal of Rook-shooting naturally fall the easiest victims to farmers who are solicitous for the welfare of their potato- and root-crops. Further, Rooks, except in the nesting-time, are shy and difficult to watch, and the blackness of the beak is so small a characteristic that it may fairly be urged that where one black-faced Rook is seen between January and the end of April, very many escape observation.—C. R. GAWEN (Chetwynd Park, Newport, Salop).

**Nightingale in London.**—Passing through the Green Park, on May 5th, about 2 p.m., with a friend we heard a Nightingale singing away beautifully, in the garden in front of Sydney House, in the thick bushes. I do not know if it is a common occurrence, so send this communication for what it may be worth.—J. C. PRIESTLEY (17, Hertford Street, W.).

**Tame Duck preying on Trout.**—I was standing on a bridge across a brook watching two tame Ducks, just below a small fall, eagerly gazing down into the water and occasionally diving; at last one stayed longer under water than usual, appearing to struggle for something at the bottom, and came up with the head and appendant viscera of a Trout, which could not have belonged to a fish of less than six or seven inches. The head was so large that the Duck could not swallow it, and after it had been trying to do so for five minutes I went away. The body of the fish must have remained under its stone of refuge. Ducks are destructive to spawn, but I never heard of their hunting fish before, and should like to know your experience, or that of your readers on the subject.—E. L. MITFORD (Henfaes, Dolgelly).

**Birds at the Galloper Light-vessel.**—The Galloper light-vessel is a good post of observation. Mr. Thomas Sorrell, formerly in the Trinity Service, and a practical naturalist, says that on one occasion, in the month of November, when the tide of migration was still running strong, the master sent him about seventy Golden-crested Wrens tied together on a string, from which he selected five Firecrests, three of which he still has, and about the identity of which there can be no doubt. Many common birds also fly against this light, and though I have never had anything rarer than a Shore Lark, no doubt good things often occur. I have received sixty-five species of birds, or their wings, from floating-lights and light-houses—a number which might be easily augmented.—J. H. GURNEY, jun. (Keswick Hall, Norwich).

**Firecrest and Grey-headed Wagtail at Brighton.**—A male Firecrest, *Regulus ignicapillus*, was caught here on April 4th, whilst fluttering against the window of a grocer's shop. The shop is in North Street, one of the most crowded thoroughfares of this town. A Grey-headed Wagtail,

*Motacilla flava*, a brightly coloured male, was also caught here, on the Downs, on April 20th. Both have been preserved, and are now in my possession.—F. H. BARCLAY (Brighton).

**Bee-eater in Co. Cork.**—I received the other day a specimen of the Bee-eater, *Merops apiaster*, L., for our collection of Irish birds. It was shot at Whitegate, Co. Cork, during the first week of May. This bird is a very rare visitor to Ireland, having only occurred here about half-a-dozen times.—ROBERT F. SCHARF (Science and Art Museum, Dublin).

**Hoopoe and Turtle Dove in Co. Waterford.**—Some of the immigrant Hoopoes observed in England have found their way over here. On the 15th April one was shot at Seaview, on the coast of this county, and sent to me. I have presented it to the Science and Art Museum, Dublin. Another Hoopoe (evidently the mate of the preceding) has frequently been seen about Seaview and along the neighbouring cliff-tops since. I have requested that it may not be shot. I had previously received the wing of a Hoopoe which had been killed by a cat, close to Seaview, in February or the beginning of March, 1886. The species is a rare visitant to Waterford, Cork, and Kerry. I know of some occurrences in each of these counties. Smith records a Hoopoe killed in Co. Waterford “during the great frost of 1739.” The Turtle Dove, which is rare in Ireland, has in several years been observed at Seaview.—R. J. USSHER (Cappagh, Co. Waterford).

**Starling mimicking other Birds' Notes.**—On May 5th, while resting after climbing to a Kestrel's nest, I heard, as I thought, the note of a Kestrel just behind me, but on turning round I saw that the note was produced by a Starling. The bird then began whistling the ordinary notes of its own species, but soon these were changed for the twitter of the Swallow, then for the call of the Partridge. The reproduction of the different birds' notes was perfect. The Starling was close to me the whole time, so that I could easily see that it was the author. I have many times noticed a Starling imitate the notes of one single other species, but never before heard it “take off” so many birds in such quick succession.—E. W. H. BLAGG (Cheadle, Staffordshire).

**Magpies attacking a weakly Donkey.**—The incident described on p. 184 certainly does not strike me as being “well authenticated.” The donkey, when found dead, had one wound, and one wound only, according to the account given. Now this “old donkey” must have been very different from all other donkeys, if, when he found a hole being made in his spine,—a very painful process one would imagine,—he did not roll on his back or in some other way get rid of the Magpies. It seems incredible that he should allow them to go on pecking *at the same place* till they had killed him. If the donkey had been found to have been wounded in *several* places, the case would have been a stronger one against the Magpies. But

the most reasonable explanation seems to be that the "old" donkey turned out in the snow with a sore back, died a natural death, starvation perhaps hastening its end; and then, but not till then, the Magpies fed upon him, finding the sore on his back the tenderest part to begin upon. The Magpie is certainly a great pilferer, but as nobody actually saw these Magpies kill the donkey, it seems drawing on the imagination a little too far to suppose that they were really guilty of his murder. — E. W. H. BLAGG (Cheadle, Staffordshire).

**Ornithological Notes from Dorsetshire.** — A Hoopoe was shot on April 17th, at Crouch Grange, by the Rev. N. Bond's keeper, who mistook it for a Jay. A boy picked it up soon after with a broken wing, and brought it home, hoping with careful attention to keep it alive, which is possible for a time at least, if it is supplied with suitable food—grubs, worms, beetles, &c. It is not a dainty feeder. It is a pity so handsome and attractive a bird as the Jay should be so hardly dealt with by keepers generally for the occasional theft of an egg, which is only its exceptional food, and to which the whole family of *Corvidæ* is addicted. An adult female Common Buzzard was brought to me for identification on May 1st. It had been killed the previous day in the neighbourhood of Winterton Kingston. A Black-throated Diver was picked up on March 20th, at Wortland, in the Vale of Blackmore, seventeen miles inland, by Mr. Montague Williams Gardner, who, hearing something fall heavily near his house, went out and found the bird lying in a helpless state. He brought it in and gave it every care, but for want of proper food and, besides being probably wounded, it died on the 22nd. About the same time a Gannet found its way to Stourton Candler, also in the Vale of Blackmore, but six miles further inland. The bird was found by Mr. Rice, of New Leog Farm, in one of his fields. Though unable to fly, it had sufficient strength and courage to attack and firmly take hold of his leg. Mr. Rice tells me it was wounded in the legs and feet. Its death-flight must have been a long one. A Pied Flycatcher is now frequenting the Rectory Garden of Corfe Castle, where one was seen some years ago, but was unfortunately killed. This one being alone, there is no chance of our hearing of a brood at Corfe, unless it is accompanied, as in the last instance, by a mate. It is to be hoped this may be the case, and that it has escaped the vigilant eye of Mr. Eustace Barker, to whom I am indebted for the notice of the visit of this rare little bird.— J. C. MANSEL-PLEYDELL (Whatcombe).

**Reported Occurrence of the Lesser White-fronted Goose in Somersetshire.**—With reference to the statement which appeared in the Report of the Proceedings of the Linnean Society on April 5th (p. 195), Mr. F. Crisp, Treasurer to the Society, has received the following communication, which he has forwarded for publication:—"I have great pleasure in sending

you the remains of the Wild Goose shot near here, for inspection at the next meeting of the Linnean Society. I am sorry that I have only the parts enclosed herewith. The particulars of the bird's taking are as follows:—It was seen feeding in some meadows at about two miles from this town, near the village of West Buckland. A farmer either disturbed it, or shot at it, I am not sure which, when it rose and flew away for a mile or so, afterwards returning to the same meadow, where it was then shot by the same farmer's son. This occurred at about the middle of January last, and it was not until a week or ten days afterwards that I heard of the occurrence, and on visiting the farmer found that the bird had been eaten, the parts now preserved being all that remained. These parts I sent to Mr. Cecil Smith, of Lydeard House, near Taunton, and he expressed his opinion in a letter to me that the bird was a specimen of the Lesser White-fronted Goose, in its first year."—W. GYNGELL (14, Fare Street, Wellington, Somerset).

**Lesser White-fronted Goose in Somersetshire.**—As I am responsible for naming the Goose exhibited by Mr. Crisp at the meeting of the Linnean Society on the 5th of April last (referred to on pp. 176, 195), I should like to give as shortly as possible my reasons for so naming the bird. The very small size of the parts sent as compared with the same parts of any other of our wild Grey Geese struck me immediately. Though evidently, from the small extent of white on the forehead, an immature bird, the small size could not be attributed to immaturity; as the bird was shot in January, it would by that time have fully attained the size of an adult. The next point was the shape of the head, the forehead and the ridge of the bill being in the same line (*cf.* Yarrell, ed. 4, vol. iv. p. 263: "Its small size, short straight-ridged bill forming a line with the forehead, on which the white extends beyond the line of the eye"). This certainly applies to the present specimen, for though an immature bird, the position of the white is clearly to be traced on the forehead, and extends directly over the centre of the eye. The bill measures  $1\frac{2}{16}$  in., as against  $2\frac{1}{4}$  in. in *Anser albifrons*; tarsus  $2\frac{1}{4}$  in., as against 2.65 in., not very far from  $2\frac{3}{4}$  in. in *Anser albifrons*; wing from the carpal joint to the end of the second quill, which is rather the longest, 16 in., as against 17 in. in *A. albifrons*. It is of course useless to compare it with *A. segetum* or *A. brachyrhynchus*: the white on the forehead and the colour of the nail of the bill immediately distinguish it from these two, although both of these occasionally show a narrow streak of white over the bill in the winter, but by no means to such an extent as either of the two White-fronted Geese, in both of which, of course, the white is constant. *Anser cinereus* being considerably the largest of all the British Grey Geese, it is unnecessary to compare the measurements of the remains in question with that bird. Of course it is not so easy to judge, from the fragments sent, between two somewhat similar species, as it would have been had the entire skin been sent; but it certainly seems to me, in spite of what was said at

the meeting of the Linnean Society, that the head and bill are in this case sufficient to enable one to form a satisfactory opinion, and that anyone comparing them with the same parts of *A. albifrons* or any of our other wild Grey Geese could scarcely be in doubt as to the species. Since the meeting of the Linnean Society, Mr. Gyngell has again sent the remains to me, and they are now before me, as also are specimens of our other wild Grey Geese, and I see no reason to alter my opinion. As to the matter of escape, that is another question, and I should be glad of further evidence on that point from Mr. Gyngell and the person who shot the bird.—CECIL SMITH (Bishop's Lydeard, Taunton).

**White Wagtail in Norfolk.**—Two male specimens of *Motacilla alba* were obtained near the Golf-ground, Great Yarmouth, on April 24th. At the date of publication of the 4th edition of Yarrell's 'British Birds,' and the new 'List of Norfolk Birds,' by Messrs. J. H. Gurney and T. Southwell (Trans. Norf. & Norwich Nat. Soc.), this species had not been obtained in Norfolk; but, attending a meeting of the above Society to exhibit my specimen on April 24th, it was stated by the President, Mr. J. H. Gurney, that one had since been obtained by Lord Walsingham at Merton.—GEORGE SMITH (Great Yarmouth).

**Pied Flycatcher at Harrogate.**—On May 4th, while rambling through Birk Crag, a well-wooded glen about half-a-mile long by a quarter broad, I was fortunate in seeing no less than five pairs of Pied Flycatchers. They seemed, from their actions, to have settled down in the locality, but probably they were new arrivals, as it was about 5 a.m. when I saw them. There were no less than three pairs together in one little corner. The neighbourhood is pretty well scoured by birds'-nesting youngsters, so I am afraid they will not be left in peace. This bird is very irregular in its occurrence here; in 1886 it was fairly plentiful; last year, although I searched diligently, I could not find a single nest, though I heard of one which had been taken by a school-boy; it was built in a bridge over the Oak Beck, at the end of Birk Crag.—RILEY FORTUNE (Harrogate).

**Pied Flycatcher in Glamorganshire.**—On May 8th, in the grounds adjoining this house, I obtained a male specimen of the Pied Flycatcher (*Muscicapa atricapilla*). This is, to my knowledge, the only authentic occurrence of this Flycatcher in Glamorgan. Mr. L. W. Dillwyn, in his 'Fauna and Flora of Swansea' (1848), states that this species "is said in the 'Swansea Guide' to inhabit the neighbourhood"; but he adds, "I much doubt whether it has been seen for at least forty years." On such unsatisfactory evidence, I was loth to (and did not) include it in my List of Glamorganshire Birds, until the occurrence of this specimen places its claim to be included beyond doubt. While writing on this bird, may I point out by way of correction to Mr. Seebohm's statement ('British Birds,'

vol. i., p. 328) that the Pied Flycatcher "has never been recorded from Ireland," that an adult female was shot in County Mayo, by Mr. R. Warren, in April, 1875, and will be found recorded in 'The Zoologist' for 1875, p. 4498.—DIGBY S. W. NICHOLL (The Ham, Cowbridge, Glamorganshire).

**Hawfinch near Harrogate.**—Last year I had a note upon this bird in 'The Zoologist.' Since that appeared, I have discovered that it is much more plentiful than I supposed it to be. Following I give the names of no less than eleven places in the neighbourhood where it occurs regularly. I have no compunction in doing so, because the places where it nests are strictly preserved. The localities are all within eight miles from Harrogate, *viz.*, Studley (the estate of the Marquis of Ripon), Ripley Park, Rudding Park, Pannal, Bishop Thornton, near Brimham, Knaresboro' (two places), Ribston, Staveley, and Boston Spa. In 1885 this bird nested at Axwell Park, near Newcastle-on-Tyne, a place which it frequents regularly.—RILEY FORTUNE (Harrogate).

**Bulwer's Petrel.**—The following remarks by Prof. Newton, recently published in the 'Proceedings of the Zoological Society,' and relating to a specimen of this bird found in Yorkshire, will be read with interest by every ornithologist. On exhibiting the specimen in question, on Nov. 15, 1887, Prof. Newton said:—"Some doubt having, it seems, been expressed as to the occurrence of Bulwer's Petrel in this country, which was announced by Gould in the concluding part of his 'Birds of Europe,' published on the 1st of August, 1837, Mr. William Eagle Clarke, Curator of the Museum of the Philosophical and Literary Society at Leeds, determined to investigate the facts; and as his search for the specimen in question has been successful, I have great pleasure in exhibiting it, on his behalf. I have the greater pleasure in doing this as, but for his perseverance and that of a local naturalist, Mr. James Carter, of Burton House, Masham, the specimen would probably have been for ever lost sight of, whereas we may now hope that it will find a permanently safe abode. Gould's statement was that the specimen having been found dead on the banks of the Ure, near Tanfield, in Yorkshire, on the 8th of May, 1837, was brought to Captain Dalton, of Slenningford, near Ripon, a gentleman, as I learn, who had succeeded to a collection of stuffed birds begun by his father. The father was Colonel Dalton, who, curiously enough, had sent Bewick the specimen of the Common Stormy Petrel (also found dead in that neighbourhood) from which the figure and description in his well-known work was taken (British Birds, ed. 1, ii. pp. 249—251). At the end of last May, Mr. W. E. Clarke applied to Mr. Carter, and the first result of the latter's inquiry was to find that the Dalton collection had been dispersed by sale just a week before. Fortunately all the cases of stuffed birds had been bought by persons living in Ripon; and, having obtained

their names from the auctioneer, Mr. Carter, after many failures and some loss of time, discovered in the possession of Mr. Jacobs, the Head-master of the Choir-School in that city, the case and the specimen in question, labelled '*Procellaria bulwerii*,' which he had bought with others at the Dalton sale. Beyond this fact, however, there was no note or anything to identify the specimen with the object of the search. Mr. Carter thereupon undertook to inquire of the surviving members and connexions of the Dalton family, and, fortunately again, one of the latter, being Mr. George Clarke, of Tanfield House, Bedale, a son-in-law of Captain Dalton, was found, who not only remembered the specimen perfectly well, having seen it 'scores of times,' but produced an old manuscript note he had made on the margin of a 'Bewick' (in which he had been accustomed to record ornithological observations), to the effect that this bird was 'found dead on the Bridge at Tanfield,' and had been given to his father-in-law, who had it 'preserved by the late John Stubbs, of Ripon, fishing-tackle maker and bird-stuffer.' Mr. George Clarke also remembered the owner having several times refused the offer of twenty guineas for the specimen, and after his death had looked in vain for the specimen, which, it appears, had been put away in a lumber-room and wholly forgotten. I think, therefore, that no doubt can be entertained of our having before us the remains of the very bird which was found dead at Tanfield, as recorded by Gould, and that we are much indebted to the gentlemen concerned in hunting out this specimen, which had so long disappeared."

[We understand that the specimen which has been thus rescued from oblivion is now in the possession of Mr. W. Eagle Clarke, and that he intends to deposit it in the Yorkshire Museum.—ED.]

**The Birds'-Nest Islands of the Mergui Archipelago.** — The remarkable group of islands called by the Burmans "Ye-ei-gnet-thaik" (*lit.* sea-birds' nests) is located on the south-east side of Domel Island, one of the largest of the Mergui Archipelago. It is composed of six marble rocks, the highest and largest of which, 1000 feet in altitude, and about one mile in length, is oval-shaped, and rises very abruptly out of a depth of only five fathoms. The islands present a very striking appearance particularly if the weather is hazy, when they are not seen until within five or six miles, for then they gradually loom out through the mist like some huge misshapen monsters that have strayed away from civilization. Their sides are partly clothed with vegetation wherever a break in the limestone has left a cleft in which moisture and dust can lodge. Conspicuous because of its leaning attitudes is a species of tree-fern which grows at any angle, but only above a height of 200 feet from the water. The face of the rocks is reddish, partly from weathering and partly from soil, and where cliffs exist the most beautiful though uncouth stalactites have been formed, showing grotesque and snake-like patterns varying in hue and shape till

one feels as if in some enchanted land. But the great feature of the group is the birds'-nest caverns, which as a rule open into the sea, the entrance being below high-water mark; fortunately I visited them at spring tides, and had plenty of leisure to examine each cavern at low water during two days. At the south end of the largest island stands a "nine-pin" of grey marble 370 feet high, almost separated from the rest. It is hollow, like a huge extinguisher, and the polished light blue and yellow sides of the interior seem to point to its having been hollowed by the swell of the sea, which on entering the cave would probably expend its force vertically, the mouth of the cave being open to the direction of the strongest seas. This sea-stack forms the western point of a nearly circular cove, 360 yards in diameter, which runs back into the island, and the sides of the cove rise steeply though not perpendicularly from it. At the head of the cove is a perpendicular wall of rock over which can just be seen the 1000-foot summit in the distance. At half-tide a tunnel, passable for a canoe, opens under the wall of rock at the head of the cove, but a ship's gig can only enter within an hour of low-water spring tides. This tunnel has a roof covered with large stalactitic knobs except at its narrowest part, where it is apparently scoured smooth by the action of the tidal rush. It is about 250 feet long, and 4 feet deep at low water (the rise and fall of the tide being 16 feet), and is covered with dripping marine life, corallines, small corals, Comatulæ, sponges, and sea-horses. Passing through this submarine passage, one emerges into another circular crater-shaped basin with perpendicular sides. This basin is only open to the sky; caves here and there enter it, some of which may perhaps lead by long tunnels to other basins. Water was running freely into it from the foot of the cliffs in several places as the tide fell, showing that water spaces existed, and strange gurgling sounds as of air taking the place of water could be heard now and again. There were hardly any signs of the place being frequented by man, except here and there the worn ropes of birds'-nest climbers. It was either not the season for the Swallows, or they had deserted the islands, for none were seen. A little reddish guano was noticed in some of the caves. There can be but little traffic through the tunnel by which we entered, for the delicate growth on its sides was hardly injured. On the west side of the northern large island a lofty cavern is connected at half-tide with another nearly circular basin of about the same size as that we have just described, but in this case the basin also opens into the sea on the east side of the island. After contemplating the cliffs that surround these basins, the general circular contour of the ridges of the islands, the undermining action of the sea at the water-line, which causes in some places an overhang of 20 to 25 feet, and the softening of the marble surface of the cavern roofs by moisture, the conviction gradually forces itself on the mind that these circular basins were themselves at one time the floors of huge

caverns; that in days gone by the islands rose far higher, with cavern piled on cavern, and that the work of disintegration by solution and wave-action is slowly going on, pulling down these marble monuments of a giant age. Indeed, here and there a fall of blocks has occurred lately, and as there is no shoal off the base of the slip, the destructive action is probably rapid. A small oyster covers the rocks at the water-line. A handsome Kingfisher was secured and sent to the British Museum. A few Doves and an Eagle or two were the only other birds seen, besides a small bat in the caves. By the position of the nest-seekers' ropes, the Swallows appear to breed only on the roofs of the caves. The islands appeared to be entirely composed of a blue-tinted marble. A vessel could lie alongside them and lower the cut blocks straight into her hold, but it is probably of too poor a quality to be worth shipment.—ALFRED CARPENTER (Commander R.N., Hydrographer to the Admiralty), in 'Nature.'

On the re-appearance of Pallas's Sand Grouse in the British Islands.—Amongst the ornithological events of 1863, the most remarkable was the migration from Tartary and Mongolia into Western Europe of large flocks of Pallas's Sand Grouse (*Syrrhaptes paradoxus*), numbers of which were met with and shot in that year in various parts of the British Islands, but chiefly in the eastern counties of England (*cf.* Newton in 'The Ibis,' 1864, pp. 185—222). It would seem as if the present year were to be signalised by a similar invasion of this very singular bird. For a month past I have been prepared to hear of its arrival in England, for several letters have reached me announcing its arrival in Poland and Prussia. Herr Taczanowski, writing from the Museum at Warsaw on April 26th, reported his having received, on April 24th, a female specimen which had been shot out of a flock, three days previously, in the neighbourhood of Plock, in Poland. On the 25th he received alive a male with a broken wing, which had been procured out of a flock of more than 200 on the banks of the River Pilica; another was received by him from Kouskie, south of Radom; and a pair was purchased about the same time in the Warsaw Market. Dr. Rey, of Leipzig, writing on April 28th to Prof. R. Blasius, of Brunswick, who kindly communicated the information, reported his having received two specimens, which had struck against the telegraph wires at Paunsdorf, fifteen miles east of Leipzig; and Dr. A. B. Meyer, of Dresden, in a letter addressed to the editor of 'Nature,' published on May 17th, gave a list of localities and dates at which examples of this bird had been recently met with on the Continent, commencing with those already announced by M. Taczanowski as obtained on April 21st, and ending with a specimen procured near Leipzig on May 7th. Since the last-mentioned date, Herr Möschler has reported one picked up dead under telegraph-wires at Bautzen, and I have received intelligence of the

occurrence in this country of others in small flocks at the following places:—

- May 15. *Hampshire*.—Itchen Stoke, near Winchester; one shot out of a flock of twenty by a gamekeeper of Lord Ashburton.
- „ 17. *Aberdeenshire*.—At Cruden, eight miles S. of Peterhead; one killed by a boy with a stone, out of a large flock.
- „ 18. *Yorkshire* (Holderness).—About thirty seen; twenty in one flock.
- „ 20. *Yorkshire*.—On the coast near Easington; about a dozen; two shot.
- „ „ *Oxfordshire*.—On Harcourt Hill, Bensington; five seen (two shot on 22nd).
- „ „ *Hertfordshire*.—Near Hoddesdon; a flock of forty; two shot. These were very kindly forwarded to me by the owner, Mr. F. M. Campbell, of Rose Hill, Hoddesdon, and were exhibited on May 25th, at a conversazione of the Linnæan Society at Burlington House, where they excited considerable attention and interest.
- „ 21. *Yorkshire*.—Kilnsea; one seen.
- „ 22. *Yorkshire*.—Same place; nearly a dozen.
- „ „ *Nottinghamshire*.—On the Clifton estate; seven seen; two shot.
- „ 24. *Yorkshire*.—Between Easington and Patrington; a flock of thirty.
- „ „ *Yorkshire*.—Burniston, four miles N. of Scarborough; a flock of forty; one shot.
- „ „ *Norfolk*.—Mousehold Heath, near Norwich; a flock of twenty-five seen.
- „ 25. *Yorkshire*.—Near Spurn; a flock of thirty seen.

We may doubtless expect to hear of many others. Meantime, the observations above noted may be useful in directing attention to what promises to be a repetition of the extraordinary event of 1863. It is, perhaps, too much to expect that people will refrain altogether from shooting at these distinguished Asiatic visitors, but I would strongly urge upon those who may meet with any flocks not to take too great a toll of them, but to give some pairs at least a chance of nesting here during the present breeding-season, as there is every reason to believe they might do if allowed to remain unmolested in suitable localities. At present I have only to add that as every fact concerning these birds is of interest, a note of their weight may be worth recording. Of a pair shot in Oxfordshire on May 20th (as above mentioned), the male weighed  $10\frac{3}{4}$  oz., the female  $8\frac{3}{4}$  oz.—J. E. HARTING.

**Pallas's Sand Grouse in Holderness.**—During a recent visit to Holderness I had many opportunities of observing in some numbers those interesting birds, the Sand Grouse, *Syrhaptes paradoxus*, which were seen in various parts of the country on or about May 20th. Three which I saw had been recently shot from a flock containing about forty birds. They

were described as being very fearless, allowing a near approach. On the 21st I watched a single bird feeding and walking about the dry sand above high-water mark near Kilnsea. On the 22nd a flock of from half-a-dozen to a dozen passed where I was standing within twenty-five yards, and as I walked on the high-road between Easington and Patrington, on the 24th, a flock of perhaps thirty crossed before me, flying in a northerly direction, having somewhat the appearance between Golden Plovers and Rock Pigeons. When flying, the note uttered was weak, and to me like "kilp, kilp"; when on the ground they had the appearance of Tumbler Pigeons, at a little distance, and had a habit of almost burying themselves in the dry, hot sand, to which their colour so closely assimilates as to render them difficult to be seen. In the case of the solitary bird seen near Kilnsea, when by any chance I lost sight of it, I again discovered its position by the frequent stoops made at it by the Lesser Terns, *Sterna minuta*, which seemed not to like its intrusion near their little colony. On my return to Scarborough, I heard of a flock of about forty being seen near Burniston, four miles north of the town, out of which a female was shot. The crops contained, in most cases, red and white clover-seed, and in the stomach I found, in addition to clover-seed, small fragments of quartz; some of those shot in Holderness contained Indian corn and linseed, supposed to have come ashore from a cargo wrecked near Hornsea.—R. P. HARPER (10, Seamer Road, Scarborough).

**Pallas's Sand Grouse near Norwich.**—On May 24th I had the pleasure of seeing a flock of about twenty-five Sand Grouse. While strolling across Mousehold Heath, within a mile or so of the city, on the afternoon of that day, my attention was drawn to some strange birds flying quickly towards me, in a south-easterly direction. As they passed near enough overhead to enable me to distinguish their pointed tails and the dark patch on the under parts, I at once recognised them as Pallas's Sand Grouse. When first noticed they were flying in a somewhat scattered line, but closed up together a little as they crossed the heath, uttering their peculiar note, and seemed to drop as they disappeared over some rising ground. In the hope of obtaining another sight of them, I followed in the same direction, but saw no more of them, and up to the present (May 26th) have not heard of their being seen again.—E. J. ELDRÉD (Bank House, Castle Meadow, Norwich).

**Redshank breeding near Harrogate.** — These birds have again made their appearance with us. For the last three years two pairs have nested in a marshy field on the outskirts of the town. Last year I found both nests, and I am happy to say the young from both got safely away. This year two pairs (probably the same birds) have again taken up their abode in the same field.—RILEY FORTUNE (Harrogate).

## REPTILES.

On the Geographical Distribution of Reptiles.—It is so seldom we obtain a well-authenticated instance of the fortuitous landing of a reptile on an island, far distant from the continental home of the animal, that the following record of an Alligator arriving by natural causes on the ocean-girt island of Barbados is replete with interest, as it affords an exemplification of how the geographical distribution of reptiles on islands may be brought about. In September, 1886, one of the lighthouse-keepers at Needham Point, Carlisle Bay, Barbados, informed Staff-Sergeant Charles Anderson, whose quarters were near, that there was a strange animal in the sea. Anderson took his rifle and three rounds of ammunition, and went to the beach, and there saw the head of an Alligator protruding from the water outside of the coral-reef, some forty yards from shore. Running into the water, Anderson mounted on a piece of coral-rock, and shot the reptile behind the eye; it lashed the water with its tail, and made for shore; before it reached the land Anderson put a second bullet into its head, and a third, after the reptile landed, killed it. This Alligator measured ten feet in length, and is preserved in the island. It was considered such a curiosity that Sergeant Anderson was given twenty-five dollars for the carcase, and the purchaser realized a considerable profit by its exhibition. On the same day, and within half-a-mile of the spot where the Alligator landed, a large tree came ashore. I am informed by Mr. D. M'Nicol, contractor to the Royal Engineer Department in this island, who purchased the tree, that it measured forty feet in length; the roots and part of the branches were attached to the stem; a section of it now lying in the R.E. Yard measures three feet in thickness. Mr. M'Nicol considers the tree to be the species which is called "silver bolla" in Demerara. On one point he is quite satisfied, namely, that no such tree grows on the island of Barbados. That the reptile was transported on this tree from the South-American continent, probably by the current from the Orinoco river, admits of no doubt. The distance from the mouth of the Orinoco to Barbados is about two hundred and fifty miles, and the chance of the reptile crossing that wide extent of ocean on a tree during the stormy season was very remote, while the accident of its having stranded on the small island of Barbados, the most eastern of the Antilles, is so greatly against the theory of probabilities, that the chances would be impossible to calculate. Still the fact of the animal's transport in safety remains. Supposing, however, a similar instance had occurred prior to the advent of man to Barbados, and the Alligator landing had been a female containing impregnated ova, Alligators might have been found on this little coral island, surrounded on all sides by great ocean depths. The introduction of the formidable Fer-de-lance Snake, *Craspedocephalus lanceolatus*, to the two islands of St. Lucia and Martinique, and its

singular restriction to those islands of the Lesser Antilles, may probably be explained by a similar train of circumstances to that above related.—  
H. W. FEILDEN (Barbados).

## MOLLUSCA.

**Mollusca of Ireland.**—We are glad to see in a recent number of the 'Proceedings of the Royal Irish Academy' (1888, p. 672) a paper by Messrs. J. W. Taylor and W. Denison Roebuck, entitled "Materials towards a Land and Freshwater Molluscan Fauna of Ireland." Although published in January last, it is stated to have been read June 28th, 1886, and probably several additions may now be made to the list of species given. Many of our readers will doubtless regret that this paper has not been printed in a journal more accessible to them.

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 SCIENTIFIC SOCIETIES.
 

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## LINNEAN SOCIETY OF LONDON.

May 3, 1888.—Dr. JOHN ANDERSON, F.R.S., Vice-President, in the chair.

The minutes of the last meeting having been read and confirmed, and donations to the Library announced, a ballot took place, and the following were elected Fellows of the Society:—A. V. Jennings, L. A. Boodle, W. Cash, and A. Henry. The following were elected Foreign Members:—Dr. A. Engler, Prof. T. Fries, Prof. R. Hartig, Dr. E. Warming, and Dr. Anton Dohrn.

The Chairman announced a resolution of the Council to found a Gold Medal, to be called "The Linnean Medal," to be awarded at the forthcoming Anniversary Meeting to a Botanist and Zoologist, and in future years to a Botanist and Zoologist alternately, commencing with a Botanist.

Dr. Francis Day exhibited some specimens of Lochleven and Sea Trout raised at Howietown to illustrate his observation that the markings usually relied upon to distinguish the species are not constant, and therefore, taken alone, of no value for the purpose of identification. He also exhibited specimens of Trout from Otago, New Zealand, descendants of some which had been introduced there, presenting some curious modifications of structure. A discussion followed, in which some interesting remarks were made by Prof. Howes and Mr. Willis Bund.

On behalf of Mr. Miller Christy, the Botanical Secretary, Mr. B. Daydon Jackson, exhibited some specimens of the Bardfield Oxlip, *Primula elatior*, Jacquin, gathered near Dunmow, and occurring only in this part of England (cf. Trans. Essex Field Club, iii. p. 141).

Mr. A. D. Michael read a paper on the life-histories of the Acari,

*Glyciphagus domesticus* and *G. spinipes*. After describing in detail observations and dissections extending over three years, the author concludes that there is a hypopial stage in the life-history of *Glyciphagus*, but far less developed than in *Tyroglyphus*, and not an active stage in the species observed; that it does not occur to all individuals of a species, and it has not been ascertained whether it occurs in all species; that the stage is not the result of dessication, or unfavourable conditions; and that it occupies the period between the penultimate ecdysis and that immediately previous. Dr. C. Stewart having criticised Mr. Michael's researches in favourable terms, a communication was made by Mr. C. B. Clarke on "Root-pressure." He contested the view of A. Sachs (and his followers) that root-pressure is sufficient to sustain the weight of a column of water of the height of 100 (or even 300) feet, and to force out drops at particular points of the leaves. He maintained that it was a mathematical error to apply the equation  $p = g p z$  to the case of water in plants, and that in a collection of cells and longitudinal tubes of varying size (all very small) the only mechanical ideas that could be applied were those of capillary attraction and motion. In the discussion which followed, Prof. Marshall Ward thought root-pressure necessary to explain the admitted results of manometer experiments; Mr. A. W. Bennett, on the other hand, regarded the assumption of a high fluid-tension in the cells of roots to drive moisture to the summits as nothing more than an expression of our ignorance as to what the water does move.

A paper, "On the Ovicells of some Lichenoporaë," having been read by the Zoological Secretary, Mr. W. Percy Sladen, in the absence of the author, Mr. A. W. Waters, the meeting adjourned to May 24th.

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#### ZOOLOGICAL SOCIETY OF LONDON.

April 17, 1888.—Dr. ST. GEORGE MIVART, 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, 1888.

Dr. C. Stewart exhibited a preparation showing the structure and development of the brood-pouch of a Marsupial Tree-Frog, *Nototrema marsupiatum*.

Mr. Boulenger exhibited and made remarks on the type specimen of a new species of Marsupial Tree Frog, *Nototrema fissipes*, recently discovered by Mr. G. A. Ramage, near Pernambuco, in Brazil.

Mr. Herbert Druce read the descriptions of some new species of Heterocera collected by Mr. C. M. Woodford at Suva, Viti Levu, Fiji Islands. The collection had been made during the months of February, March, and April, 1886, and was especially interesting on account of the

exact localities being noted, as well as for the new species it contained. Ninety-four species were represented, eight of which were described by the author as new to science.

A communication was read from Mr. T. D. A. Cockerell, containing some remarks on Atavism, with reference to a paper on the same subject read by Mr. J. Bland Sutton at a previous meeting of the Society.

Prof. G. B. Howes gave an account of the vocal pouch of *Rhinoderma darwini*, and described in detail the mode of its attachment, and the position of the embryos in it. The author controverted the idea of Espada that the alimentary functions were arrested during the development of the embryos in this Batrachian.

Mr. Oldfield Thomas read a paper describing a new genus and species of *Muridæ* obtained by Mr. H. O. Forbes during his recent expedition to New Guinea. The author proposed to call this form, which was characterized by the possession of a prehensile tail, *Chiruromys forbesii*, after its discoverer.

Lieut.-Col. Godwin-Austen read the first of a proposed series of papers on the Land-Mollusca of Burmah. The present communication gave an account of the shells collected by Capt. Spratt, R.A., in Upper Burmah, amongst which were specimens of several new and very interesting species.

A communication was read from Mr. R. Bowdler Sharpe, containing the sixth of his series of notes on the specimens of the Hume collection of birds. The present paper treated of certain species of the genus *Digenea*.

May 1, 1888.—Prof. W. H. FLOWER, C.B., LL.D., F.R.S., President, in the chair.

Colonel Irby exhibited (on behalf of Lord Lilford) a specimen of *Aquila rapax* from Southern Spain, believed to be the first authentic specimen of this species known from the Peninsula.

Prof. Flower exhibited, and made remarks on, a specimen of the Japanese Domestic Fowl, with the tail-feathers enormously elongated, the longest attaining a length of nine feet. The specimen had been presented to the British Museum by Mr. F. D. Parker.

Mr. C. M. Woodford made some general remarks on the Zoology of the Solomon Islands; and read some notes on the nesting-habits of Brenchley's Megapode, which lays its eggs in the sands on the sea-shore of these islands.

Mr. G. A. Boulenger read the description of a new Land Tortoise of the genus *Homopus* from South Africa, based on specimens living in the Society's Gardens, which had been presented to the Society by the Rev. G. H. R. Fisk. The author proposed to name the species *H. femoralis*.

Mr. F. E. Beddard read the second of his series of notes on the visceral anatomy of birds. The present paper treated on the air-sacs in certain diving birds.

Mr. Francis Day read the first of a proposed series of observations on Indian Fishes.—P. L. SCLATER, *Secretary*.

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ENTOMOLOGICAL SOCIETY OF LONDON.

May 2, 1888.—Dr. D. SHARP, F.L.S., President, in the chair.

Major J. W. Yerbury, R.A., of the Army and Navy Club, Pall Mall, S.W.; and Mr. P. W. Mackinnon, of Masuri, Western Himalayas, India, were elected Fellows.

Dr. Philip Brooke Mason exhibited an hermaphrodite specimen of *Saturnia carpini* from Lincoln, and another specimen of the same species with five wings, bred at Tenby.

Herr Jacoby exhibited female specimens of *Chrysomela japana*, collected by Mr. J. H. Leech in Japan, and called attention to a sexual structure in the middle of the abdominal segment.

Mr. Adkin exhibited a variety of *Eubolia bipunctaria*, taken at Box Hill, in July, 1886.

Mr. W. F. Kirby exhibited, for Dr. Livett, a curious discoloured female specimen of *Ornithoptera minos*, Cramer.

Mr. H. Goss exhibited, for Mr. W. Denison-Roebuck, a number of specimens of an exotic species of Bee obtained by the Rev. W. Fowler, of Liversedge, from split logwood. The cells or pouches were very irregular and rough, and altogether unlike those in the "comb" of any known British species of Bee.

Dr. J. W. Ellis read a paper entitled "Remarks on the British specimens of the (so called) *Aphodius melanostictus*, Schmidt"; and exhibited a number of specimens and drawings of this species and of *Aphodius inquinatus*, F. A discussion ensued, in which Dr. P. B. Mason, Dr. Sharp, Mr. Champion took part, and Dr. Ellis replied.

Mr. E. Meyrick communicated a paper "On the Pyralidina of the Hawaiian Islands," the materials for which consisted principally of the collection of Lepidoptera Heterocera formed by the Rev. T. Blackburn during six years' residence in the Hawaiian Islands. Mr. Meyrick pointed out that the exceptional position of these islands renders an accurate knowledge of their fauna a subject of great interest. He stated that of the fifty-six known species of Hawaiian Pyralidina nine had been probably introduced through the agency of man in recent times; but he believed the remaining forty-seven to be wholly endemic: of these the author referred twenty-six species to the *Botyridæ*, twelve to the *Scopariidæ*, four to the *Pterophoridæ*, three to the *Crambidæ*, and two to the *Phycitidæ*. Dr. Sharp, Mr. McLachlan, Dr. Mason, and Mr. E. B. Poulton took part in the discussion which ensued.—H. Goss, *Hon. Secretary*.

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## FIELD NOTES FROM NORTH LINCOLNSHIRE IN THE SPRING OF 1888.

BY JOHN CORDEAUX.

MARCH 12th.—A young dark-faced Puffin, with a small beak, was shown me to-day; it was taken in the surf at Cleethorpes, and the man had it in a basket alive.

March 28th.—Flocks of Lapwing and Golden Plover in the marshes; a few Pied Wagtails about, and many pairs of Meadow Pipits; about a thousand Dunlin on the foreshore. A large hawk, apparently a Peregrine, was feeding on a Stock Dove in a field near the Humber; one half the breast was eaten. On going to the spot the story of the tragedy was made clear: the Dove had been struck in full flight a considerable distance from where it fell, slayer and slain hurled forward together in the hurricane-rush of the fatal stoop, till both had come to the ground. Two long, narrow, and converging lines of small feathers, ripped from the shoulders and neck, led up to the body; the head also was torn from the neck, and some distance apart, severed by the same impact of that terrible hind claw.

April 12th.—Strolling down the "beck" this afternoon I flushed a Green Sandpiper. Saw a Snipe and Water Rail. In a willow-carr were numerous Reed Buntings; one fine old male struck me as unusually light-coloured and a distinct variety.

April 14th.—First Swallow seen, and several between this and the 18th.

April 16th.—S.W., rain. Saw a small flock of Wheatears, three males and three females.

April 19th.—S., heavy showers. Chiffchaff heard, and Willow Wren seen; a great many Wheatears on passage.

April 24th.—N., cold rain. First Redstart; a female and two male Wheatears, all three on a whitethorn hedge. Observed a beautiful variety of the Blackbird, the body rich bronze; wings, except the primaries, which were of the normal colour, a pale silver-grey.

April 26th.—N., very cold. Drove to Croxby Pond, attracted by a report that a strange bird—"a large fish-eating Diver"—had frequented the place since the last week in March. Cautiously approaching from the north side, through the wood, I got out my telescope at the last tree, and proceeded to sweep the water. In the near foreground, amongst dead and broken reeds, was a cock and hen Teal, then a glossy green-headed Mallard and his mate, and beyond these a female Shoveller. Near to the centre of the water was the object of the quest—a Great Northern Diver, in the autumn plumage, the upper parts greyish black, with indistinct ash-coloured markings; throat, front of neck, and other under parts visible, white, with a few dark streaks on the posterior half of the flank. This fine bird was swimming majestically to and fro, sometimes carrying its head for some seconds beneath the water. As long as I was concealed it swam rather high, but on advancing into the open, imperceptibly sank itself, like a torpedo-boat, till little but the dark upper parts were visible. The keeper said he had seen it catch fish, and mournfully expressed regret that the bird's extreme cunning and wariness had thus far baffled him in becoming its executioner. The sea is clearly visible from the hills above Croxby, and no doubt it had been driven in during one of those miniature blizzards from the north-east with much driving snow late in March; lashed with salt spray and blind with the stinging hail, it rose and flew landward, rising higher and still higher as swept forward before the resistless blast, outpacing its own tremendous swiftness; and then, as the storm slackens, it stoops again to the wood-girdled mirror in the lonely hills,—the only dark space visible in the vast solitude of the snow-clad wold,—and there, despite the keeper and his gun, to find for many a day to come, a haven of security and quiet rest. I am pleased to add that, of its own free will, this our interesting visitor has now disappeared altogether from the pond. I saw a considerable number of Teal on the water, or flying restlessly

to and fro, their often repeated spring call-note resembling the creak of a wheelbarrow; this and the monotonous bell-note of the Coots were the sounds which broke the stillness of this quiet spot. The Coots were many, in pairs, sometimes chasing each other with much noisy splashing. The males had the bills and also the frontal plates a delicate pink—the colour of a “Captain Christy” rose; and the Waterhens, dabbling along the reedy margin, had the same parts like red sealing-wax. Two pairs of Carrion Crows slyly watched the pond from the neighbouring wood—a portent of much future ill to the domestic arrangements of the waterfowl. This was quite a red-letter day for an ornithologist, for on my return I saw a Ring Ouzel, and at a sharp angle of our “beck” came upon fifteen little animated lumps of sulphur—the first Yellow Wagtails of the season. They were all males, and together within the space of a few yards, on short green turf, searching as if for something to eat. I examined them very carefully with a binocular, and found one which had entirely a yellow head, the occiput only very slightly marked with olive-green. Later in the afternoon I saw four females and a male, also several Pied Wagtails—these latter in pairs. Perched on a low bush in a meadow was the first Whinchat of the season, and on a row of high trees, the nearest to the coast, a large flight of Fieldfares, chattering and noisy, as if in consultation on their forthcoming passage to Norwegian pine-woods.

April 28th.—Several Redstarts in the hedgerows in the marsh; all are females, which is here invariably the case in the spring migration; the males appear to choose some other route.

April 30th.—S., very warm. This morning the hedgerows swarmed with Willow Wrens, all restless and on the move inland. I do not remember ever having seen so many at one time before, not even in the autumn at the Spurn, when they are moving south. Numerous other small birds have come in during the night—Lesser Whitethroat, Whinchats, Tree Pipits, and large numbers of Swallows. Cuckoo first heard. In a field, where men were ridging for potatoes, were many Yellow Wagtails, and with them a single White Wagtail, *Motacilla alba*—a beautiful well-marked male; two, I have been informed, were obtained near Yarmouth at the same date. I was much struck with the large influx of small migrants seen this morning, and conjecture they had come just in advance of the southerly gale, which, commencing on the

night of the 30th, continued to blow with more or less violence for the three following days. Subsequently a friend living in Grimsby told me he had heard, at midnight on the 29th, the cries of large numbers of birds passing over the town.

May 2nd.—S., gale. Sedge Warbler and Sand Martins first seen, the latter numerous.

May 3rd.—S., strong gale. First appearance of Whimbrel in the marshes.

May 4th.—S., strong. About two thousand Dunlin on the muds, chiefly in summer plumage, with the black abdominal patch very distinct. I was watching these from the bank when a Sheldrake flew into the field of the glass; following the flight of the bird for about a quarter of a mile along the shore, I observed it suddenly slacken, make a half-circle, and drop to about a score of small, plump, dark-looking ducks, which were swimming rather high in the water. I was puzzled at the time to determine the species, as they showed little distinctive colouring, also the water was rough. The males amongst them were clearly distinguishable by having dark heads and necks, and now one and then another of these, from time to time, rolled up a white flank on the top of a wave. They were most expert divers. Again, on the 5th, at the same place, when the water was comparatively smooth, I had them under the glass, and this time had no difficulty in recognizing Tufted Ducks, but I think there was not a mature plumaged bird amongst them. They were in much the same dress as we find the young of the year in the autumn, with individual variations in the stage of change to maturity.

May 5th.—Innumerable Dunlin, some Whimbrel and Curlew, and a few Grey Plover, one in summer plumage. Turtle Dove first heard.

May 8th.—Dunlin still numerous, and many more Grey Plover and Whimbrel. Common Sandpiper on the foreshore.

May 9th.—Walked for some hours across one of the wild commons which remain in North Lincolnshire. I am sorry to say that, since my last visit, cultivation has made sad inroads into what was, not many years ago, one of the most interesting spots in the county, both as regards the fauna and flora. A considerable portion has been torn up by steam, exposing a white blowing-sand, totally unfitted in these times for profitable cultivation; "flashes," or ponds, formerly the haunt of innumerable

wildfowl, have been drained. Still enough remains to make us regret all that has vanished. I saw several Shovellers, chiefly males, on the wing, sufficient to represent eight or nine pairs. Snipe, Redshank, and Lapwings, also numerous Wild Duck and Teal, the two latter with young broods on the "flashes." I also flushed a pair of Dunlin from the heather, belonging to that small, brightly-coloured race, some few of which haunt the banks of the salt-water drains throughout the year. I had not the least doubt, from the anxious manner of the little birds that they had a nest not far off. I have received the eggs from this place, and much rarer finds than even this, amongst the waders, have been made in recent years. Formerly this common was a great resort of the Short-eared Owl, several pair remaining to nest. The Owls have been exterminated by the keepers with their deadly pole-traps—a cruel form of bird-murder which no humane person would tolerate or adopt. I question whether there are now more than a pair or two nesting anywhere in the district. The useful Barn Owl, too, has been ruthlessly destroyed whenever opportunity offered, in this same cruel fashion. Noiselessly across the waste in the twilight, like a fitting phantom, comes the soft-winged Owl, and seeing, as if placed ready to his use, a post of vantage from which he may mark each stealthy movement of the mischievous Field Vole, stays his flight to settle on the treacherous perch; and then during all that long, sad night,—and too often, we fear, through the succeeding day,—with splintered bone protruding through smashed flesh and torn tendon, hangs suspended in supreme agony, gibbeted head downwards, till death puts an end to his sufferings. Well may we ask, Can all the game-preserving in the world justify this ignorant and needless wrong? A pair of Shelldrakes nested on the common in 1887, and at this time eleven adults may be seen on a large pond within a few miles, where they are carefully protected. I found both Stock Doves and Wheatears, in some numbers, using the old deserted, rabbit-burrows. Are these invariably deserted by the rabbits? From the foot-marks at the entrance I suspect both bird and quadruped sometimes use the same hole, or at least enter by the same door. A large colony of Black-headed Gulls have now entirely removed from their old pond, and gone to another further within the common; eggs were numerous, but I did not see any young: they now share

the pond with Shovellers, Mallard, and Teal. I have never heard the Shoveller utter any note or sound when flushed; but my friend Mr. J. Ostler Nicholson, who, from living close to their haunts, has had great experience of their habits, says that the note during the breeding-season is "tuck, tuck," and frequently uttered when they are in flight; he once heard it, out of the breeding-season, when a pair were flushed from a pond in the middle of the day. I also saw three male Pochards on an extensive ballast-pit, in part grown up with alder-bushes, flags, and reeds. Several times during the spring, when passing this place, I have noticed these ducks in pairs, and now, from seeing the drakes alone, it is presumable their mates are sitting on eggs.

May 10th.—S., rain. I saw to-day two couple of Dotterel in an extensive marsh-pasture near the Humber. For thirty years I have generally seen some in this field in May. I drove very close to the birds in a pony carriage; they were wonderfully fearless and tame, running quietly forward, and it was only on trying to decrease the short distance between us that they rose to wing with a low mournful whistle, flew a few yards, and again alighted, sometimes quite motionless, or hoisting one wing like a small sail, or running a few steps would quickly stoop and pick some small object from the grass-roots. Listening to the soft melancholy call-note of the bonny birds recalled scenes very different from their present surroundings, and I had only to close my eyes to picture an alpine waste of grey stones set in tufted moss and dwarf creeping-plants, where long steep slopes of velvet turf and loose shingle sweep down to leagues of heather and white cotton-grass, till the broken muirland becomes blended with the shining waters of a loch, backed by an horizon of snow-patched mountain. Dotterel are certainly not so common as they were thirty or forty years ago, when, I am told, "trips" numbering fifty to one hundred were not exceptional; and I have a note of twenty couple, killed by two guns in one day on the high wolds. This was on their first coming before they pass forward into the marshes, and some years before the passing of the Wild Birds Protection Act.

May 17th.—Spotted Flycatcher first seen. Found a nest of the Lesser Whitethroat with the bird sitting on the eggs, the nest being placed near the summit of a laurel fronting our lawn.

May 18th.—S.E. First Garden Warblers; several heard during

the day. Dunlin and Ringed Plover were scattered all over the foreshore; the latter had much increased during the week. About the usual number of Curlew, Whimbrel, and Grey Plover, also a few Turnstone. This was the day on which Pallas's Sand Grouse, *Syrhaptes paradoxus*, arrived at Flamborough and the Spurn; one, a fine male, was obtained at Irby, six miles S.W. of Grimsby,\* at the same date; and another, also a male, shot from four on Swallow wold, near Caistor, on the 22nd. About seventy were seen in the Spurn district between the 18th and 26th.

May 19th.—S., warm. Saw a second "trip" of Dotterel, numbering ten birds, in the same field as before—a bare sheep-pasture; they were somewhat scattered, but on my driving slowly round, and gradually contracting the distance, they drew together, the outside bird of the group being within easy cast of an ordinary trout-rod from where I sat. Now one and then another would elevate a wing till the point was perpendicular to the body, suggestive of a man stretching his arm above his head; they also gave utterance to some low subdued notes, quite a pretty musical trill, and only audible at a short distance, and altogether distinct from their ordinary flight-call. On the foreshore of the Humber were nearly the same species as yesterday, excluding Whimbrel, and with the addition of some Redshanks. There were three Nightingales singing this evening within a short walk of the house.

May 21st.—E., moderate. Saw the Dotterel once more in their old quarters (but not after this date); and not a wader of any description, even a solitary Dunlin, was to be seen on the two miles of foreshore, where they had been so exceedingly plentiful on the 19th.

May 22nd.—There is a Kestrel sitting in the old nest of a Carrion Crow, placed in a solitary thorn which overhangs a drain in the marsh. The nest is not more than eight feet above the level of the land. A pair nested last year exactly in a similar situation in the same locality.

May 24th.—N., very cold. Dunlin and Ringed Plover in some numbers on the foreshore, and about a dozen Grey Plover in summer plumage.

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\* This, I subsequently found, was one of the three shot from a small flock of five by a boy employed in tenting birds on the wold. I obtained it by the merest accident, the other two having been plucked and eaten.

## ON THE WINTER BREEDING OF THE OTTER.

BY THOMAS SOUTHWELL, F.Z.S.

IN 'The Zoologist' for 1877, p. 172, in reply to some interesting observations, by Mr. A. H. Cocks, on the breeding of the Otter (*tom. cit.* p. 100), you were good enough to insert a note of mine in which I endeavoured to show that, so far at least as the county of Norfolk is concerned, the Otter almost invariably breeds in winter. Eleven years have since elapsed, and as several other instances have come to my knowledge in which I could fix the age of young Otters with certainty within a few days, I should like to supplement my previous remarks with this additional experience. I will not trouble you with details in those cases for which I can personally vouch, but may state that in every instance I have full particulars, and where there was any difficulty in fixing the date of birth with some degree of certainty I have omitted the case altogether. I am quite convinced the vague statement that the Otter produces from three to five young ones in the month of April or May cannot be substantiated, and where young Otters are seen with their parents in the latter month it is more than probable they are three months old. One instance only has come under my own observation in which it could be proved that young ones were produced between the months of February and October.

The first entry in my note-book upon which I can fully rely was made on December 9th, 1851, and since that date I have notes of six litters of young Otters born in January, six in February, one in April, three in October, and seven in December; these I will number one to twenty-three inclusive.

I have also notes of old bitch Otters which were giving suck at the time they were killed, as follows:—One in January, one in February, one in October, and three in November; thus I may say that in twenty-nine instances all, with a single exception, gave birth to, or suckled, young between the months of October and February, both inclusive. Of the April litter there can be no doubt, as the young were found in the lair on April 11th, 1879, and could not have been more than a week old.

Referring once more to Mr. A. H. Cocks's paper (*Zool.* 1877, p. 100), I showed (p. 173) that in at least six out of the ten

instances there adduced, the birth of the young might with certainty be referred to the autumn or winter months. The particulars will be found at p. 173 of the same volume, and these I will number from 24 to 29 inclusive. There were also four other records which I doubtfully referred as follows:— (No. 30\*) November, (31\*) March, (32\*) October, (33\*) May. (Doubtful cases I will mark with an asterisk.) At the same time I mentioned a baby Otter (34) picked up dead on the banks of the river Want, December 15th, 1872; two others (35) killed near Maidenhead, January 10th, 1875; and a third instance (36) at Llechrhwyd, in January, 1875. These were recorded at various dates in the columns of 'Land and Water.'

Again, in 1882, at p. 201 of 'The Zoologist,' is a most instructive paper on the breeding of the Otter, by Mr. Cocks. A female Otter (37), received by him in March, and weighing  $2\frac{3}{4}$  lbs., would be probably not more than three months old, which would place its birthday in the month of December, at the earliest. In two instances female Otters in his possession came into season in the month of August, and a litter (38) was born about October 12th.

I have before remarked that I do not place much reliance upon these instances, as the animals were not in a state of nature; but so far as they go, they tend to support my views. Mr. Cocks's young Otter came into season in the month of August, when ten months old, and the period of gestation being (as he has shown) sixty-one days, a young Otter would probably have her first litter when twelve months old, and it seems not unlikely, as the young ones remain for about nine months with their parent, that this first date of reproduction would govern the period of subsequent births. It would thus follow that in a state of nature, the Otter might be expected to be a winter breeder.

In looking through the pages of 'The Zoologist,' I find several other records of the breeding of the Otter, which may be quoted here. The two instances given at pp. 122 and 172 of the volume for 1879 are already included in my own notes. In the volume for 1877 I find it stated that Mr. E. H. Rodd saw, on December 5th, a very young Otter (39) in Mr. Vingoe's laboratory at Penzance.

In 1885 (p. 168) Mr. M. Browne mentions the capture of an old female Otter and four blind young ones, on the banks of

the river Soar, in "the spring of 1817," also two other young ones at Loughborough in the month of March, 1884, but the circumstances are not sufficiently exact in either instance to be of much service for my purpose. I therefore omit them from my summary.

Again, in the volume for 1886, p. 67, Mr. A. P. Morris records the finding of three newly-born Otters (40) by some sedge-cutters on October 8th, 1884, near Salisbury; also the capture of a young one (41), which he conjectures would be four or five months old, on March 21st, 1885. He adds that on another occasion, in the month of November, three young ones (42) were found in a nest in a faggot-heap and killed, "because they were too young to keep." The same writer states that in the month of October two young males (43\*) were procured, weighing "above 4 lbs." each, and in November two others (44\*), of about the same weight; these, if the weight is correctly given, would probably be about four months old, but the record is indefinite. One more instance of the finding of very young Otters occurs in 'The Zoologist' for 1887. It is there stated that two of these animals (45), newly-born, were found under the floor of a boat-house in Hampshire on August 14th, 1886; but an even earlier instance is reported in 'The Field' for August 7th, 1880, where it is stated that a young Otter (46), evidently newly-born, was found on the banks of the river Cocker on July 26th. On the other hand, I may mention that an equally infantile Otter (47) is stated in 'Land and Water,' December 18th, 1880, to have been found on the banks of the river Dunsup (Yorkshire) on November 17th.

An old marshman at Stalham Fen, who has spent the whole of a long life amongst the haunts of the Otter, assured me that very young Otters are frequently met with in February, and that the old female when heavy with young will leave the trail of her belly as she crosses the snow, and by this they know that the young must be produced very early. This man told me that a litter was once found there of five young ones—the only instance I know of more than four being produced at a birth.

As an example of the absence of exact information with regard to the breeding of this animal in a good observer and sportsman, I may quote Charles St. John, who, in his 'Natural History and Sport in Moray,' upon finding young Otters (48),

“apparently not three weeks old,” on November 17th, thus expresses himself, “I have often fancied that the Otter breeds at various seasons, and not regularly, like most wild animals.” Probably, had he given more attention to this subject, he would have found that the irregularity, although remarkable, was not so great as he seems to have supposed.

On analyzing the above records, I find that of the forty-eight instances mentioned, forty-two may be considered quite reliable, and six must be classed as doubtful. Of the former nine must be referred to the month of January, eight to February, one to April, one to July, two to August, one to September, seven to October, four to November, and nine to December. The six doubtful cases are thus distributed:—March, one; May, one; June, one; July, one; October, one; and November, one. There are forty instances of the birth of young ones between September and February (both inclusive), two of which only are doubtful, and eight between March and August, four of which must be considered doubtful; that is to say, the records are not sufficiently exact for the period of birth to be fixed with certainty.

I have here endeavoured to state as impartially as possible the facts which have come to my knowledge upon this subject, and I believe I am justified in arriving at the conclusion that the Otter breeds in autumn and winter, but more often in winter; and that litters in the spring are very rare, one solitary instance only having come under my own observation, that being in the month of April. I have found reliable statistics very difficult to obtain, the bulk of those recorded being, for some reason or other, too inexact for my purpose; and the twenty-three cases analyzed at the commencement of this paper, which have all more or less come under my personal observation, extend over a period of thirty-seven years, during which time I have notes of the particulars of the occurrence of more than two hundred Otters in Norfolk alone; but of late years I have not kept up my notes very diligently.

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## THE ART OF TRAINING PIGEONS IN THE EAST.

(Concluded from p. 219.)

ABUL FAZL says that the Emperor's Pigeons used to accompany his processions. The *Kahars* carried the pigeon-houses, and the birds sometimes rested in them, or flew overhead and went along in the air with the procession. This is quite correct, and I agree with the Sheikh. At the present day the Pigeons of Bahadur Shah have been seen to accompany his processions, the only difference being that the pigeon-houses were carried on carts, and the Pigeons above kept pace with the procession as far as Eed Gah. Moreover, the King's throne (*hawadar*, or seat), on elephant-back, proceeded under the shadow of these Pigeons; in other words, they formed a sort of canopy over the King's head. When the procession passed through the Lahore Gate of the city, the birds descended downwards and kept fluttering over the King's head, even within the gate, and as soon as the throne had passed out of the gate, they reascended without ever touching the ground all this while.

Abul Fazl states that the Emperor's Pigeons cannot be numbered. There were more than 20,000, nearly 500 of which were celebrated for their skill and cleverness. He adds that in former times the pigeon-keepers used to distinguish these birds by the turn of the feet, or *chak-i-chashm*, or the sides of the beak, and took great pains in doing so; but that the Emperor devised several new marks of distinction whereby all difficulty was removed—*viz.*, the eye, sides of the face, claws, and position of the nostrils.

From the above I understand that before Akbar's time, the *Vilaiti* Pigeons were usually examined and distinguished by the turning of their feet, the cleft of their eyes, and the opening of the nostril. Beyond this the poor simple Vilaitees knew nothing; hence their perplexity at anything that could not be ascertained from these three sources of distinction. The Emperor therefore fixed on several other distinguishing characters—namely, both sides of the eye,—that is, under and above the pupil,—eight claws (which were supposed to indicate what the turning of their feet did in former times), and both sides of the beak. Names also were given to the various breeds, and birds of different kinds

were mated. From the white Pigeons were obtained coloured young ones, and from coloured birds white ones. Different kinds of Pigeons were thus crossed, and the characteristic markings of some were produced in others, to such an extent that the account of these different breeds and their various colours and names filled a large volume.

Abul Fazl says the Emperor recognised ten grades. I say that these grades indicated their order of merit. The Emperor divided all his Pigeons into several grades. Those of the first grade were the very best of their kind, rare, and obtained at great cost. According to Abul Fazl, they were brought in and sold by poor people, who were paid so much for them by the Emperor that they became rich. Those of the second grade were mongrels, or *Doghla*, the word being a corruption of *Doghal*. The Sheikh says that the price of second-grade Pigeons was three rupees per pair; of the third, two and a half; of the fourth, two; of the fifth, one and a half; of the sixth, one; of the seventh, twelve annas; of the eighth, eight annas; and of the ninth and tenth, six annas.\* He states that amongst the Emperor's Pigeons the descendants of *Mohna* held the first rank, all other breeds giving place, amongst which that called *Ashki* was regarded as distinct. Then comes the *Char-zarahi* breed, whose ancestor was one of the *Magasi* Pigeons of Hayi Alli, of Samarcand. I say that these two breeds, *Ashki* and *Char-zarahi*, are quite unknown at the present day, nor does anyone know anything about them. Abul Fazl says that *Oodi* Pigeons have descended from a cross of these two noted breeds. I understand that *Oodi* and *Magasi* birds are

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\* The Sheikh mentions three ashts as the price of the ninth- and tenth-grade Pigeons. I have translated "three ashts" as "six annas," my reason being that *asht* is not a Persian word. There is, indeed, no such word in Persian, except *ashta*, which means "haste," and can have no connection here. Besides this the letter *t* is not in either the Persian or Arabic alphabet, although the soft *t* or *tai* is. The hard *t* is either Hindi or English. Now in Hindi, *asht* means eight, and the Sheikh, who calls the equivalent of eight annas *nirn*,—*i. e.* half a rupee,—meant by three ashts three-eighths of a rupee—*i. e.* three two-anna pieces, or six annas. Since at that time *Bhahsta* was the dialect generally spoken, *asht* was the common name for the then current coin worth two annas; hence the employment of this term by Abul Fazl.

still to be found, chiefly at Cabul. They are obtained by crossing *Kali* and *Atshi-badrang*. *Ooda* or *Oodi* birds are offspring of black *Taoosi* at the present time.

Abul Fazl says that next to these several other *Saths*, or other breeds, were presented to the Emperor. Certain royal Pigeons were of the following colours—*magasi*, *yarahi*, *awiri*, and *zamiri*. The last is a mixture of *zarahi* and *awiri*. I say that this breed is no longer to be found or heard of. Other kinds are *Chini*, *Nafti*, *Shafki*, *Oodi*, *Surmai*, *Kishrnishi*, *Sunali*, *Halvai*, *Jigri*, *Nabati*, *Doghi*, *Vashki*, *Jilani*, *Ruya*, *Nilofari*. The first seven of these are still obtainable, but the remainder are now unknown. The Sheikh says that *Arzak* is a colour between yellow and *Nakhudi*. I say that *Arzak* is a well-known colour between light yellow and bright red. Other colours are *Atshi*, *Shaftalu*, *Gulgaz*, *Zard*, *Kaghyi*, *Yagh*, *Agrai*. *Agrai* is a colour between *Nabati* and *Kishwishi*. *Mohurrahi* and *Kizri* between *Sabz* and *Oodi*. These names were bestowed by the Emperor. I say that *Atshi*, *Shaftalu*, *Yard*, *Kaghzi*, *Yagh*, and *Agrai* are still to be seen at Delhi and Lucknow. *Gulgaz* is no longer heard of. *Gajrai*, most probably corrupted into *Kizri* by the natives, may still be found. The names *Abi Sarmak*, between *Surmai* and *Magasi*, were also bestowed by the Emperor, and the different breeds were *Tarah*, *Kalsar-durn*, *Ghazah*, *Yakrang*, *Halkum Safaid*, *Par Safaid*, *Kullor*, *Gharghar*, *Magh-i-Babri*, *Ala-bur*, *Kalya Sar*, *Mahdurn*, *Toidar*, *Marvarid-sar*, and *Mashala-durn*.

All I can say regarding these colours is mere theory or conjecture, for I have never indulged in such diversion myself, nor have I ever been fond of *Kabutar-bazi*. By *Kulsar* is meant perhaps *Kulsara*; *Dumghanga* is perhaps corrupted into *Dum-gaza*; *Halkum Safeid-par* is *Bamna*—there is also one *Safeid-kulla*; *Ghurghar* is perhaps *Ghagra*; *Magh-i-Babri* is *Magh Babra*; *Alah-bur* is *Alpara*; *Kalya-sar* is beyond my comprehension, but may be *Kalesra*; *Mahdurn Toghdar* is perhaps *Marvarid sar Mashala Durn*.

Abul Fazl says that besides these, there were many other Pigeons whose colours only were mentioned, but through the Emperor's attention to them they became celebrated also for their skill. *Karkara-palak*, *Peyazi-palak*, *Nigari Rekhta-palak*, and several other charming Pigeons, though not able to perform

any feats, still delight many people by their variegated colours. *Koka*, for instance, charms us by its melodious voice. In my opinion, however, *Yahu* is the Pigeon whose voice is indeed charming; but any Pigeon which coos musically is called *Yahu*: they coo every morning like devotees. *Bugha* awakens us at dawn with its sweet notes; it has probably derived its name from the guttural sounds which it produces. Abul Fazl (or, as he was also called, Allami), observes that *Laka* has a very haughty bearing, and moves its tail and neck in an ostentatious manner. But *Alai* (i. e. the writer) says that the *Laka* breed still exists, and really struts very gracefully. Allami remarks that the *Lotan* breed when released becomes agitated, and flutters on the ground like a wounded bird, or one that has been half-sacrificed; sometimes it will begin to flutter if an open hand is struck on the ground before it, and sometimes also when it comes out of its cage and touches the ground with its bill. This kind of Pigeon has a white crest on the head, and as it has a great deal of moisture or humidity in the head it is apt to flutter about as if wounded. This fluttering is of three kinds—viz. *dusti*, *kalami*, and *havai*. If you give it a shake, by grasping its neck between your fingers, it will fall over and flutter, and this is called *dasti*; secondly, if it fall and flutter on your striking it with your finger on the bill it is *kalami*; thirdly, when it falls over, through fright, or even at the flight of a bird overhead, it is called *havai*.

*Khirmi* Pigeons are noted for their flying. Abul Fazl says the male flies so high in the air that it almost disappears from view, but as soon as the female is brought out in a cage and shown, the male at once descends and is soon by her side. In coming down some of these Pigeons descend with one wing contracted and the other expanded, while others have both extended or both pressed closely to their sides. I say that this *Khirmi* Pigeon is not *Kheira*, for this is only the name of a colour, viz., a *Sabz* Pigeon, with a white head, but not spotted. It has, moreover, no such quality as above stated. Hence this *Khirmi* Pigeon is quite different from the *Vilaite* Pigeon. Here in India no one has ever heard of a Pigeon so attached to its mate that it comes down from the air at the sight of it, though all Pigeons are more or less attached to their mates, and will fly down to them from the adjoining walls or houses. They evidently recognise them, and seldom leave them alone when they are about to lay.

*Ratah Pigeon*.—The Sheikh remarks that this breed is well known for letter-carrying, and that both male and female are trained to take letters to distant places. I say that this breed is quite unknown at the present day, nor are any kinds of Pigeons now used to carry letters in India; hence no one knows anything about this *Ratah* bird.

*Nisavri Pigeon*.—Abul Fazl says that these Pigeons fly as high as *Khirmi* Pigeons, and like the latter are often lost sight of, even remaining away for a day or two, and on their return they never miss the way to their nests. A *Parpa* Pigeon, according to Abul Fazl, at once takes the air, and will continue flying by itself. Even *Saths*, or small parties of them, will fly by themselves as if they were but one Pigeon, and many of them impart information. I say, this is a specimen of the flattery and adulation so prevalent in the days of Asiatic monarchs. The fact is that *Nisavras* certainly fly very high, and *Parpa* and *Pamoz* are not unlike them. Some of them are *Sada-pa*, but they are scarce, and not much liked at present. *Parpa* and *Pamoy* (or as they are also called, *Phalpera* and *La-chidar*) are, of course, approved of.

Abul Fazl says that *Shirazi*, *Shustri*, *Kashani*, *Jogyia*, *Rezah Dahan*, *Magsi*, and *Golas*, are all wild and wanderers of the desert, and that people sometimes tame them, and make them familiar with their dwelling-place. They fly off to the forest, and on their return are given salt and water, which makes them bring up all they have eaten in the forest, and this serves in a great measure for their owners' or trainers' livelihood. I say, however, that such is not the case in this country. There is no one in India who adopts such a plan.

Abul Fazl says that a Pigeon seldom lives above thirty years, and that for 100 flying Pigeons 4 seirs of grain is quite enough; for others, 5 seirs; and for those selected for laying,  $7\frac{1}{2}$  seirs will suffice. He says that the flying Pigeons receive pure *arzan*, which probably means *chaina* grain. I say that Indian Pigeons can hardly eat as much. They have no great power of digestion;  $2\frac{1}{2}$  seirs is the largest quantity of grain generally allowed for 100 flying Pigeons. More than this would make them refractory and disobedient. But if not used for flying, 4 seirs of grain would suffice. An equal quantity is given to those selected for laying. In this country *bajra* (a kind of millet) is given them.

Abul Fazl says that except such as are used for flying, all

other Pigeons are fed on a mixture of seven kinds of grain, *viz.*, rice, pulse or *chana*, *moonz*, *china*, *kajar* or *kojar* (a product of the eastern parts of India), *Lahdara* (a produce of Oudh), and millet. Here in India, I say, they receive nothing but *bajra*, though in the eastern provinces and Bengal, they are sometimes fed on *dhan* also.

Abul Fazl states that a great number of the Emperor's servants looked after his Pigeons, and gained an insight into the art of Pigeon-keeping, and he names the most celebrated of them:—

*Kabutar-baz.*—Kul Alli of Bukhara, Hasti of Samarcand, Mulla Yada (son of Mulla Ahmud Chela), Mukbil Khan Chela, Kawga Sandal Chela, Momin Harir, Abdul Latif Bukhari, Rajah Kasin Balkhi, Habib Shahr Sabzi, Sikandar Chela, Maksud Sawarkundi, Rajah Pahlwan Chela, Ira Nund, &c.

The members of this establishment belong to the Military Department, and hold different ranks in the army. A foot-soldier's monthly pay varies from 2 rs. to 48 rs. One of them, Habib Shahr Sabzi, is the same *Kabutar-baz* who resided in *Shaharkash*, or as it is also called, *Shahar Sabz*. He was summoned from Farghana in Turkestan. Mention is made of Habib's coming to India in a letter, which also contains an account of several kinds of *Uranan*, or Flying Pigeons, being received from other countries. All these events occurred in the 9th and 10th centuries. Beyond this nothing is known of Akbar's *Kabutar-bazi*, of which nothing save a dry story survives.

It has neither been, nor can probably be, ascertained when or where this diversion first commenced. In Persia, of course, it can be traced to the time of the *Safavis*; and after the year 800 A.H. it was pretty well known in that country; while in Turkestan, the native gentry, called *Khavanin*, used to indulge in it so early as in the year 700 A.H. Following are the names of some of the gentlemen who were fond of this diversion:—Babir Abu Sayid Mirza, Omar Sheikh Mirza, and Shahrukh Mirza, who traced their descent from Amir Taimar Gorkan.

In India it originated, and was perfected in the time of Akbar the Great. Among the Hindi Rajahs it was rarely indulged in, the reason being that to catch a bird and to keep it hungry, to make it fly and perform other works of labour is opposed to their religious prejudices, and regarded as cruelty, although

feeding them without depriving them of their liberty, is considered an act of humanity, and consistent with their religion.

In a work entitled 'Kasas-ul-Aubeya,' composed by Abdul Wahid, a Muftizada of Bilgran, some time after the year 1240 A.H., I have seen it mentioned that men of the Loot tribe used to indulge in this diversion, but they were visited with the wrath of God, and were destroyed while living in Sodom and Gomorrah in Syria. A detailed account of this tribe is given in the Old Testament, in the book of Genesis, chap. xix., in connection with the Patriarch Loot, and also in Mahomedan, Alkoran Soorah Valzaryat.

Pigeon-keepers, or *Kabutar-baz*, administer various kinds of medicine to their Pigeons when they are taken ill. They also give them certain other drugs to make them lay eggs and bring up good and new kinds of young ones. Good food of all kinds is given them, to make them learn to fly and perform feats of strength with ease and accuracy. This food is not composed of grain, but the very best dishes are prepared with butter, &c., at a great cost, and given them to eat. The pigeon-keepers of Lucknow and Delhi, as well as such of the well-to-do gentlemen as are fond of this diversion, are quite conversant with the different medicines and dishes prepared for their Pigeons. I myself have never indulged in it, for my father never allowed me to take up any such pursuit, hence whatever I know, or whatsoever I have here written, is the result of my own researches on the subject.

Pigeons were used as letter-carriers in Egypt about 800 A. H., when Amir Taimar Gorkan returned from Barsai, after his battle with Bazarged Zaldaram.

I have compiled this treatise in obedience to an order from my kind benefactor and old patron, without any aid, except from the *Ain-i Akbaari*, which I have translated to show what Abul Fazl has said on the subject.

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## NOTES AND QUERIES.

## MAMMALIA.

**Leaping Powers of the Hare.**—While rambling in the winter-time over the snow-covered plains in this region, I have recently interested myself in ascertaining how far, on a level surface, a Hare or Rabbit may leap at each spring, at a time when either of these animals is put to its best speed. Two species of *Lepus* are quite abundant in this vicinity, *viz.*, the Mexican Hare (*L. callotis callotis*), and the Sage Hare, which is really a medium-sized Rabbit (*L. sylvaticus Nuttalli*), while the first-mentioned is a big Hare. It is not uncommon to find here, in certain localities, a stretch of perfectly level prairie extending for a distance of three or four miles, and when this is covered by an even layer of one inch or more of snow, it offers an admirable surface on which to take account of the distance which may separate any two tracks of one of these animals, either one made by a Hare, or one made by one of the Rabbits. On such a prairie as I have just referred to, I have on numerous occasions fired at these animals when they have been running, and at the same time beyond the range of my fowling-piece; such a shot almost invariably has the effect of so alarming the game as to make it run at its very best rate of speed, and upon coming up with the tracks they have left on the snow at such times, I have been surprised at the distances they can clear at each individual leap. Under these conditions I once measured the spaces cleared by an old Mexican Hare, and found the first two equalled 12 ft. apiece, while the third effort was rather more than 13 ft., and I have never known this species to exceed this, although I have tested not a few of them. Of course the Rabbit cannot compete with such magnificent gymnastics as this: it will, however, when thus frightened, make leaps of fully 6 ft.; and on one occasion I measured one on the dead-level prairie, which was rather more than 7 ft. At their common rate of going the Hare rarely clears more than 4 ft. at any single leap, while the Rabbit is satisfied with rather more than 2 ft., and, when quietly feeding about the sage-brush, the tracks made by an individual of either species may actually overlap each other.—R. W. SHUFELDT (Fort Wingate, New Mexico, Dec. 6th, 1887).

[If any of our readers have made similar experiments with English and Scotch Hares we should be glad to receive details for publication.—ED.]

**Hare; number of Young at a Birth.**—My keeper (J. Shave) found a Hare's form last week containing *five* leverets not more than a day old; they were evidently one litter, for they were all of one size. Shave, who has had a long and wide experience, tells me he has never found more than three in any Hare out of the many hundreds he has "paunched," and that

one is the usual number in the case of a young Hare, and two in the case of an old one.—J. C. MANSSEL-PLEYDELL (Whatcombe, Blandford).

**Vespertilio Bechsteinii** and **V. mystacinus** in Hampshire and Staffordshire.—Apropos of the articles on British Bats which have appeared in recent numbers of 'The Zoologist,' I may mention that I took two specimens of *V. Bechsteinii*, in the New Forest, in July, 1886. They were living in a hole made by a Woodpecker; there were several more of them, probably about a dozen altogether. One of these specimens has recently been inspected by Mr. Oldfield Thomas, and identified by him as *V. Bechsteinii*. The New Forest seems to be the only English locality for this Bat, and it has not been recorded from there in recent years. A specimen of *V. mystacinus*, now in my possession, was taken in a cave near here in November last. This is only the second specimen recorded from this county.—E. W. H. BLAGG (Cheadle, Staffordshire).

[Two examples of *V. Bechsteinii*, taken at Preston, near Brighton, are in the possession of Mr. F. Bond.—ED.]

**The Beaver in Norway.**—In a brief account of the Norwegian Fauna, by James Greig (Zoological Curator of the Bergen Museum), published in Giertsen and Halvorsen's 'Norway Illustrated' (4to, Bergen, 1888), it is said of the Beaver that it is now only to be found, in quite a restricted number in Drangedal, in the county of Nedenoes, and also near Kragero.

**Risso's Grampus in the River Crouch.**—Mr. J. A. Laver, of Hockley, Essex, informed me a short time ago that about September 5th, 1887, some workmen in his employ discovered a cetacean stranded on the saltings on the north side of the River Crouch, in this county, a few miles above the spot where Rudolph's Rorqual was captured last year, of which Professor Flower gave a description after its removal to Southend. My informant, although no naturalist, gave so good a description of the animal that I was at once convinced it could be no other than Risso's Grampus, *Grampus griseus*. He told me that it was cut up and boiled for the sake of the oil, of which it produced a considerable quantity; that the skull had been roughly split, and the lower jaw containing seven teeth had also been divided. I at once made application for any remaining portions of the skull and other bones. These were accordingly sent me, and have been examined by Prof. Flower, who has confirmed my identification. My informant describes the specimen to have been 10 ft. 10 in. long; pectoral fins about 20 in. long; seven teeth in lower jaw, shutting into sockets in the upper; back black, with irregular markings (as if from old wounds), lighter below; forehead rounded, more so than appears in the specimen figured in 'The Field,' March 13th, 1886, which he has since seen. He also says this rounded forehead was as full of a clear white oil as is an orange of juice, enabling him to ladle it out. The rest of the oil

produced by the animal was liquid and thinner than any animal-oil he ever saw. He now regrets that from his ignorance of the value of the specimen he allowed it to be destroyed. He describes the lungs as very dark, and so like liver in appearance that he could not distinguish one from the other by colour. The capture of this cetacean occurs so rarely on our coasts (five times only) as to make it worth recording, especially as this is the first specimen which has been found east of the Straits of Dover, and so far north. Without doubt many other cetaceans suffer a similar fate, the popular idea being that all the larger ones are Whales and all the smaller ones Porpoises (although some of them are distinguished by such names as "finners," "bottle-noses," &c.), and that there is only one thing to be done with them, namely, to extract the oil, in ignorance of the fact that entire specimens would often fetch more money for museum purposes than could otherwise be obtained.—HENRY LAVER (Head St., Colchester).

**Swedenborg's Whale.**—At a recent meeting of the Scientific Society of Upsala, Dr. C. Aurivillius read a paper on the skeleton of the so-called Swedenborg Whale (*Eubalena swedenborgii*, Lillj.), discovered last November in the province of Halland, in a layer of marl 50 ft. above the sea. Remains of this species of Whale have only been found once before, *viz.*, early last century, when some parts of one were discovered in the province of Western Gothland, 330 ft. above the sea, and 70 miles inland. It was at first believed that they were the bones of some giant, but it is said that Swedenborg discovered their true nature. The skeleton has been presented to the Upsala Museum.

#### BIRDS.

**The Re-appearance of Pallas's Sand Grouse in the British Islands.**  
—Letters from all parts of the country have reached us, announcing the re-appearance of Pallas's Sand Grouse, generally in small flocks, and several single birds have been picked up dead, having come in contact with telegraph-wires. Prof. Newton reports that he has seen three eggs which agree in all respects with authentic examples of those of Pallas's Sand Grouse, and which were taken in this country on May 20th. It is to be hoped that if any others are discovered they will be left to be hatched, that the fact of the young being reared in this country may be satisfactorily established. We are glad to learn that at a recent meeting of the Norfolk and Norwich Naturalists' Society, Mr. J. H. Gurney, jun., President, in the chair, measures were concerted for the protection of these birds, and letters directed to be addressed to all the principal landowners in the county with that object. In addition to the live specimen sent to the Zoological Gardens from Berwick, on June 2nd, two others from Scotland have been lately presented by the Duke of Argyll. The following letters on the subject reached us too late for insertion with those which appeared in the June number of 'The Zoologist':—

*Scotland.*—As many readers of 'The Zoologist' are doubtless looking for records of the occurrence of this interesting species throughout the country during the past fortnight (May 14th to 28th), I venture to send you the following notes regarding their appearance in this district:—The first intimation I received of their arrival was from a birdstuffer in this city, who, on the forenoon of May 17th, showed me three (a male and two females), which he had that morning received from Dunbar. They had been killed the previous day, out of a flock of about twenty, while feeding in a field on a farm in the neighbourhood. Their crops were full of clover-seeds. At midday I had a note from a friend informing me that a person who had been pigeon-shooting the previous evening at Tyne Estuary had fallen in with a flock of about the same number resting on the sand-hills, and had secured three, two males and a female. Being more anxious to see them alive than dead, I proceeded at once to Dunbar, and was soon on the "links" adjoining Belhaven Sands, where I had the good fortune to meet with first a flock of fourteen, and then with a party of four. The same gunner who obtained the three on the sands the previous day, had got another—a female—this morning (the 17th), and I found a fine male bird lying dead on the "links," where another—also a male—was picked up dead the following day. They were again seen on these "links" on the 20th, but not since, so far as I am aware. Subsequently I received tidings of their appearance in several other localities, *viz.*:—At Oldhamstocks, near Cockburnspath, Berwickshire, where a flock of twenty-four were seen on the 17th, and five (two males and three females) killed. Near the railway-station, Stow, Midlothian, where one (a male) was killed against the telegraph-wires, and picked up quite fresh on the 18th. Pentland Skerries, Orkney, where three (females) were secured out of a flock of twelve on the 17th. In Unst, Shetland, where two (a male and a female) were killed on the 18th. To the west of North Berwick, where a flock of about a dozen were seen by a party of golfers on the 24th; they were flying in a westerly direction, and appeared to have come in from the sea. Between North Berwick and Tyne Estuary, where two males and a female (which I have just seen) were shot, I understand, on the 26th. At the foot of the Pentland Hills, above Balerno, about ten miles west of Edinburgh, where for over half-an-hour on the 26th I watched a flock of fifteen feeding in a field which had been recently sown with oats and grass; they came from the west, and, on taking wing again, proceeded on their eastward (and coastward) course. Near Aberfeldy: one, a female, having been sent to Edinburgh for preservation; near Elie, Fife: one, a male, also sent here for preservation. Lastly, I have just heard that a flock was seen a few days ago on the Carse, between Stirling and Alloa, and two of them shot. Up to the present moment I have handled altogether twenty-five (twelve males and thirteen females), and seen in life thirty-three of these Asiatic

strangers; much valuable information regarding their habits, food, measurements, &c., having thus been obtained from personal observation. I cannot, however, but regret having had to chronicle the deaths of so many, though personally I have not lifted a hand against them. From the state of the ovaries in several I have dissected I do not doubt that they would nest with us if unmolested.—WILLIAM EVANS (18A, Morningside Park, Edinburgh).

I daresay you have seen accounts in the newspapers of flocks of Pallas's Sand Grouse having arrived in Scotland. A few were obtained here (Anstruther, Fifeshire), and I was fortunate enough to obtain a pair of them on May 26th. Apparently they have been in this neighbourhood some time. A few only were got. In the crops of the ones I obtained were a few grains of barley, and a good lot of clover, with other small seeds.—JOHN ROSS (Anstruther, Fifeshire, N.B.) [Communicated by H. W. Marsden.]

*Yorkshire.*—In addition to those reported by me near Burniston (p. 234), I saw two flocks of Sand Grouse on the morning of May 28th near Scarborough, one of about eight, the other of nearly twenty birds. The small flock appeared very wild, and would not allow a nearer approach than eighty yards.—R. P. HARPER (10, Seamer Road, Scarborough).

*Cambridge.*—Several flocks of Sand Grouse were seen in the neighbourhood of Newmarket and Mildenhall between June 10th and 13th. One flock of about twenty, on Newmarket Heath on June 7th, alarmed by the morning gallops of some race-horses, flew up suddenly as the horses passed, and four of them coming in contact with telegraph-wires were killed on the spot.—W. MAYD.

*Norfolk.*—The following particulars of six Sand Grouse shot at Downham, Norfolk, and recorded in the 'Standard' of May 26th, have been sent me in a private letter:—"In reply to yours of the 27th, a Mr. Watson was on his farm shooting rabbits, when about thirteen Sand Grouse came flying past; he shot at the lot, and killed six at one shot, and, finding them very uncommon birds, he brought them to me, being a bird-fancier. I have sent them to Mr. Howlett, of Newmarket, to be stuffed." A local paper, dated May 26th, states that Mr. Howlett has also received another fine specimen, taken at Mildenhall.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

*Suffolk.*—The following are, I believe, unrecorded occurrences of Sand Grouse in Suffolk:—Female, Southwold, about the beginning of June, sent to Mr. Travis, of Bury; male and female, received by me in the flesh from Aldeburgh, June 8th (no particulars given); male, shot at Bradfield St. George, near Bury, June 11th, sent to Mr. Travis, and preserved by me; flock of about thirty seen at Sicklesmere, near Bury, about the same time.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

*Essex.*—These birds have made their appearance in Essex. A flock of about twenty were seen at Barking Side on June 4th, and two were

subsequently shot, which proved to be adult males. I myself came across about a dozen of them in a ploughed field near Blake Hall Station on the Ongar line, Great Eastern Railway, on June 10th.—A. F. GATES (Marsh Gate Lane, Stratford).

My brother, Mr. G. F. Mathew, R.N., informs me of a flock of five having been seen near Harwich towards the end of May.—MURRAY A. MATHEW (Buckland Dinham, Frome, Somerset).

*Kent*.—Will you kindly allow me to place on record in 'The Zoologist' what I have not the least doubt was an occurrence of Pallas's Sand Grouse in this neighbourhood (St. Peter's, Thanet). A bird was first seen on May 30th, and was then feeding on a field of recently-sown spring tares. What first attracted my attention to it was that it did not rise and fly away when I entered the field, as was done by several wild Rock Doves, which were feeding near it. However, it would not allow a very near approach, but ran with considerable speed over the ground with its body close down, and looking almost like a small animal. When at last made to fly, by a dog I had with me, it went at a very rapid pace, and looked much like a Golden Plover, only larger, uttering as it flew a low piping note. On the morning of the following day (May 31st) this bird again made its appearance in the same field, but all attempts to get near it were futile. I must not omit to say that the colour, as seen from a distance, was light greyish brown.—H. S. D. BYRON (Bromstone Farm, St. Peter's, Thanet).

*Hampshire*.—It may interest your readers to know that I saw a pair of Pallas's Sand Grouse (*Syrrhaptes paradoxus*) at a birdstuffer's at Portsmouth on the 31st ultimo, which had been obtained a few days previously on Hayling Island, in Hampshire, just over the Sussex border. They were killed out of a flock of about a dozen on Sinah Common, a district of sand-hills and shingle.—WILLIAM JEFFERY (Ratham, Chichester).

On the evening of May 20th a flock of between thirty and forty Sand Grouse were observed flying across Broxhead Common, between Wolmer and Aldershot. They were flying very fast towards the north-east.

I have lately examined a specimen of Pallas's Sand Grouse, which was picked up in the New Forest on June 2nd, having been killed by flying against the telegraph-wires. It was a female, weighing 8½ ounces, and was in good condition except that its neck, breast, and one wing were much damaged by collision with the wires. Its crop, which was cut to pieces, must have been full of small seeds (some of which I enclose for identification), and some few of the same I found in the gizzard. I counted twenty-seven eggs in the ovary, but they were very minute, the largest not much exceeding in size the head of a pin. Its most remarkable feature, of course, was the structure of the foot, so different to anything I had ever seen before, without a hind toe, the under part forming quite a pad thickly covered with small round warty protuberances, whilst the whole leg and foot

are thickly clothed with short feathers down to the blunt claws. I have not much doubt that the specimen was one of a flock, as I heard that on the 4th or 5th of June, one or more were taken or seen near Bournemouth, and it is very probable that even previous to the 2nd a flock passed near the same place, as the day before the one above mentioned was picked up another, very much damaged and decomposed, was found not fifty yards away. On June 8th a friend of mine saw a flock of strange birds—seventeen in number—flying swiftly in a westerly direction over the River Avon, and as they flew very near to him he saw what he described as “a dark mark across the breast” of each, and, as the birds were uttering a peculiar noise at the time of their passage, I have not much hesitation in referring them to the species in question. I am glad to say I have not heard of a single specimen being shot in this neighbourhood.—G. B. CORBIN (Ringwood, Hants).

*Dorsetshire.*—I am glad to say the recent migration of this bird into England, the third and largest on record, has reached Dorsetshire. Six of these birds were picked up dead, or dying, last week at Stoborough, Wareham, on May 28th, under the telegraph-wires—a proof, if any were needed, that the steppes of Tartary are not yet furnished with this higher stage of civilisation. We may now possibly hear of the invasion extending farther west.—J. C. MANSEL-PLEYDELL (Whatcombe, Blandford).

*Isle of Man.*—On May 22nd some of these birds made their appearance in the Isle of Man. A little flock of eight were seen on that date at the Lhan, and two of them, male and female, were shot. On May 28th one was shot out of a flock of fifteen near Ballaskeg, Maughold. — PHILIP M. C. KERMODE (Ramsey, Isle of Man).

*Cumberland.*—Up to the 10th of June the number of Sand Grouse killed in Cumberland amounted to nineteen, and two, at least, of the hen birds appeared to be incubating.—H. A. MACPHERSON.

*Pembrokeshire.*—On May 28th *Syrrhaptus paradoxus* had reached Pembrokeshire. I have heard from Mr. F. Jeffreys, naturalist, of Haverfordwest, that one (a female) was shot at Ambleston, in the centre of the county, some three miles from Stone Hall, on that date. The number of its companions was not stated.—MURRAY A. MATHEW (Buckland Dinham, Frome, Somerset).

*Gloucestershire.*—On June 2nd five Sand Grouse appeared on the large fields between Ullen Wood Farm and Seven Springs House, a few miles from Cheltenham, and two or three single birds subsequently appeared there. They were seen to fly over a larch plantation, then wheeled and alighted not far from the spot they had risen from. They were described as “of a reddish yellow tint, with dark bars, and wings very pointed.” None were shot, but the description leaves very little doubt that they were correctly identified. Another lot of six or seven birds (or possibly the

same lot) were seen a few days later between Cirencester and Northleach, and from eight to ten miles from Birdlip.—F. DAY (Cheltenham).

*Somersetshire*.—On May 25th one was shot out of a flock of eleven on Steart Island, on the north coast of Somerset, near Bridgwater.—MURRAY A. MATHEW (Buckland Dinham, Frome, Somerset).

In a letter which I received from the Rev. C. G. Anderson, dated 26th May last, he says:—"I had a specimen of (I think) the Sand Grouse brought to me this morning. It was shot last night on the shore at Steart. There were eleven in the flock. I sent it this morning to Petherick to be stuffed." I saw this bird at Petherick's on May 30th. It was then very nicely set up, and was an undoubted specimen of Pallas's Sand Grouse, and I should say a male, although Petherick declared that it was a female by dissection; but I think he must have been mistaken. It is an addition to the list of Somerset birds.—CECIL SMITH (Lydeard House, Bishop's Lydeard, Taunton).

Two Sand Grouse were seen at Charlynch, a village about three miles from Bridgwater, on the afternoon of May 25th, by the rector of that place, Rev. W. A. Bell, who is well acquainted with the birds, having shot numbers of them in India. One was believed to have been seen at Burnham, but I have not heard the date, and am sending to Mr. W. Stote these particulars, as they may probably have gone in that direction.—H. ST. B. GOLDSMITH (King Square, Bridgwater).

*Devonshire*.—A good specimen of Pallas's Sand Grouse is now being preserved at Mr. Rowe's, the birdstuffer of this town. It was shot at Hartland about the 3rd or 4th of June. Three or four others were killed at the same time, I believe, and are being set up by a birdstuffer near there.—J. G. HAMLING (The Chase, Barnstaple).

*Guernsey*.—The first I heard of the arrival of Sand Grouse was from Guernsey. In a letter from Sir Edgar MacCulloch, the bailiff, dated May 24th, he says:—"Whilst I was at dinner, Couch, the birdstuffer, called to show me a specimen of Pallas's Sand Grouse, which was shot on the 21st of this month somewhere in the Vale Parish. It was brought to him by the wife of the man who shot it, and it appears that there was another in its company; but the man who shot it could not look after its companion, as it was time for him to get ready to attend an inspection of the militia regiment he belongs to. The bird is in excellent condition, but a little disfigured about the head with shot. I cannot say whether it was a male or female, but I daresay Couch will discover the sex when he comes to skin it, which he was intending to do at once." I have not seen this bird myself, but I have no doubt the identification is correct. This, so far as I know, is the first occurrence of the Sand Grouse in Guernsey.—CECIL SMITH (Lydeard House, Bishop's Lydeard, Taunton). [A small flock appeared in Jersey during the last week in May.—ED.]

**Pallas's Sand Grouse in Heligoland.**—I am indebted to Mr. H. Gätke for the following notes on the occurrence of the Sand Grouse in Heligoland, communicated in a letter dated May 25th :—"On 8th of May, twelve birds; 13th, a score; 14th, some; 15th, some; 16th, flights from five to twenty, twenty-five shot; 17th, L——, early this morning, on Sandy Island, shot eighteen; 18th, flights from twenty to two hundred head; 19th, a few; 20th, small flocks from five to twenty; 21st, fog, none seen; 22nd, hundreds, many females; 23rd, flocks from ten to forty; 24th, many great flights, fifty to one hundred; 25th, many flights from five to twenty, very cold northerly wind blowing rather fresh." "This is principally to tell you to look after the birds in sandy, gravelly places,—the flat beach at foot at the sand-dunes, like our Sandy Island. On the top of our cliff, the cultivated ground, they are met with in far less proportion, not ten to one hundred. To see the birds when squatting on ground composed of sand, stones, and some dry seaweeds is scarcely possible, and they know this well, because they lay so close. What flyers they are! They beat all we have ever seen here."—JOHN CORDEAUX (Great Cotes, Ulceby).

**Pallas's Sand Grouse in Scandinavia.**—The Sand Grouse seems to have appeared in Denmark and Scandinavia before making its appearance here. In the Island of Bornholm, in the Baltic, large flocks, numbering many hundreds, were seen early in May, some being shot, others captured alive. A few days later birds were seen in various parts of Denmark and Sweden. In Norway a flock of birds was seen at Lister, on the extreme west coasts, on May 12th, and two were shot, a male and female. Their crops were full of tiny black seeds unknown to that country, whilst the eggs in the hen were far developed. During the immigration in 1863 these birds were seen as far north as Nordfjord. In that year, too, many nested on the west coast of Jutland, where the soil is sandy, but the eggs were all gathered by the fishermen.—*Nature*.

**Kites in Dorsetshire.**—A pair of Kites frequented the neighbourhood of Dorchester during the early part of the present summer, and would probably have nested had it not been for the untimely death of one of them, which unfortunately ate some poisoned carrion laid down by a vulpicide for the destruction of foxes, by which act both sportsmen and naturalists have been made to suffer. The latter are the worse off, because foxes usually find protection in this part of the world, the coverts in which the above catastrophe occurred being an exception. — J. C. MANSELL-PLYDELL (Whatcombe, Blandford).

**Pied Flycatcher in Ireland.**—In his notice of the Pied Flycatcher in Glamorganshire (p. 229), Mr. Digby S. W. Nicholl takes the opportunity of correcting Mr. Seebohm's statement ('British Birds,' vol. i. p. 328) that the Pied Flycatcher "has never been recorded from Ireland." I have, as

Mr. Nicholl correctly states, recorded, in 'The Zoologist' for 1875, the capture of an adult female of this species here at Moyview, Co. Sligo (not Mayo) on the 18th of April of that year, and the specimen may be seen in the collection of the Royal Dublin Society, Kildare Street, Dublin. The occurrence of this bird is also noticed in my list of the birds of the Moy Estuary, in 'The Zoologist' for June, 1877 (p. 237), but, although this specimen is the first recorded to have been captured in Ireland, I have no doubt that many other examples may have passed unnoticed, from the fact that Mr. R. M. Barrington, in the 'Report of the Migration of Birds observed at Lighthouses and Light-ships for 1886,' states that a wing of an individual of this species was sent to him from the Tearaght (one of the Blasket Islands off the Kerry coast), the bird having struck the lantern on the night of the 21st of September of that year. — ROBERT WARREN (Moyview, Ballina).

**Honey Buzzard near Bury St. Edmunds.**—A fine female Honey Buzzard was shot by a keeper at Culford, near Bury St. Edmunds, on June 11th, and came into my possession in the flesh. Its crop and stomach contained fragments of Blackbirds' eggs and the remains of several unfledged birds. The largest egg in the ovary was about the size of a pea, so I do not suppose it would have nested this year. I can find no record of this species ever having attempted to breed either in Norfolk or Suffolk. — JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

**Hoopoe in Hampshire.**—Early in May I heard that the Hoopoe had been seen in several localities in this county. In one instance a pair frequented a wood for a week or ten days and then disappeared; but during their stay they were very familiar, coming out on a lawn near the wood, and searching for food amongst the grass. Indeed, in every instance the tameness of the specimens was observed. I am glad to say that only one, so far as I know, has been killed, a male in breeding-plumage. I believe a boy caught it or picked it up, as the plumage was quite uninjured. Its gizzard contained the empty skins of three or four dipterous grubs, and a peculiarity I noticed about the beak was that both upper and lower mandibles were quite flat and smooth on the inner surface, without the cutting edges so marked in many species, and doubtless well adapted to its peculiar mode of feeding.—G. B. CORBIN (Ringwood, Hants).

**Ducks preying on Trout.**—I am quite prepared to corroborate Mr. E. L. Mitford's experience (p. 225) with regard to the fact of a duck capturing and eating a Trout. Having in my grounds some thirty-seven Trout-ponds, I have had some opportunity of observing the habits of birds frequenting them. I was compelled to give up keeping ducks owing to the injury they did to the fish. I question very much if a duck could catch a Trout in a fair chase, but that is not their plan. It is well known how Trout, on being alarmed, seek the shelter of some hole or corner, and it is

from these hiding-places that the ducks drag them. I can well understand the case of a fish being occasionally pulled in two by the operation. Ducks do great harm when allowed free access to Trout-streams. I have watched them frequently, and am quite satisfied that they eat not only Trout, but a great quantity of Trout-food in the shape of mollusca and crustaceans, &c. I shot a Heron at my ponds last autumn, and found on dissection the remains of a rat, but no trace of any fish. Others, however, which I have been reluctantly compelled to shoot, have had Trout in their stomachs. The Waterhen is often seen about the fish-ponds, and I cannot find that it does any harm; and the Common Sandpiper breeds with us every season. Last year I found the nest in my garden, containing the usual four pyriform eggs.—J. J. ARMISTEAD (Solway Fishery, Dumfries).

**White Stork at Scarborough.**—It may be worthy of notice that an example of the White Stork, *Ciconia alba*, occurred near Scarborough on April 8th. When first seen by a man named Cooper, who sent his dog for it, it was floating dead upon the sea near Peasholm. It proved to be a mature bird in good condition and plumage, but had unfortunately lost so many of the dorsal feathers as to render it useless for mounting as a specimen, and when it came under my observation some days later, decomposition was too far advanced to determine the sex by dissection. The wings have been preserved, and the cranium and sternum are being macerated.—R. P. HARPER (Scarborough).

**Kestrel nesting in a House.**—This spring a pair of Kestrels built a nest in a detached villa near the village of Kellinghall, near Harrogate. They built in a hole under a board which hangs down from the eaves—a most peculiar situation for them to choose. I regret to say that the birds have not fared well, as a neighbouring farmer had them shot, being afraid they would disturb his pigeons. The house is quite near the main road from Harrogate to Ripon, and although it has been built some years has never yet been occupied.—RILEY FORTUNE (Harrogate).

**Food of the Kestrel.**—A pair of Kestrels, now breeding in our church-tower, have afforded me an unusually good opportunity of watching their domestic arrangements. I found the nest, or rather three eggs laid in a loophole of the tower, on April 27th, and promptly put a padlock on the belfry-door. By April 30th a fourth egg had been added, and on May 26th the eggs were still unhatched, and one at least seemed to be rotten, so it and another were taken. On May 30th I looked at the nest again, and found the two eggs there. As they had been incubated more than a month, I should certainly have removed them, but luckily a faint squeaking attracted my attention, which proceeded from the eggs. There are now two thriving nestlings, which ought to grow apace, as each parent bird has practically but one nestling to provide for. The castings thrown up and the

remains of uneaten food left near the nest show the food of the birds to have consisted almost entirely of mice. I could only find traces of two birds, which were, I think, a young thrush and a lark.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

**Dotterel in the Lake District.**—An interesting case concerning a rare British bird was heard before the Westmoreland county magistrates at Kendal on 2nd June last. A man named Gilpin, living in the mountain parish of Kentmere, was charged under the Wild Birds Protection Act with having in his possession four Dotterel during the close-time. A police-constable proved seeing the four birds in the man's possession, one of which he obtained and produced in court. The constable deposed that the man said he had been three days on the hills after the birds; that he was obtaining them for an angler, but was unaware he was doing wrong. For the prosecution the police called Mr. John Watson, the hon. secretary of the Lake District Angling Association, who stated that he had made a study of birds all his life, and was well acquainted with the Dotterel. He had no hesitation in saying that the bird produced was a male Dotterel in breeding plumage. In reply to the Bench, witness stated that the birds bred near to the summits of the highest mountains, and that annually about this season they stayed for a few days among the Kentmere hills on their way to their summer nesting-haunts. Although never common they were, owing to persecution, much more rare than formerly. Probably only a few pairs now breed in the Lake District. In some cases dogs had been trained to find the nests, so that the birds might be killed upon them. The feathers of the Dotterel were held in high estimation by anglers for dressing flies, though the skins are much less valuable than formerly. The Bench fined defendant £1 (*i. e.* 5s. for each bird) and costs, or in default fourteen days' imprisonment. It is to be hoped that this will be a warning to others.

**Montagu's Harrier nesting in Dorsetshire.**—In 'The Zoologist' for December (p. 464), I reported the nesting of a pair of Montagu Harriers in Dorsetshire. I have now to record a similar occurrence this summer, and in the same neighbourhood, which leads me to suppose it is the same pair. I regret to say they are now lying dead on my table, having been brought to me by a local birdstuffer to be identified. The female was shot on her nest while sitting on three eggs; the male survived her only by one day, and also fell to the keeper's gun, the keeper no doubt priding himself that he had done his master a good service. They are both in fully adult plumage, and it is very much to be regretted that they were destroyed before I could interfere to prevent it.—J. C. MANSEL-PLEYDELL (Whatcombe, Blandford).

#### FISHES.

**Note on the Haddock.**—The Brixham trawlers stationed here for the season have been recently fishing in the Bristol Channel, and have brought

in a constant catch of Haddock. Thirty-five years ago Haddock was an unknown fish off St. Ives, in the Bristol Channel, and then it was plentiful in and off Mount's Bay. We never had an afternoon's inshore hook-and-line fishing without taking some Haddock. The last catch I made was of seven good fish on a "spiller," in 1858. Since then we have never seen a Haddock on this coast, and St. Ives Bay has not been tried for them. I feel sure none have been seen there, because I have always had friends amongst the fishermen of St. Ives on the look-out for them for me. From some unaccountable cause, the fish seems to have shifted its habitat.—THOMAS CORNISH (Penzance).

**Sparus auratus at Penzance.**—On June 11th I received a fine specimen of that rare fish the Gilt-head (*Sparus auratus*, Cuv., *Chrysophrys aurata*, Yarrell), which had been caught on a hook and line in the Bay here, in about fourteen fathoms water (the usual fishing-ground). The only example that I had previously seen was caught here in March, 1870. The present specimen is not very brilliant in colour, but its identification was easy. It measured over all,  $19\frac{1}{2}$  in.; eye to fork, 14 in.; depth at origin of dorsal,  $5\frac{7}{8}$  in. Weight three pounds ten ounces. I had it cooked, and found its flesh white, firm, and of excellent flavour, but a little "woolly." I attribute this latter quality to the fact (which I infer from the colours of the fish) that it was not in its best condition for the table.—THOMAS CORNISH (Penzance).

**Spanish Mackarel off Penzance.**—On June 20th I caught in the Bay a Spanish Mackarel, *Scomber colias*, a fish which is undoubtedly rare here. In fact, I had long since set it down as probably a variety of the Common Mackarel, but about this example there was no mistake. Its dentition, eyes, scales under the origin of the pectorals, first dorsal in a groove, colouring, and its peculiar shape, all mark it as distinct from the Common Mackarel. It is a much stouter fish than the common species, and immediately behind the first dorsal the back makes a downward curve, giving the fish the appearance of being hump-backed. It then carries its thickness evenly to behind the second dorsal, whence it tapers to the origin of the caudal. Its measurements were:—Over all,  $12\frac{1}{2}$  in.; depth at origin of first dorsal,  $2\frac{1}{8}$  in.; depth about midway between the dorsals immediately behind the depression,  $1\frac{5}{8}$  in.; depth just behind second dorsal,  $1\frac{5}{8}$  in. Weight eight ounces. The line of oblong dark spots under, and parallel to, the lateral was very conspicuous.—T. CORNISH (Penzance).

[Couch, writing of the Spanish Mackarel, says ('Fishes of the British Islands,' vol. ii. p. 79):—"In the memory of many persons it has been not unfrequently caught in nets in Cornwall, where alone hitherto it has been found with us, and sometimes to the number of 300 or 400 at a time, in the summer or autumn; but for several years it has become much more rare."]

Some years ago a good many were taken off Brighton (see 'Zoologist,' 1850, p. 2929). According to Turton, this fish is sometimes found in the rivers about Swansea, but never in shoals. Thomas Edward, the Banffshire naturalist, thought he had recognized it on the Banffshire coast. It is a wanderer from the Mediterranean, and apparently does not go far north.—ED.]

#### CRUSTACEA.

*Dromia vulgaris* in Cornwall.—It may interest some of your readers to learn that two specimens of the rare crab, *Dromia vulgaris*, have recently been procured off this coast.—G. TREGELLES.

[We do not think this species is quite so rare as supposed. It is common (as its specific name would imply) in the Mediterranean, and has been found not only on the coasts of Kent and Sussex, but also in some numbers in an immature state in the Scilly Islands.—ED.]

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### SCIENTIFIC SOCIETIES.

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#### LINNEAN SOCIETY OF LONDON.

*The Centenary Anniversary Meeting, May 24, 1888.*—W. CARRUTHERS, F.R.S., President, in the chair.

Messrs. R. Barron, L. A. Boodle, Sydney Klein, and E. B. Poulton were admitted Fellows of the Society.

The following Reports were presented:—(1) Report of the Secretary on the history of the Society and its collections; (2) Report of the Treasurer on the financial history of the Society from its commencement; (3) Report of the Librarian on donations, and additions by purchase, to the Library.

The President then delivered his annual address. A vote of thanks to him having been moved by Sir John Lubbock, Bart., M.P., seconded by Dr. Maxwell Masters, and carried unanimously, the following Eulogia were pronounced:—

On Linnæus, by Prof. Fries, of Upsala.

„ Robert Brown, by Sir Joseph Hooker, K.C.S.I.

„ Charles Darwin, by Prof. Flower, C.B.

„ George Bentham, by W. Thiselton Dyer, C.M.G.

A vote of thanks to the speakers having been moved by Dr. St. George Mivart, seconded by the Rt. Hon. Sir M. E. Grant Duff, and carried unanimously, the Linnean Gold Medal, struck in commemoration of the Centenary, and awarded for researches in *Botany* to Sir Joseph Hooker and for researches in *Zoology* to Sir Richard Owen, was presented by the President to the recipients.

The meeting then adjourned, and the annual dinner of the Society took place at the Hotel Victoria. The following evening a *Conversazione* was held at the Society's Rooms in Burlington House, and was rendered particularly attractive by the exhibition of a collection of numerous interesting memorials of Linnæus.

June 7, 1888.—W. CARRUTHERS, F.R.S., President, in the chair.

Messrs. G. C. Haité and C. A. Hebbert were elected Fellows of the Society.

The following were nominated Vice-Presidents:—Mr. F. Crisp, Dr. Maxwell Masters, Dr. John Anderson, Mr. C. B. Clarke.

An exhibition under the microscope of decalcified and stained portions of the Test of *Laganum depressum* was then given by Prof. Martin Duncan, who made some very instructive remarks on the structural characters to be relied on for discriminating the species.

Mr. D. Morris, of Kew, exhibited some drawings of a Fungus (*Exobasidium*) causing a singular distortion of the leaves of a *Lycorica* from Jamaica.

A paper was then read by Mr. H. N. Ridley on the Natural History of Fernando Noronha, in which he gave the general results of his investigations into the Geology, Botany, and Zoology of this hitherto little-explored island.

The meeting adjourned to June 21st.

June 21, 1888.—Mr. F. CRISP, Treasurer, V.-P., in the chair, which was subsequently taken by Dr. JOHN ANDERSON, V.-P.

Messrs. G. C. Haité and R. G. Alexander were admitted Fellows of the Society.

Mr. F. W. Oliver exhibited the aquatic and terrestrial forms of *Trapella sinensis*, of which he gave a detailed account, illustrated by diagrams.

Dr. R. C. A. Prior exhibited a branch of the so-called "Cornish Elm," and described its peculiar mode of growth, which suggested its recognition as a distinct species. In the opinion of botanists present, however, it was regarded as merely a well-marked variety of the common Elm.

On behalf of Mr. R. Newstead, of the Grosvenor Museum, Chester, photographs and drawings of the Little Grebe, *Podiceps minor*, were exhibited to illustrate a peculiarity observed in the mechanism of the leg-bones.

Mr. A. W. Bennett exhibited, under the microscope, and made remarks upon, filaments of *Sphæroplea annulina* (from Kew) containing fertilized oospores.

Mr. Thomas Christy exhibited specimens of natural and manufactured Kola-nuts, and explained how the latter might always be detected.

The following papers were then read:—(1) Dr. P. H. Carpenter, on the ZOOLOGIST.—JULY, 1888.

*Comatulæ* of the Mergui Archipelago; (2) Prof. P. Martin Duncan and W. P. Sladen, on the *Echinoidea* of the Mergui Archipelago; (3) Mr. W. P. Sladen, on the *Asteroidea* of the Mergui Archipelago; (4) Mr. W. Bolus on South African *Orchideæ*; (5) Mr. R. A. Rolfe, "A morphological and systematic revision of *Apostasiæ*."

This meeting terminates the session 1887-88.

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ZOOLOGICAL SOCIETY OF LONDON.

May 15, 1888. — 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 April, 1888; and called special attention to two Rock-hopper Penguins from the Auckland Islands, presented by Capt. Sutcliff, R.M.S.S. 'Aorangi,' 19th April; also to two Indian Hill-Foxes, and to a fine example of the Spotted Hawk-Eagle, *Spizaëtus nipalensis*, presented by Col. Alex. A. A. Kinloch, and received 20th April.

A communication was read from Mr. George A. Treadwell, containing an account of a fatal case of poisoning from the bite of the Gila Monster, *Heloderma suspectum*.

Mr. Boulenger exhibited the type-specimen of a singular new genus of Snakes, *Azemiops fea*, recently discovered by M. Fea, of the Museo Civico of Genoa, in the Kakhim Hills, Upper Burma. Mr. Boulenger proposed to refer this genus provisionally to the family *Elapidæ*.

The Secretary read a letter addressed to him by Mr. E. C. Cotes, Entomological Department, Indian Museum, Calcutta, respecting the insect-pests of India, and requesting the assistance of entomologists in working out the species to which they belong.

Mr. H. Seebohm exhibited and made remarks on a series of specimens of Pheasants from Mongolia, Thibet, and China, including examples of the two species discovered by Col. Prjevalski, *Phasianus trauchi* and *P. vlangali*.

Prof. F. Jeffrey Bell exhibited and made remarks on three specimens of a large Pennatulid, *Funiculina quadrangularis*, obtained by Mr. John Murray on the west coast of Scotland. They showed very clearly the differences between examples of this species of different ages.

Mr. R. Bowdler Sharpe gave an account of a third collection of birds made by Mr. L. Wray in the main range of mountains of the Malay Peninsula, Perak. The present paper contained descriptions of ten species new to Science, amongst which was a new *Pericrocotus*, proposed to be called *P. wrayi*.

Prof. F. Jeffrey Bell read the descriptions of four new species of Ophiuroids from various localities.

Mr. F. E. Beddard read a paper containing remarks on certain points in the visceral anatomy of *Balaniceps rex* bearing upon its affinities, which he considered to be with the *Ardeidæ* rather than with the *Ciconiidæ*.

Mr. G. B. Sowerby gave the description of a gigantic new species of Mollusk of the genus *Aspergillum* from Japan, which he proposed to name *A. giganteum*.

June 5, 1888.—Dr. EDWARD HAMILTON, 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 May.

Mr. H. E. Dresser exhibited a specimen of a new Shrike from the Transcaspian district of Central Asia, which he proposed to call *Lanius raddei*, after Dr. Radde, of Tiflis, its discoverer,

Mr. Sclater, on the part of Mr. F. M. Campbell, exhibited a pair of Pallas's Sand Grouse, *Syrnhartes paradoxus*, shot in Hertfordshire, in May last, and made remarks on the recent immigration of this Central Asiatic bird into Western Europe.

The Secretary exhibited, on behalf of Prof. R. Collett, a nest, eggs, and two young ones in down of the Ivory Gull, *Larus eburneus*, belonging to the Tromsø Museum, which had been obtained in Spitzbergen in August, 1887.

Mr. Warren communicated a paper on Lepidoptera collected by Major Yerbury in Western India in 1886-87, forming a continuation and completion of two previous papers, by Mr. A. G. Butler, on Lepidoptera collected by the same gentleman in similar localities. The present collection contained examples of over 200 species of Heterocera, of which about one-fourth were described as new. Mr. Warren remarked upon the abnormal development of separate organs, such as the antennæ and palpi, in tropical insects, as being rather specific aberrations from a generic type, than as warranting the erection of new genera.

A communication was read from Mr. Martin Jacoby, containing descriptions of some new species of Phytophagous Coleoptera from Kiukiang, China.

Mr. F. E. Beddard read some notes on the structure of a peculiar sternal gland found in *Didelphys dimidiata*.

Mr. G. A. Boulenger read a paper on the scaling of the reproduced tail in Lizards, and pointed out that the scaling of the renewed tails of Lizards may, in some cases, afford a clue to the affinities of genera or species to one another.

Mr. F. E. Beddard gave a preliminary notice of an apparently new form of Gregarine found parasitic on an earthworm of the genus *Perichata*, from New Zealand.—P. L. SCLATER, *Secretary*.

## ENTOMOLOGICAL SOCIETY OF LONDON.

June 6, 1888.—Dr. D. SHARP, F.L.S., President, in the chair.

Mr. George Meyer Darcis, of 32, Central Hill, Upper Norwood, was elected a Fellow of the Society.

Mr. Pascoe brought for exhibition a book of fine plates of *Mantida*, drawn by Prof. Westwood, which it had been hoped would have been published by the Ray Society.

Mr. E. Saunders exhibited a species of Hemiptera, *Monanthia angustata*, H.-S., new to Britain, which he had captured by sweeping, near Cisbury, Worthing. The insect is rather closely allied to the common *Monanthia cardui*, L.

Mr. M'Lachlan exhibited a species of *Halticidæ*, which had been sent him by Mr. D. Morris, Assistant Director of the Royal Gardens, Kew, who had received them from Mr. J. H. Hart, of the Botanic Gardens, Trinidad, with a note to the effect that they had attacked young tobacco and egg-plants badly in that island. Mr. Jacoby had, with some reserve, given as his opinion that it might possibly turn out to be *Epitrix fuscata*, Duv., a species which had been described from Cuba.

The Rev. H. S. Gorham exhibited a number of beetles lately captured in Brittany, including *Diachromus germanus*, L., *Onthophagus taurus*, L., *Hister sinuatus*, Ill., and other species which are exceedingly rare, or altogether wanting in Britain, and yet occur very commonly in the North of France.

Mr. Enoch exhibited specimens of the Hessian Fly bred by himself, and mounted for the microscope.

Mr. White exhibited living larvæ of *Endromis versicolora*, and remarked that when quite young they are nearly black, owing to being very thickly spotted with that colour; the body-colour is green, and after the second change of skin the spots disappear. Mr. White also exhibited two preserved larvæ of *Phorodesma smaraglaria*, which he had recently taken, and made some remarks concerning the so-called "case" which this insect is said to construct from the leaves of its food-plant, *Artemisia maritima*. This he did not consider to be really a case, but he had discovered that the larva possessed on its segments certain secretory glands, at the apex of each of which there is a bristly hair; this appears to retain pieces of the plant, which are probably fixed firmly afterwards by means of the secreted fluid. These pieces are very irregularly distributed, and their purpose is evidently protective.

Mr. Lewis exhibited about three hundred specimens of the genera *Heterius*, Er., and *Eretmotus*, Mars. The most remarkable of these was *Heterius acutangulus*, Lewis, discovered last year by Mr. J. J. Walker near Tangier, and were recently taken by him at S. Roche, in

Spain. The names of the other species exhibited are:—*Heterius Bedeli*, Lewis, *H. punctulatus*, Lucas, *H. cosmosellus*, Fairmaire, *H. pluristriatus*, Fairmaire, *H. setulosus*, Reitter, *Eretmotus sociator*, Fairmaire, from Algeria. *Heterius acutangulus*, Lewis, *H. arachnoides*, Fairmaire, *H. —*, n. sp., *Eretmotus tangerianus*, Marseul, from Morocco. *Heterius hispanicus*, Rosenb., *H. marseuli*, Brisout, *Eretmotus Ibericus*, Brisout, from Spain. *Heterius ferrugineus*, Oliv., from France.—W. W. FOWLER, *Hon. Sec.*

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## NOTICES OF NEW BOOKS.

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*Notes on the Birds of Herefordshire: contributed by Members of the Woolhope Club.* Collected and arranged by the late HENRY GRAVES BULL, M.D. 8vo, pp. 274. London: Hamilton, Adams & Co. Hereford: Jakeman & Carver.

ON turning over the pages of this volume, the latest contribution to the series of county "avifaunas" which it has become the fashion now-a-days to write, we are forcibly reminded of the old adage which refers to "too many cooks," and we cannot help thinking that the reason (or, at all events, one reason) why the Editor has so completely failed in his object, is because he has tried to please too many contributors, and has accepted all sorts of MS., good, bad, and indifferent, and far too much poetry, also good, bad, and indifferent. An apt quotation from the works of a genuine poet, if skilfully introduced, is an embellishment to the text, but to string together a number of quotations, *à propos des bottes*, and to deal them out a page or two at a time (see pp. xvi—xvii, 14, 79, 82, 83, 85, 110, 111, &c.), with hardly a line of prose to relieve the monotony, is the surest way to weary the reader, and to vex the critic.

We shall endeavour to do the authors justice, however, by skipping the poetry, and by looking only at the facts which they have thrown together, not very skilfully, concerning the birds which have been met with in Herefordshire. And here we must, unfortunately, again protest, and question the wisdom of introducing a large number of species which are not known to have occurred at any time in the county, and are perhaps never likely to do so. It is true the names of the species in question are enclosed between brackets to indicate that they have no connection with the county, but this being the case, it would have been

better to have omitted them altogether, for the statements concerning them are of a purely negative character, and their introduction not only confuses the reader, but hinders him from forming a proper estimate of the strictly local fauna. If we add that throughout the volume there is a manifest lack of acquaintance with the literature of the subject, and a want of appreciation of what a county avifauna should be, we shall perhaps have advanced all that need be said in the way of adverse criticism.\*

It is much pleasanter to turn to the redeeming features of the book, and to assure our readers that, setting aside the selections from the poets, and much unprofitable verbiage, they may extract some information concerning British birds of more than local interest.

It has often been asserted that the Mistletoe Thrush derives its name from a predilection for the berries of the Mistletoe, and the statement is made (p. 3) that these berries are its "favourite food." Now if any observers be qualified to speak authoritatively on this point it should be the ornithologists of Herefordshire; for in this county, if we mistake not, the plant is as common as the bird; and yet elsewhere repeated enquiries have failed to elicit any positive evidence that the berries in question are ever touched by this bird. Is the oft-repeated statement, after all, only a scrap of "folklore" devoid of real foundation?

On the authority of the Rev. C. L. Eagles, it is stated (p. 9) that the Ring Ouzel "lives sometimes all the year round on the slopes of the Black Mountains, where he has shot them in winter, and has often seen their nests in summer." This is interesting, as it has been doubted whether this bird should be regarded as a resident (*cf.* 'Handbook of British Birds,' p. 12), or as a summer visitor (*cf.* Yarrell, 'British Birds,' 4th ed. vol. i. p. 287). Several instances in support of the former view have been noted in 'The Zoologist,' 1879, pp. 174, 203, 266, and 1886, p. 490. See also Mansel-Pleydell, 'Birds of Dorset,' p. 22.

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\* The allusion to "Mr." White of Selborne (p. 23) reminds us of a letter which appeared not long since in the columns of a contemporary, signed by a Mr. Fox, who desired to make it known that he was *not* the author of a statement quoted in the previous number as having been furnished by a Mr. Fox to Gilbert White, "neither had he the pleasure of knowing Mr. White"!

The Nightingale is said to be not at all abundant in Herefordshire (p. 15), and almost confined to the southern half of the county; but its numbers vary very much in different seasons. The Rev. Clement Ley writes:—"I have known them in certain years so numerous at Sellack, near Ross, as to be positively troublesome by the nocturnal disturbance they cause. In other seasons they have been almost entirely absent."

A curious site for Sand Martins' nests is mentioned at p. 45, a number of these birds having "recently established themselves in the mound at the back of the rifle-butts, Warham."

The Cirl Bunting is stated (p. 59) to be not an uncommon bird in Herefordshire.

The Black Woodpecker, *Picus martius*, comes again to the fore (p. 91), and the Editor states that there can be no doubt of its having been observed on several occasions in Herefordshire. Capt. Mayne Reid is stated to have seen two specimens in the woods near his residence at Frogmore, Ross, and although, as every one knows, this well-known author was much given to romancing, he may on the occasion referred to have been perfectly serious.

The Rev. Clement Ley saw a Great Black Woodpecker at Ruckhall Wood, Eaton Bishop, about the year 1874, and pointed it out to his cousin, Mr. Edward Du Buisson, who also saw it there. On writing to Mr. Ley on the subject, he replied that "he had not the least doubt about it," and that, besides this instance, he has on two or three occasions heard the note of this bird in the neighbourhood of Ross, without being able to get a sight of it. The secret of meeting with rare birds in England, he adds, is to be found in familiarising oneself with their notes in countries where they are more common. Thus, by learning the note of the Great Black Woodpecker on the Continent, he has met with this bird on several occasions in England, the last occasion being in 1876 at Mount Edgecombe, in Devonshire, where he not only heard the note, but "got a fine view of the bird." Then Mr. D. R. Chapman is stated to have seen a Great Black Woodpecker at Belmont (about a mile from where Messrs. Ley and Du Buisson had seen it, as already mentioned) in the spring of 1879. "His attention was called to it by his son, as it flew from a copse to a tree standing in open ground. To make sure of the species, he crawled along the

meadow for some 60 or 70 yards, and was rewarded by a clear view of the bird."

These statements are positive enough, and we must confess that, considering the wide geographical range of this bird, which inhabits the pine-forests of Northern and Central Europe, and is found also in Spain, we see nothing at all improbable in its occasional appearance, as reported, in the British Islands.

It is not often that one is fortunate enough to witness the actual arrival of the Cuckoo here in spring. The mode of its appearance is thus described (p. 107) by the Rev. W. B. Mynors, whom, by the way, we had the pleasure of meeting last autumn on Speyside:—"While admiring the beauties of Nature about 5.45 a.m. on April 14th, my attention was arrested by a dull chattering, with a few sharp accents. After some seconds I descried a line of something, high as the eye could reach, about the size of Wagtails, moving from S.E. to N.W. equidistant, probably from 20 to 40 yards apart. This was an arrival of Cuckoos. I believe I saw the end of the straight line of birds, probably by no means the beginning of it. While carefully watching them, I saw about four or five leave the line, and descend with a clumsy zigzag movement till near the earth; two or three certainly remained, one or two re-ascended." Thus it appears that Cuckoos migrate in company, and travel at a good height.

In Herefordshire, as in other counties at the present day, ornithologists have to deplore the gradual extermination of all the larger birds of prey. Kites, Buzzards, Harriers, Peregrines, are all getting scarcer every year; even the poor Kestrel and the useful Owl do not escape persecution. We often wonder why country gentlemen who are fond of shooting do not educate their gamekeepers more by imparting to them a little useful natural history when opportunity occurs, as it must frequently do in the course of their rambles. Some of our friends have adopted this course with the best results. Keepers, who were never happy unless letting off their guns at something, have learnt to take a pleasure in seeing things live, in observing the movements and habits of wild creatures, and in reporting their presence to their masters. It would be well if others were to follow their example.

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## ORNITHOLOGICAL NOTES FROM NORFOLK AND SUFFOLK.

By T. E. GUNN, F.L.S.

IN forwarding my record of ornithological events for the year 1887, I am unable to note the occurrence of any special rarities, but the following notes may be worth publishing:—

A peculiar-looking example of the Common Buzzard, *Buteo vulgaris*, was killed at Honing, above Stalham, on October 19th. Mr. Cubit, the owner, related to me the following particulars of its capture. His gamekeeper had at different times previous to the above date found remains of Pheasants, which he imagined were destroyed by some large bird of prey; he therefore baited a trap with a dead hen Pheasant, and on the following day found the depredator had been caught by its toes, and that, notwithstanding its imprisonment, was busily engaged in feasting on the bait, and was quickly dispatched by a blow from the keeper's stick. Its chief point of interest is the singular form of the upper mandible, half of which had been carried away by gunshot some time previously, being divided in its entire length from tip to base, the remaining half curved downwards, overhanging the lower mandible on one side, making it difficult for it to tear its prey. It proved nevertheless to be in very fair plight. Its stomach was filled with portions of its prey, including a quantity of feathers, the latter having apparently been plucked in bunches, as if the bird, with its peculiar shaped beak, was obliged to give each an extra twist to enable it to do so. I also found two

filiform worms, each four inches long, in its stomach. It was a small example for a female bird, and weighed but 1 lb.  $2\frac{1}{4}$  oz.

On the afternoon of July 29th a birdcatcher brought me alive an adult male Hobby; it had dashed into his nets after his call-bird, and the man in trapping it unfortunately broke one of its wings, so that I could not keep it alive. The Hobby is now rather rare in Norfolk, but still breeds in a few favoured localities in the larger woods. The stomach of the bird now referred to contained a small portion of fur, and some wings and wing-cases of beetles.

In this notice of ornithological events of the past year I think mention should be made of the dispersal of the collection of rare birds formed by Mr. H. Stevenson during the last thirty-five years, and collected principally in this county. Local naturalists cannot but regret this event, as such a rich collection ought to have been secured entire for the Norwich Museum. Some of the principal rarities were, however, purchased for that institution; but a great many have been dispersed among private collections. On the whole the collection fetched a good price, the total sum realised being between £300 and £400. I will just enumerate a few of the principal rarities, and the prices they fetched:—

IN CASES:—			IN SHADES:—		
Lot.		£ s. d.	Lot.		£ s. d.
47.	Roller .....	4 10 0	90.	Little Bustard .....	9 19 0
49.	Two Hen Harriers .....	4 5 0	91.	Squacco Heron .....	11 11 0
55.	Little Bittern .....	3 10 0	92.	Kentish Plover .....	2 5 0
59.	Crane .....	13 2 6	95.	Baillon's Crake .....	4 5 0
61.	Ruff and Reeve .....	2 5 0	96.	Rose-coloured Pastor....	2 10 0
62.	Three Montagu's Harriers	5 5 0	99.	Richard's Pipit .....	3 10 0
63.	Three Black-tailed God- wits .....	4 0 0	100.	Savi's Warbler .....	7 7 0
64.	Pair of Black Terns and Eggs.....	5 15 6	101.	Blue-throated Warbler ..	2 12 6
66.	White-eyed Pochard ....	2 15 0	102.	Pectoral Sandpiper.....	7 17 6
68.	Group of ten Ruffs ....	11 0 6	103.	Broad-billed Sandpiper..	7 17 6
71.	White Stork.....	6 16 6	104.	Sabine's Gull .....	9 9 0
72.	Group of twelve Birds ("Winter") .....	10 10 0	105.	Fork-tailed Petrel .....	1 5 0
78.	Two White-winged Cross- bills .....	7 17 6	ON STANDS:—		
79.	Two Black Redstarts ....	4 5 0	111.	Red-legged Falcon (im.)	2 15 0
81.	Two Slavonian Grebes..	7 7 0	135.	Two Little Auks .....	2 0 0
82.	Three Sand Grouse ....	11 11 0	138.	Two Solitary Snipes ....	1 6 0
83.	Black-winged Stilt .....	13 13 0	146.	Buffon's Skua .....	1 12 6
86.	Two Bee-eaters .....	19 19 0	155.	Eared Grebe (summer) ..	1 10 0
87.	Two Golden Orioles ....	11 0 6	183.	Buff <i>var.</i> Robin .....	0 12 0
			223.	Buffon's Skua .....	1 12 0
			226.	Great Skua .....	1 15 0

In dissecting a Long-eared Owl on Jan. 21th I found the remains of a Song Thrush in its stomach. A male of *Picus minor* was shot on Feb. 10th near Norwich; the female was also seen, but escaped; the birds were evidently paired. Another male was shot on March 10th at Upton, near Acle. The first Ring Ouzel (a male) I heard of this season was shot at Whitlingham on Oct. 11th. Two examples of the Swift (or "Devilin," as it is locally called) were killed on Sept. 20th, an unusually late date at which to find this bird here. An unusually fine Tree Pipit was brought to me on Oct. 3rd; it had a rufous-tinted breast, and weighed  $1\frac{1}{2}$  oz. Three Siskins and a solitary Mealy Redpoll seen on a small alder-carr at Cossey on Oct. 4th; I think this unusually early. Grey Wagtails seen on Sept. 20th in their usual haunts at the New Mill dam and banks of the river Wensum above Norwich.

An unusual number of Landrails were killed during the autumn of 1887. I received at least a dozen, from the 3rd to the 21st September, killed in various localities around Norwich. All the birds, with one exception, proved in good plumage, and in most instances very fat. In the various dissections I found their food chiefly consisted of seeds of various rushes, also insect remains. In one I found the remains of a large Longicorn beetle, and a full-sized land-snail, the shell of which was quite perfect; this seemed an unusual-sized morsel for the bird to swallow. The one exception to good plumage is an adult female shot on Sept. 12th near Norwich. This bird had rather a peculiar appearance, owing to the overgrowth of its upper mandible, which projects considerably beyond the lower; both mandibles seemed perfect, and not injured in any way to account for this overgrowth. Although in plump condition, its entire plumage was covered with an immense accumulation of parasites, and the basal half of its feathers were quite cleared of the fibres by these pests, which had deposited masses of ova at the base and around the shafts.

On New Year's Day I received a male Hawfinch from Watton; it had its crop and gizzard filled with the broken kernels of cherry-stones. Another, also a male, was killed a few days later at Reymerstone, the stomach of which also contained the kernels of fruit-stones. A Grey Crow, on the same date, had in its stomach some rabbit-bones and large-sized pebbles.

A female Little Grebe which I dissected on Jan. 6th had in

its stomach some small water-snails and pebbles—the first occasion I ever found this latter item in a Grebe's stomach, the usual foreign matter introduced into that receptacle to assist digestion being their own feathers, as I have repeatedly noted. In a male of *Larus ridibundus* I found, on Jan. 3rd, some fishy matter in its stomach; in another, on the 12th of the same month, I found some empty larva-skins of the cabbage moth. The contents of the stomach of a hen Blackbird consisted, at this date, of black ants, small seeds, and grit, the bird being exceedingly fat; in another, killed the following day, I found grain and other vegetable matter. The stomach of a Water Rail contained remains of small insects, minute red seeds, and grit. On Jan. 13th I found in a Redwing three species of small snails, vegetable fibre, and small pebbles. Two Pochards, *Fuligula ferina*, male and female, in very fat condition, had their gizzards filled with vegetable fibre, sand, and small grit. A female Green Sandpiper, on the same date, from Twyford, contained remains of aquatic insects and grit. Of two Common Gulls killed on Jan. 15th, one contained fish-bones and pebbles, the other remains of small black beetles and vegetable fibre. In the stomach of a female Green Woodpecker I found remains of from fifty to sixty millipedes. In a Nuthatch killed Jan. 17th, I found fragments of small seeds, particles of red brick and grit. On the following day, in a Great Spotted Woodpecker, I found three large empty larva-skins of the wood-leopard moth; and a Lesser Spotted Woodpecker, killed on March 10th, contained food of a like nature.

Two fine examples of the Pink-footed Goose, *Anser brachyrhynchus*, were forwarded to me, one shot on Jan. 10th at Feltwell, near Brandon, and the other at Beeston Regis, near Cromer, on Feb. 4th; both were females, the stomach of the latter containing vegetable matter and sand. A fine male Bittern, shot on the marshes adjoining the river Yare at Brundell, near Norwich, on Jan. 8th, was in good feather and very fat; the stomach contained an eel  $11\frac{1}{2}$  in. in length, and a smaller one of 5 in., besides the elytra and other remains of a water-beetle, *Dytiscus marginalis*. The largest eel was doubled with the head and tail lodging together in the bird's gullet; it was contorted and stiff in its curvatures, the gastric juice having been in operation apparently for some time before the fish succumbed.

An adult male Velvet Scoter, in fine plumage, was shot early

in January at Pakefield, near Lowestoft. An adult female Goosander, killed on Jan. 8th; was exceedingly fat, the stomach extended with a large dace measuring  $9\frac{1}{2}$  in. in length, the head of which lodged in the stomach and was partly digested. An adult male Bewick's Swan was shot by a marshman on Rockland Broad early in January, and sent to me. It weighed 12 lb. 13 oz.; in total length 47 in. and  $21\frac{3}{8}$  in. in the wing from carpal joint to tip of longest primary; the gizzard contained sand and silt only.

Several examples of the Solitary Snipe, *Gallinago major*, were killed or observed during September. The first I received, on the 20th, was a male shot by Lord Wodehouse at Barton, and was exceedingly fat. A pair of these birds were repeatedly seen and flushed from a particular corner of a marsh at Buckenham for several days in succession, but rose out of gunshot, and so escaped. I also heard of two others being obtained. Several Common Snipe were also killed during this month, and were all doubtless migratory birds. Jack Snipe very plentiful about Yarmouth.

An old male Great Crested Grebe was picked up dead in a marsh at South Walsham on June 3rd. It was in good condition and feather, and after being skinned I could find no trace of any wound to account for death. Its stomach contained a mass of matter consisting of its own feathers, scales of small fish, and seeds of rush, the whole contents weighing  $1\frac{1}{2}$  oz.; the feathers predominated, and were evidently plucked from its breast, which was almost bare in that part. On July 29th an adult female of this species on being opened showed an ovary full of small eggs, and the stomach contained a quantity of feathers, and several large Entozoa, which it had no doubt swallowed with fish.

Adult males of the Ruff and Greenshank were killed on August 16th near Norwich. A Partridge shot at Caistor, near Norwich, on Dec. 22nd, had the upper mandible curving over the lower, and forming nearly three-fourths of a circle; the tip of the lower mandible had in this instance been injured by being broken at the point, thus offering no check to the growth of the upper one.

On Jan. 17th I received an adult female Heron having the eggs in ovary in a forward state of development. On Feb. 25th an adult male killed at Strumpshaw was sent me. Colour of eyes, pupil bluish black, surrounded by a fine circle of yellow, then an

outer circle of reddish orange; the naked skin around eyes of a rich purple blue, as also the extreme corners of the gape; about the eye to base of bill a reddish flesh tint; bill yellow, with reddish tinge on base of both mandibles. Its stomach contained remains of a perch of  $5\frac{1}{2}$  in. This Heron had a large tumor in the sole of one foot as large as a pigeon's egg, which much impeded the bird in not allowing its foot to be placed in proper position on the ground, consequently the claws of two of the toes somewhat deviated from their normal growth. On March 18th, just three weeks later, another adult male came to hand, having been obtained from the river-side at Elmham; the feathers of its forehead and crown were pure white, and it had four long and broad occipital crest-feathers, being an indication of mature age. On opening its stomach, I found both that and its gullet literally crammed with five roach 9 in. in length and weighing 7 oz., a miller's-thumb, a stone-loach, and eighteen examples of the "pride" or "mud-lampers" (a somewhat local species, but too much decomposed to admit of preservation), and, lastly, two black bags of frog-spawn. An immature male Heron, killed near Wymondham, had its stomach and gullet filled with the partly-digested remains of a water vole, *Arvicola pratensis*, which it had swallowed entire, head foremost.

An adult male Coot, *Fulica atra*, having the largest bald pate I have seen, was given to me on Feb. 24th, having just been killed on Barton Broad by Mr. Preston. This species has been—I think erroneously—reported to be detrimental to the fishery interest by feeding on the small fry; but only in one instance, out of a large number of dissections I have made at different times, have I ever found this to be the case—this bird was captured by taking a small fish-bait from an eel-line on Burnt Fen Broad. On Nov. 17th a male Water Rail, with very pale plumage, was sent me, having been shot at Earsham, near Bungay. Another, a very small bird, was killed in this neighbourhood the same day, and weighed scarcely three ounces.

On the morning of October 20th I took a walk on the North Denes from Yarmouth to Caistor. Sky Larks seemed fairly abundant, sometimes in companies of seven or eight; very few Titlarks (Meadow Pipits); small flocks of Twites. I saw a gathering of about twenty Grey Crows feeding on the edge of the surf; five Snow Buntings, and subsequently two more. A solitary

Grey Wagtail passed overhead southwards; this bird is here considered uncommon by gunners and birdcatchers, although pretty common around Norwich at this time of the year. I was told a couple of these birds, a Grey Shrike, and an immature Little Gull were shot a day or two previously, and I saw three Shore Larks that had been netted during the same morning, and which were reported as the first of the season. Three Woodcocks had been killed on the denes during the previous few days. A large number of Twites arrived on the denes, but very few Snow Buntings.

A large number of waders arrived on the north coast of Norfolk early in September, seemingly most numerous at Cley and neighbourhood, the first examples being sent me on the 3rd of that month, and from that date up to the end of September I received specimens of the following species, *viz.*, Ruff, Little Stint, Knot, Curlew Sandpiper, Sanderling, Bar-tailed Godwit, Dunlin, Ringed Plover, Curlew, Whimbrel, Grey Plover, Spotted Redshank, Turnstone, Common Redshank, Golden Plover; also a few Wheatears, Stonechats, Lesser Terns, Great Black-backed Gulls, and others. A large proportion of these migrants were in immature plumage; but Mr. Gurney states (p. 85) that "only young birds were obtained." It may be well to correct this, for I found two Turnstones were adult, and a Curlew Sandpiper which still partly retained the red breast of its breeding-plumage. The rarest bird amongst the above was the Spotted Redshank, *Totanus fuscus*, a female in immature plumage, killed on the 12th; it had just begun to moult a few feathers of the adult plumage on its back; its stomach contained the remains of shrimps. Most of these migrants were exceedingly fat, especially the Sanderlings and Curlew Sandpipers, the bodies of these latter being completely encased with thick layers of that substance; the fat of the Sandpipers was whiter and somewhat harder than that of the Sanderlings. The principal contents of the stomachs of these waders I found consisted of minute mollusca, small seeds, worms, and shrimps, also a quantity of silt and pebbles, some of large size. I dissected a female Woodcock on Nov. 18th, and found in its stomach small mollusca, worms, coleopterous larvæ, and wings and other remains of small black beetles.

During the middle of November an unusual number of Long-tailed Ducks made their appearance on our coast, several examples

making their way to Rockland Broad and other pieces of water close to Norwich. A female bird shot near the coast on the 17th, and sent to me, had its stomach filled with shrimps. On the following day two ducks of this species in change of plumage were killed on Rockland Broad, and these I purchased; in both the ovaries were very little developed, showing them to be immature. The gizzard of one contained pebbles and bits of clam-shells, the other empty; both birds fat. On the same day a fourth, also a female, killed by a gunner named Ward; was sent me from Aldeburgh; the stomach contained a few small periwinkle-shells and silt; the bird was not so fat as others, and in younger stage of plumage; I subsequently received two others.

An immature male Red-breasted Merganser from Hicking on Nov. 0th; and an immature male Goosander, on Dec. 31st. from Rockland Broad; the stomach of this latter contained an entire roach of  $8\frac{1}{2}$  inches, also the partly digested remains of another of similar dimensions.

On October 6th a female Scoter was shot whilst flying along the river Yare at Buckenham, and given me by a friend; the feathers of its back were peculiarly margined with yellow. The ovary contained a large number of eggs, some as large as millet-seed. Its stomach contained numerous pieces of the lining-shell of the fresh-water mussel, some pebbles, and a small bivalve or two. The inner coat of the stomach was of a deep lemon-yellow colour.

Previous to the advent of the Long-tailed Ducks, already mentioned, a large number of Velvet Scoters visited our coast and inland waters, and several were killed on Hickling Broad, with common fowl of various kinds. The first I received was on Nov. 9th, and a second was sent to Norwich Market the same day; on the 12th a third came from the same locality: all these were males, and in immature plumage. The first weighed  $2\frac{1}{4}$  lb., and its stomach was empty; that of the third contained some pebbles, pieces of flint, vegetable fibres, and silt. On the 24th another, also an immature male, was sent me from Hickling, the stomach of which was filled with fragments of clam-shells. I subsequently received others, also young birds, which were probably some of the same flock.

A labouring man living in the parish of Ashwellthorpe, near Wymondham, on opening his door in the early morning of

Nov. 22nd, was surprised to find a strange visitor almost on his doorstep, which, having received some injury, was unable to move out of his way quick enough to avoid being dispatched with a stick. It was brought for my inspection, when I found it to be an immature Gannet. It had apparently been disabled by striking against the telegraph-wires that ran close by this man's house, which is nearly thirty miles inland.

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## ORNITHOLOGICAL NOTES FROM MAYO AND SLIGO.

BY ROBERT WARREN.

THE unusually cold and dry spring of 1887 so checked vegetation that until some showers fell on April 8th, accompanied with a higher temperature, neither the winter-sown vetches, nor new grasses, showed any signs of growth; and as we had frost nearly every night till the 8th, and snow on the hills until the 12th, our summer birds were very late in visiting this district.

The Sandwich Terns, usually such early visitors, were not heard until the 5th of April, eight days later than in 1887, and eleven days later than in 1886.

I did not hear a Willow Wren until April 23rd, and N.E. winds setting in, stopped his song for some days. Whimbrels and the Cuckoo were heard on the 28th, and Chiffchaff (unusually late) on the 30th. On the morning of the 4th of May I observed a solitary Swift, but no Swallows until the 6th; and on the 10th I heard the Corn Crake near Enniscrone, and saw the Spotted Flycatcher here on the 13th. The Common Terns were not seen on the river until the 17th, nor the Whitethroats heard singing until the 20th, but it was some days later before they were in full song. These notes are of birds observed in the Co. Sligo side of the estuary; but as some of the same species were observed earlier on the Co. Mayo side, by my friend, Mr. E. Knox, of Palmerstown, near Killala, I give his dates as supplied to me, to show the difference of time:—"On April 13th, Wheatear; 22nd, Chiffchaff; 24th, Common Sandpiper; 25th, Whimbrel; 26th, Swallow; 29th, Corn Crake; May 1st, Willow Wren and Cuckoo; 14th, Whitethroat."

On the 7th of June I went round the estuary and river in my punt, in order to ascertain what waders had remained about

the sands after the spring migration ; and also to prove the correctness of a statement made to me that a colony of Terns were breeding on the Inch, a long narrow ridge of gravel and stones thrown up by the action of the tides at Killala Pool, between Killala and Ross. Dropping down on the ebb tide to Bartragh, I observed a good many Common and Sandwich Terns, the latter engaged in bringing sand-eels from the bay to feed their mates, for the females now are all hatching, these Terns being early breeders. Very few of the Common Terns appeared carrying sand-eels ; most of them are playing and fishing about the channels. Further down on the Enniscrone Sands I saw a flock of about fifty Oystercatchers, probably barren birds, or too young for breeding, their nearest nesting-haunt being about ten or twelve miles away, near Ballycastle, Co. Mayo, where these birds breed in the fields close to cliffs along the coast. I then slowly paddled across the estuary by Bartragh, to Killala Pool at the end of the island, seeing on the way four male Sheldrakes resting on the sands, evidently flocking together (like Mallards), while their mates were on their nests in the sand-hills. A little further on I observed five Grey Plovers, but not near enough to see whether they had put on the black breasts of summer.

Several Terns, either Arctic or Common, were flying about, and a Little Tern was fishing close by ; while, a short distance off, a pretty group of five Black Guillemots, in their clean-looking black and white plumage of summer, were quietly resting on the water. I afterwards saw another bird, thus making up the three pairs. They evidently had not commenced to breed, for the nearest nesting-place was about six miles off, near Downpatrick Head ; and Black Guillemots, after they begin to breed, are seldom seen any distance from their nesting-places, and never in flocks.

I then pushed on for the Inch, for I had but little time to spare, the tide being nearly at its height, and I did not wish for a heavy pull of five miles against the tide on my return. On nearing the Inch, I observed a number of Little Terns, as well as some of the larger species, flying about ; and on the end of the gravelly spit, a little flock of both species resting together on the stones ; and near them, five or six Turnstones in the intermediate stage between the winter and summer plumages ; also

about a dozen Dunlins, all showing the rusty-coloured back and black breast indicative of summer plumage.

On landing I disturbed two pairs of the Little Terns, but on walking up to where they had been sitting I found I was too early for eggs, the birds being only preparing the little depressions in the fine gravel that were to serve them as nests. Very few of the larger Terns either were sitting. I found only six nests, four with from one to two eggs each, and two with three; one of the latter nests was in the centre of a little grassy hillock, and the other three eggs were lying on the bare stones, without the slightest attempt at lining of any kind.

I have no doubt but that most of the larger Terns were the Arctic, from the dark appearance of their under parts when seen flying overhead, and also from the fact that a very large colony of common Terns breed on the low, flat islands of Lough Conn.

I was glad to have ascertained the fact of the Little Terns breeding on this part of the coast, for although occasionally seeing an odd bird or two, I had no idea of this small colony being so near. On returning along the opposite side of the estuary from Killala, by Killroe and Moyne Abbey, I observed a large flock of Curlews in a field by the shore; and on the shore, resting along high water-mark, a flock of between 150 and 200 Godwits. Although I examined them through my glass for some time, I could not make out a single red-breasted bird, all appearing to be in the grey winter plumage.

The September and October migration of 1887 was remarkable for the unusually large numbers of Godwits and Grey Plovers that appeared about the sands and shores of the estuary, the latter birds scattered about everywhere, and were unusually tame, there being no difficulty in approaching within shot from a punt, most of them appearing to be young birds, having but little fear of any danger from boat, or punt. However, by the first week in November the greater part of the Grey Plovers disappeared, leaving only the usual numbers that are seen frequenting their haunts round the bay and estuary; but the Godwits remained about the sands all throughout the season. We had a large number of Golden Plover, and fair numbers of Wigeon, but I never remember so few Great Northern and Red-throated Divers about, the birds being absent from many of their usual haunts; and where two or three used to haunt

particular parts of the coast, a solitary bird would only be seen during the past season.

On the 3rd of January I observed nine Wild Swans flying up the river. They had come in from the bay from a northerly direction, and were evidently making direct for Lough Conn; three birds, from their dark plumage, appeared like young birds of the year, and their call was not like that of Whoopers, but more like Bewick's.

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### WINTER ROOSTING COLONIES OF CROWS.\*

BY C. L. EDWARDS.

Crows constitute one of the most sagacious, gregarious, and omnivorous genera of birds. Throughout their wide distribution they form colonies which may be either small and of the family nature, where the Crows do not migrate but live together throughout the year, or of large aggregations, composed mainly of migrants collecting together for the winter. In America their winter colonies are found at or about 40° N. latitude along the Atlantic coast and in the valley of the Mississippi. They are so populous and so well organised, and their roosts so permanent, that they afford one of the best fields for the psychologist to study the manifestations of the social instinct. Although various phases of their gregarious habit have been recorded by a number of observers, there has hitherto been no systematic attempt to present the topic as a whole, including study of individual colonies, the number of colonies, with a general conspectus of the American literature and legislation upon the subject, such as is attempted in this preliminary report, to be followed by more detailed study of special phases later.

The importance of the topic for all interested in what, since Palmén and Beard, might almost be called the philosophy of bird migration, or in the study of those remarkable social organisations our knowledge of which has been so well compiled by Espinas, and which has been so suggestive to so many writers, or in the social organisations of mankind, is obvious.

Although throughout New England and New York Crows are

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\* From the 'American Journal of Psychology,' 1888, pp. 436—459.

found as winter residents, and roosting colonies of several hundred individuals have been reported, yet the large majority of Crows migrate southward to spend the winter. Audubon says they "become gregarious immediately after the breeding-season," forming large flocks which towards autumn remove to the Southern States. Dr. C. Hart Merriam tells me that in New York, soon after the nesting-season, as early as July and August, the Crows collect in flocks which gradually increase in size until numbering several hundred individuals. In October these flocks migrate, and, with the Crows indigenous to our more southern territory, form the winter colonies.

These colonies have been reported from Delaware, New Jersey, Virginia, Pennsylvania, and Maryland, in the East, and from near St. Louis, Missouri, Kansas, and Nebraska, in the West. Mr. Rhodes gives a list of fourteen roosts: eight in New Jersey, two of which are now in use, the others having been deserted from two to forty-five years; four in the Delaware River, one of which, Reedy Island, is now in use, the others deserted from twenty to seventy years; and two in Pennsylvania, one of which is in use, the other deserted eight years.

The literature of Crow-roosts is not very extensive. The most historic is the Pea-patch, described by Wilson, "near Newcastle, on an island in the Delaware . . . a low, flat, alluvial spot of a few acres, elevated but little above high-water mark and covered with a thick growth of reeds. . . . It is entirely destitute of trees, the Crows alighting and nestling among the reeds, which by these means are broken down and matted together." The colony was once destroyed during "a sudden and violent north-east storm" by the tide flooding the island. Wilson continues: "This disaster, however, seems long to have been repaired, for they now congregate on the Pea-patch in as immense multitudes as ever."

According to S. W. Rhodes this historic roost, the condition of which Nuttall in 1829 did not know, "was abandoned soon after the construction of Ft. Delaware was begun in 1814, and . . . the Crows betook themselves to Reedy Island as the most convenient substitute." Nuttall first tells us of the colony at Reedy Island. Mr. George W. Jones, keeper of Reedy Island Lighthouse, in a report kindly sent me by Dr. C. Hart Merriam, says:—"The island, one mile from the mainland, opposite Port

Penn, Del., is two miles long, and contains about sixty-five acres of marsh-land. There are no trees or bushes, but the reed-grass grows very thickly upon the island. The Crows occupy about twenty acres, breaking down the reeds, which are from seven to nine feet tall, and roosting upon the broken stems."

Dr. John D. Godman has left some valuable observations upon the Crow, and as he lived for a time in Anne Arundel County, Md., only three or four miles from the Arbutus roost (described later), it was no doubt the ancestors of these Crows that he observed. "The roost is most commonly the densest pine-thicket that can be found, generally at no great distance from some river, bay, or other sheet of water which is last to freeze or rarely is altogether frozen. To such a roost the Crows, which are during the daytime scattered over, perhaps, more than a hundred miles of circumference, wing their way every afternoon, and arrive shortly after sunset." Mr. S. W. Rhodes gives personal observations of a colony near Merchantville, Camden Co., N. J., which occupies oak-trees twenty feet high, covering fifteen or twenty acres of ground.

Dr. Coues says:—"In settled parts of the country the Crow tends to colonise, and some of its 'roosts' are of vast extent. Mine is on the Virginia side of the Potomac, near Washington." Concerning this roost, a newspaper writer, "Invisible," tells us, among many highly-coloured items, that "for an unknown period of time, probably ever since the Potomac Valley was settled, if not long before, the woods of 'Cooney,' the old ante-bellum popular term for that part of Alexandria and Fairfax counties bordering on the Potomac, have been occupied by a vast colony of Crows. They now roost in the grand old oaks at Arlington. Years ago they occupied a strip of pines that grew back of the river above Georgetown."

Mr. H. W. Henshaw, of Washington, who has known of this roost for about sixteen years, tells me that the Crows about Washington come in from the surrounding territory by three main streams, the largest coming from the south, down the river; the next in size from the east, flying over the city, and probably feeding along the shores of the Eastern Branch of the Potomac; and the third, scattering, from the west and south-west in Virginia. During cold or stormy days they do not disperse so widely, and stay about on the Potomac flats near the city. Last

year there were estimated to be 40,000 or 50,000, but this year probably twice as many. The main colony is of two or three bodies within the area of a square mile. The roosts are not exactly continuous, but pretty close together, according to the clumps of trees. The Fish Crows are about one to five in proportion to the Common Crows.

In Baird, Brewer, and Ridgeway is an account of one of these colonies of Crows, possibly journeying northward, "from the lips of the late John Cassin, an ornithologist hardly less remarkable for his outdoor observations than for his researches in the closet." On a Sunday morning in April, 1868, when Philadelphia was enveloped in an impenetrable fog, a body of Crows numbering hundreds of thousands alighted in Independence Square. "As if aware of their close proximity to danger, the whole assembly was quiet, orderly, and silent. A few birds, evidently acting as leaders, moved noiselessly back and forth through their ranks, as if giving tacit signals." Then scouts departed to explore, and upon their return the leaders again went cautiously through the ranks. But they did not move until another exploring party had made its report, apparently more favourable, then "the whole of this immense congregation rose slowly and silently, preceded by their scouts, and, moving off in a westerly direction, were soon lost to view."

The Fish Crow (*C. ossifragus*, Wils.) is confined to the Atlantic seaboard from Long Island to Florida, and the Common Crow (*C. americanus*, Aud.) is most numerous east of the Rocky Mountains. W. W. Cooke and Otto Widemann say that the Common Crow is a resident of St. Louis and vicinity, roosting by thousands in winter among the willows opposite St. Louis.

In a note in the 'American Naturalist' for December, 1887, Mr. W. Edgar Taylor signalises a roost "covering perhaps four or five acres, on Hog-thief Island, in the Missouri River, about six miles above Peru, Neb." "Two other good-sized roosts are known, one ten miles north, and the other on an island eight miles south of Hog-thief Island." Mr. N. S. Goss, author of 'Kansas Birds,' is quoted as saying that several large roosts exist in Kansas.

Mr. Taylor says the Hog-thief Island roost has been occupied for at least twenty-five years. "The Crows assemble about the 1st of October, and disperse about the 1st of May. About

daybreak on a fine morning, when setting out for a day's journey, their chatter and noise may be distinctly heard in Peru, six miles away. The Crows in severe winters peck holes in the backs of hogs, in some cases eating off the ears. Sometimes these Crows roost in small bushes and large weeds, but generally in trees, often the willow or cottonwood."

In the great region west of the Rocky Mountains we practically leave the haunts of those species of the Crow genus heretofore considered, and enter the land of the largest of Crows, the American Raven (*C. corax sinuatus*, Wagl.). It is interesting to learn from Baird, Brewer, and Ridgeway that the Ravens form winter colonies much as our eastern species. Dr. Coues is quoted as observing them "congregating in autumn and winter about Fort Whipple, Arizona." Their roost was in the pines near the small enclosure where the beeves were slaughtered for the garrison, "and the banqueting there was never ended" upon the offal. Also Captain Blakiston observed them near Fort Carlton. They keep together in pairs during the day, but at night roost in one immense body in a clump of aspen-trees about a mile from the fort. The incoming and outgoing of the Ravens from the roost was with wonderful regularity. They assemble about sunset, and disperse about half-an-hour before sunrise.

Mr. Watase (a Japanese student in this University) tells me that there are vast numbers of Crows in Japan, especially in the northern part, where they do immense damage to the crops. In Tokio, in the great forest called the Emperor's Garden, right in the heart of the city, there is a colony of many thousand Crows which have their nests there, and at dusk from ten miles about they gather at this rookery. Some ten or fifteen years ago a law was passed in Japan that the Crows be exterminated. All their nests were torn from the trees, and policemen were dispatched in every direction to kill them. Thousands had been destroyed, when some thoughtful person suggested that the Crows were of great value to the city as scavengers; then the carnage was ordered to be stopped, and to-day, protected by law, they are apparently as numerous as ever. But where the crops suffer from Crow depredations, as in the north of the empire, the law giving a bounty of five cents for every Crow's head is still in force, and there are men who do nothing but go about killing

Crows, and indeed make of it a lucrative business. The Crows sometimes become so violent that they attack the trains of pack-mules which carry fish inland from the sea-shore. They pick off the flesh from the mules' backs, pluck out their eyes, and at times become very dangerous and violent, so that it is with great difficulty that they are driven off. There are three species in Japan, *Corvus japonicus*, which is distinctly Japanese; *Corvus corax*, which is said to be identical with our Raven; and *Corvus corone*, the Common Crow of Europe.

The colonies, which are formed only for the winter, come together late in the fall and break up in the spring, following the generally accepted laws of bird migration. In the report of Mr. Jones, of Reedy Island, in part given above, he says that the Crows come from the 1st of September until it gets cold, and begin to leave by the 1st of April, until in the last of May none are left. While at St. Louis, Cooke and Widemann say that by March 14th most of the Crows have left the winter roost.

The main element bringing them together in a common body at night, I take it, is the social. In the choice of a roost, scarcity of mankind and access to food, combined with a growth of trees available for roosting upon, are the principal points considered. A region once selected is kept for a great many years, if there is no very decided disturbance to cause emigration.

(To be continued.)

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## NOTES AND QUERIES.

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**The British Association.**—The next Annual General Meeting of the British Association for the Advancement of Science will be held at Bath, commencing on Wednesday, September 5th, the President elect being Sir Frederick Bramwell, D.C.L., F.R.S. A detailed programme of the meeting has not yet reached us, but in our next number we shall doubtless be able to give some information respecting Section D. (Biology) that will be of interest to our readers.

## MAMMALIA.

**A white Roe.**—For the last six years a normally coloured Roe has regularly produced white fawns, which unfortunately have always reverted to the ordinary colouring within two years. At present a two-year old white doe, which survived the hard winter of 1887–88 has brought forth a white fawn, which was found yesterday (June 1st) to be strong and healthy.—HERMANN SCHEINPFLUG (Frauenhain, near Dresden).

[Except in the case of the semi-domesticated Fallow-deer, albinism amongst the *Cervidæ* is of rare occurrence. A white Roe is preserved in the collection of the Margrave of Baden at Zwingenburg Castle, and another procured at Luss, on Loch Lomond, was preserved for the late Sir James Colquhoun.—ED.]

**Bank Vole in Surrey and Yorkshire.**—The Editor, at the conclusion of his excellent paper on the Bank Vole, *Arvicola glareolus*, asked for information as to its distribution. I am surprised that no one seems to have observed the Bank Vole in Surrey, or if they have, they have failed to report it. Up to eight or nine years ago I had resided for many years in Surrey, and have since visited this my native county for three or four weeks yearly. I first became acquainted with this Vole about twelve years ago when at school at Guildford. In the course of our day and half-day holidays we did not leave a foot of ground unexplored for a radius of fifteen miles around Guildford. During one of these rambles I and other school-fellows found the Bank Vole and Dormouse fairly common near Puttenham Caves, near Guildford. I have also found it in two or three woods near Westcott, where I resided. In Yorkshire I have several times met with this Vole in the woods at Ripley. During the summer of last year I found a dead specimen there. It has also been seen in other localities near here.—F. R. FITZGERALD (Secretary, Naturalist Society, Harrogate).

## BIRDS.

**Pallas's Sand Grouse in North Yorkshire.**—According to the information I have been able to gather, it appears that Sand Grouse, *Syrhaptus paradoxus*, were seen here in the second week of May; the exact date I could not ascertain. A flock of six was first noticed at the Tees-mouth, and frequently observed until June; most probably all these birds perished, as several were found dead on the neighbouring salt-marshes; the tail and a foot of one were brought to me on June 12th. On May 22nd a female, in good condition, was picked up on the sands between Redcar and Marske, the ovary containing eggs the size of No. 1 shot. About the same date another was washed up by the tide; I saw the remains of this bird as late as June 28th. On June 7th five were shot from a large flock near Marske; I had an opportunity of examining them shortly afterwards, and

secured two; there were four females and one male; all the females had eggs in the ovaries, and one had evidently nested, as the ovary contained only two eggs, one of them the size of a hazel-nut. On June 10th a flock of twelve was seen on Redcar sand-hills. On the 12th a flock passed one of the fishing-boats at sea, heading towards land. Other flocks were reported from time to time, but probably they formed part of those already mentioned, although, on the other hand, it is not improbable that fresh arrivals may have come over. On June 25th a pair were seen near the Tees-mouth. On the 30th, wind N., strong, I found one on the Redcar sands; it had been in the water a considerable time, for the head was gone and the body sodden with water. On the same date a flock of thirteen was flushed at the Tees-mouth. On July 1st a flock of about a dozen and an odd bird were on Coatham sands. On the 3rd one on Redcar sands; it remained within a hundred yards of the town, picking amongst the gravel at high-water mark until disturbed by a passing dog. On the 4th, eight at the Tees mouth, flying W. On the 9th two flew past Redcar at 6.30 a.m., going N.W., and calling loudly. Other instances in Cleveland:—May 23rd, twelve near Whitby, and a male and female shot. About the end of May one was picked up at Battersby on the railway, killed by coming in contact with the telegraph-wires. On June 1st a female bird was found below the telegraph-wires between Hinderwell and Kettleness. On June 10th a flock of twelve appeared near Ormesby.—T. H. NELSON (Redcar).

**Pallas's Sand Grouse in Yorkshire.**—A small flock of these birds was seen in the neighbourhood of Withernsea, and one, a female, was shot by Mr. Simpson, of that place, and has since been sent to me.—F. R. FITZGERALD (Harrogate).

**Pallas's Sand Grouse in Yorkshire.**—On May 26th I observed four of these birds near Beaver Dyke. A party of six strange birds were seen in Nidderdale on May 22nd, and from the description given to me I have no doubt they were of this species. Mr. T. Smorfit, of Darley, in Upper Nidderdale, shot two others out of a party of five near Darley, on June 4th; they were feeding, when, seen in a field of tares. A flock of fifteen are reported to have been seen at Goldboro' on May 30th by a farmer resident there.—RILEY FORTUNE (Harrogate).

**Pallas's Sand Grouse in Durham.**—Six were noticed in a field between Bishop's Auckland and Byers Green on June 3rd.—T. H. NELSON (Redcar).

**Pallas's Sand Grouse in Northumberland.**—Writing from Durham on June 6th, Mr. James Sutton says:—"Several Sand Grouse have been sent to this city. Last week I examined four brace, *viz.*, two males and six females, mostly shot in Northumberland the last week in May. I also had a present of a brace shot on the 30th or 31st of May; average weight

about 10½ oz.; eggs very little developed.”—[Communicated by Lieut.-Col. E. A. Butler.]

**Pallas's Sand Grouse in the Isle of Man.**—A correspondent residing in the Isle of Man informs me that a large flock of about fifty visited the island early in June.—T. H. NELSON (Redcar).

**Pallas's Sand Grouse in Norfolk and Suffolk.**—On May 27th I saw a flock of eleven Sand Grouse on my ground, flying east towards Yarmouth. They were only about twenty yards from the ground, and passed within fifty yards of me, with the sun shining full on them, so I had an excellent view of them. Mr. Lawrence Peto told me he saw a flock of eleven on Sir Savile Crossley's ground, which adjoins mine, on the following day,—about a mile from where I had seen them the day previous,—which were probably the same birds. Several others have been seen, and some shot and picked up dead, about Lowestoft and Yarmouth, and there is a rumour that the eggs have been taken already in Norfolk. I have numerous other notes of their occurrence, some from Ireland; so that they seem to be more or less abundant throughout the United Kingdom. My son, writing from Beccles, says Sand Grouse have been shot everywhere containing eggs, and many which had evidently been sitting, and a few nests have been found, but the locality has been kept secret (June 27th). G. W. Smith, Great Yarmouth, in a letter dated June 12th, says he saw twenty-two one day on the sand-hills, and approached within a few yards of them; also that eggs had been procured in Norfolk. Again, writing on the 15th June, he says:—“In a letter received yesterday from Mr. John Eggleston, the dealer at Sunderland, he told me he had just bought a clutch of eggs from Norfolk, giving 20s. a-piece for them.” Mr. W. E. Baker, writing to me, on June 9th, from Lynn, Norfolk, says:—“I am sorry to mention that a good many Sand Grouse have been shot near Lynn; a friend of mine caught one alive, and it is doing well in his aviary.” Col. Shuttleworth told me that Mr. Smith, naturalist, Yarmouth, showed him two Sand Grouse, male and female, which were shot close to the Golf Links, on June 11th, and that he had seen a flock of about twenty on the wing there himself. I also saw a pair in the shop of Mr. Bunn, naturalist, Lowestoft, which were killed near that town in the middle of June.—E. A. BUTLER (Herringfleet Hall, near Lowestoft).

**Pallas's Sand Grouse in Hampshire.**—Mr. James Sutton, writing from Durham on May 31st, says:—“I have just examined two hen Sand Grouse in the hands of the Subcurator here, both killed by telegraph-wires, one near here, the other near Winchester.”—[Communicated by Lieut.-Col. E. A. Butler.]

**Pallas's Sand Grouse in Co. Down.**—Mr. Sheals, Birdstuffer, Belfast, writing on May 30th, stated that he had just received a Sand Grouse, which had been shot at Killough, Co. Down.

**Pallas's Sand Grouse in Wexford.**—On June 14th Mr. James Bent, Rosslare, Co. Wexford, sent me the skin of a bird of this species, which he shot there early in June. It had been badly skinned by a boy, and spoiled as a specimen, but is perfectly recognizable. This is the only specimen that has come under my observation in the South, though I have heard of captures of Sand Grouse in several other parts of Ireland, of which I hope particulars will be given.—R. J. USSHER (Cappagh, Co. Waterford).

**Pallas's Sand Grouse in Spain.**—I received a letter a few days ago (July 23rd) from my friend Don José Arévalo y Baca, Director of the Natural History Museum of the University of Valencia, informing me that a male of Pallas's Sand Grouse was killed from a flock of five or six on June 9th, on the sandy shore that extends between the two canals known as Perèlló and Perellonet connecting the Lake Albufera with the sea, some ten miles to the S.E. of the above-named city. Señor Arévalo writes of the *Syrrhaptes* as hitherto unknown in Spain.—LILFORD.

**The European Lapwing in the Island of Barbados.**—Dr. Charles Manning, of this island, has in his possession a live Lapwing, *Vanellus cristatus*, which was shot at and injured in one wing on the 24th December, 1886, in the island of Barbados. This bird has now been eighteen months in confinement, and when I saw it, a few days ago, appeared to be quite healthy; it is fed on earthworms. I am not aware of any authenticated record of the prior appearance of this species in the West Indian islands, nor, for the matter of that, on the American continent, unless we include Greenland, from whence it has been recorded. That it should have survived the great ocean passage of over four thousand miles is a remarkable fact.—H. W. FEILDEN (Barbados, June 25, 1888).

**Golden Plover carrying its Young.**—When walking with a friend across an upland moor in Peebleshire, on June 23rd, we flushed a pair of Golden Plover, which flew about and screamed in such a manner as led us to suspect that their young must be concealed in our immediate vicinity. On proceeding to search about the place one of the old birds, the female, flew towards us, and, settling in the heather about twenty yards from where we were standing, rose again almost immediately with a young one between its legs, which it carried flying close to the ground for a hundred yards or so, when it again pitched, ran a short distance, and taking wing finally settled on a neighbouring hillock, where it commenced its cry of alarm as before. We proceeded to the place where we saw it alight, but owing to the closeness of the heather failed to find the young one, nor did the old one attempt to repeat its former performance. Although numerous instances are recorded in which the Woodcock has been seen to carry its young out of danger, I think the Golden Plover rarely acts in such a manner, and if I am right in my conjecture, the above may have sufficient interest

for insertion in 'The Zoologist.'—T. G. LAIDLAW (St. Andrew Street, Edinburgh).

**Reported occurrence of the Little Egret in Yorkshire.**—I would suggest that the Little Egret alleged to have been obtained at Aike, near Beverley (Zool. 1884, p. 177), *vide* Mr. Ruskin, endorsed by Messrs. Clarke and Roebuck, was probably an example of the Great White Heron, *Ardea alba*. The evidence is as follows:—Both captures are said to have been made by labourers of Mr. James Hall, of Scarborough, near Bridlington. Particulars of the capture of the White Heron are given in the British Association Report for 1838 (p. 106), and Mag. Nat. Hist. 1839 (p. 31), but unfortunately we are not sufficiently supplied with the requisite particulars about the Little Egret. In 1871 I corresponded with Mr. Hall, when no mention was made of more than one bird, which he said was killed about two miles from his house, adding, "I had it here in its dirty, bloody, disfigured state, sending it myself to Read, of Doncaster, who restored it." In Gould's 'Birds of Great Britain,' and in Yarrell's 'British Birds,' it is alluded to as a Little Egret, the assumption being that there were two Egrets, one said to have been killed about 1835 and one about 1840—the former *Ardea alba*, the latter *A. garzetta*. Mr. Gould told me he had the late Lord Hotham's authority for the Egret killed in or about 1840 being a Little Egret, and that he assured him it belonged to the smaller species (*A. garzetta*); if this was so there were two birds, and the discrepancy in the dates is accounted for.—J. H. GURNEY, jun. (Keswick Hall, Norwich).

**Young Rooks with white Chin-spots.**—Two years ago (Zool. 1886, p. 339) I called attention to the curious fact that a very large number of young Rooks have a more or less obvious spot of white between the rami of the lower mandible—that is to say, on the chin. This spot is sometimes as large as a halfpenny, but is seldom so large as a farthing, and is often indicated only by a few white feathers. It seems to have no connection with sex. In 1886 I examined 191 young Rooks, of which 78 only (considerably less than one-half) had the white chin-spot. This year I have examined 179, of which no less than 101 (or considerably *more* than one-half) had the white spot. Altogether, therefore, of 370 birds examined 179 have had the white spot, and 191 have not. I may add that all young Rooks certainly do not lose the feathers round the base of the bill at the first autumnal moult. Last January I obtained a couple which still retained them.—MILLER CHRISTY (Chignall St. James, Chelmsford).

**Golden Oriole and Stock Dove in Cornwall.**—I have to record the capture of an adult male Golden Oriole in the Trebartha Valley last April. It was in company with some Thrushes. The Stock Dove, which in Rodd's 'Birds of Cornwall' is stated not to breed in this peninsula, has within the

last four years been frequently noticed in summer. I took a nest from a hole in an oak-tree in this parish in May, 1886, which was the first occurrence that I know of. My friend Mr. R. Kelly, of Kelly, in a letter this spring, requested me to identify a Pigeon breeding in a rabbit-hole there: and three instances have occurred of the bird breeding in rabbit-holes in my own gravel-pits, the keeper also having brought me young birds caught by him in rabbit-traps. I consider this breeding of the Stock Dove in Cornwall the more interesting, as it is a parallel case to that of the Starling, which I first noticed here in 1856, and which now is too common to excite attention.—FRANCIS R. RODD (Trebatha Hall, Launceston).

**Food of the Kestrel.**—The Kestrels in our church-tower, recently mentioned by me (p. 269), have safely brought off their young. The nestlings, at about two days old, much resembled small white chickens. They grew rapidly, and soon began to resent the approach of their numerous visitors by hissing and spitting, very much after the manner of a small kitten on its first introduction to a dog. As they grew older they would sit up in the nest almost erect, resting on the whole length of the tarsus, like a Guillemot; they remained in the nest, as nearly as I can say, for five weeks. I noticed the remains of one Starling and several Sparrows, which had been brought for food, but not a sign of either pheasant or partridge. On the day the young ones left the nest I found a mouse, *Mus musculus*, quite fresh, and not touched. It is seldom that one has the chance of examining a Kestrel's nest by simply walking upstairs to it, and I much hope these interesting birds will return to the same tower next spring.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

**Song of the Great Tit.**—On the 30th September last my attention was attracted by what I suspect to be the very unusual occurrence of a Great Tit, *Parus major*, singing. The bird was in a tall hedge beside me. His strains were uttered in an undertone, after the manner of the Sky Lark and Robin, when they sing while standing on the ground, and seemed to be a mimicry of the song of the latter bird, intermixed with the notes of the Linnet. The hedges were getting very bare, and I was able to watch the bird for a minute or more, during which he sung two or three times as he hopped slowly along the hedge.—L. W. WIGLESWORTH (Castlethorpe, Bucks).

**The Osprey in Barbados.**—Schomburgh, in his 'History of Barbados' (p. 631), records that a large Fish Hawk (perhaps *Pandion carolinensis*) was shot in October, 1835, at Graeme Hall Swamp. Several Ospreys, *Pandion haliaëtus*, appeared in the island of Barbados during the month of October, 1887. One of these is preserved in the collection of Dr. Charles Manning, and another, a fine female, shot in the same month and year, is in the collection of Mr. Herbert Hart, of Fairfield, also in this island. The

Osprey may be called an irregular and somewhat rare visitant to Barbados. I have a specimen of *Circus hudsonicus* (Linn.), given me by Dr. Charles Manning, who obtained it in St. Philip's parish, September, 1886, in the vicinity of a dovecot. It is a young bird, and the first recorded from this island.—H. W. FEILDEN (Barbados, June 25).

**Great Crested Grebe in Yorkshire.**—The Crested Grebe, *Podiceps cristatus*, has for some years made its home on the Mere at Hornsea. A few years ago a pair or two settled down on its sheltered waters, and now we have quite a little colony of these graceful birds as tenants of our Mere. On May 24th I visited their nesting-place, under escort of the keeper. Half-a-dozen nests, within a radius of as many yards, soon revealed a parent-bird or two sitting on their eggs. As the boat neared the tall reeds the bird plunged quietly under water, after rapidly covering up her eggs, stained by the dark water-weeds. The eggs of this Grebe vary from four to five.—PETER INCHBALD (Grosvenor Terrace, Hornsea, Hull).

**Notes from Rutlandshire.**—While walking through the meadows bordering the Welland river, in this county, on Jan. 28th last, I observed ten wild geese flying overhead in a south-easterly direction. From information subsequently received, I believe these to have been White-fronted Geese, two of which species were obtained on the river near Uppingham about the same time, and have already been recorded in 'The Field.' I first noticed Partridges in pairs on Feb. 3rd, but from the prolonged and severe wintry weather which followed this date, nesting has been unusually late this spring. On March 13th, during the very considerable flood caused in the lower parts of the Welland valley, I noticed two gulls fly up from the edge of the flood-water near Tinwell village, and again on the following day there were four gulls standing on a portion of meadow near Ketton from which the flood had just receded. I note this circumstance as gulls are not often observed in this entirely inland county. The birds being seen only from a passing train, I was unable to distinguish the species, but from their size, and not having black heads, imagine them to have been either Common Gulls or Kittiwakes. On March 24th I was pleased to see on the lake in the park a single specimen of the Great Crested Grebe, which the park-keeper informed me had been there for some days. I made no attempt to obtain it, hoping it might be joined by another, and that the pair would remain there to nest; but unfortunately it disappeared shortly afterwards, and did not return again. The Swallows did not arrive this year till April 15th, and the Cuckoo on the 21st. On April 19th I flushed a Green Sandpiper on the banks of the Welland near Tinwell; this bird is occasionally seen on the small rivers and brooks of this county, but is not common, and appears chiefly in spring and autumn. The Swans in Exton Park were busy with their nest on March 24th, though there was much cold weather and snow after that date;

on April 14th I saw the female bird sitting, and subsequently five young ones were hatched, all but one of which shortly afterwards disappeared, presumably being devoured by the pike: this unfortunately happens with nearly all the cygnets on these ponds. On March 27th I received a letter from the gamekeeper at Burley-on-the-Hill, informing me that he had seen a Redstart on the previous day; though an early date for this bird, I have no reason to doubt the accuracy of my informant, as he is a good observer, and the bird breeds annually close to his house. During the earlier part of the spring all birds were somewhat later in nesting than usual. A pair of Lapwings appeared to have a nest in a fallow-field near Ketton on April 1st. Jackdaws were building on the 7th, and Thrushes and Blackbirds on the two following days. The first Pheasant's nest was seen at Barnsdale, near Exton, on the 16th, and I obtained the first Plovers' eggs two days afterwards, on the 18th. The Blackcap appeared on April 12th, the Wryneck on the 15th and the Whinchat—or, as it is locally called, "Ulick"—on May 1st. I was told by one of my keepers that he had seen a Turtle Dove on April 14th—an early date for this bird, but the man expressed himself as certain about it. On May 8th I observed a Wheatear on a fallow-field near Cottesmore village; I had previously seen one close to the same spot in September last year (1887); these birds are not often seen here, and appear to pass only in spring and autumn without remaining to breed. On May 24th I had the good fortune to find two Hawfinches' nests, both in apple-trees, and each containing five eggs; the eggs in one nest were of the smaller and rounder type, with the markings more scattered over the whole surface, and the black spots very dark and bright. In the other nest they were of the more ordinary type, longer and more pointed, with the dull, dusky, and streaky marks peculiar to this egg more evident, and the black spots fewer, and more at the larger end. These birds breed annually in this county, but the nest is not easy to find; I have seen as many as five and six of these birds together, both in summer and winter. On the following day, May 25th, I saw a Lesser Spotted Woodpecker on a white poplar-tree at Burley ponds; this bird is not unfrequent in the woods in this neighbourhood, but is difficult to distinguish unless it is traced by its loud and curious note. The Sedge Warbler, the Reed Bunting, and Yellow Wagtail were also seen by these ponds. On June 6th I heard and saw both the hen and the cock bird of the Wood Wren in Tunneley Wood, near Exton Park; the bird has not often been seen in this neighbourhood. While driving to Pickworth on the next day I saw as many as eleven Stock Doves on the ground in one field—rather an unusual number to see together. On the following day, June 8th, I heard a Water Rail uttering its curious note in the sedges in the upper pond in the park; this bird, being of very shy habits, is seldom seen except when flushed by beaters in the shooting season.—GAINSBOROUGH (Exton Park, Oakham).

**Garden Warbler nesting at a height from the Ground.**—In June last I found a nest with young of this bird in the top small twigs of a young birch, between seven and eight feet from the ground, in a plantation, and just below the level of the top of the wall separating it from a public road. I had a very good view of the bird. Some long straws were attached to the nest and fastened among the little twigs of an adjoining branch to that in which the nest was held, possibly with a view to lessening the effect of the wind, which, however, in the plantation would not be considerable. I do not remember ever before seeing a Garden Warbler's nest into which I could not look without difficulty.—JOHN P. THOMASSON (Woodside, Bolton).

**Turtle Dove in Co. Sligo.**—On the evening of July 13th, close to the lawn here, I observed a Turtle Dove, *Turtur communis*, feeding in a newly-sown turnip-field, picking up any seeds left uncovered by the turnip-sower; and again, on July 16th, I saw the bird near the same place. On being disturbed, on both occasions, it flew into an ash-tree on the lawn, and, from its tameness and apparent unwillingness to leave the locality, it may possibly have a nest and mate hatching near. This bird is a very rare visitor to this western district, and has only come under my notice in the years 1862 and 1882, as already recorded in the pages of 'The Zoologist' for 1877 and 1882.—ROBERT WARREN (Moyview, Ballina).

**Supposed Nesting of the Green Sandpiper in Norfolk.**—Mr. W. E. Baker, writing to me from Tilney All Saints, Lynn, on June 9th, says:—"I just missed finding a nest of the Green Sandpiper, *Totanus ochropus*, it having hatched off a few days before I went to search for eggs. The keeper told me a boy picked up one of the young ones, and he made him take it back again. I did not see the birds myself, but often saw them in this district last summer, and wholly concluded they nested there."—E. A. BUTLER (Herringfleet Hall, near Lowestoft).

[As no properly authenticated instance of the Green Sandpiper breeding in the British Islands has been recorded, it would be very desirable to have further particulars of the case above referred to, and particularly to learn in what situation the nest was placed, and of what materials it was composed.—ED.]

**A Visit to Lord Ilchester's Swannery at Abbotsbury.**—In this swannery, which is situated at Abbotsbury, about eight miles from Weymouth, and protected from the sea by the Chesil Beach, a high bank of shingle, there are now from six to seven hundred Swans. On June 4th the birds had mostly hatched. In some cases the keeper is obliged to break the shell, as the parent bird, after hatching three or four eggs, would probably eject the remaining ones from the nest. The average number of eggs laid is five, and the largest number that the keeper can recollect is eleven, all of

which were duly hatched. [Probably laid by two birds.—ED.] He broke an egg in our presence; the horny tip of the bill of the young bird, by which the egg-shell is usually broken, was very apparent. The young bird was wet and very draggled, but appeared lively, and the keeper said that in a few hours it would recover itself and be in a fluffy condition, and he showed us one in that state. The Swans often fight, the combats sometimes terminating fatally. We saw one nailed by the head to the keeper's shed, which had been killed that morning in a fight, its neck having been broken by its adversary. More frequently, however, their wings get broken, and then the keeper is obliged to despatch them. On a separate pool we saw the king and queen Swan, which breed there by themselves, not allowing any others to approach. On the shore, round the main piece of water, there was a flock of Dunlin (*Tringa variabilis*), and Ringed Plover (*Charadrius hiaticula*), with one Little Stint (*Tringa minuta*). Over the water were flying Common Terns (*Sterna hirundo*), and among them a few Lesser Terns (*Sterna minuta*); as well as Common Gulls (*Larus canus*), and some Herring Gulls (*Larus argentatus*). On the sand, by the water's edge (which, by the way, is brackish), was a Turnstone (*Strepstilas interpres*), in splendid plumage, and a Common Cormorant (*Phalacrocorax carbo*) was seen flying just over the surface of the water. At the back of the swannery is a decoy in which a Pintail Duck (*Anas acuta*) was caught a few years ago, and which we saw swimming about with Mallards. The Pintail Duck, which is a hen, has since been provided with a mate. The wild duck are decoyed by means of tame birds, which are fed at the entrance of the tunnels, enticing wild birds to them, when both are driven up the tunnels and secured at the end, the wild birds being then killed. About 200 are caught in this way in a season. The keeper said that the Ringed Plover breeds sparingly, and the Terns plentifully, on the Chesil Beach, above referred to. The swannery is open to visitors all the year, excepting when the decoys are at work, and is well worth seeing, and no ornithologist, being in the neighbourhood, should miss visiting it. A week later we visited the Chesil Beach in search of eggs. After walking half-a-mile or so, we found a nest of the Common Tern, containing three eggs of the usual type. This nest, in common with scores of others found later on, was placed in a slight hollow in the shingle. Only in a few cases were the eggs placed on the bare ground, all the rest having, some in larger quantities than others, the dried stems and roots of the bladder campion (*Silene inflata*), surrounding them. The above plant was very numerous, almost covering the beach in some places. As we advanced the Terns rose in hundreds, if not in thousands, before us, flying over and around our heads, uttering their shrill screams, while the Ringed Plover, hovering low over the ground, whistled their shrill note. Notwithstanding the great number of Lesser Terns seen, we were unable to find their eggs, although, during our walk, we came across

several hundred eggs of the Common Tern. Three was the greatest number of eggs we found in a nest, although the keeper of the swannery informed us afterwards that they laid four; but as he said that many people visited the Chesil Beach, and that on the Sunday before "a party" had been there and taken, as he said, "'undreds and 'undreds" of eggs, it was not surprising we did not find the full number. We obtained several interesting varieties, the most curious one, perhaps, being of the size of a Thrush's egg. It was evidently too late for the eggs of the Ringed Plover, as the two nests we found contained respectively one and two young ones. These were placed in the middle of two plants of the bladder campion, and were rather well-hidden from view. When placed on the beach they could hardly be noticed, their colour harmonising wonderfully with the shingle. On a marshy piece of land in the middle of the "Fleet," as this backwater is called, were several Cormorants and Shags, standing apart, with their wings outstretched.—ERNEST SALMON (Clevelands, Wray Park, Reigate).

**The Speed of Swallows.**—An experiment has been recently made in Ireland with a view to ascertain at what rate Swallows fly. On July 12th a House Martin, *Chelidon urbica*, was taken from a nest which contained young under the eaves of Lowry's Hotel at Tubbercurry, Co. Sligo, and, after being placed in a cage, was conveyed ten miles away to Ballymote, where, at 10.30 a.m., it was liberated. The nest was watched, and at 10.43 a.m. the bird returned, having accomplished the ten miles in twelve minutes, a rate of speed equivalent to fifty miles an hour.—J. E. HARTING.

**Curiosities in Nesting.**—During a short stay in Cumberland this spring the following peculiarities were noticed. We found a clutch of four Jackdaw's eggs, of which two were quite unspotted, of a uniform pale blue, lighter than a Starling's; of the rest, one had two faint spots, the other three or four. A Moorhen had made her nest in a bush five or six feet above the water; she had perhaps learnt a lesson from experience, as we saw several eggs at the bottom of the stream that had been evidently washed out of nests placed lower down. On the girders of an iron railway-bridge a Water Ouzel had constructed her nest; besides ordinary traffic, heavy mineral-trains were frequently passing above, within six inches of her head; we were anxious to see whether she would rear her brood in so noisy an abode, but unfortunately the nest was pulled down. Under the same bridge many Starlings had nested.—T. N. POSTLETHWAITE (Hallthwaites, Millom, Cumberland).

**A Puffin inland on Fresh Water.**—During the second week of May last I received a Puffin from a local fisherman of Portumna, Co. Galway, who had caught it with a landing-net on Lough Derg (the Lower Shannon). He informed me it was very easily taken.—J. E. PALMER (Lyons Mills, Straffan, Co. Kildare).

**A double-yolked Egg of the Robin.**—A circumstance which came under my notice you may perhaps think of interest. On May 22nd I found a Robin's nest from which the young had flown; it, however, contained an egg, evidently bad from its discoloured appearance. As this egg was of most unusual size I cut it open, and found it contained two dead young birds, each perfectly formed and almost ready to have burst the shell. The shell was rather largest in the middle, tapering off to each end, and the birds were placed with their heads towards the points, the small portion of unconsumed yolk being between them in the middle of the egg. The colouring of the shell, however, was collected chiefly at one end, as is generally the case with Robins.—H. S. D. BYRON (Bromstone Farm, St. Peter's, Thanet).

[Double-yolked eggs are well known to those who rear poultry and pheasants, but we imagine are less frequently laid by small birds. At all events, they are less frequently noticed. With poultry and game the more artificial conditions of existence, and more stimulating food, may in some measure account for the phenomenon.—ED.]

**Dipper's Nest in a Tree.**—I took a nest the other day in Scotland, on the Don, an account of which, I think, may interest you. It was that of the Water Ouzel, to me one of the most charming of British birds. The peculiarity of this nest was, first, its enormous size, compared with that of the bird; and, secondly, that it was built on the branch of a tree overhanging the river, some six feet above the water. I have seen very many nests of this bird, but never before on a tree, nor have I ever heard of one in such a situation. But the chief peculiarity was its size, which equalled that of a small beehive, being three feet four inches by two feet seven inches. It was visible a quarter of a mile off, and had already been visited, or I should not have taken it. The material was chiefly moss from the stones in the river, with some twitch, and a few dead leaves. This great globular mass, which was very compact, seemed to be designed as a sort of outer case for the real nest, which was built inside it, and of a size suitable to that of the bird, lined as usual with fine dry leaves—oak and beech, chiefly the former. The eggs, four in number, white and transparent, very beautiful. The usual position of the nest is under a bridge, or on the perpendicular, moss-covered bank of a river. I never before saw or heard of one on a tree.—GEORGE ROOPER (Nascott House, Watford).

**Nuthatch nesting in a Sandbank.**—On June 1st I was shown two nests of the Nuthatch, *Sitta cæsia*, one in a sandbank in the grounds of Catteshall Manor, near Godalming, and another in a similar situation some two hundred yards distant, just outside the grounds. In each instance the hole was about eight feet from the ground. The holes, when I saw them,

had been enlarged, but originally, and as made by the birds, they were almost circular, with a diameter of not more than two inches. The former nest had eggs, and the latter young ones; there were six of each. The nests were mere layers of dead leaves and flakes of bark, and both eggs and young were within easy reach of the hand. A few Sand Martins had nests in one of the banks.—HENRY BENSON (Farncombe Rectory, Godalming).

**Notes on Birds in Lancashire.**—On the 8th and 9th of May I had the satisfaction of meeting with two “trips” of Dotterels, after a fruitless search of some years in many parts of the country. On May 7th I was informed that a “trip” of fifteen had been seen, and on May 8th, in the same locality, I met with a “trip” of nine, in various stages of plumage, from the mature bird to that of a uniform shade of colour, which I consider as that of the bird of the preceding year. On May 9th the third “trip” was seen, which consisted of three individuals only. On May 11th I walked along shore from Lytham to Naze, and saw large numbers of Ringed Plovers and Dunlins in flocks, to which may be added a small flock of Turnstones. On May 12th, in a large sward-field between the sand-hills and the road, near South Shore, Blackpool, were four Whimbrels, busily feeding, most probably on some of the smaller *Helices* common to sandy land. Notwithstanding the increase of population, a few pairs of Ringed Plovers still breed near St. Anne’s and Lytham. From a place of concealment near Banks, on May 14th, I was enabled to watch through my binoculars four Turnstones that were in company with other shore-birds, and as they were driven within thirty yards by the influx of the tide I had ample opportunity to observe their actions and plumage; some were very handsome, having acquired their perfect summer dress. I may here remark that I have noticed on the scapular feathers of this species metallic reflections of a greenish tint, to which I have never seen any allusion made in any work on Ornithology; this was very noticeable in two specimens obtained at Spurn in the third week of May. Crossed the Wyre from Fleetwood to Knot-End, on May 15th, and proceeded over the extensive stretch of sand marked on the map as “Bernard’s Wharf,” where I met with a flock of about twenty Sanderlings; those that would allow of sufficiently near approach appeared to be in full nuptial livery, but were very wild. Two pairs of that beautiful little bird, the Lesser Tern, were fishing at the mouth of a small stream that runs over the sand from Pilling to join the Lune, and had most likely come across the bay from the colony near Walney. On returning to Knot-End three Cuckoos were seen together—two, evidently males, paying court to a female. Dunlins were very numerous here,—as indeed they were on all parts of the coast of Lancashire suitable to their habits,—more particularly near Crossens, on the Ribble estuary, where thousands could be seen at the same time. Near that place I noticed a very light-coloured bird, presumably

a Dunlin, though had the season been winter one might have taken it to be a Sanderling—possibly it was one, but, from some abnormality, retaining the dress of winter. Again visited the shore between Lytham and Naze, on May 16th, and saw several Whimbrels, which in all cases were remarkably tame. On the extreme point of a small salt-marsh were seven Mallards and one Wild Duck, all apparently asleep, except one which watched me with neck erect for some time, until finally, on my nearer approach, all took wing.—R. P. HARPER (Scarborough).

**Nesting Habits of the Whitethroat.** — A curious and, so far as I am aware, unique habit of the Whitethroat, *Sylvia cinerea*, has frequently come under my notice, a habit of which I have not found any mention in any of the works on Ornithology that I am conversant with. It is that the male alone builds the nest without any assistance from his mate. It is some years since I first observed this fact, and so many instances of it have since come before me, that I no longer doubt that it is the invariable rule. Last summer I discovered several Whitethroats' nests in process of construction, and after careful watching, could not ascertain that the hen-bird ever came near the nest until it was ready to receive eggs. The male was always the sole builder, and worked constantly, particularly in the early morning, visiting the nest on an average once every two or three minutes, and leaving no doubt as to his sex by singing from time to time while at his work—often even with building-material in his bill—and always when leaving the nest after building, he would express his satisfaction by a triumphant burst of warbling. The materials used, dry stems and blades of grass, were nearly always gathered from one spot only, and that at a short distance only from the nest, the bird returning always to the same place for a fresh supply. I should like to know whether any reader of 'The Zoologist' has observed this peculiarity in the Whitethroat, or whether they have found it mentioned in any work on Ornithology. — ALLAN ELLISON (Trinity College, Dublin).

#### FISHES.

**Sting Ray at Penzance.**—I have received a second specimen of the Sting Ray, or Fire Flaire, *Trigon pastinaca*, Cuv. It was caught in a trawl in about twenty fathoms water, in Mount's Bay, on July 5th inst. The only other specimen which I ever saw was one I captured in August, 1870 (see Zool. 1870, p. 2347). The present specimen is a small one; it measured:—Over all, 1 ft.  $5\frac{3}{4}$  in.; from tip of snout to insertion of tail,  $7\frac{1}{2}$  in.; from insertion of tail to the end of the "whip-string" (which I, of course, must call the caudal-fin),  $10\frac{1}{4}$  in.; from this insertion of the tail to the well-marked origin of the sting,  $3\frac{5}{8}$  in.; from the origin of the sting to the end of the caudal-fin,  $6\frac{5}{8}$  in.; the "sting," measured over all,  $1\frac{7}{8}$  in. (of which the free part measured  $1\frac{1}{2}$  in.); the extreme breadth across the

wings was 10 in., and the weight was  $15\frac{1}{2}$  oz. I have been particular about the measurements, because it is not unlikely that at some time a confusion may arise between this species of Ray and the Eagle Ray. I see that some of the authorities explain the name of "Fire Flaire," applied to this fish as due to the extraordinary redness of its flesh. I carefully cut this specimen to pieces, and found its flesh not more ruddy than that of any ordinary Ray not properly crimped on capture.—THOS. CORNISH (Penzance).

**The Whip-Ray in Co. Cork.**—On July 9th a female specimen of the Whip-Ray (*Myliobatis aquila*, L.) was sent to the Science and Art Museum, Dublin, from Timoleague, Co. Cork. It was caught off the S.W. coast of Ireland. I should like to draw particular attention to the fact that this is the first authenticated record for Ireland of this remarkable fish. I myself was absent when the specimen was brought to the Museum, but Prof. Ball had a cast taken of it, and noted the colours. The upper surface of the body was of a dark greenish hue, being somewhat darker about the head and the extremity of the pectoral fins. The length of the body from the tip of the snout to the base of the tail was 21 inches, the width at the widest part of the body being  $32\frac{3}{4}$  inches. The whole body, inclusive of the tail, measured 3 feet  $11\frac{1}{2}$  inches in length.—ROBERT F. SCHARFF (Science and Art Museum, Dublin).

#### CRUSTACEA.

**Dromia vulgaris in Cornwall.**—With reference to the note of Mr. Tregelles (p. 272), recording the capture of two specimens of this curious crustacean off the Cornish coast, it is—as the Editor suggests in his addendum—not so rare as is usually considered. This fact, however, is only of recent growth, for although Bell refers to its having occurred on the coasts of Kent and Sussex, he quotes Sicily as a locality whence he obtained several in an immature condition; and, as the species was described in his appendix only, it was in all probability rare in his day as a British form. From observations that I have made with regard to the occurrence in the English Channel of Mediterranean species, not only of Crustaceans but of Echinoderms, I am strongly of opinion that, from some cause or other, there is taking place an extension of the geographical range of certain forms. *Dromia vulgaris* is a case in point; my first specimens were from the Channel Islands, and were found by fishermen to whom this crab was a perfect stranger, nor could I find any who knew the species at all. My next specimens, about twenty in number, were from the Channel, dredged in deep water, and they had been put aside as something "out o' the common." Since then, however, it has occurred on many parts of our south coast, but I do not know of any having been recorded from the Scilly Islands. If my opinion be correct as regards the extension of the

range of this species from the Mediterranean, I have no doubt that it will soon become as common in the English Channel as it now is in the Mediterranean, for it is a curious fact that British specimens are finer than those from the Italian shores. It is also a species that should increase and multiply, for not only is it frequently covered with sponge-growth, thus protecting it from the attacks of fishes to whom crustaceans are food but sponges are not, but the animal itself closely resembles, when at rest, an Echinoderm, *Amphidotus cordatus*, the fine grey bristles or spines of which are equalled in appearance by the grey pile of *Dromia vulgaris*, whose legs, too, are capable of being packed away closely out of sight, thus completing the illusion (to its fish-enemy), for I believe Echinoderms are not sought after as food by fish. I could refer to other crustaceans and echinoderms which I believe are finding their way northwards from the Mediterranean, but I have already overstepped my limit for a note. I should like to see in 'The Zoologist' more records of rare crustaceans.—EDWARD LOVETT (West Burton House, Croydon).

## INSECTS.

**Butterflies mobbing Small Birds.**—While staying in Sweden, in 1883, I noticed a remarkable habit on the part of the Grayling butterfly, *Satyrus semele*. This was on an island a few miles north of Göteborg, which was mostly low-lying rock. Small birds, Pipits or Wagtails, flying over these rocks were frequently pursued for a short distance by these butterflies, which would sometimes start up from the rocks and dash off after the bird, and regularly mob it, as small birds will a hawk, sometimes even flying up to the bird ten or fifteen feet in the air. When I first noticed this I thought the bird was trying to take the butterfly, but on subsequent occasions I saw clearly that the butterflies were the aggressors. At times a single butterfly would go to the attack; at other times three or four would start off together. I should much like to know whether similar occurrences have been noticed. The Grayling butterfly struck me as being a most beautiful example of assimilation of colour to surrounding objects; indeed it goes further than trusting merely to its colour for protection; for not only does it close its wings immediately on settling, and thus, with its delicately pencilled under surface of grey and brown, become almost identical with the lichen-powdered grey rocks, but it rests at a very acute angle to the surface of the rock, so that it casts scarcely any shadow from the sun, and when seen in profile, is scarcely in relief from the surface of the rock on which it rests. Surely it would be a sharp-eyed bird which would find this butterfly at rest, and a clever one to take it on the wing.—GEORGE E. LODGE (5, Verulam Buildings, Gray's Inn).

## ARCHÆOLOGY.

Le Moine's 'Clef des Champs,' 1586.—I wish to call attention to a curious old work which, although by no means devoid of interest, has, I believe, hitherto entirely escaped the notice of naturalists. The work in question, is an oblong quarto entitled 'Le Clef des Champs, pour trouver plusieurs Animaux, tant Bestes qu' Oyseaux, avec plusieurs Fleurs & Fruitz. Anno, 1586. Imprimé aux Blackefriers, pour Jacques le Moyne, dit de Morgne, Paintre.' It is dedicated "A Ma-dame Ma-dame de Sidney," to whom there is an *Epistre* in old French, dated March 26, by way of preface, also a "Sonet a elle mesme." According to Brunet's 'Manuel de Libraire' (vol. iii. p. 974), Le Moyne was a painter, and a native of Dieppe. He also wrote in French an account of an expedition to Florida in 1564, commanded by René de Laudonnière, but it was never published in that language. Theodore de Bry, having purchased the MS. after Le Moyne's death, brought it to London about 1588, translated it into Latin, and published the translation in the second part of his 'Grands Voyages,' issued at Frankfort in 1591. An edition in English was published in Boston in 1875. Of the 'Key to the Fields' two copies are preserved in the British Museum—one having formerly belonged to Sir Joseph Banks, the other to Sir Hans Sloane. Both Lowndes and Alibone seem to have overlooked it as an English book—probably through its having been in French. The volume consists of 48 pages, each bearing two coloured illustrations, twenty-four being devoted to Quadrupeds, and the same number to birds, flowers, and fruits, respectively. There is no letterpress beyond the before-mentioned introduction and the names, which are given in Latin, French, German, and English. The mammals depicted are the Lyon, Lebard, Beare, Once, Tiger, Luzarne, Wolfe, Boore, Deere, Horse, Mule, Oxe, Cowe, Camell, Goate, Hinde, Hare, Foxe, Genette, Spagnelle [Spaniel], Sanguin, Munkey, Ape, and Catte. The birds given are the Thrushe, Jackbacker, Jay, Owle [Tawny], Rwene [sic], Pye, Kingsfisher, Yelowhamer, Greenfinche, Nightingale, Sparrow [should be Chaffinch], Staar [Starling], Goldfinche, Lapwinge, Sparrow, Larcke, Thuet [Hoopoe], Linnette, Titymouse, Robine, Greefepeacke [Green Woodpecker], Swallow, Coccoo, and Bulfinche. The illustrations seem to me to be singularly good for the period,—over three centuries ago,—and the colours remain fairly bright, although some of them (especially the reds) have turned black. So far as the domestic animals and the cultivated flowers and fruits are concerned, I believe the volume might be found to reveal interesting facts in connection with development.—MILLER CHRISTY (Chignal St. James, Chelmsford).

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## SCIENTIFIC SOCIETIES.

## ZOOLOGICAL SOCIETY OF LONDON.

June 19, 1888.—Prof. W. H. FLOWER, C.B., LL.D., F.R.S., President, in the chair.

A letter was read addressed to the President by Dr. Emin Pasha, dated Tunguru Island (Lake Albert), October 31st, 1887, announcing the despatch of further collections of Natural-History objects, and promising for the Society some notes on European migratory birds observed in that country.

An extract was read from a letter addressed by Mr. E. L. Layard to Mr. John Ponsonby, concerning the occurrence of a West-Indian Land-shell, *Stenogyra octona*, in New Caledonia.

Mr. Tegetmeier exhibited and made remarks on the feet of an Australian Rabbit, supposed to have acquired arboreal habits.

Prof. Bell exhibited and made remarks on a specimen of a tube-forming Actinian, *Cerianthus membranaceus*, in its tube, obtained by Mr. John Murray at a depth of seventy fathoms in Loch Etive.

A communication was read from Prof. W. Newton Parker, on the poison-glands of the fishes of the genus *Trachinus*. This paper showed the existence of glands in connection with the grooved dorsal and opercular spines of the two British species of Weever. The glands were stated to be composed of large granular nucleated cells, which are continuous with those of the epidermis. An account of the observations of previous authors, both as regards the structure and physiology of the poison-organs of these fishes, was also given.

A communication was read from Mr. H. W. Bates, containing the description of a collection of Coleoptera made by Mr. J. H. Leech, during a recent visit to the eastern side of the Corean Peninsula. A second communication from Mr. Bates treated of some new species of Coleoptera of the families *Cicindelidæ* and *Carabidæ*; from the valley of the Yang-tsze-Kiang, China.

Mr. J. B. Sutton read a paper on some abnormalities occurring among animals recently living in the Society's Gardens.

Prof. Bell read an account of a collection of Echinoderms made at Tuticorin, Madras, by Mr. Edgar Thurston, Superintendent of the Government Central Museum, Madras.

A communication was read from Mr. F. Moore, containing the second portion of a list of the Lepidoptera collected by the Rev. J. H. Hocking, chiefly in the Kangra District of the north-western Himalayas. The present paper contained the descriptions of seven new genera and of forty-eight new

species. An account of the transformations of a number of these species was also given from Mr. Hocking's notes.

This meeting closed the session. The next session will commence in November, 1888.—P. L. SCLATER, *Secretary*.

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ENTOMOLOGICAL SOCIETY OF LONDON.

July 4, 1888.—Dr. DAVID SHARP, F.L.S., President, in the chair.

The Hon. Lionel Walter de Rothschild, of Tring Park, Hertfordshire, was elected a Fellow of the Society; and Mr. George Meyer-Darcis was admitted into the Society.

Mr. Enock exhibited male and female specimens of a spider received from Colonel Le Grice, R.A., who had captured them at Folkestone on the 27th May last. They had been submitted to the Rev. O. Pickard-Cambridge, F.R.S., who identified them as *Pellenes tripunctatus*, a species new to Britain. Mr. Enock also exhibited specimens of *Merisus destructor* (Riley), an American parasite of the Hessian Fly, bred from British specimens of that insect.

Mr. Wallis-Kew exhibited a number of larvæ of *Adimonia tanacetii* (Fab.), found in Lincolnshire, feeding on Scabious.

Mr. Porritt exhibited a number of variable specimens of *Arctia mendica*, bred from a batch of eggs found last year on a species of *Rumex* near Huddersfield. Mr. Porritt said that this species, in the neighbourhood of Huddersfield, was often more spotted than the typical form, but he had never before seen anything approaching in extent the variation exhibited in these bred specimens. Out of forty-four specimens (twenty-five males and nineteen females) not more than eight were like the ordinary type of the species.

Mr. M'Lachlan exhibited a quantity of *Palingenia longicauda* from Holland—the largest of the European *Ephemeridæ* (Mayflies), and at the same time one of the most local.

Mr. Jacoby exhibited the following species of Phytophagous Coleoptera from Africa and Madagascar, recently described by him in the 'Transactions' of the Society, viz.:—*Lema laticollis*, *Cladocera nigripennis*, *Oedionychis madagascariensis*, *Blepharida intermedia*, *B. nigromaculata*, *Chrysomela madagascariensis*, *Sagra opaca*, *Blepharida ornatocollis*, *B. laterimaculata*, *Mesodonta submetallica*, *Schematizella viridis*, *Spilocephalus viridipennis*, *Apophyllia smaragdipennis*, *Aethonea variabilis*.

Mons. Alfred Wailly exhibited a large number of species of Lepidoptera and Coleoptera, recently received by him from Assam, from the West Coast of Africa, and from South Africa. He also exhibited eggs and living larvæ of *Bombyx cytheræa*, and made remarks on the life-history of the species.—H. Goss, *Hon. Sec.*

## NOTICES OF NEW BOOKS.

*An Illustrated Manual of British Birds.* By HOWARD SAUNDERS, F.L.S., F.Z.S. To be completed in about twenty parts. Parts I.—IV. 8vo. London: Gurney & Jackson, Paternoster Row. 1888.

AN illustrated work on British Birds in one volume has long been a desideratum; the only book of the kind, John's 'British Birds in their Haunts,' with illustrations by Wolf, although frequently reprinted, being quite out of date as regards the text. The appearance therefore of this new work by Mr. Saunders cannot fail to give satisfaction to every one interested in the study of birds. Four parts have already appeared, each containing twenty woodcuts, with two pages of text to each species, and costing only one shilling a part, a marvellously cheap publication.

The illustrations being identical with those in Yarrell's 'British Birds,' plus some new additions, it might be supposed that the new work is an abridgment in one volume of the old one; but, as will be seen by comparison, this is not the case. Each chapter has been entirely rewritten, and several species have been introduced which have found their way into the British list since the issue of the fourth edition of 'Yarrell' was commenced some seventeen years ago.

The study of Ornithology, like everything else, is, of course, progressive, and we suppose therefore that it was inevitable that changes should be made in the classification adopted in this new volume by Mr. Saunders. We cannot help thinking, however, that it would have been better for many reasons if the classification adopted in the fourth edition of 'Yarrell' had been still adhered to. The question of classification having been so fully considered by Prof. Newton, and by Mr. Saunders himself, in the latest edition of 'Yarrell,' it seems rather soon to depart from the conclusions there arrived at, and to propound a new scheme. Nor can we see the advantage of transposing the Orders in the manner proposed. We are, of course, aware that it has become the fashion to place the Order Passeres at the head of the list, because, as Mr. Saunders states, "authorities in Europe and America are fairly agreed that the highest avian development is attained in that order." But this must always be more or less a

matter of opinion. For our part we have always contended for the superiority of the Accipitres, not only as fliers (and *flight*, it must be remembered, is the characteristic attribute of the class Aves), but also in regard to intelligence, docility, and subserviency to man's requirements, no birds being more capable of understanding and obeying their owners' wishes as expressed by sign or call than the Falcons. But, however that may be, all we now wish to assert is that a certain scheme of classification having been so recently adopted in a new edition of a standard work of authority, it seems a pity to have disturbed it, at all events to the extent accomplished in Mr. Saunders' new volume.

We would also contend for a little more "conservativism" in maintaining views which have been put forth with good reasons to support them, instead of adopting opinions at variance with such views, and without any explanation for the change. As a case in point, we may notice the orthography of the name "Mistletoe" Thrush. In a footnote in vol. i., p. 260, of the fourth edition of 'Yarrell,' Prof. Newton has made it very clear that "Mistle" is the correct spelling, while Mr. Saunders, without explanation, prefers the more common, but less authorised, form "Missel."

In stating (p. 15) that "the Ring Ouzel is the only Thrush which is entirely absent from our islands during the winter," unless in exceptionally mild years, Mr. Saunders might have usefully added a few references to evidence of its stay here throughout the year, as, for example, 'Zoologist,' 1879, pp. 174, 203, 266, and 1886, p. 490; and Mansel-Pleydell, 'Birds of Dorset' (p. 22). In a recently-published volume on the 'Birds of Herefordshire,' the Rev. C. L. Eagles writes:—"The Ring Ouzel lives all the year round on the slopes of the Black Mountains, Herefordshire. I have shot them in winter, and have often found their nests in summer."

Of the Redstart it is said (p. 30), that "in Ireland only two or three occurrences are known." This was doubtless true some time ago, but of late years this bird has been more observed as a summer migrant to Ireland, and in June, 1885, was found to be nesting in the Co. Wicklow, as reported by the Rev. Dr. Benson, 'Zoologist,' 1885, p. 260.

Most of the new woodcuts are very nicely executed, but it is a pity that some of them do not quite range with the figures of

other species belonging to the same genus. For example, the Desert Wheatear is too large in comparison with the Black-throated Wheatear or the Common Wheatear, while the wing is too small for the body. The figure of the Bluethroat looks clumsy by the side of the Common and Black Redstarts, the bill and legs being much too robust, and the eye too large. This undue enlargement of the eye, by the way, has spoilt many of Mr. Neale's otherwise satisfactory cuts. Nor is Mr. Keulemans beyond criticism in his drawing for this work, his cut of the Tawny Pipit being very heavy compared with the succeeding cut of Richard's Pipit; the head much too large, and the legs more like those of a Thrush than a Pipit. In the same way the engraving of the Water Pipit overpowers the smaller and more delicately-drawn figures of Pipits in the original 'Yarrell.'

But there is no need to pursue criticism further. Mr. Saunders has conferred a real boon on all lovers of birds by undertaking what (for want of a better name) we may term the one-volume 'Yarrell.' It is no easy matter to compile from the most authentic sources as much desirable information as can be compressed into less than two pages of type; but, so far as we may judge by the parts already published, the success of the work is guaranteed, and it will be all the greater by reason of the publisher's punctuality in the monthly issue of the parts.

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*Birdsnesting and Birdskinning: a complete Description of the Nests and Eggs of Birds which breed in Britain.* By EDWARD NEWMAN. Second Edition. Revised and Rewritten, with Directions for their Collection and Preservation; and a chapter on Birdskinning. By MILLER CHRISTY. Fcap. 8vo, pp. 138. London: T. FISHER UNWIN. 1888.

EIGHT-AND-TWENTY years ago (alas! how time flies!) the late Edward Newman, at the suggestion of the present writer, published, under the title of 'Birdsnesting,' a little handy volume designed to give, in a condensed form, accurate information respecting the nests and eggs of birds which breed in Great Britain and Ireland. Some of the MS. as it was first designed in 1860, is now before us, and we can scarcely believe that so many years have elapsed since the idea was first conceived, discussed, and executed. Yet so it is; and the little book has

been long out of print, while other and more pretentious volumes on the same subject have had their share of public patronage, or, it may be, are still receiving it. Of course, in the quarter of a century which has elapsed since its publication, we have come to know a good deal more about birds' eggs than was then dreamt of by the author. Not only have a good many species new to Britain been detected and duly reported, but many interesting facts concerning the nidification of some of the rarer birds have come to light, and more or less modified previously existing accounts of them.

No wonder, then, that Mr. Miller Christy, in undertaking a second edition of 'Birdsnesting,' has found a good deal to alter and amend. As a matter of fact, he has entirely re-written the book, and it is now so altered, both in size and general plan, as to strike the reader as a new book. The information given under the head of each species falls under three subheadings, namely, *Situation* [of nest], *Materials*, and *Eggs*; but while in the original this is arranged systematically according to the classification adopted by Yarrell, in the new edition the species are dealt with alphabetically, as in Montagu's 'Ornithological Dictionary.' Of the two, perhaps the latter plan is the more preferable for the object in view, since in this way the species sought for is more readily found.

In the way of additional information, Mr. Miller Christy's little book contains a chapter on "Egg Collecting" with a few illustrations of useful implements; another on 'Birdskinning,' and a third embodying the principal provisions of the Wild Birds Protection Acts 1880-81. Although containing this additional information, space has been so economised that the book is small, and may be well slipped into the pocket as a companion in country rambles.

Mr. Christy states, in his Preface, that in carrying out the work of revision it has been his endeavour, as it was that of the original author, to produce a first and elementary book on Oology, rather than anything else—a book suited to the needs of the intelligent schoolboy rather than to those of the experienced ornithologist. But whosoever may have occasion to consult it will undoubtedly find, in a condensed form, a great deal of useful information on the subject of which it treats.



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## THE RABBIT PEST AT THE ANTIPODES, AND THE REMEDY PROPOSED BY M. PASTEUR.

THE influence of small mammals upon agriculture and arboriculture is a subject of much importance, and one upon which, from time to time, a good deal has been written. These creatures affect our interests in various ways: some are beneficial, others so injurious that the only question is how to keep down their numbers; while of those which possess both good and bad qualities a close observation of their habits is necessary before we can decide whether, on the whole, they are beneficial to man or the contrary.

Dr. Hart Merriam, in his Report to the Department of Agriculture, Washington, for the year 1886, referring to the effects of mammals upon agriculture, particularly mentions the hordes of mice which periodically overrun the country from the Atlantic to the Pacific, and from the Mexican border to Canada, doing an amount of damage which in the aggregate must amount to several millions of dollars a-year. In the meadow and pasture they feed upon the roots of the best grasses; in the garden upon the roots, fruit, and seeds of vegetables; and in the fields upon grain, both standing and in the shock. In winter they destroy fruit and forest trees and ornamental shrubs by eating the bark from the roots and trunk. The number of Meadow Mice distributed over a given area is subject to periodical fluctuations, and they sometimes become enormously abundant. At such times, says Dr. Hart Merriam,

their runways through the meadows and grain-fields result in the loss of at least one-fifth of the crop.

Again, the depredations of Ground Squirrels and Gophers in the prairie regions of the Mississippi Valley, and in the far west, are well known, and yet the extent of the damage they do is not generally recognised. In a fertile part of the Sacramento Valley, in California, a few years ago, the sudden increase in a species of Ground Squirrel which fed upon grain caused the land to depreciate one-half in value; or, to be more explicit, land which previously fetched one hundred dollars an acre could not be sold for fifty; and this depreciation was due solely to the abundance and ravages of the Squirrels.

Here, in England, it is on record that different parts of the country have, at various times, been overrun with a plague of Field Mice, which has caused incalculable damage to trees and crops, and has been only partially checked by devices for trapping them, and by the attacks of birds of prey, especially the Short-eared Owl, *Asio accipitrinus*. Thus Jesse, in his 'Gleanings in Natural History,' describes how the trees in the Forest of Dean, in Gloucestershire, were seriously damaged by Field Mice, great numbers of which were taken in pitfalls of a peculiar construction. Childrey, in his 'Britannia Baconica,' 1660 (p. 14), mentions a similar swarm of mice which appeared in Denge Hundred, Essex, in 1580, and eat up all the roots of the grass. "A great number of Owles," he says, "of strange and various colours assembled and devoured them all, and after they had made an end of their prey, they took flight back again from whence they came." From this we may infer that this plague occurred in the autumn, when the Short-eared Owls arriving from Norway and Sweden to spend the winter here, fared sumptuously upon the mice until the time came for them to leave us in the following spring.

A similar account from Market Downham, in Suffolk, is given in the 'London Magazine' for 1754, where we are told that "the parishioners pay almost the same veneration to the Norway Owls as the Egyptians did to the Sacred Ibis, and will not at any rate annoy them, on account of their destroying the Field Mice, with which they are infested commonly about once in six or seven years."

But of all plagues of this kind in modern times, none

probably has ever equalled the plague of Rabbits from which, through man's folly, the colonists in Australia and New Zealand are now suffering. The introduction and, so-called, "acclimatisation" of the Rabbit in Australia, so far from proving, as was expected, a blessing, by increasing the food supply for colonists, has proved to be a curse, by ruining the sheep-runs upon which the wealth of the country mainly depended, and destroying the vegetation throughout many fertile districts.

The Report of Mr. Morgan, the United States Consul-General at Melbourne, Victoria, in 1886, furnishes the best account we have seen of the introduction of the Rabbit into Australia, and the disastrous results which followed. From this Report we learn that, although tame Rabbits were brought to the colonies in very early years, it was not until 1860 that the common grey Wild Rabbit was (so far as can be authoritatively ascertained) introduced by a large landed proprietor in the western district of Victoria for the purpose of sport. From this western district they spread to the stony rises between Colac and Camperdown, in which place the splendid cover afforded them caused their rapid increase, and they multiplied with such astounding rapidity as literally to overrun all that portion of country.

In Charles Darwin's celebrated Essay "On the tendency of Species to form Varieties,"\* the following passage occurs (p. 47):—"Where man has introduced plants and animals into a new and favourable country, there are many accounts in how surprisingly few years the whole country has become stocked with them." Had these lines been penned a few years later than the date of their publication, the writer could have found no better illustration than the history of the Rabbit in Australia.

Some time after 1860, Rabbits were taken to other parts of Victoria, and were soon found in the neighbourhood of Horsham, spreading thence into the Mallee country, extending north-east to Swan Hill. The country west and north of Horsham being exceedingly favourable to them, consisting of sand-hills, pine-ridges, and scrub, they increased there greatly, and have done serious damage to crops during the past few years, principally since 1874.

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\* Journ. Linn. Soc. vol. iii. pp. 45—62 (1858).

So great has been their fecundity that there are now but few places in Victoria in which they do not exist—from Point Nepean, along the coast from Queenscliff to Geelong; in Gisborne, Ballan, Bacchus Marsh; away north-west to Nhill and north to Swan Hill; along the Murray River; on the New South Wales and the South Australian borders—Gippsland, and the surrounding district, being the only place in which they are conspicuous by their absence.

In the rangy district of Mansfield they have made an appearance, and the Buffalo, Howqua, King, and other rivers in the neighbourhood of Bright and Myrtleford, are now invaded by these pests in large numbers. It is, however, noticeable that in places where the soil is hard, or the climate cold or wet, the Rabbit does not increase to anything like the extent observable in country more suited to them, such as sand-hills, pine-ridges, &c. There is also another peculiarity observed, which will be borne out by all who have had any great experience on this subject, namely, that where Hares increase and become numerous the Rabbits do not. There may be an exception to this, such as on the Werribee Estate, but nevertheless it is the rule.

It is doubtful, says Mr. Morgan, whether many persons are aware of the immense loss which has been sustained in this colony through the ravages of the Rabbits, but it is an undoubted fact that as much as £23,000 has been expended to clear one estate, and keep the pests under, and in many others it has cost the owners large sums from £15,000 downwards.

In 1877 Bruin Station carried 36,000 sheep, rental, £500; in 1879, 10,000, run abandoned; re-let under grazing license for £56. Wanga and Nipo, once carrying 20,000 sheep; rental, £400; now not a sheep on the run, which was also abandoned, and re-let for £20. Lake Hindmarsh carried, in 1877, 33,000 sheep; lost 25,000 in two years; rent £700, now £72. Corong, in 1877, 36,000 sheep, now 3000; rent £1050, now £150; and several others are mentioned as being in an equally bad position.

During the years 1884, 1885, 1886 the Government expended, in the extirpation of Rabbits in Victoria, about £30,000, chiefly by poisoning with phosphorized oats and wheat, arsenic in bran and chaff, and bisulphide of carbon, and by paying 3d. a dozen on all skins or scalps of Rabbits produced to the agents. In this way at least 157,000 dozen were brought in (equal to

1,884,000 scalps and skins), and paid for in two years. In New South Wales the sum voted by Parliament in 1886 for the destruction of Rabbits was £74,000, and in South Australia £30,000. The number of skins exported from Victoria in one year was 4,000,000, and the area infested about 20,000,000 acres more or less. In New Zealand the legislature took the matter in hand in 1876, and enacted strongest laws for the destruction of Rabbits. In 1881, on account of the damage done by these pests, more than 500,000 acres of sheep-runs were abandoned, the loss to the exports of the colony being estimated at 2,500,000 dollars per annum, while upwards of 180,000,000 Rabbits were killed in New Zealand in little over three years.

Referring to the fecundity of the Rabbit, Mr. Morgan says it may be asserted on good grounds that one pair under the most favourable circumstances increase, in two-and-a-half years, to the enormous number of 2,000,000, assuming the district suits them. But, assuming they only increase to one-fourth of that number, it will be seen how necessary it is to be on the watch to destroy them. He concludes his Report by observing that, although the estimated damage by Rabbits would be difficult to ascertain, it may be safely stated that during the last ten years the loss in Australia in various ways has amounted to at least £3,000,000 sterling.

Under these circumstances, when shooting, trapping, and poisoning have alike proved ineffectual, it is not surprising that the Colonial Government should decide to offer a very considerable reward to any one who should devise a satisfactory method of wholesale destruction, and by actual experiment prove its efficacy to the satisfaction of commissioners appointed by the Government. The reward, in fact, which has been offered by the Government of New South Wales is £25,000, as intimated by a public notice dated Sydney, 31st August, 1887, and the payment of this sum is made conditional upon the plan recommended being not only new and effective, but absolutely harmless to sheep, horses, dogs, and other domestic animals.

Upon the announcement of this official notice in the Paris '*Le Temps*' of November 9th, 1887, it naturally attracted the attention of M. Pasteur, who shortly afterwards (Nov. 29th) addressed a letter to the editor of that journal, in which he stated his views on the subject. In the opinion of M. Pasteur,

the methods hitherto employed were ineffectual, because they affected only the individual Rabbits actually killed by direct contact of poison, trap, or shot, and extended no further. What was needed, he considered, was the administration of something fatal which could be communicated, as a contagion, and spread throughout the entire Rabbit population of whole districts. This medium he believes he has discovered in the so-called "chicken cholera" (*cholera des poules*), which may be communicated by a cultivation of the microbes producing it, which may then be introduced amongst the vegetation on which the Rabbits feed. Experience has shown that the occasional ravages of this epidemic in poultry-yards is undoubtedly due to the droppings of the fowls first affected, which contaminate the soil and the food thrown upon it; and further experiment has demonstrated that Rabbits are liable to be affected by this disease by watering their food with a liquid charged with microbes obtained by boiling down food already contaminated.

In a communication addressed in January last to the Agent-General for the Colonies, M. Pasteur detailed various experiments which he had made upon Rabbits, first in hutches, and then in open, enclosed spaces, the result of which went to show the soundness of the views he had expressed.

On Nov. 27th he put five Rabbits in a hutch, and left them unfed until six o'clock in the evening. At 6 p.m., some cabbage-leaves which had been soaked in a liquor charged with the cholera-microbes were thrown into them, and were devoured in a few minutes. At midnight three fresh Rabbits, uncontaminated, were put in with them. The following morning at 8 o'clock the five Rabbits experimented upon appeared ill; at 11 o'clock two were dead, and at 3 p.m. the remaining three died. At seven in the evening one of the three introduced the previous midnight was found dead; the other two were not affected.

This experiment was repeated. On Dec. 3rd four more Rabbits were fed with infected cabbage-leaves, and at midnight four others were introduced, and not fed. The next day the former all died, and their dead bodies being allowed to remain in the hutch, the remaining four all died at intervals. These were tame Rabbits. On December 17th a wild Rabbit was similarly treated, and was found dead the next day. In every case it was demonstrated that death was due to the cholera microbe.

On Dec. 3rd and following days experiments were made on pigs, dogs, goats, sheep, rats, horses, and donkeys, in every case by feeding them with similarly contaminated food. Not one of these animals was affected.

Then followed an experiment on a large scale in the open air. Madame Pommery, of Rheims (whose name is well known in connection with the celebrated Champagne vineyards, of which she is the proprietor), having read M. Pasteur's letter in '*Le Temps*,' wrote to say that she had an enclosed rabbit-warren of about twenty acres, in which the Rabbits had increased so enormously, and had so undermined the walls, that she was anxious to do away with it, and if he pleased to make any experiments there, it was at his service. This being the very thing for his purpose, he accepted the offer, and his experiment was facilitated by the fact that the proprietor of the warren, with a view to prevent the Rabbits from trying to burrow out of the enclosure in search of food beyond the walls, had been latterly in the habit of throwing down, just outside the holes, heaps of lucerne and hay, on which they fed greedily. Nothing then was easier than to water this food with the microbe-bearing fluid, and the Rabbits were at once inoculated. This was done on Friday, Dec. 23rd, 1887. On the 26th Madame Pommery wrote:—

“On Saturday (in consequence of the fatal repast of the previous day) nineteen dead Rabbits were found outside the burrows. On Sunday the enclosure was not visited. On Monday morning thirteen more dead Rabbits were counted, and since Saturday not a single live Rabbit has been seen moving. Moreover, a little snow had fallen during the night, and not a footprint of any Rabbit was to be observed.”

As a rule, they die in their holes, and the thirty-two dead ones which were picked up outside may therefore be regarded as a very small proportion of those destroyed. On Tuesday, Dec. 27th Madame Pommery wrote:—

“The lucerne placed outside the burrows on Monday evening has not been touched, and again no trace of footprints is perceptible on the snow. All are dead.”

As to the number of Rabbits destroyed by this experiment, it is scarcely possible to fix it exactly, but M. Pasteur was informed by the men employed at the warren that that they estimated the number that formerly came out of an evening to

feed upon the eight great trusses of hay that were thrown down to them to be upwards of a thousand (*beaucoup plus d'un mille*).

So far as can be judged by the result of M. Pasteur's experiments, it would seem that he is in a fair way of earning the reward offered by the Government of New South Wales. At all events, it is to be presumed that the Commissioners will make no objection to his repeating the experiment in one of the districts under their jurisdiction, the more so as he assures us that while Rabbits are more susceptible of inoculation than fowls, the larger domestic animals are not likely to be injuriously affected should they by accident take up any of the contaminated vegetation.

It is due to another French *savant* to state that M. Mégnin, whose researches on the Gapes disease in gallinaceous birds, and on the parasite which causes it, have been already made known to our readers (Zool. 1883, p. 386), has proposed to inoculate Rabbits with a liver disease which is peculiar to them (*le phthisie du foie, ou coccidienne*), and which he has reason to believe would prove equally fatal; but we have seen no description of his *modus operandi*, and in the absence of this information, we are disposed to regard with favour the method suggested by M. Pasteur, which, from its simplicity in application ought certainly to succeed.

Those of our readers who may be desirous of having more details than we have been able to give in the limited space at our disposal would do well to consult the 'Annales de l'Institut Pasteur,' and an article by M. Tissandier, published in 'La Nature' (24 Mars, 1888), to which we are indebted for much of the information above given.

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## NOTES ON THE BIRDS OF CUMBERLAND.

BY THE REV. H. A. MACPHERSON, M.A.

SINCE the 'Birds of Cumberland' appeared, in 1886, the researches of Mr. W. Duckworth and myself have continued to make progress, and we now possess a fair amount of additional information regarding the Vertebrates of Cumberland and Westmoreland also. Much remains to be done; the next five years

will probably extend our materials liberally. As regards our views already published, we erred in one particular, *viz.*, in stating that the Sanderling, *Calidris arenaria*, “did not remain to winter with us.” Its presence with us in winter has since been abundantly proved, but we still believe that this is the exception.

Not a little labour has been bestowed by one of us in sifting the papers of the late Mr. T. C. Heysham. These, though in many ways disappointing, and often painful to decipher, are constantly in unison with our own conclusions already published, and, in one or two cases, supply dates previously uncertain. It is our intention to issue reports on our local Natural History from year to year; those for 1886 and 1887-8 have successively appeared. In these it is only possible to touch upon a few points of general interest; but archæological and field-notes are duly entered up for future use. Mr. Duckworth has taken up residence at Ulverston, from which he hopes to take more or less frequent field excursions into Westmoreland.

The following notes may serve as a brief supplement to the ‘Birds of Cumberland’:—

*Saxicola isabellina*, Isabelline Wheatear.—Female, shot at Allonby, November, 1887, by Mr. J. Mann. Sent in the flesh to me, and presented to the National Collection, as the first example detected in Western Europe. (‘Ibis,’ Jan. 1888.)

*Ruticilla phœnicurus*, Redstart.—In a nest of the Pied Flycatcher, *Muscicapa atricapilla*, which we procured for the National Collection in 1888, Mr. Tandy and I found a young Redstart, which the old Flycatchers were rearing with their own proper brood.

*Ruticilla titys*, Black Redstart.—One seen on the outskirts of Carlisle, Nov. 12th, 1886.

*Loxia bifasciata*, White-winged Crossbill.—In the historical visitation of 1845, eleven were shot in Cumberland, nine of them in female plumage.

*Otocorys alpestris*, Shore Lark.—In addition to one specimen recorded, I know of two others killed on our seaboard.

*Cypselus melba*, Alpine Swift (‘Birds of Cumberland,’ p. 63).—The St. Bees bird—the only one known to have been killed in Cumberland—was obtained in July, 1842. It is now preserved at Crofton Hall by Sir Musgrave Brisco, Bart.

*Gecinus viridis*, Green Woodpecker.—A pair nested in South Cumberland in 1887, upon their northern breeding limit in Great Britain.

*Hierofalco islandus*, Iceland Falcon.—Accidentally omitted from all notice, in 'Birds of Cumberland,' was a female, killed at Winton, Westmoreland, figured by Mr. Goodchild (Trans. Cumb. and Westm. Assoc.). Mr. Goodchild tried to remount this bird, but the skin fell to pieces, and is now in the Carlisle Museum in a shattered condition.

*Nycticorax griseus*, Night Heron.—Two are included in 'Birds of Cumberland.' I have a record of a third, killed in Cumberland in 1847. Of these three one was adult, the others immature.

*Platalea leucorodia*, Spoonbill.—Among the Heysham papers I found a letter of one James Irwin, describing carefully the bird which, with some warranty from Sir W. Jardine, gave rise to the report that a Great White Heron was seen on the Solway in the winter of 1840-1. I have shown this letter to Mr. Howard Saunders, and we are satisfied that the bird in question was a Spoonbill.

*Anser brachyrynchus*, Pink-footed Goose.—A large flock visited Naworth in January, 1887, and two were shot. A "gaggle" of thirty frequented Rockcliffe Marsh in the winter of 1887-8, and one was shot. We have other notes of its occurrence, but it is a scarce bird. The Bean Goose, *Anser segetum*, is the ordinary Grey Goose of the Solway.

*Anser leucopsis*, Bernicle Goose.—From an experience in killing and handling these geese rarely equalled, Mr. A. Smith, of Rockcliffe, can distinguish the sexes externally by the shape of the cranium.

*Cygnus bewicki*, Bewick's Swan.—Some adults were killed in the Lake District, January, 1888.

*Spatula clypeata*, Shoveller.—First proved to nest in Cumberland in 1886; nested in two quarters in 1887.

*Fuligula cristata*, Tufted Duck.—The hope that this species might "nest in Cumbrian waters" has at length been realised. A fine brood was reared in 1888 at no great distance from the Solway.

*Harelda glacialis*, Long-tailed Duck.—First obtained in the county in 1834 (Heysham, MS.). A score or so of birds appeared on the English Solway in October, 1887, nearly all females.

*Oidemia fusca*, Velvet Scoter.—Additional examples were shot

on the Solway in the winters 1886-7, 1887-8. It is a rare bird, however, with us, and a very wary one, difficult to secure even when hard hit.

*Syrhaptes paradoxus*, Pallas's Sand Grouse.—Two specimens stand recorded as obtained in Cumberland in 1863. Mr. J. H. Gurney, jun., has most kindly brought to my notice a third, preserved in the collection of the late Mr. Dawson Rowley. In 1888, from eighty to a hundred birds—perhaps more—visited Cumberland between May and August. Twenty-one were shot before June 10th, after which our small influence began to tell in favour of preservation.

*Porzana parva*, Little Crake.—Mr. Heysham had a sketch taken from the county specimen, as I learn from a letter lent me by my friend Mr. H. P. Senhouse, of the Fitz, Cocker mouth. This letter was sent by Mr. Heysham to Mr. Senhouse, senior. He borrowed the bird for the use of the artist he employed.

*Scelopax rusticola*, Woodcock.—Mr. T. C. Heysham examined a nest with eggs near Carlisle in 1837. It then rarely bred in Cumberland.

*Sterna dougalli*, Roseate Tern.—The bird alluded to as "shot many years since on Burgh Marsh," was killed in August, 1834.

*Larus minutus*.—A fine adult with black hood was shot in the neighbourhood of the Solway in the summer of 1886. Another, in winter dress, was seen in the spring of 1888. It is no doubt a much rarer bird with us than on the east coast of England.

*Uria grylle*, Black Guillemot.—Mr. Duckworth observed a single bird on the Solway in 1886. [When this species used to breed in the Isle of Man it was doubtless more often to be met with in the Solway; but a correspondent in the Island has recently informed us that it is no longer to be found there in the nesting season.—ED.]

In concluding these brief notes, let me express regret that so few trustworthy notices of birds appear in the public prints from the Lake District. Many counties furnish a number of observers; in Cumberland the task of scrutiny is almost entirely left to one, and information can only be collected by constant vigilance. It would be pleasant if visitors to our mountains would favour us, from time to time, with the results of their observations. Reliable statistics regarding birds, mammals, and marine fishes are especially desired.

## ORNITHOLOGICAL NOTES FROM ST. LEONARDS.

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

I HAVE the pleasure to send you a few notes from the neighbourhood of St. Leonards-by-the-Sea.

On May 7th a male Golden Oriole was shot at Battle, and sent to Mr. G. Bristow, the taxidermist, when the following mems. were taken:—Bill brownish red, mouth and tongue pale flesh-colour; length from tip of beak, 8 in. (Yarrell gives  $9\frac{1}{2}$  in.); expanse, 14 in.; contents of stomach one large beetle. It is to be presumed the shooter was unaware that he is liable to a penalty under the Wild Birds Protection Act. Another "protected bird"—a Hoopoe—was shot at Bexhill. It seems from the 'Field' that Hoopoes and Orioles appeared about this time in several parts of England, and that the law was not so often kept as broken, a result which might have been safely foretold in respect of these foreign birds. On the 8th a Grasshopper Warbler was shot as it was uttering its cricket-like note about 6 o'clock on a sunny morning, and a Common Sandpiper was taken in a fishing-net, called a "kettle-net," at Camber. On the 11th another Grasshopper Warbler was shot, which, though a male by dissection, was, strange to say, in immature plumage; that is, it was very light on the breast, and the throat was very slightly spotted, with no tint of yellow about it. It does not seem to be a rare species at St. Leonards, the locality in question being very near the town; but, though I went there several times, I only once caught the faint, trilling sound.

There are some birds which are curiously rare at St. Leonards: in the course of four springs I do not think I have ever seen the Redstart or heard the Corncrake. On the other hand, the Black Redstart has often occurred, and almost all our other spring migrants are common; so abundant is Ray's Wagtail, that fifteen pairs, settled down to breed, may be seen in a morning's walk; yet the Grey-headed, though diligently searched for, was not discovered.

On the 26th Mr. Bristow received a Sand Grouse from Appledore, shot on the previous evening; I had this bird served with morrels, and found it very good, the inner pectoral muscle in particular being very tender. The keel of the sternum is

very remarkable for its depth. About the same time a covey of five or six were reported to Mr. Bristow, as seen at Filsham Farm. The black abdominal band in Pallas's Sand Grouse is variable both in extent and colour, being sometimes suffused with chestnut or mottled with buff-colour.

In the 'Natural History of Hastings,' compiled by the Rev. E. M. Bloomfield, there is a list of birds, and this is the only publication on local Ornithology; it enumerates several rare species, but one which is not included is the Slavonian Grebe, of which Mr. Bristow has an example, killed on a pond at Hollington, a suburb of St. Leonards, last February; and another which might be added is the Scandinavian Rock Pipit (*Anthus rupestris*), if it be a good species, of which I saw an unmistakable example at Bopeep, with a brilliantly vinous breast. But this was several years ago, and all agree that these Scandinavian Pipits have been extremely rare in Sussex of late years.

Mr. Bristow has several interesting birds in his laboratory at St. Leonards, which he is glad to show to visitors, among them a very pale Barn Owl, a young bird, received on the 24th of August from Brede, which, if not an albinism, is many shades paler than the ordinary tone of colouring in this species; another, like it, was killed about the same time and place.

On the 15th I was not sorry to have an opportunity of renewing acquaintance with the Kentish Plover and Sanderlings at Rye; the latter were very abundant for the time of year, twenty-eight in one flock. They have a way of running in and out of the foam and froth, which seems not to wet their plumage, feeding hard all the time, picking off the bottom the minute marine life, stirred up by the rapidly-advancing tide as they go. This is very pretty to watch, and a habit I have not noticed in the Dunlin. From the rapid action of their beaks the quantity they consume must be enormous.

The colony of Lesser Terns flourishes, and forty-three were counted in one flock, their position as they sat on the sand indicating more plainly than words that the wind was still in the east. The ferryman, who called them "scrates," said, however, they were nothing like as numerous as they once were. Only four Common Terns were seen, one of which was skirmishing with a Black Tern.

## WINTER ROOSTING COLONIES OF CROWS.

BY C. L. EDWARDS.

(Concluded from p. 297.)

IN the following study of the colonies at Arbutus and Avondale, Md., I have attempted to describe the life of the colony during the twenty-four hours of day and night. The facts given are from observations made by the writer during the winters of 1886-87 and 1887-88.

## A.—THE ARBUTUS ROOST.

Seven miles south-west from Baltimore, a half-mile south-east of Arbutus station on the Baltimore and Potomac Railway, is a tract of land of about a half-mile square on which are several patches of woods which furnish the roosting-ground and its neighbourhood for a winter colony of Crows. It seems from the testimony of the owners of this land that the Crows have roosted there for about twelve years, having previously occupied a piece of woods a half-mile or more to the westward, which they abandoned when house-building and wood-cutting by the inhabitants made it undesirable. Although this ground has been for some years the head-quarters of the colony, yet it has during that time made temporary changes to places within a radius of one or two miles. Within this more extended limit, in the memory of "the oldest inhabitant," which individual has lived near Arbutus for over half a century, the Crows have come to make their winter colony.

Dr. Godman says, "Such roosts are known to be thus occupied for years, beyond the memory of individuals; and I know of one or two which the oldest residents in the quarter state to have been known to their grandfathers, and probably had been resorted to by the Crows during several ages previous."

There is in the first-mentioned half-mile tract one particular piece of woods containing about fifteen acres of ground which seems to be the favourite roosting-place of the Crows, and from which, according as their numbers increase, they overflow into the surrounding woods and bushes. The trees are mostly of black oak, with some chestnut, white oak, poplar, and other common forest species, all of a decidedly "scrubby" growth, not being on an average more than twenty-five or thirty feet high. The woods are situated in a sort of valley quite surrounded with hills which

have been cut into jagged, fantastic forms in the several centuries of digging by the inhabitants for the rather poor iron ore of the region. The dumping of the refuse from these excavations in the hollow or valley has caused huge mounds here and there, and these, together with the well-eroded slopes of the small hills, give a decidedly picturesque outlook to the arid land.

The country being of poor soil is sparsely settled, and a glance at a map on which all the houses are indicated shows in a striking manner that this roost is in a region where are fewer houses than for miles around it. So these persecuted birds, over whose heads the Maryland statutes of outlawry have been hanging for almost two hundred years, would be stupid indeed if they had not learned to avoid man and his gun on every possible occasion, and to seek the most secluded spot available for a roosting-place.

The neighbouring farmers, with unusual good sense, seem to appreciate the value of the Crows, rarely disturbing them, and how far the colony understands this I will of course not attempt to say.

On a bright sunshiny day, up to within about two and one-half or three hours of sundown, the only Crows discoverable are the few which remain to feed in this territory, as their allotted ground, when the colony at dawn breaks up for the day. Perhaps, in addition, some that are blind or sick, too weak to fly far away, have remained at the roost. On a foggy or snowy day, however, more linger about all day, the main body is considerably delayed in dispersion, and the Crows come in earlier in the evening. Now, by about three hours before sunset on a clear day, evidently having secured their daily rations, these few fly to above one of the several gathering-grounds of the large flocks or detachments of the main body of Crows which are to come later. In the course of an hour the few already in are joined by one now and then until quite a number have come together, screaming out their "caws" vociferously and discordantly. This small flock may perchance fly over into the woods a mile to the westward, and by the time it returns in the course of fifteen or twenty minutes will have grown to a very large flock. As it settles down on a near corn-field with much fluttering of wings and very successful attempts at making a great noise, its individuals nervously hopping or flying from one spot to another, one is reminded of a flock of overgrown Blackbirds at the migrating season foraging

in some stubble-field for food. Suddenly, from some common impulse, the flock rises and moves away on an excursion for perhaps three or four miles. As the Crows rise and start away their noise is, if possible, increased, but gradually dies out as they approach the distant hill, and is quite lost before they disappear to sight on its further slope. When they are gone the wintry field which for an hour has been associated with the noisy birds seems quite desolate.

But now, as the sun is becoming large over the western hills, we see in almost every direction, singly, in pairs, in small groups, the Crows centring toward the roosting-ground, and by the time the flock we first observed returns from its excursion it has become decidedly reinforced. Before settling down, the flock may again wander off for two miles or more, but so many new individuals are arriving that a number do not join the main body, but seek the tops of the black oaks as if settling for the night. It is about sunset when these first ones alight, and it is not long before twenty or thirty of the nearest trees on the edge of the woods will each have seven or eight black figures perched upon its topmost branches.

Just as the sun is sinking below the horizon the flock which wandered away returns, and so many more Crows have joined the force that it has grown to immense proportions. The sunset appears to be the signal for all Crows, individually or in flocks, to centre at the roost. They come then in long streams, irregular in outlines perhaps, but rather constant in numbers, and after sunset the incoming is almost without noise, save the sharp whirring of their wings.

Audubon says: "They may be seen proceeding to such places more than an hour before sunset, in long straggling lines and in silence, and are joined by the Grackles, Starlings and Reed Birds, while the Fish Crows retire from the very same parts to the interior of the woods, many miles distant from any shores."

Also Dr. Godman observes that "endless columns pour in from various quarters, and as they arrive pitch upon their accustomed perches, crowding closely together for the benefit of the warmth and the shelter afforded by the thick foliage of the pine. The trees are literally bent by their weight, and the ground is covered for many feet (?) in depth by their dung, which, by its gradual

fermentation, must also tend to increase the warmth of the roost."

But among those which have settled upon the perches there is a good deal of "cawing," which may serve to guide to the roost their fellows belated in the dark or storm. At times, if unusually disturbed, instead of remaining upon the trees they will fly back and forth, and high into the air, making considerable noise. Those coming in sometimes answer this signalling, especially if, as I witnessed in the case of a heavy snowstorm in December, 1887, they may have cause to be confused. As they appear suddenly from out of the distant darkness, or from the thickest of the swirling snow, a spectre procession without beginning and without end, one is haunted by the weird reality of the ghostly scene. We seem to be looking at Poe's "Raven" and all its earthly relations, coming as mysteriously as did that uncanny guest, in a series that shall end "nevermore!"

This body, however, is but one branch of what we must now compare to a vast army of Crows. And as this division is marshalled into camp, from at least two other directions great bodies are coming in streams, settling down upon the trees or flying high above them, outlined against the red after-glow of the sun. The air, as far as one can see toward the west, seems literally alive with Crows. It is as if one of those huge swarms of gnats which we are all familiar with in the summer sunshine had been magnified until each individual gnat was as large as a crow, without any diminution in the total number of individuals.

In the winter of 1886-87, as one of a party from Baltimore, I saw one of these vast divisions coming in for the night with singular regularity. It came from the north-east, and as it approached our point of observation was somewhat hidden by a clump of trees, until, within a hundred yards of us, the procession made a sharp bend, and the Crows were directly over the woods which constituted the roost. If you will imagine a river one hundred and fifty feet wide and about thirty feet deep, its end a huge cataract by which the water falls to lose itself in a large lake, its beginning farther away than the eye can see, and if instead of water you will make this river of Crows not so closely packed but that they can fly easily, and make the swiftness of the current equal to the ordinary flight of the Crow, you may gain some idea of the stream which our party watched for over an

hour without noticing any diminution in its bulk. And what a lake it made! When a gun was fired the Crows rose above the woods like a great black cloud, and when they settled again every available branch of the thousands of trees was utilized to afford them resting-places.

Mr. Rhodes says: "The aërial evolutions of this descending multitude, coupled with the surging clamour of those which have already settled as successive reinforcements appear, and which at a distance greatly resembles the far-away roar of the sea, may justly awaken emotions of sublimity in the spectator."

The Crow is ever a wary bird, and even after having perched for the night is easily disturbed. If one walks through the woods where the Crows are roosting, the nearest ones rise with the "caw" of alarm, and fly over the trees to the farther edge of the main body. If one walks steadily towards them they keep as steadily giving way in orderly wave-like retreat. I have thus followed this colony from copse to copse through the whole neighbourhood of its roost. If while walking one but stops, with no other movement, the Crows immediately suspect some treachery, and there is a noisy stampede of all within danger. Very probably they have learned that a gunner always halts when about to shoot.

On the morning of February 19th I saw the colony disperse for the day under peculiarly favourable circumstances. The sky was perfectly clear and well lighted by the stars and the moon in its first quarter. We reached the field within one hundred yards of the roost about half-past three o'clock in the morning. Because of some noise in walking over the frozen furrows, a few of the nearest Crows took alarm at our approach, and flew back a few rods into the woods; but this without the slightest noise, save the cracking of some branches or the whirring of their wings in the retreat. For over two hours all at the roost was silent as a graveyard, except that every now and then some restless individual, a sentinel perhaps, would utter a most peculiar croak, just like the louder note of a bull-frog.

But just an hour before sunrise, when the east was becoming faintly lighted, the Crows suddenly commenced awakening, and at the same time commenced "cawing." The few who led the measure were within one or two minutes joined by the full chorus of 300,000 or more voices, each apparently striving to be heard

by all the rest. Never before had I realised the almost infinite possibility of the Crow's variable "caw" in the production of discords. This great noise, which the poetic soul of Audubon conceived to be "thanksgiving" and "consultation," was kept up for twenty minutes before any movement was discernible. Then about a dozen Crows started off for the day's work, followed by more and more, until they were going from the roost much as they return to it in the evening, in three or more large streams. The Crows, however, were then much more scattered in the order of flying than in the evening streams. After they had been leaving thus for about twenty minutes, the streams constantly growing larger, a common impulse seemed to move a large number of Crows, and they did not wait to "fall in" as individuals, but suddenly joined the stream as a large flock. The streams were thus swollen in bulk quite regularly about every five minutes until the colony had dispersed. In an hour's time, or just at sunrise, the whole body, with the exception of twenty or thirty, evidently too weak to go far off, had left the roost. All this time the din of the general body does not seem to diminish, those left behind apparently doing double duty in the "thanksgiving," while those going away, as far as one can hear, do not fail to keep up their cawing. In this respect they differ from the evening streams, which in the main come in with but little if any noise. In seeing this morning dispersion I think one is impressed, even more than in the evening, with the vast number of Crows constituting the colony.

In the daytime the individuals are scattered all over the surrounding country, seeking food in the fields, along the shores of bay, river, and creek, one and two together, and then in rather large flocks at the glue factories and stock-yards if there chance to be such rich grounds in the neighbourhood. They disperse to a radius of from one to about forty miles over the fields and along the water-courses. I have seen them scattered all the way from Baltimore to Philadelphia on the one side and to Washington on the other. Of course these Crows were members of two or more colonies.

Mr. Rhodes says that "during winter a radial sweep of one hundred miles, described from the city of Philadelphia and touching the cities of New York, Harrisburg, and Baltimore, will include in the daytime, in its western semicircle, fully two-thirds

of the Crows (*C. americanus*) inhabiting North America, and *at night* an equal proportion in its eastern half." Mr. Rhodes was evidently not familiar with the fact of large numbers of Crows wintering in the far South and the West.

That they fly from very long distances is shown by the fact that there are usually a few individuals coming in with the main body who, upon reaching the roosting-ground, are so exhausted as to be unable to fly, and can only hop about as best they may to escape their ground enemies. Upon Dec. 17th, 1887, were caught two of these Crows, which, if I may so express it, had the "flyer's cramp," for in every other respect they were apparently in good condition, and are now in sound health. That the muscles of flight had suffered a partial paralysis is shown by the fact that in the course of a week they had so much recovered that, had not their wings been clipped, they would probably have flown away.

The successive layers of autumn leaves and excrement left by the Crows in winter have formed a remarkably rich compost for the naturally rather poor soil. Upon a field formerly a part of the woodland which formed this roost, but from which the trees were cut three years ago, much larger crops have been produced than from neighbouring fields. Upon this ground many plants new to this part of the country, such as "river weeds," have been noticed by the farmers. In some of the excrement from this roost sent to Dr. Merriam were identified the seeds of the sumach (*Rhus glabra*) and corn, but the seeds of a species of plant, much more numerous than either of these, could not be identified. Among the small stones, bits of brick, and sand and broken shells were found fragments of *Modiola hamatus* and *Arvicola riparius*. Thus it is evident what an important part the Crows play in plant, and possibly animal distribution.

In this colony I have identified both the Common Crow (*Corvus americanus*, Aud.), and the Fish Crow (*C. ossifragus*, Wils.). The two species live together very contentedly, although probably in the main seeking different feeding-grounds. I believe the Common Crows are much the more numerous of the two; but on the wing they are scarcely distinguishable, except by voice, and so the exact proportion of the two kinds is virtually unattainable.

It is an interesting, although rather discouraging, operation to attempt to separate the variously intoned "caws" and imagine the condition of mind each one represents. It is a veritable Babel! Old Crows, with a voice like the rasp of a file as it plays on the edge of a saw; middle-aged Crows, with long-drawn "caws" that have *andante* movements about them, destined to linger in one's ears after the musical apparatus has vanished from sight; and young Crows, just learning the difficult art of expressing their emotions, who get along excellently until, all of a sudden, their note terminates in something totally unexpected, like a boy at the adolescent age, when he is never certain whether he will talk falsetto or bass. But in all these different shades of tone there is that one unmistakable nasal basis which so clearly distinguishes the Crow's "caw" from all other bird-notes.

C. C. Abbott says: "Crows have twenty-seven distinct cries, calls, or utterances, each readily distinguishable from the other, and each having an unmistakable connection with a certain class of actions; some of which, as for instance the many different notes of the brooding birds, are only heard at certain seasons." Though we may not agree with such an exact classification, yet it is undoubtedly true that Crows express quite different states of mind by quite different notes.

A determination of the exact number of Crows here collected is not possible, but even the most sober observers place it among the hundreds of thousands. As a basis for an approximate calculation, I have made the following observations at the roost:—

With the aid of two friends, fifteen different square rods, taken here and there at random, were paced off, and the number of trees thereon capable of furnishing roosting tops counted. An average gave us nine and three-fifths trees per square rod. At any one roosting the Crows occupy about ten acres, or  $(160 \times 9\frac{3}{5} \times 10) = 15,360$  trees. If on each tree fifteen Crows roosted—and that, if anything, is not too large an average—we should have 230,400 Crows in the colony.\* Because of the dim light at sunset, my attempts at taking instantaneous photographs of the incoming streams of Crows were failures. A view, however, of

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\* It is difficult to realise the meaning of such a large number, and perhaps an illustration may help us. It happens that if one Crow came in each second, day and night, it would require just sixty-four hours for this number to assemble.

one of the gathering flocks, taken about an hour before sunset, as it flew by in a straggling stream, shows two hundred and seventy-three Crows in the photographic field. On this basis, the flying time (an average of a number of observations) for the bird to cross the field being fifteen seconds, in three streams coming in for one hour, we should have 199,560 Crows. But the streams toward the middle and end of the incoming are manifestly much larger than the above, so this number may be taken as a minimum estimate.

Dr. Godman says: "During hard winters many Crows perish, and when starved severely, the poor wretches will swallow bits of leather, rope, rags—in short, anything that appears to promise the slightest relief." I have often found Crows sick of various disorders which I shall not attempt to classify, going blind and starving, and in the aggregate for a winter many suffer the inevitable fate of mortals. I have found as many as eleven sick and recently dead Crows upon the roosting-ground in one day, and no doubt the Hawks and Opossums have found as many, for they are so boldly fond of the birds as to become noticeably increased in numbers in the region of the roost in winter, and of their visits well-picked bones scattered about bear testimony. But the consumers of Crows are not confined to Hawks and Opossums, for there is an old coloured man in the neighbourhood who eats the fresh birds, and when his larder is abundantly supplied, salts down the Crows for future use.

Having the total population of the colony and the average death-rate we may calculate the average age of the Crow. I think that a death-rate of five for each night at the roost, drawn as an average from a number of observations, is certainly not too low. Allowing that during the almost equal period the colony is away from the roost the same number die, we then have a daily death-rate of ten, or a yearly mortality of 3650 Crows. So a colony of 230,400 individuals would be a fraction under eighty years in dying off; or, in other words, the potential longevity of the Crow would equal about eighty years. It is well known,\* at least

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\* "This bird sometimes lives for a century or more. Those have been seen in several cities of France which have attained this age, and in all countries, and in all times, it has passed as very long-lived."—Buffon, 'Histoire Naturelle,' tom. xviii., 1775, p. 32. "The Raven likewise is

traditionally, that the Crow is of remarkably long life, and although, as is easily seen, there are many obstacles in the way of anything but the barest approximation, yet I believe the above calculation is founded upon factors approximately correct.

#### B.—THE AVONDALE ROOST.

Through the kindness of Dr. Pattison, of Baltimore, I have been made aware of a roost near Avondale, Carroll County, Md. I visited this colony on March 3rd, spending half a day at the roost and in the immediate vicinity. The Crows here have selected the slope of a high hill upon which is a thick growth of deciduous trees, the oak and the chestnut prevailing. This hill belongs to a range extending some fifteen or twenty miles from north-east to south-west, parallel to the mountains which, some twenty-five miles away, can be seen from its crest. The exposure of the slope is toward the south, and so the Crows in adopting this site are quite protected from the cold northern winds which prevail in winter. There are large tracts of woods adjoining this roost, but only when driven away by shooting do the Crows leave this favourite hillside. They have roosted here for about ten years. The general life of this colony is much as at the Arbutus roost, and I should judge the two colonies to be of about the same size.

#### CROW LEGISLATION.

The legislation upon Crows in Maryland has been quite extensive, the first law for their destruction having been framed in 1704, in connection with one for the destruction of Wolves. A part of the section relating to Crows is as follows:—" . . . Every person that shall bring or cause to be brought to any of the Justices of the peace in any county within this province the head of a Crow with a perfect Bill shall be allowed the sum of six pounds of Tobacco and the Justice of the peace before whom such Crows heads shall be brought shall cause the Bill to be cut off to prevent the deceit of twice or oftener paying therefor." This law, in 1707, was continued for three years, then revived in

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reported to live long, sometimes to a hundred years. . . . But the Crow, like unto him in most things (except in greatness and voice), lives not altogether so long, and yet is reckoned amongst long livers."—Bacon, quoted in *Essay on 'Comparative Longevity in Man and the Lower Animals,'* Lankester, London, 1870, p. 67.

1710. In 1713 a new Act was passed, putting the Squirrels also upon the list of outlawry. This act was continued in force by supplementary acts in 1716 and 1722. In 1728 a new general "Act to encourage the destroying of Wolves, Crows, and Squirrels" was passed. In it we find that "every master, mistress, owner of a family, or single, taxable in the several and respective counties within this province" shall be obliged to produce "three squirrel scalps or Crows heads for every taxable person they pay levy for that year." The penalty of not producing the required number of scalps or heads was two pounds of tobacco for each one lacking, and for any in excess a like allowance was made. This law was in force for thirty years, when it was repealed, and an Act specifying four Squirrel scalps or Crows' heads was substituted.

Special laws for redeeming heads or scalps in excess of the requirements of these general laws were passed for different and various counties of the State, in 1749, 1762 (Baltimore Co.), 1794, 1795, 1796, 1798, 1803, 1804, 1807, 1809 and 1816. In 1824 all Acts heretofore passed for the destruction of Crows in the several counties of this State were repealed. Then new special laws were passed in 1826, 1829, 1830, 1831, 1846, and 1847. In 1860, with the adoption of the first general code of laws for Maryland, Art. 31, concerning Crows, was inserted. In it was specified a bounty of  $6\frac{1}{4}$  cents for each Crow's head brought in, provided an oath was taken that the Crow had been killed in the county where claim was made. In 1864, 1878, 1880, and 1884 (Baltimore Co.), the law was repealed for certain counties. In 1882, 1884, and 1886 new special laws associating with the Crows "Hawks and big Owls" have been passed.

I have consulted the general statutes now in force of all the States, and find only in one other State, Virginia, that a law concerning the destruction of Crows is extant. As early as 1796 a law was there passed requiring for every one tithable six Crows' heads or Squirrels' scalps. In the Code of Virginia for 1873 the right is given to each county to "allow or discontinue rewards for killing in such counties Panthers, Wolves, Foxes, Wild Cats, Crows, or Blackbirds."

I have read statements of laws having been passed in the early days of New England, and of such large numbers of Crows having been destroyed in one season that—the crops for the next season suffering a like fate from the "cut-worms" and other

insects—the inhabitants by repealing the laws were glad enough to encourage the Crows to come back.

The general effect of these laws has been to cause the destruction of large numbers of Crows. Dr. Godman has with graphic pen described the methods of hunting and slaughtering them in Maryland in the first years of this century.

It is interesting to learn from Mr. Henshaw that such near relatives of the Crow, the Blackbirds (*Agelaius gubernator*, Wagl., and *A. phœniceus*, Linn.), at San Luis Obispo, collect in the fall and winter in immense flocks and roost in the swamps of "tulle" (a kind of bulrush). They do not come into the swamp in streams, but in large flocks, and these, diving down into the reeds, are very soon hidden.

This dwelling together in large flocks is also quite true of the Crow-Blackbird, or Purple Grackle (*Quiscalus quiscula*, Linn.), as we see in this latitude after the breeding season and until migration, and in the South during the winter.

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## NOTES AND QUERIES.

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Death of Mr. Henry Stevenson, F.L.S., F.Z.S. — Our readers will learn with regret that our excellent friend and contributor, Mr. Stevenson, of Norwich, author of the well-known volumes on the 'Birds of Norfolk,' died at Norwich on the 18th August last, aged fifty-eight. For more than five-and-twenty years we have been accustomed to read in the pages of this Journal all kinds of interesting information from Mr. Stevenson's facile pen, and have for some time past deplored the fact that domestic trials and troubles had deprived him of that energy as a writer for which at one time he was conspicuous. As proprietor of 'The Norfolk Chronicle,' and contributor to other periodicals, notably to this Journal, 'The Field,' and the 'Transactions of the Norfolk and Norwich Naturalists' Society,' of which he was for some time Secretary, his name was well known, and few writers could furnish from personal observation more graphic descriptions than he could of the haunts and appearance of the wild creatures whose habits he loved to study whenever he could break away from literary work, and betake himself to one of his favourite "broads" or "meres" for a little quiet contemplation of nature. It has long been a matter of disappointment to his naturalist friends that he did not complete and publish the third volume, as contemplated, of his 'Birds of Norfolk.' We are glad to learn from a mutual friend that the materials for this volume have been preserved, and

that, in accordance with Mr. Stevenson's expressed desire, its publication will be undertaken in due course by Mr. Thomas Southwell, of Norwich. But we shall miss the master-hand of the author, and cannot but deplore the fact that he has not lived to complete what he so admirably commenced.

**The British Association.**—As announced in our last number, the 58th annual meeting of this Association will be held this year at Bath, and will commence on Wednesday, Sept. 5th, the President elect being Sir Frederick J. Bramwell, D.C.L., F.R.S., M.Inst.C.E. Amongst the Vice-Presidents are the Earl of Cork and Orrery, K.P., Lord Lieutenant of Somerset, the Marquis of Bath, the Bishop of Bath and Wells, the Bishop of Clifton, the Mayors of Bath and Bristol, Sir Frederick Abel, the Archdeacon of Bath, the Rev. Leonard Blomefield, Prof. Michael Foster, Mr. W. S. Gore Langton, J.P., Mr. Skrine, J.P., Mr. Wodehouse, M.P., Col. Laurie, M.P., and Mr. Jerome Murch, J.P. The General Treasurer is Prof. Williamson, the Local Treasurers for Bath being Messrs. Hammond, Murch, and Stone. The General Secretaries are Capt. Sir Douglas Galton, and Mr. A. G. Vernon Harcourt; Secretary, Mr. Arthur Aitchison; and Local Secretaries for Bath, Messrs. Pumphrey, Stothert, and Watts. In Section D., Biology, the President is Mr. W. T. Thiselton Dyer, C.M.G., M.A., F.R.S.; Vice-Presidents, Prof. Schäfer and Dr. P. L. Sclater; Secretaries, Messrs. C. Bailey, F. E. Beddard, S. F. Harmer, Walter Heape (Recorder), and Prof. H. Marshall Ward. The President of the Biological Section this year being a botanist, we cannot expect to hear of many zoological papers being read in that section, but any that may appear of interest to our readers will be brought to their notice in our next number.

#### MAMMALIA.

**Bank Vole in Sussex.**—May I add, in addition to other records, that the Bank Vole occurs in this part of West Sussex, but, owing to its shy and retiring habits and its rapid movements, often escapes notice? Some years ago (perhaps twenty), in clearing a large heap of garden rubbish, several Bank Voles were disturbed, and I captured three or four, but failed to keep them alive in confinement. I have only occasionally observed them since, but last summer (1887) a pair took up their quarters in an old fern-covered oak-stem just opposite my dining-room window. They seemed very shy in broad daylight, and, as a rule, only showed themselves when scuttling from one point to another.—WILLIAM JEFFERY (Ratham, near Chichester).

**Bottle-nosed Dolphin in the Solway Firth.**—On October 20th last, when walking with a companion along Mersehead Sands, parish of Kirkbean, Kirkcudbrightshire, we came upon a large Dolphin lying at high-water mark. The carcase was smelling strongly; the Gulls had got through the thick and tough hide, and were tearing out the viscera. Not having a knife with me strong enough to detach the head, nor any convenience for

carrying the latter if detached, I took the precaution of noting the colours, dimensions [length 9 feet], teeth, and sex (female), and left the body undisturbed, with a view to returning at an early date to secure the skull. From the state of the animal, and the situation where it was lying, I concluded it had lain on the spot for nearly a fortnight,—that is, since the last high tide,—and that it had been swept in from some part of the Barnhourie Bank—a broad tract of sand only covered at high water, and which extends out into the Solway for about six miles. I am tolerably certain that the animal had been in the first instance left helpless on Barnhourie at ebb tide, which here runs out with great rapidity, and that since its death the body had scarcely been in the water at all. I was not able to return for the skull for several weeks. In the interval the high tide had shifted the beast further up the shore, knocking out a good many of the teeth in transit, and the Gulls had also injured the extremities of the upper jaws considerably. However, I took off the head,—by this time in a decidedly unsavoury state,—brought it home, and, having cleaned it, forwarded it some time afterwards to Professor Struthers of Aberdeen, for proper identification. This being the first Dolphin I had seen in the flesh I was unable to name it with certainty, but I felt pretty sure it was the Bottle-nosed Dolphin, *Delphinus tursio*, and I have recently had a note from Professor Struthers to say it is that species. When the late Mr. E. R. Alston wrote his account of the “Mammalia of Scotland” for the Natural History Society of Glasgow, in 1880, he was unable to cite more than two Scottish specimens of *Delphinus tursio*, although he added, on the authority of Dr. Murie, that herds of this species are occasionally seen off our West coast. This Dolphin is an addition to the Solway list of Cetacea, which hitherto has comprised only the Porpoise, Common Rorqual, Bottle-nosed or Beaked Whale, Pilot or Ca'ing Whale, Grampus, and a somewhat doubtful record of the Common Dolphin.—ROBERT SERVICE (Maxwelltown, Dumfries).

#### BIRDS.

**Pallas's Sand Grouse in Ireland.**—The subjoined particulars respecting the occurrence of Pallas's Sand Grouse in Ireland reached me from the following sources. From Mr. Williams, Dame Street, Dublin:—“Two female specimens were received from Mr. W. C. Burton (Carrigaholt Castle, Co. Clare), on May 28th. They belonged to a good-sized flock which was seen on the seashore near that gentleman's estate. Two female specimens were shot on May 26th, on the property of Mr. David Sherlock (Rahan Lodge, King's Co.). Three more were noticed on this occasion and several times after, being protected, so that they might have an opportunity to breed. On June 11th two female specimens were sent from Galway; but, having been kept too long, they were unfit for preservation. On June 16th

a female Sand Grouse was picked up on the railway embankment at Clontarf, Co. Dublin, having been maimed by flying against a telegraph-wire. A male specimen was forwarded from Athlone, by Mr. W. Turkington. Two were shot out of a flock of five." From Mr. James Tank, taxidermist, Aungier Street, Dublin:—"One specimen was received in the beginning of June from Bellmullet, Co. Mayo. It was shot while being pursued by a hawk. Four others were seen in the same place, two of them being killed. The gentleman who sent the first-named Sand Grouse (the Rev. Henry Hewson) does not know what became of them." Besides the above-mentioned specimens of *Syrhaptes paradoxus* from Irish localities, I hear that one was received by Mr. R. J. Ussher from Co. Wexford, and one (a male) by Mr. R. M. Barrington, of Fassaroe, Co. Wicklow. I may add that I have myself seen most of the specimens above recorded, and that two of them—viz. one from Mr. Burton and another from Mr. Sherlock—have been presented to the Natural History Museum, Dublin.—ROBERT F. SCHARFF (Nat. Hist. Museum, Dublin).

**Sand Grouse in Yorkshire.**—I have had sent to me a pair of Pallas's Sand Grouse, which were shot out of a flock of about twenty-five, at Burniston, near Scarborough, on May 16th.—RILEY FORTUNE (Harrogate).

**Sand Grouse breeding in Durham.**—A correspondent writes "A nest with three young is near here." I hope they will have flown before this is printed.—S. L. MOSLEY (Huddersfield, July, 1888).

**Sand Grouse breeding in Cumberland.**—We have just seen (Aug. 22), in the hands of Mr. Stevens, the well-known Auctioneer, of King Street, Covent Garden, two undoubted eggs of Sand Grouse stated to have been taken near Carlisle in June last. As he was unable, beyond this, to supply any information, we hope that our correspondent, Mr. H. A. Macpherson, may be able to ascertain and report further particulars of so interesting an event. They were offered for sale on August 21st, and bought in at a reserved price.

**Sand Grouse at the Land's End.**—I have at the present time in my possession (August 18th) a male specimen of Pallas's Sand Grouse alive. It was one of a flock of eleven seen at the Land's End in May last, of which three were killed and this one captured. I hope to restore it to health sufficiently to send it to the Zoological Society's Gardens. I should have advised you of the occurrence of this flock before, but I had no personal knowledge of it, and I never care to report the occurrence of any specimen on mere hearsay.—THOMAS CORNISH (Penzance).

**The Crossbill in the Hebrides.**—Although a well-known bird in Western Scotland, and an irregular visitor to Shetland, the Crossbill, *Loxia curvirostra*, has not been recorded hitherto from the Inner or Outer Hebrides. I have therefore great pleasure in recording its presence in

Eigg and Skye. A flock of at least sixty birds reached Eigg on July 3rd, and on the 27th of the month a smaller flock was observed in the island of Skye, as I learn from Mr. G. S. Dumville Lees, who is always most helpful in assisting to work out the Ornithology of that faunal area. Since the year 1868, when as a small boy I used to exercise a catapult upon the flocks of Crossbills then frequenting the pine-woods of Bournemouth, I have enjoyed a good many opportunities of studying the ways of this species, but never until this summer in Eigg had I the pleasure of seeing Crossbills feeding on Aphides. Some interesting notes on caged Crossbills will be found in Mr. C. M. Adamson's work, 'More Scraps about Birds,' especially as regards their feeding on green peas. I have had a great many caged Crossbills myself during the last sixteen years, and I am surprised to find that Mr. Adamson's birds "did not bathe." Mine were always very partial to a "cold tub." I may remark that Crossbills have been unusually numerous in the north-west of England since December, 1887. Their presence is reported to me from Grange, Millom, and Appleby, and they have certainly bred this summer near Penrith, though neither Mr. Tandy nor I succeeded in obtaining a nest.—H. A. MACPHERSON (Carlisle).

**Crossbills in Co. Westmeath.**—On August 1st a flock of twenty-four Crossbills might have been seen, close to our house, busily engaged in opening spruce fir cones, which are unusually abundant this year: one was shot, and proved to be a small and immature specimen of this season, just changing from its nesting plumage into the bright red tint which distinguishes the adult male Crossbill, and leads us to believe that the birds were reared in, or near, our plantation.—FRANCES J. BATTERSBY (Cromlyn, Rathowen, Co. Westmeath).

**Migration of the Crossbill.**—Several Crossbills occurred at the Spurn on the 13th and 14th of July, on the sand-hills between the Lighthouses and Kilnsea Beacon: one also was taken on board the Bull Lightvessel, off the mouth of the Humber, and kept for a week, when it escaped and flew away. Since the 16th of June great numbers have visited Heligoland in flights of from ten, twenty to fifty. Mr. Gätke informs me that the hawthorns in his garden were crowded with them, and that on some days there must have been hundreds dispersed amongst the foliage. All were adults; not a single striped young one amongst them.—JOHN CORDEAUX (Great Cotes, Ulceby).

[We have heard of a good many Crossbills this summer in different parts of the country. In July a flock of these birds was observed in Skye, as reported in 'The Field' of August 4th and 11th,—a noteworthy fact, as we believe the Crossbill had not been previously observed there.—ED.]

**Cuckoo in the City.**—On the afternoon of August 16th a bird which we at first took for a Kestrel, but which proved to be a young Cuckoo, was

killed among the trees in the churchyard of Christ Church, Spitalfields. It was fully fledged, but flew very feebly, and was evidently so faint from fatigue or hunger that it would probably have fallen a prey to cats during the night. The feathers bore no traces of its ever having been caged. I may add that during the past summer two Quails have been seen in the same churchyard, but these had evidently escaped from the Great Eastern Railway depôt near at hand, whither the Quails are brought which supply Leadenhall Market.—J. H. KEEN (Church House, Spitalfields).

**The Cuckoo calling in July.**—For the past five years I have heard the Cuckoo uttering its full call in this neighbourhood well into July; but this year I heard him up to the 13th of the month. What is the cause of this alteration in the bird's habits?—W. R. TATE (Walpole Vicarage, Halesworth).

[It can scarcely be regarded as anything more than an individual peculiarity.—ED.]

**Richardson's Skua in the Island of Barbados.**—On the morning of the 10th of July, 1888, there was brought to me alive a beautiful specimen of *Stercorarius crepidatus* (Gmel.). It is in full mature plumage, of the dusky garb, without a single feather showing evidence of immaturity. I should call it a typical adult specimen. On dissection it proved to be a female, the ovaries enlarged, some of the rudimentary eggs being of the size of No. 4 shot. The bird was rather thin; its stomach contained fish-bones and a green substance. The man who brought it to me stated that he captured it in the water, with a hand-net, close to the shore, at daybreak of the same day he brought it to me. There had been heavy squalls of wind and rain over the island during the preceding night from N.E. The bird was evidently worn out, or would not have allowed itself to be captured in that manner. I am not aware of a prior instance on record of the capture of any of the *Stercorariinæ* in the West Indies, though doubtless their winter migration extends to the Caribbean Sea. The appearance of the Arctic Skua, at this season of the year, on the shores of Barbados, is certainly a most unlooked-for occurrence. At this season of the year this species is engaged in rearing its young in high northern latitudes, and what could have induced an adult bird to remain under the tropics at midsummer is an enigma to me. I carefully dissected the bird, and found no trace of any injury; its plumage was in very good order, and the bird, though rather thin, by no means emaciated, whilst the ovary was enlarged and healthy.—H. W. FEILDEN (Barbados, July, 1888).

**Short-toed Lark in Sussex.**—On July 27th I examined a living example of this bird, *Alauda brachydactyla*, in the possession of Mr. Cooper, the well-known taxidermist, of 28, Radnor Street, St. Luke's, who informed me that it was taken in the net of a birdcatcher at Amberley, Sussex,

on the 18th of the same month. It was a bird of fully a year old.—HOWARD SAUNDERS (7, Radnor Place, W.).

**Bee-eater in Co. Cork.**—Several gentlemen having expressed doubts as to the origin of the Bee-eater which I referred to in the June number of 'The Zoologist' (p. 226), I should like to state that the bird was offered to me *in the flesh* from Cork; and I received it in a perfectly fresh condition. I have no doubt as to its having been really shot in Co. Cork, as mentioned in my previous note.—ROBERT F. SCHARFF (Nat. Hist. Museum, Dublin).

**Attacks by Owls.**—Stories of Owls attacking persons passing their haunts at night are occasionally current in districts where these birds are common: but as such occurrences are probably not very frequent, the following may be worth notice:—On the night of May 31st last, my brother, Mr. H. W. L. Haigh, was walking along a road leading through a narrow rocky gorge in a neighbouring parish, when he was surprised by something striking him on the head and knocking off his cap. This was repeated two or three times before he became aware that his assailant was an Owl. On the following night I accompanied him to the same spot, and on my passing the rock indicated, the bird immediately came down, striking my hand, which I put up to ward off the blow, and inflicting several deep scratches. It did not, however, attack me again, although I repassed the place several times. A man whose cottage was situated immediately under the rock told us that for some time past this Owl had been the terror of his family, attacking the children, the cat, and even the fowls if they ventured out of doors after dark. We also learned from him that the nest was in a cleft of rock just over the house and contained two young birds, one of which had that morning fallen down into his garden. He showed us this bird, which was a Brown Owl, *Syrnium aluco*, fully fledged, and almost ready to fly. I had it replaced in the rock at once, and shortly after was pleased to hear that they had left the nest in safety, and that the old bird had discontinued its pugnacious habits.—G. H. CATON HAIGH (Aber-ia, Penrhyndeudraeth, Merionethshire, North Wales).

**Fulmar Petrel and Gull-billed Tern at Hunstanton.**—I have lately seen a fine adult Fulmar Petrel, *Fulmarus glacialis*, which was shot at Hunstanton in January last, and is now in the collection of Dr. Whitty. This gentleman's interesting collection of local birds also contains a Gull-billed Tern, *Sterna anglica*, shot in July, 1878, not far from Hunstanton Station, and taken to its present possessor in the flesh. I do not think this bird has been recorded.—JULIAN G. TUCK (Hunstanton).

**Dipper nesting in Trees.**—Mr. Rooper has done good service in reporting the nest of the Dipper, *Cinclus aquaticus*, which he found built in a tree; but this situation, while very unusual, is by no means unprecedented. In 1885 my friend Mr. W. Duckworth found two nests of the

Dipper placed in trees overhanging the Cumbrian river Eden. One of the trees was an oak, the other a willow. The nests were preserved, and the pair which nested in the willow brought off their young ones safely in 1885, 1886, and 1887. They may have nested there this year also, but I have not had time to visit the spot this year. The fact is briefly noticed in Mr. Howard Saunders's new 'Manual of British Birds,' and will be found recorded in the 'Transactions of the Cumberland and Westmoreland Association,' No. xi., 1887, p. 29.—H. A. MACPHERSON (Carlisle).

**Varieties of Common Birds in Yorkshire.**—A friend recently asked me to call and tell him what a bird was, which had been picked up dead and given to him: on seeing it I found it to be a perfectly white Lesser Redpoll. During the present year I have had brought to me a pure white Starling, and a pair of House Sparrows white with the margins of the feathers on the upper parts rust-colour; these were full-grown young birds, and probably both came from the same nest. They are now in the Rev. G. D. Armitage's collection at Lutterworth. I have also a white Sky Lark, a pale grey and pied Blackbird, and a Ring Dove with a grey back, killed in this district.—S. L. MOSLEY (Huddersfield).

**Shoveller and Rough-legged Buzzard in Surrey.**—During March last I paid a short visit to Guildford, and on my arrival some relatives informed me that a strange bird had been shot by a friend of mine, Mr. C. Land of Horsley, and taken to the local taxidermist for identification, but the only information that they could obtain was that it was some kind of duck, species unknown. Being curious to get to know what it could be I visited my friend the next day, and found it to be a male Shoveller, *Spatula clypeata*, in good plumage. This bird, as far as I know, has only been recorded a few times previously as occurring in Surrey. The same gentleman showed me a fine Rough-legged Buzzard, *Buteo lagopus*, that he had shot at Horsley during the previous autumn (exact date forgotten). This species has several times occurred near Godalming.—F. R. FITZGERALD (Harrogate).

**Redstart nesting in a Thrush's Nest.**—In June last Mr. Bell, of Liddell Bank, Dumfriesshire, an enthusiastic field naturalist, was kind enough to ask my friend Mr. Baily and myself to spend a couple of days in birds'-nesting with him on the Liddell. I was detained at home, but Mr. Baily went, and on his return reported the find of a Redstart's nest built into an old nest of a Song Thrush. There was no doubt about the ownership of the nest, for the hen bird was seen sitting on her eggs, two of which were taken. On hearing this I suggested that the nest might be acceptable for the Natural History Museum, and it has since been sent to me for presentation there, together with the remaining three eggs. The Thrush's nest measures about four inches across, and that of the Redstart

two inches and one-fifth inside measurement: the former was placed in a thorn-bush, and was therefore open to the sky, though well screened by branches above. I have seen a good many Redstart's nests, but I can only recall one instance in my own experience in which a nest of *R. phœnicurus* has been open to the sky. The nest in question was placed in a thick bush, and was surrounded by thickets.—H. A. MACPHERSON (Carlisle).

**Rock Thrushes, in their Native Haunts and in Captivity.**—June is the month for a naturalist, be he zoologist or botanist, to visit Switzerland and Northern Italy; such a multitude of flowers, such interesting birds, which though not to be found so frequently as are the flowers, yet are all the more delightful when they are met with; and it is of the latter that I would write a few words about, more especially mentioning the two species of Rock Thrushes, viz., the Rock Thrush, *par excellence* (*Petrocincla saxatilis*), and the Blue Rock Thrush (*Turdus cyaneus*). I was at Lugano last June for a month, and birds being my *grand passion*, what could I do but look about for them, not contenting myself with a mere passing glimpse, but trying to secure some callow brood to rear up and make pets of. Now I knew that both the above-mentioned species must in the summer time be natives of the surrounding mountains, so almost the first morning after my arrival in the quaint old town, nestling down by the shores of one of those lovely lakes of Northern Italy, I started out at five o'clock,—one cannot stay in bed on a real summer morning in Italy,—and found my way along a white, dusty road to the foot of San Salvatore, which, as everyone who has been to Lugano knows, rises up quite close to the town in the shape of a huge molehill. Nature has been exaggerating as well as other good people whom one meets with; but then what is a failing in them is not so with her, and if she has chosen to make a mountain out of a molehill, why the world is the gainer; at any rate, I know I was on this morning of which I am writing, for although I neither saw nor heard anything of the birds for which I was searching, yet I was rewarded by a glorious view, the sun rising and throwing his light on to the distant mountains, apparently not such early risers as myself; for there they were snoozing like great giants with white nightcaps—the caps of eternal snow. Monte San Salvatore, although thickly covered with an undergrowth of hazels, overtopped by Spanish chestnuts and other trees, seemed to be lacking in bird-life. There were some Blackcaps about, and near the foot some Nightingales; and how the Nightingales sing in Italy! Is it fancy that their voices are richer and their notes more varied than their English cousins? or is it merely that everything being so brilliant and beautiful, one comes to the conclusion that of course the Nightingale's song is, too? Well, I thought I had better find some peasant—some nice, obliging Italian—who could and would put me on the track of a Rock Thrush; and so I was rowed across, on a very

hot, sultry afternoon, in a *dolce far niente* sort of a way, to the foot of Monte Caprino, which bounds the lake of Lugano on the opposite side to the town itself, and there I was introduced to my bird-guide that was to be. He, however, not knowing the birds by their French names, and I not knowing them by their local Italian ones—the limit of his ornithological knowledge—we found a difficulty in coming to a conclusion as to the species required, until I took my paints and made a rough sketch of the two kinds. “Ah,” he said, pointing to the Blue Thrush’s portrait, “*Passera Solitaria e Collossera*,” he added, dabbing rapidly with his finger at my scribble intended to represent the Rock Thrush. “*Collossera*” is, I presume, a local corruption of “*Codirossone*,” which Messrs. Sharpe and Dresser give as the Italian name for this bird. [The best lists of Italian provincial names of birds will be found in Professor Giglioli’s ‘*Avifauna Italica*.’—ED.] So he told me that he could easily procure me a brood of this kind; but the *Passera Solitaria*, that was quite another thing, for they build much higher up, and in the face of the precipices, where the nest is most difficult of access; but he would try his best. And so he did; for on rowing across, a few days later, I was delighted to find that a brood of Rock Thrushes had been discovered; so off we set to look at the nest, which we came to after a good deal of toiling up the dry bed of a torrent, and some stumbling over the loose boulders and stones, with steep banks on each side thickly covered with shrubs, grass, and trees. Then came a warming scramble up one of these banks, with the brown Lizards darting away at every step, then a final hoist up until I could just cling on to the tufts of grass and see into the nest, which was very much like a Blackbird’s, but built in the side of the bank, where the ground had been hollowed away, apparently by the old birds, who on this occasion did not put in an appearance. In the nest there were three young birds of about a week or nine days old, and one pale blue egg, minus spots of any kind. As I wanted more than one bird I took the nest as it was, and triumphantly carried it, with its contents, back to Lugano. They prospered beyond all hope, and are now three fine young birds, fast donning their winter plumage, two males and one female, as far as one can judge. My bird-hunter found me a nest of the Blue Thrush, but in a quite inaccessible spot—*viz.* in the face of a huge rock rising precipitously out of the lake; about 100 feet up there was a small hole, and as we sat in the boat below, a Cuckoo flew quite close past this hole, when immediately a Blue Thrush darted out, chasing the intruder along the face of the rock until both pursuer and pursued disappeared over the top, which little occurrence convinced me that my guide was right as to the whereabouts of the nest of the *Passera Solitaria*, and it is in these sort of places that this bird usually builds. In the neighbourhood of the Italian lakes it is thought much of as a cage-bird and a songster, whilst the Rock Thrush is rather ignored, and

I was almost jeered at by all to whom I showed my young Thrushes for taking so much trouble to rear such good-for-nothing birds; for all that I did not give them up, believing them capable of turning out very good songsters, and very charming in every way. It was in the little town of Mendrisio, at the foot of Monte Generoso, that I procured a young Blue Thrush of a month old. Poor little bird! how glad I was to get him home to Lugano and wash him, for his feathers were caked with dirt. The Italian "paese" and small tradespeople, so dirty in themselves, seem to think their captive birds are equally indifferent to cleanliness; for my young Thrush had been reared by an old man, the occupier of a dank and dark tobacco and eating shop, who, by-the-bye, possessed the only Rock Thrush I saw in captivity—a fine male bird of the previous year's rearing, in very fair plumage, the blue head and chestnut breast being fully assumed—most resentful of any foreign interference, and pecking fiercely at my fingers when I held them to the bars of the cage. As to the young *Passera*, he grew apace, and eat I should be afraid to say how much. As I write he is sitting near me, a full-grown bird in perfect winter plumage, apparently not regretting his exile from snow-capped mountains and vine-clad valleys.—HUBERT D. ASTLEY (Henley-on-Thames).

**Young Rooks with White Chin-spots.**—The note by Mr. Miller Christy (p. 302) is very interesting. I recently obtained an almost full-grown young Rook with a large, pure white patch on the chin, extending two inches from the base of the bill and up to the rami of the mandible; the first three or four primaries on each side are also white. On mentioning this bird when at Mr. Bond's, he pointed one out in his collection marked *exactly* in the same way. It is curious how certain marked varieties are recurrent.—S. L. MOSLEY (Huddersfield).

**Tree Sparrow breeding at Harrow.**—On referring to "Yarrell" (4th edition, vol. ii., p. 85), I find it stated that Middlesex is one of the English counties in which this bird has not yet been recorded as breeding, "but it has probably been overlooked." I do not know whether it has since been recorded from Middlesex, but if it has not, I can testify that it breed annually in the neighbourhood of Harrow, in that county, showing an evident increase since 1876, when the 'Flora of Harrow,' with a list of the birds, was published, in which it is stated that the Tree Sparrow is "uncommon, but seen occasionally in small flocks during the winter."—G. E. H. BARRETT-HAMILTON (New Ross, Co. Wexford).

[See 'The Zoologist,' 1887, p. 24.—ED.]

**Swallows nesting In-doors.**—In July last a pair of Swallows built their nest in the cornice of a sitting-room in constant use; the windows of the room, though open all day, were, with one or two exceptions, closed at night; supper was served in the room, and not unfrequently pipes were

lighted: nevertheless the building of the nest proceeded, it was lined, and evidently finished. But it happened that on the 25th of July there were many visitors, and I suppose the noise and smoke were too much for the birds; anyhow they deserted the nest, and were not seen in the room afterwards. On July 28th I took down the nest, which contained one egg. In an unused bed-room, also, a pair of Swallows have nested and brought off their young. Another pair attempted to nest on a broom placed in the corner of an upstairs room, but were disturbed. But more curious still, a pair of Swallows have reared a brood in our steam wash-house, where the noise of the washing and wringing machines is simply deafening, and the room is filled with the vapour from the boiling water. Is it possible that the very wet summer has driven the birds to seek more sheltered situations for their nests than the chimney? Still this would not explain their choosing the rooms of a dwelling-house rather than some barn, of which there are plenty near, and which have been regularly used by some of them. A pair of Swallows, accompanied by a third, have for some years nested under a porch at the back door of "The Cottage," returning each year and repairing the nest: they came as usual this year, the first bird appearing on April 16th, and roosting each night on the nest; on the 23rd a second appeared, and afterwards a third; on the 28th a smashed egg was found on the ground; on May 11th the nest was on the ground,—from what cause it fell I know not. The birds appear to have sheltered for the night in a barn close by, for the following morning the heads and tails of two Swallows were found there, a pet cat having evidently appropriated the rest. Two days after a pair of Swallows were noticed surveying the spot where the nest had been; in another week they were laying the foundations of a new nest exactly in the old spot, and they have since completed this and brought off their brood. It would look as though the third Swallow (whose presence each year I cannot understand) had found a helpmate at once and built again on the old spot.—JOHN H. WILMORE (Queenwood College, near Stockbridge, Hants).

#### FISHES.

**Sting Ray in Bosham Harbour, Sussex.**—Two examples, which I have no doubt may be referred to this species, were taken while hooking eels and flounders in Bosham Harbour, in the early part of this summer. This fish is known to our local fishermen as the "Stinge," and is much dreaded by them,—so much so that in the second case the fish, a large one, was cut adrift rather than haul it into the boat to obtain the hook.—WILLIAM JEFFERY (Ratham, near Chichester).

**Abundance of the Picked Dogfish in Killala Bay.**—About the middle of July Killala Bay was visited by immense numbers of the Picked Dog-

fish, *Acanthias vulgaris*, which did great damage to the drift-nets of the fishermen and scared the salmon from the nets. These fish moved about in large shoals, and wherever they encountered the nets quite filled them. Indeed I was told of one catch filling three large yawls, and on July 17th I saw one boat come in with over a ton weight of Dogfish on board, but amongst this large boat-load I saw only two of the small spotted species, *Scyllium canicula*. They had evidently visited the shoal water of the Bay for the purpose of bringing forth their young, which were quite ready for exclusion, many actually producing their young on being taken on board the boats. There was a similar visitation of this species of Dogfish to our Bay and the adjacent coast in the summer of 1882, when they did so much damage to the net and line fishermen that fishing was entirely stopped until they had left the Bay for deep water.—ROBERT WARREN (Moyview, Ballina).

[For the benefit of those of our readers who may not be familiar with this fish, we may remark that it is one of the commonest of the Sharks (*Spinacidae*) which frequent our coasts. The name "Picked Dogfish" is evidently a corruption of "Piked Dogfish," so called from the two sharp "pikes" or spines which it carries on its back in front of each dorsal fin. Its predatory habits are well known to the fishermen, and the herring and pilchard fisheries are often seriously affected and depreciated by the attacks made upon them while in the nets, which are often much damaged in consequence. Some interesting statistics upon this subject will be found in Day's 'Fishes of Great Britain and Ireland,' vol. ii., pp. 316, 317, where a good figure of the fish is also given.—ED.

#### CRUSTACEA.

*Dromia vulgaris* on the Sussex Coast.—I have a specimen of this Crab which was sent me alive in May, 1886. It was obtained by scallop-dredgers in the channel off Newhaven, or Beachy Head.—WILLIAM JEFFERY (Ratham, near Chichester).

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## SCIENTIFIC SOCIETIES.

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### ENTOMOLOGICAL SOCIETY OF LONDON.

August 1, 1888.—Dr. D. SHARP, F.L.S., President, in the chair.

The Rev. R. Walton-Lewis, B.A., of Cape Colony, was elected a Fellow of the Society.

Mr. F. Du Cane Godman, F.R.S., exhibited a large number of species of Lepidoptera and Diptera recently collected for him in Mexico by Mr. Herbert Smith.

Mr. White exhibited a specimen of *Osmylus maculatus*, taken by him on the Stort, near Sawbridgeworth, in July last. He also exhibited parasites bred from *Bombyx neustria*, and a living example of *Heterodes Guyoni*, found at Dartford, and believed to have been introduced with Esparto grass from Tunis.

Mr. Enoch exhibited a stem of barley, showing the appearance of the plant under an attack of Hessian Fly.

Mr. Stevens exhibited a number of galls collected at Byfleet, Surrey, in July last, by Mr. Leonard Stevens; also a specimen of *Coleophora solitariella*, with ichneumons bred from it.

Mr. Edward Saunders exhibited a specimen of *Catephia alchymista*, captured by his son at St. Leonards, in June last. He also exhibited specimens of a rare Ant (*Anochetus ghiliani*), which were taken at Tangier by Mr. G. Lewis. One of these he had submitted to Dr. Emery, of Bologna, who thought that, although ocelli were present, the specimen was probably intermediate between a worker and a female, and that possibly the true female did not exist.

Mr. Pascoe exhibited a number of species of Coleoptera recently collected in Germany and the Jura Mountains, and read a note correcting the synonymy of certain species of *Brachycerus* recently described by him in the 'Transactions' of the Society. He stated that the corrections had been suggested by M. Peringuey and M. Aurivillius.

Prof. Westwood communicated a paper entitled "A List of the Diurnal Lepidoptera collected in Northern Celebes by Dr. Sydney Hickson, with descriptions of new Species."—H. Goss, *Hon. Secretary*.

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## NOTICES OF NEW BOOKS.

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*Pallas's Sand Grouse* (*Syrhaptes paradoxus*), *its history, habits, food, and migrations; with hints as to its utility, and a plea for its preservation.* By W. B. TEGETMEIER. 8vo, pp. 24. With a coloured plate and three woodcuts. London: Horace Cox, 346, Strand. 1888.

CONSIDERING the amount of interest which has been excited by the recent immigration of flocks of this singular Asiatic species, it is perhaps not surprising that a certain amount of literature should spring up concerning it, not only in England, but in other parts of Europe, where its unwonted appearance this year has attracted the attention of all classes.

To some extent, it may be said, we were not altogether unprepared for this incursion, seeing that it is not the first time that the bird has visited us in some numbers, and it was, of course, within the bounds of possibility that it would come again from a repetition of the same operating cause. What this cause is no one has yet satisfactorily determined. In the opinion of Prof. Newton\* it may be regarded as "the natural overflow of the population of *Syrrhaptes*, resulting from its ordinary increase. It may have been striving to extend its range in all directions, and if so (he considers) it would assuredly have found the direction of least resistance." But to account for such a sudden and complete dispersal some further explanation seems necessary; and it appears to us not unlikely, as we have elsewhere suggested,† that a sand-storm of unusual severity, such as is known to occur in desert-lands, may have suddenly expelled the entire bird-population of the district over which it swept, driving them in their fright so far beyond the limits of a natural migratory movement at the approach of the breeding-season that, having once got beyond the desert plains and over inclosed and cultivated country, they would keep on and on in the expectation of finding ground attractive to them, until the necessity for food and rest would compel them to descend and alight. In this way only does it seem possible to explain their journeying so far westward as the British Islands, since we may reasonably assume that the birds might have met with tracts of country much nearer to their true home which would have suited them so well as to render any journey further westward unnecessary.

In the pamphlet before us Mr. Tegetmeier does not attempt any explanation of the cause of this invasion, but confines himself, as he tells us in his preface, to a description of the habits of the bird as furnished by ornithologists who have observed it in its native country; a popular account of the singular peculiarities of its structure; a short history of its remarkable migrations; and a plea for its preservation as an object not only of interest, but of utility.

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\* 'The Ibis,' 1864, p. 219.

† "The recent immigration of Pallas's Sand Grouse," in 'Life Lore' for August, 1888.

A coloured lithograph of the bird (copied from Dresser's 'Birds of Europe') conveys a good idea of its appearance to those who have never seen a specimen, although for our own part we prefer the coloured plate by Wolf in the first volume of Stevenson's 'Birds of Norfolk.'

The woodcut of the sternum, or breast-bone, figured on p. 16, is obviously borrowed from 'Yarrell,' and represents, oddly enough, a preparation of our own, made five-and-twenty years ago, when a living Sand Grouse, which had been deposited in the Zoological Society's Gardens, subsequently died there, and was forwarded to us.

Of the other woodcuts given (p. 15), one shows the upper and under surface of the foot, with its feathered tarsus, and below it is figured an egg, supposed to be of the natural size and shape, but which to our eyes does not by any means convey a good impression of its real appearance. The fact is, that the delicate texture and soft markings of birds' eggs cannot be properly represented by wood engraving, the outlines being invariably too hard, and the edges of the markings too unsubdued.

We might point out several typographical and other slips here and there, such as "furculam" for "furcula" (p. 16), "Navan" for "Naran" (p. 18), and the misapprehension (p. 14) that the specific name *paradoxus* was bestowed by Illiger. But these, doubtless, may have already caught the author's eye, and have been noted for correction should another edition be called for.

In the "Bibliography" given on the last page, we think Mr. Tegetmeier might well have included 'The Zoologist' for 1863 and 1864, since the volumes for these years not only contain a mass of correspondence on the subject of Pallas's Sand Grouse in the British Islands, but furnished the materials from which some of the subsequently published accounts quoted by Mr. Tegetmeier were compiled. But apart from this, his pamphlet will undoubtedly serve a useful purpose in disseminating information about a bird still comparatively little known to people in this country, and in encouraging the protection of a species which may prove to be of value from the sportsman's as well as the naturalist's point of view.

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# THE ZOOLOGIST.

THIRD SERIES.

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## THE WILD ANIMALS OF BRITISH INDIA.

It has been too much the habit of English sportsmen in India, says a writer in a recent number of the 'Quarterly Review' (No. 333, July, 1888), to deplore the general decrease of the wild animals which they used to hunt. Wherever there has been a marked diminution or disappearance of the beasts of prey, it is usually due to one of three causes. The first and principal cause has been the gradual increase of cultivation throughout; the second cause is referable to the policy adopted by the Government of India, of giving pecuniary rewards for the extermination of wild animals and poisonous snakes; and the third cause is to be found in the assiduous endeavours of English sportsmen, during the last century, to kill as many wild beasts as they could find time and opportunity to destroy.

With regard to the first cause, it is a simple fact that the clearance of the forest and the spread of cultivation have been fatal, not only to the larger beasts of prey, but also to the innocent herds of Deer and Antelopes. Without entering into any discussion on the landed tenures of India, it is generally known that, however much the Government revenue systems may differ in each province, there is everywhere a similar amount of land-hunger among the cultivating classes. Wherever it has been possible to redeem a few acres of uncultivated land, the venturesome peasant has gone in, with his bill-hook and his plough, and has not hesitated to risk his life in protecting his

little crop from the ravages of the wild beasts, which had looked on the land as a part of their own domain.

The policy which has been pursued by the English Government, in attempting to exterminate wild beasts, leaves very little reason to fear that it will permit its new Game Law to be abused, so as to encourage the growth of any noxious animals. On the contrary, if, according to the old fable of Æsop, a council of wild beasts could now be held, it would be for the animals to complain that the English Government had encroached on their rights and privileges in a manner utterly unknown to the original rulers of India. They might plead, that there is no evidence that under any Hindoo or Mahomedan dynasty was there ever a fixed tariff of rewards for the destruction of Lions and Tigers, of Crocodiles and Snakes. They might admit that it was the practice of Oriental monarchs to make large collections of living wild animals in their menageries. The native potentates and their princesses and courtiers delighted in the fights of wild beasts; whether a Tiger was pitted against a Tiger, or a wild Buffalo fought against a Rhinoceros. The jungles were of course harried and netted to take alive the animals needed for the tyrants' pleasure. But with the English Government it has been made a systematic business to encourage the destruction of all wild beasts. A table of rewards, setting a value on the head of each Tiger and other dangerous animals hangs in every public office and market-place.

We shall now proceed to explain what has been the object of the Government operations and its system of rewards. In a recent number of the official 'Gazette' certain figured statements have been published with a resolution, recorded by the Viceroy of India on the 22nd November, 1887, reviewing the provincial returns, showing the measures adopted for the extermination of wild animals and poisonous Snakes in British India during the year 1886. The Government paid Rs.189,006 in rewards for the destruction of wild animals and poisonous snakes collectively; but we shall treat of the snakes separately hereafter. The total number of human beings reported as killed by wild animals in 1886 was 2707. Some stress must be laid on the word *reported*, for it is very possible that many deaths occurred which were not reported to the police, through whose agency these statistics are collected; whilst, on the other hand,

it is suspected that some cases of murder are concealed—the cause of death or disappearance being attributed to wild beasts. The total number of cattle reported as killed by wild beasts in 1886 was 55,203; but this also gives a rather inadequate idea of the true mortality amongst tame animals; for, in the first place, many must be killed whilst grazing in the jungles, whose death the poor owner never reports to the police; and the return only includes cows and oxen, and buffaloes; whilst it is incidentally mentioned that nearly 8000 sheep and goats were killed in Madras, in addition to 10,000 head of cattle.

The following table exhibits the numbers of the human victims, according to several wild animals by which they were slain:—

Killed by Wild Elephants	-	-	-	-	57
„ Tigers	-	-	-	-	928
„ Leopards	-	-	-	-	194
„ Bears	-	-	-	-	113
„ Wolves	-	-	-	-	222
„ Hyænas	-	-	-	-	24
„ Other animals	-	-	-	-	1169
					<hr/>
					2707

The account *per contra*, showing the number of wild animals destroyed, and the amount of rewards paid for their destruction, stands as follows:—

	Number killed.	Rewards paid.
Wild Elephants	7	Rs. 300
Tigers	1464	„ 48,000
Leopards	4051	„ 70,632
Bears	1668	„ 7,783
Wolves	6725	„ 24,138
Hyænas	1650	„ 6,552
Other animals	6852	„ 6,033
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Total	22,417	Total 163,438

Thus it will be seen that, on the whole, the wild beasts had much the worst of the conflict. As between tigers and men, unfortunately, the numbers were more nearly equal; but on looking into the details from the different provinces, very remarkable differences appear. For instance, in Lower Bengal 580 persons were killed by tigers, but only 245 tigers were killed;

whereas, in the province of Assam 81 persons were killed by tigers, whilst 436 tigers were killed. Some provinces are almost free from tigers. In the Punjab only one man was killed by a tiger, and only four tigers were destroyed. In the province of Bombay only 8 persons were killed by tigers, though 97 tigers forfeited their lives. It will have been observed that 1169 of the deaths are attributed to other unspecified animals; whilst 6852 animals coming under this indefinite heading were killed. From some of the details which have been given, particularly in Bengal, it appears that Jackals take the highest place in this class, and it is probable that many more young children are carried off by Jackals than the returns show. A woman, whose hut is on the outskirts of a village surrounded by trees and low brushwood, may go over to a neighbour's house to borrow a little rice or some fire-wood. Her absence may be but for a minute, but when she returns, the little child that she left playing at her door has disappeared. No cry was heard, for the Jackal seized the child by the back of the neck, and death was instantaneous. The men of the village are away at their daily work in the fields, and before the afflicted woman can summon her neighbours to the rescue, every morsel of her missing child has been devoured by the Jackal and its hungry whelps.

With regard to the unspecified 6852 wild animals which killed 1169 persons, some almost comic particulars have been given in the reports of the different provinces. For instance, in Madras they include wild boars, bisons, mad jackals, and crocodiles. In Bombay the list embraces scorpions, mad dogs, mad camels, mad jackals, wild hogs, stray dogs, and bulls. In Bengal they consist of wild boars, buffaloes, crocodiles, mad dogs, sharks, moles, oxen, pigs, scorpions, wasps, and koias. We regret that we are not acquainted with the last-named animal, the koia; and it is rather a novelty to find wasps entered as wild beasts. The Mole was fatal to one of our greatest English monarchs, and therefore may have acquired high rank and dignity in the eyes of the educated native clerk by whom the return was most probably compiled; whilst the same authority professes to distinguish between Alligators and Crocodiles; and it is an addition to zoological knowledge when a Shark is classified as a wild beast. The statistical compiler has also noted a difference between wild boars, boars, and pigs.

The number of cattle killed by wild beasts in 1886 was 55,023. They were destroyed as follows :—

By Tigers	- . . . . .	23,769
„ Leopards	- - - - -	22,275
„ Bears	- - - - -	758
„ Wolves	- - - - -	4,265
„ Hyænas	- - - - -	1,312
„ Other animals	- - - - -	2,644

As regards poisonous Snakes, it was hardly to be expected that among the Hindoos any systematic action should have been taken for their destruction. To the Hindoo the Snake is the representative of a deity. A native finding a Cobra in his house would be more disposed to propitiate it with a bowl of milk than to strike it with a stick. But the English Government of India has taken a different view of its duties as regards venomous Snakes. The deaths attributed to the bite of a Snake were so numerous that about thirty years ago, when Sir Frederick Halliday was Lieut.-Governor of Bengal, he first authorized the grant of a small reward for the dead body of every venomous Snake that was produced before the magistrate of a district. In some districts the proffered reward had but little effect; in others the pecuniary inducement was so tempting to the poorer classes that almost the whole community took to snake-hunting. They brought in the dead Snakes by thousands, so that the magistrate of one district complained that he could not carry on his ordinary duty on account of the stench from the putrid bodies. Finally, a financial difficulty arose, as the demands for the rewards were found to have exceeded the small sum which had been tentatively provided in the annual Budget estimates. So Lord Canning and his financial advisers decided that, having regard to the empty coffers of the public Treasury, it would be expedient to allow the Snakes to remain undisturbed in their natural haunts.

When the financial state of the country improved, the Supreme Government permitted some of the local administrators to resume the practice of offering rewards for killing venomous Snakes. The number of persons killed by Snakes in India is appalling. The returns for 1886 show that 22,134 human beings perished from snake-bite. On the other hand, the number of cattle killed by Snakes is returned at 2514. The serpent is therefore specially the mortal enemy of man in India; and

death from the bite of a Snake comes to be regarded as an ordinary incident in human life. The province of Bengal holds a bad pre-eminence in the bills of mortality from snake-bite, as the death of 10,388 persons, which is nearly half the total for the whole of India, is attributed to this cause. The figures are as follows :—

	Deaths.
Madras - - - - -	1,492
Bombay - - - - -	1,206
Bengal - - - - -	10,388
N.W. Provinces and Oude - - -	6,538
Punjab - - - - -	984
Central Provinces - - - - -	869
Burmah - - - - -	182
Assam - - - - -	254

On the opposite side of the account, it is stated that 417,596 Snakes were destroyed, and that Rs. 25,360 were paid by Government as rewards for their destruction. But considerable inconsistency prevails in different provinces, both as to the diligence with which the Snakes are persecuted, and in the sums paid as rewards in killing them. In Madras only 255 Snakes were destroyed, and no rewards were paid. In Bombay they killed 266,921 Snakes, and paid rewards amounting to Rs. 6527 for them. In Bengal 31,284 Snakes were destroyed, and rewards of Rs. 3889 were paid. In the North-West Provinces and Oude the slaughter of 26,636 Snakes cost Rs. 3299, and in the Punjab 85,715 Snakes were destroyed at a cost of Rs. 10,506. In Burmah 2097 Snakes were killed, but only Rs. 3 were paid as rewards.

In Madras they lost 1492 lives from snake-bite; but they killed only 255 Snakes, and paid no rewards! In Bombay 1206 persons were bitten, and 266,921 Snakes were killed, and Rs. 6727 were paid in rewards. Yet in 1886 the rate of mortality from snake-bite was higher in Bombay than in Madras in 1885. In the Punjab the deaths from snake-bite increased from 686 in 1885 to 928 in 1886; but they killed 47,000 Snakes in the former year, and 85,000 in the latter year.

It certainly becomes rather difficult to say whether it is best to continue to give rewards for killing Snakes, or to revert to Lord Canning's policy of masterly non-interference, leaving the Snakes undisturbed in their natural haunts. It seems very

possible that, where the Snakes are systematically hunted and caught, some of their pursuers are fatally bitten; and, on the other hand, it has been officially suggested that when rewards are freely given for killing Snakes, some of the ingenious natives deliberately breed them, and live upon the profits derived from this new kind of stock. The number of cattle killed by Snakes is so small that some instruction is derivable from it. It is certain that cattle must be greatly exposed to attack from Snakes whilst grazing in the jungles: the Snakes doubtless avoid the cattle; and similarly any Snake will try to get out of a man's way if it can do so, with the exception of the Ophiophagus, who is credited with the habit of attacking men. The mortality from snake-bite in Bengal is also much larger among women than among men. They are usually bitten in the early morning, when they go out unseen before daylight, either to fetch wood from the faggot-stack, or for some other domestic purpose. During the rainy season, when nearly all the rice-fields are under water, the Snakes take refuge on the higher plots of ground on which the villages are built, and they hide themselves in the little wood-stacks and granaries in the courtyards of the houses; whilst, not unfrequently, they take up their abode in the house itself, where they are allowed to dwell with impunity, and sometimes fed with milk, until, on some unlucky day, the wife treads accidentally on the Snake in the dark, and it turns upon her and bites her. From the bite of a full-grown Cobra death ensues in a very few minutes; and the natives have no such remedies at hand as English science might use, but they put a vain faith in the fanciful charms and incantations recommended by their priests.

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## THE MANX SHEARWATER ON SKOMER ISLAND.

BY RICHARD M. BARRINGTON, M.A.

FOR over twenty years I have been visiting out-of-the-way islands on our western and southern coasts, from North Rona to St. Kilda, and thence southwards to the Skelligs and Blaskets: not merely flying visits, but living on them for days and weeks at a time in the height of the breeding-season. I have scarcely missed a year. Notwithstanding this I have been slow to record

my experiences in print. Wishing to examine the breeding-station of the Gannet at Grasholme Island, off the coast of Pembrokeshire, I pitched my tent on Skomer Island, towards the end of the first week in June last, about eight miles nearer shore, the position and appearance of which has been well described by the Rev. Murray A. Mathew in 'The Zoologist' for November, 1884. Not a Manx Shearwater was seen all day, except one or two which swept over the waves as we were crossing; but it is well known that owing to its crepuscular habits, the number seen in the daytime affords little indication of the proximity or otherwise of a breeding-station.

All went well until about 9.30 p.m. We were enjoying the quiet of the evening, watching the thousands of Puffins, in the midst of which we were camped, flying from the edges of the cliffs out to sea and back again. The island is about four miles round, I should say, and I think that of all I have ever visited, it would take first prize for Puffins, St. Kilda, where I stayed three weeks, being a good second. The boatmen had left us, but we were informed that numerous as were the Puffins, the Shearwaters on Skomer were still more abundant. I had a friend with me (V.), and we strolled along the cliffs for a walk; the ground (like all Puffin-breeding stations), was honeycombed with holes, and our feet went through every moment. "Do you hear that?" I said. "What?" said V. "Listen at this hole," I said. "Cuck-cuck-oo, cuck-cuck-oo, cuck-cuck-oo" (the "oo" was sounded like "oh," occasionally like "aw"). There was no mistake: it was a Manx Shearwater; the first we had heard. V. became excited and determined to get the bird. We rooted away with our hands at the bank for about two yards; the hole went gradually deeper, the Shearwater inside, at intervals of a minute or so, still crowing, "Cuck-cuck-oo." It seemed to be getting louder, and this gave us hopes of reaching the bird. Our hands were now quite tired, dirty, and the finger-nails broken with scraping. We got a huge piece of driftwood and prised up the soft bank, using a stone as a fulcrum. This brought us about four feet farther. Still the crowing continued, the noise outside apparently stimulating the Shearwater to louder efforts. V. now got an old crowbar, as the driftwood was rotten. This bar was used in connection with a hoisting-derrick on the edge of the cliff; we did not bring it with us. The bar

helped us about two yards farther, and V.'s enthusiasm was beginning to flag, but the defiant crows of the Shearwater inside urged him on, and he kept at it. We were both extremely warm (to use no stronger term), and rested ourselves for a moment, listening to the loud cries of the bird in the hole, which were more vigorous than ever, when we heard another close by. It was 10.15 p.m. We had been following the first Shearwater as if it was the only one in Skomer. "Try the second one," said I; "it may be easier to reach." Ere we could attempt anything we heard a third, a fourth, a fifth. In twenty minutes the whole ground seemed alive with them; Shearwaters crowded in every hole, where half-an-hour previously there was a dead silence, save occasionally the "oh" of a Puffin.

Presently the sounds, which were at first rather deep down, came nearer the entrances of the holes. It was quite dusk, yet we distinctly saw the white breasts and under parts of the Shearwaters as they fluttered out of the burrows. The crowing was no longer confined to underground regions; it soon began overhead, and the swift swerving flight of *Puffinus anglorum* crossed and recrossed our line of vision against the lighter parts of the sky. Now every hole seemed to deliver up its occupant, and as we went back to the tent, Shearwaters fluttered across the path in dozens, everywhere making for the edge of the cliff, or for some prominence from which they could rise. They were crowing all the time, those overhead as well as those in the holes. The air became alive with Shearwaters answering those underground, the rush of their wings as they sailed past with extraordinary swiftness would of itself have made a loud volume of sound, but when the night-air was filled with their cries in addition, it was indeed as if Bedlam were let loose. The note is always the same,—“cuck-cuck-oo,”—generally repeated three times, and with a varying degree of loudness and of harshness, or hoarseness, which is concentrated in the final “oo.” We lay down to sleep, but it was a mockery, for as the night wore on, the noise became worse and at times awful, and the maximum of intensity was reached about 11.30 p.m. The tent was on a slope about 150 feet over the sea, and though rather out of the track of the Shearwaters on their fluttering career downwards, they repeatedly banged themselves with all their

force against the sides. It was as if some one kept throwing clods of turf against the canvass.

Unable to sleep, we determined to go out, and either frighten or kill some of the Shearwaters. Armed with a stick each, we walked about two hundred yards, and caught or killed all we could carry—forty to fifty—in about half-an-hour. On the steep slope over the sea we had few chances, because the birds were quickly able to fly; but further up, amid the heath and bracken and on bare level places, the Shearwaters cannot rise, but flutter along the ground twenty, thirty, and even a hundred yards or still further, if there is no hillock from which they can rise, and here they could be knocked over with ease. Even on a moderate slope they cannot rise immediately, at all events they did not do so, and probably if a Manx Shearwater were placed on a level floor it might not be able to fly at all. Has any one tried the experiment? At all events facts are stubborn things, and in the dim light of a summer's night, on Skomer Island, in June this year, my friend and I caught or killed numbers of Manx Shearwaters, fluttering over level ground or down a moderate incline, quite unable to rise. Some of the Shearwaters actually crowed in my hand as I carried them to the tent by the legs. Our midnight raid had no effect whatever in quieting the birds, and we got no sleep until after two in the morning, when the noisy multitude began to enter their holes again, and after three not a crow of a Shearwater was heard until about ten the next night. It will thus be seen that in summer-time the great bulk of the Manx Shearwaters feed only five hours or thereabouts out of the twenty-four. They are seventeen hours in the holes, during which time one might travel all over Skomer Island and not see one, and very few were noticed in the daytime at sea.

I cannot agree with the Rev. Mr. Mathew, in describing the noise made by the Shearwaters as a "soft, weird, and unearthly chorus, though I have no doubt it "resembled nothing he had ever listened to before." If there was one attribute of the noise more striking than another, it was not only the want of softness, but the hoarseness, or harshness, of the final "oo," or "co," or "caw," sometimes shrieked desperately from the throats of the flying Shearwaters. In the holes, and at a distance, the noise appeared more subdued.

We stayed three or four nights on Skomer, which will ever be associated in my mind with the Manx Shearwater. As I have visited a great many islands, I venture to express an opinion that Skomer is the greatest British breeding-place of the Manx Shearwater, and, for its size, perhaps the greatest in Europe. The birds are not confined to the edge of the cliffs (indeed they rather avoid the extreme edge, which is mainly colonized by Puffins), but breed all over the island. The Puffins and Shearwaters constantly live in the same holes, but the Shearwaters seem to burrow deeper than the Puffins, and the Puffins do not breed so far inland. Skomer is largely devoted to rabbits, and the courteous and hospitable owner, Capt. Davies, complains bitterly of the injury done to him by the Shearwaters and Puffins. He states that they have become far more numerous since the passing of the Sea Birds Protection Act, and have driven away the rabbits, disturbing the does in the breeding-season. The Shearwaters he complains most of, because they breed everywhere, and take possession of the rabbit-holes in the very centre of the island. Captain Davies offered a small reward for their destruction one evening to his farm-boys, and he told me they brought him I think it was twenty-four dozen Shearwaters in a few hours, striking them with sticks as they fluttered along the ground attempting to fly. The eggs are so very deep in the holes they are difficult to obtain.

Mr. Dixon says the "Manx Shearwater is one of the commonest birds of St. Kilda"; but he was unable, he tells us, to land on "Soa, their great stronghold." owing to "the tremendous swell which was breaking over it." I visited Soa the year previous to Mr. Dixon's excursion to St. Kilda, and found it was a large island grazing one hundred and fifty to two hundred sheep, and more than one thousand feet high,—very unlikely to be covered with even a "tremendous swell,"—and I should say that the Shearwaters of Skomer Island are much more numerous. On some future occasion I may trouble you with a few notes on St. Kilda birds, as my experiences do not altogether coincide with those of Mr. Dixon. At present my subject is the Skomer Shearwaters, whose noise and numbers have made a vivid and lasting impression on me. Mr. Dixon's notes on the St. Kilda Shearwater will be found in 'The Ibis' for 1885, p. 94, and in Mr. Seebohm's 'British Birds,' vol. iii., p. 421.

## ON THE HABITS OF THE MANX SHEARWATER.

BY THE REV. H. A. MACPHERSON, M.A.

CONSIDERING the attention paid of late years to the habits of British birds, it is surprising how many points of interest still require to be placed on a definite basis of ascertained truth. To no species will these words apply more forcibly than the Manx Shearwater (*Puffinus anglorum*). Colonies of this species were visited year after year, but ornithologists for the most part satisfied themselves with collecting specimens. The 'Transactions' of the Norfolk and Norwich Naturalists' Society have recently contained observations on the habits of this species by Mr. J. H. Gurney, jun., Mr. E. Bidwell, Mr. H. M. Wallis, and the writer; and these notes are offered as a further contribution to the literature of the subject.

A visit was paid, on July 4th of the present year, to the colony at Eigg, where an unknown Englishman had previously made havoc of the birds, in direct defiance of the wishes of the proprietor. Let us hope that the report current amongst the fishermen, that he had killed "half a hundred" nesting birds, was exaggerated. At any rate, the narrow track that winds along the grassy slopes on the north-east side of the island was followed on the morning in question, and not a few suitable spots were examined for the presence of Shearwaters. The first burrows approached were all untenanted, two or three holes usually occurring together. After an hour's search two burrows were explored side by side; each of these proved to contain a single bird engaged in incubating a chipped egg. Another burrow disclosed a fine old bird, which had evidently elected to spend the day underground. It appeared to be a male, being little worn in plumage, though the fact that some males share the labours of nidification was proved in 1885, when the writer dissected a male which had a bare hatching-spot. Another series of holes contained a solitary chick, and an old bird keeping company with a nestling about three days old. Several other holes proved to be occupied. All the nests contained fibres and the stems of grasses, evidently gathered close by. No burrow was more than a long arm's length in extent, and the majority ran from right to left. The soil was constantly light and dry.

On being dragged into broad daylight without ceremony, the

old birds cackled and scolded lustily, struggling vigorously to obtain their release. They used their bills also in defence, and inflicted some clean, incised cuts. The only bird that resigned itself placidly to its captors was the solitary male; doubtless the others felt that they were defending their eggs or young. When released on the grassy slopes, the birds fluttered downwards for many yards with expanded wings, and finally took flight about 100 ft. above the sea, all departing in a N.W. direction.

Remembering a former enquiry as to how this Shearwater progressed on *terra firma*, the writer was at pains to carry one of the birds to the most level strip of turf that could be found above the sea-shore. Liberated here, the bird was eager to escape, but ran with manifest discomfort; its legs appeared to be of little use, and progress was accomplished mainly by a vigorous flapping of the pinions.

One object of the ramble was to decide the downy plumage of the nestling. Specimens had previously been described from this colony of two varieties: (1), having a dark grey patch on the abdomen encircled by white; (2), having the abdomen pure white. This occasion furnished for comment specimens of the first variety, and also examples intermediate between the two, showing how the two forms merge almost imperceptibly one into the other.

Crossing from Eigg to Arisaig, on July 5th, only a string of from forty to fifty Shearwaters was observed. They flew to S.E., the wind blowing from N.E. On July 20th, Portree was left for Eigg; weather showery and wind again N.E.\* No Shearwaters were seen until within a few miles of Arisaig, when a great number appeared. Sometimes a string of ten filed rapidly past, or five or six alighted together on the water. Their flight was occasionally in an extended line, but oftener in irregular files, and a right merry dance they led over the gloomy waters, which had lost the azure blueness of the previous day.

Several times the writer passed large flocks of Shearwaters mixed with Herring Gulls (*Larus argentatus*), the two species clustering together thickly on the waves, evidently feeding on shoals of fish. They thus brought to mind a problem which for some years had puzzled the observer. Some few dissections of adults and young birds had only shown that the œsophagus

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\* On July 20th the writer was accompanied by Mr. A. H. Macpherson.

usually contained clear and liquid oil. But on July 4th one of the breeding birds captured *in nido*, being stroked gently on the back, had belched forth a substance which an accomplished physiologist, Dr. Fletcher, who was present, pronounced to be without doubt the muscle of a species of fish in course of digestion. It was therefore gratifying to see, on July 20th, flocks of Shearwaters certainly feeding on surface fishes, especially as the writer had never before seen Gulls and Shearwaters congregating on the wing together. Dark spirits of the deep, as Shearwaters usually appear, while careering headlong over the waves, their sombre appearance on this occasion only served to create a lively contrast with the white heads and pearl-grey mantles of the adult Gulls. The Shearwaters did not linger very long upon the water, preferring to take restless flight hither and thither.

Despite their name, they do not literally "shear" the waves, but only top them very closely. Their flight generally consists of five or six quick beats, succeeded by a graceful gliding motion for a few yards. This is varied by many beautiful curvettes, none apparently executed at a greater elevation than forty feet above the sea, though the same birds ascend nearly a thousand feet in the gloaming, in order to reach such breeding-ledges as may happily lie outside the reach of the exacting British "tourist." On this occasion many Shearwaters were noticed until Eigg was approached; not more than half-a-dozen could be counted within a mile of the island.

Shaping a southward course past the Isle of Muck, many Shearwaters were again observed, and a little north of Ardnamurchan a dozen birds appeared close to the shore-line. As Ardnamurchan lights were neared, two or three Shearwaters were descried resting on the sea, somewhat in Gull fashion; the neck of the bird was bent slightly back, and the body floated buoyantly. Two flew past within a hundred yards of the lighthouse.

It is noteworthy that the Black Guillemot (*Uria grylle*), when disturbed, generally escapes with short flights; the Razorbill (*Alca torda*) sometimes takes wing, but more often dives out of barm's way; Guillemots (*Uria troile*) and Puffins (*Fratercula arctica*), if alarmed, usually duck abruptly under. Manx Shearwaters, though capable of diving strongly, usually shift their quarters by taking wing.

The foregoing remarks may serve to illustrate the facts that

(1), the colour of the downy young varies; (2), that these Shearwaters feed largely on shoals of fishes; (3), that they can associate with Gulls; (4), that during the day they forage many miles from their nesting-holes. It may be added that fine young birds and half-incubated eggs may be found in July in the same colony, suggesting that the birds do not all breed at the same time. Recent notes support the contention that the young of this Shearwater are white-breasted in first feather. Their capacity for existing many hours without food is very remarkable, though it is to be hoped that no modern naturalist would subject any birds of this species to treatment such as that accorded to the examples kept by Sir T. Browne, who, ceasing to supply them with fish, "found they lived sixteen days without taking anything" (Sir T. Browne's Works, ed. Bohn, vol. iii. p. 318).

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## BIRD PESTS OF THE FARM.

BY H. H. SCOTT.

(Hipsburn, Lesbury, Northumberland).

SINCE I came to Northumberland, twenty-nine years ago, Rooks have much increased in the district—apparently trebled or quadrupled in numbers. They have altered to a considerable degree their mode of feeding. There is an antiquated belief that they live almost entirely on grubs and worms; but now the food of Rooks consists principally of cultivated crops. They first swallow as much as they can find of the seed which is put into the ground, and afterwards feed on the produce from such seed as at first escaped them. Corn of all kinds and potatoes are particularly liable to these depredations; and in regard to turnips, if the seed is so small that it is beyond their ability to gather it, still—as soon as the bulbs are well developed, especially Swedes—they are at work pecking holes in many more than they can eat, and many rot from the effects of rain and frost.

Rooks, having gradually increased beyond their natural food-supply, were driven to other expedients to supply the deficiency; and in addition to the farmers' crops, they found a convenient and palatable supplement in the eggs of other birds, and it is only twenty or thirty years since they became general stealers of eggs. To such an extent are these thefts now carried that during

nesting-time, in districts where there are large rookeries, the heather on the moors, and the fences in the fields are sought by Rooks, yard by yard, for the eggs of game-birds. In the district surrounding the Cheviots, where there are many rookeries, a nest overlooked is the exception. One shepherd told me, two years ago, that he knew of eight Grouse-nests, and only two had escaped. Meeting a head keeper on a large estate, a few weeks ago, I asked him how the Partridges were doing. His reply was, "He knew of dozens of nests, but scarcely one had escaped the Rooks." From what I have seen, and the evidence I have obtained, I am led to believe that not more than—if as many as—one-third of the game-nests escape their search. It has been remarked of late years that Grouse have decreased much in the districts mentioned, since such a small proportion of the eggs escape; and the Rook does not confine himself to eggs, for he takes the birds if he discovers them at a young and tender age.

How is it that the Rook has not been tried and condemned long since? Here are birds which do the farmer ten times as much harm as good, and destroy more game-birds than scores of poachers, yet nothing is done to stop their depredations, whilst much money is spent in providing keepers to preserve from human poachers. I would not by any means propose to exterminate Rooks; but it appears to me that if they were diminished to, say, one-sixth of their present number, it would only be reducing them to their normal number, and restoring the balance of nature, which having in times past (both as regards birds and beasts) been so materially disturbed by man, must continue in some degree to be regulated by him.

Next to the Rook in doing damage are House Sparrows, which are most injurious to fruit trees and bushes, by eating out the young buds; and in districts where they are numerous they are most destructive to corn crops as soon as the ears approach maturity. Like the Rook, they have increased enormously of late years, and it is absolutely necessary that, in their case also, something should be done to reduce them to their normal number.

Another pest of the farm is the Wood Pigeon, destructive to corn crops, turnips, and clovers. Only in some parts of the county do they appear in numbers, and when they do so, they are generally temporary visitors in severe weather from a more northern climate.

It is only by estimating closely the cost of the depredations of the birds I have mentioned, and adding thereto the expense of the bird-herds trying to scare them, that a farmer comes to have any precise idea of the loss he sustains. I have been trying to make these estimates for a few years, and my evidence is as follows:—Altogether I farm 700 acres of arable land in rotation. My costs and losses in connection with these birds amount annually to about £200; but, again, to avoid all contention, I will call it £150 per annum, and £150 on 700 acres is about 4s. 6d. per acre. As closely as I can reckon, the proportions of damage by the different kinds of birds were five-eighths by Rooks, two-eighths by Sparrows, and one-eighth by Wood Pigeons. I do not, however, say that every cultivator in the country suffers as much; but even, on the average, if the general losses are half,—*viz.* 2s. 3d. per acre,—they are about as much as the whole of the local rates paid for poor, schools, highways, and police, and all from a cause which might easily be removed by those directly interested. What a fuss ratepayers make about an addition of one penny to the income-tax or local rates, but here it is not pennies but shillings. Indeed I am convinced that these birds have had as much off the land for the last few years as has remained for profit to the men who farm it; for who amongst farmers has made more annual profit than 2s. 3d. per acre on the arable area occupied by him?

The thinning of Rooks appears to me easy of accomplishment, Sparrows not quite so easy, and Wood Pigeons more difficult, as the latter only breed in small numbers in this county.

I expect the majority, if not all those who are in the best position to form an opinion,—*viz.* landlords, tenants, gamekeepers, and shepherds,—can corroborate me in what I have written; but I submit that much weight should not be attached to theories which may be advanced by those who are not directly interested, or who have not had an opportunity of getting instructed in natural science by practical observation.

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Commenting upon this article, which we have abridged from a local newspaper, Mr. R. J. Graham Simmonds (Land Agent to Sir John Haggerston, Bart.) remarks that “It should open the eyes both of agriculturists and preservers of game to the mischief

going on continually around us in this respect, and the absolute waste of material and money which it involves. Whilst careful observers are almost unanimous in acknowledging the fact of the changes of habit in such birds as Rooks, the remedy for the evil has not been so far suggested. Years ago, no doubt, the Rook did a larger amount of good than harm, because the land was more full of grubs and vermin, which the Rook in those days fed upon chiefly; and also, the number of Rooks being smaller, there was enough and to spare for all, of the food they then principally enjoyed. Better farming, draining, and other improvements have altered the case now, and the land does not contain the same quantity of insect-life; whilst, on the other hand, the birds themselves have increased in numbers. Being obliged, therefore, to investigate the other sources of food-supply, they naturally take what comes first, and grain suffers, as Mr. Scott points out, both at sowing and reaping time. As regards their game-destroying propensities, there is no question about the enormous destruction to eggs from the common Rook. He is an egg-thief of the most wanton character, and may be seen beating a patch of grass or a hedgerow for nests like a terrier dog hunting for a rat. That this is sheer mischief, and not stress of hunger, is abundantly evident, as he will at such times abandon the grub and the worm for the greater delicacy of a nest of eggs, and once he finds them, there is hardly any limit to the number he will destroy. I have known one Rook take seventeen eggs from a game-nest, one by one, as deliberately as possible; and it is a fair argument that this bird would not have been a solitary instance at the time. That people either do not realize the existing state of things, or are led away by what was a truism years ago, but is so no longer,—that they ‘do more good than harm,’—is evident. What is the remedy—total annihilation? Certainly not. There is a medium course in everything, and what is wanted now, in the interest of farmers, as well as preservers of game, is that the relative proportion of such birds as Rooks to the amount of their natural food now existing on the land, should be restored. There is no necessity to destroy rookeries, which are a favourite feature of some old places; but there should certainly be a tacit understanding between all who own rookeries that they should be kept within limits. If, every May, the young Rooks were shot regularly, they would afford many a welcome pie to the cottagers in the locality, and the remaining birds would then not be too numerous,

and would find their legitimate food in sufficient quantity for their decreased numbers; they would then neither have to steal the farmers' grain, nor—having to search, as at present, long distances for food—take such pains to find out nests of eggs on moors and hedgerows."

Continuing the discussion, Mr. Gilbert Millar, head-keeper to Mr. Creswell, of Harehope Hall, Alnwick, writes:—"Seeing that no one has corroborated Mr. Scott's article on the destruction of game-eggs by Rooks, and as I have been a keeper on several large estates both in England and Scotland, perhaps a few remarks from me may not be out of place. Twenty-five or thirty years ago it was a very rare thing to know a Rook take eggs; but they have turned gradually worse every year since then, and now they have become a perfect pest and take all the early nests. Not one out of every twenty early nests that I have known of this last few years has escaped them; and until the vegetation gets up there is not any chance of escape. It is hardly possible to trap Carrion Crows now, as you are almost certain to get a Rook instead. I have never seen more Partridge nests in one season than I have this, but not one escaped of the first laying that I knew of. The result is that those that lay the second time do not lay so many eggs, and a larger proportion gets destroyed in the hay-cutting time, and thus affords little sport till October. Early Grouse-nests on outlying moors have the best chance to escape, as the Rooks, being then busy nesting themselves, do not travel so far as they do at other times; but whenever they are done nesting they spread out, seeking fresh feeding-ground. Some people think, because they see a Pheasant's nest in a rookery, that it is conclusive proof that Rooks do not take eggs; but they are safer there than outside, as the Rooks never seem to look for them under their own nests. Any good that a few people do trying to put them down is hardly known, and not until landed proprietors combine together to banish them from their rookeries will there be any change for the better. Those seasons they are banished from the rookeries they will do more damage on outlying grouse-moors than they do at present."

[We can fully confirm the statement that Rooks carry off Pheasants' eggs, and a note of our observations on this subject, communicated some years ago to Mr. W. B. Tegetmeier, was published by him in his work on 'Pheasants, for Coverts and Aviaries,' 1873.—ED.]

A VISIT TO THE BIRD ROCK ("CRAIG-Y-DERYN"),  
TOWYN, NORTH WALES.

BY E. CAMBRIDGE PHILLIPS, F.L.S.

IT was the 26th of July, in the Jubilee year; an accident had temporarily laid me up, but a fortnight at that healthy but quiet little village of Borth, Cardiganshire, with its comfortable hotel, and, best of all, its pure sea-breezes wafted straight over the Atlantic, had nearly made me all right again. Borth itself is singularly destitute of bird-life, the sea being usually very rough, and there is no feeding-ground—nothing but beautiful sands three miles in length. On our right we approach Ynyslas and the estuary of the Dovey, the muddy flats of which teem with shore-birds, and run nearly up to the prettily-situated town of Machynlleth. On the opposite side of the mouth of the estuary is Aberdovey, an excellent place for anyone wishing to explore that long extent of muddy flats I have before alluded to. Past the mouth of the Dovey, in Cardigan Bay, is Towyn, easily distinguishable from Borth, and as in the evening I could often see small strings of Cormorants, *Graculus carbo*, heading towards Towyn, and, on enquiry, finding they were returning to Craig-y-Deryn, their breeding-place, I determined to pay it a visit.

Starting by train from Borth, we ran along the estuary of the Dovey until we came to Aberdovey Junction. The tide being out, there were plenty of birds on the flats, principally Curlews, Gulls, and Plovers, the Black-headed Gull being especially numerous; and on nearing the Junction, a couple of Sheldrakes, with five or six little ones, were calmly waddling along the mud. Changing at Aberdovey Junction, and crossing the Dovey, a pleasant ride on the opposite, but more rocky, side of the estuary, past Aberdovey, landed us at last at Towyn, where, however, we were still a long way from the object of our journey.

Acting on advice given us before starting, we took the little slate-railway from Towyn to Abergynolwen, a distance of about five miles through most charming scenery, and on alighting at Abergynolwen we found some difficulty in getting a trap of any sort, but a few words in Welsh from my wife soon procured us an excellent tea in the small but clean village inn, and a capital

pony and trap, and at last we were nearing the Bird Rock. To anyone without nerves the drive would have been delightful, but with two wheels and a most dangerous road, after many twistings, I was thankful when we reached a large valley opening to the sea, at the mouth of which is Towyn, and turning to the left we pulled up close under a large rock, "Craig-y-Deryn" (the Bird Rock.) This rock stands boldly out, a most conspicuous object on the left-hand side of the valley looking down towards Towyn, and is precipitous on the two sides jutting out into the valley; but its top may be reached by walking over the hill from the valley behind it. These two sides, like a miniature Gibraltar, are nearly perpendicular, and it is on the ledges of the side facing towards Cader Idris that the Cormorant builds and rears its young in safety. The guide-books do not give the height of the rock, but I should say it would be about 400 feet, more or less. I know the Cormorants looked very small from where we stood. A road skirts the bottom, and the nests, with the young, for the most about three-parts grown, were easily distinguishable from the quantity of white droppings that fall beneath the nests and stain the surface of the rock.

We watched the old birds, particularly the hens, feeding their young, and the flight of the parent-birds as they circled and soared round the face of the rock, and particularly the powerful flight of the large dark cock birds, was grand in the extreme. The young, during the time they were being fed, made a continual querulous crying. Every now and then a Sparrowhawk would sweep round the face of the rock; instantly the old cock Cormorants would trumpet out their hoarse note of alarm and defiance, to be answered, in their turn, by the cries of the hens and young, making a babel of noise that must be heard to be understood. These sounds would ultimately die away, and perfect silence would reign until the appearance of another hawk would start afresh the trumpeting, and set the echoes replying. It was impossible for me to count the nests from where I was on the road, but at a rough guess I should say there were about thirty there then, but whether any young had flown I am unable to say.

The fishermen say that there are Cormorants on the rock blind from age, and that they never leave the rock, but are fed by the younger birds; but I am assured by a naturalist living at

Aberystwith who knows the rock well that he has many times seen it without a single Cormorant on it. They also say that the younger birds conduct the old blind birds to the sea, which I think is more likely to be true.

At the foot of the rock were two dead birds that seemed to have been shot when away, and to have flown home to die. There were also several small rabbits feeding directly under the rock, of which the Cormorants seemed to take no notice. The nests, as far as I could see, never seemed to contain more than three birds, and these must be able to fly well before they could get from the rock to reach the sea, about four miles off.

I watched the busy scene for more than an hour, and left about half-past six, when fresh arrivals kept coming in from the sea in little strings of four, five, and six. Instead of returning to Abergynolwyn we drove about two miles and a half down the valley towards Towyn, where we dismissed our driver, and walked the remaining distance into Towyn, which is the route I should advise any ornithologist visiting the rock to take. Charmed beyond measure at a sight which to me was so novel, I have here attempted to describe it.

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## NOTES AND QUERIES.

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**Death of Philip Henry Gosse, F.R.S.**—We regret to have to record the death of Mr. P. H. Gosse, whose name amongst naturalists has long been a "household word"; for few men have done more than he has in the course of a long life to popularize the study of Zoology by means of his pleasantly written and often well illustrated works. Born at Worcester in 1810 he went in early life to reside at Poole, in Dorsetshire, and it was here he imbibed his taste for Natural History. Subsequently engaging in the mercantile profession, he visited Newfoundland on business in 1827, and remained there for eight years, during which time he found leisure to study the insects of that country and of Lower Canada, where he made an important collection. Travelling through the United States, he spent a year in Alabama, where he made a considerable number of drawings of insects, chiefly Lepidoptera. In 1840, having returned to England, he published his 'Canadian Naturalist,' but his love of travel could not keep him long in England; proceeding to Jamaica in 1844, he spent eighteen months in investigating the Natural History of that island, and making

collections there, which resulted in the publication of his 'Naturalist's Sojourn in Jamaica,' and his 'Birds of Jamaica,' with an atlas of coloured plates. Finally, settling down at Torquay, he devoted his attention almost entirely to the marine fauna, and the results of his research appeared from time to time in such works as his 'Naturalist's Ramble on the Devonshire Coast,' 'The Aquarium,' 'A Manual of Marine Zoology,' and 'Tenby, a Seaside Holiday.' His most important work doubtless was his 'Actinologia Britannica, a history of the British Sea Anemones and Corals,' which was finished in 1860; but this by no means concluded his literary labours, for besides the works above mentioned he produced a 'Natural History of Fishes,' a 'Text-book of Zoology for Schools,' a 'Manual of Marine Zoology,' 'The Romance of Natural History,' 'A Year at the Shore,' 'Evenings at the Microscope,' and some others; while the Royal Society's Catalogue of Scientific Papers to the end of 1873 includes some sixty separate memoirs from his busy pen. Amongst these should be specially mentioned two memoirs on the natural history of the Rotifera, contributed to the Transactions of the Royal Society, of which learned body he was elected a Fellow in 1856; his other papers being contributed to the 'Annals and Magazine of Natural History,' the 'Popular Science Review,' the 'Intellectual Observer,' and 'The Zoologist,' in which last-named periodical his earliest essays appeared. His latest work, undertaken in conjunction with Mr. C. T. Hudson, appeared in parts under the title of 'The Rotifera or Wheel Animalcules,' and formed, when completed in 1886, two goodly quarto volumes. Since that date, gradually failing health necessitated a rest from work until, on the 23rd of last month, he passed peacefully away, at St. Marychurch, Torquay, at the age of seventy-eight years. As an excellent out-door naturalist and an accurate reporter of what he had himself observed, Mr. Gosse, in his own line, was well nigh unsurpassed. To his teaching hundreds are indebted for their love for Natural History, and the cultivation of a taste which his agreeable writings did so much to encourage and enlighten.

**Meeting of the British Association at Bath.**—In Section D (Biology) the opening address was delivered by Mr. Thiselton-Dyer, C.M.G., F.R.S., President of the Section. It was devoted chiefly to a consideration of the present position and progress of Botany in this country, and will be found reported at length in 'Nature,' Sept. 13th. Mr. Dyer concludes thus:—  
 "To sum up my argument. I believe I have shown you that at the bottom of every great branch of biological enquiry it has never been possible to neglect the study of plants; nay, more, that the study of plant-life has generally given the key to the true course of investigation. Whether you take the problems of geographical distribution, the most obscure points in the theory of organic evolution, or the innermost secrets of vital phenomena,

whether in health or disease, not to consider plants is, in the words of Mr. Darwin, 'a gigantic oversight, for these would simplify the problem.'

Sir John Lubbock read a paper on "The Instincts of Solitary Wasps and Bees." Sir John remarked that the Hive Bee and the common Wasps were so familiar and so interesting that they had, to a great extent, diverted attention from the so-called solitary species of the same groups. Few, for instance, were aware that about 4500 species of wild Bees were known, and of Wasps 1100, of which 170 and 16 respectively lived in Britain. Their habits differed in almost every genus, and Sir John Lubbock referred to many which offered points of great interest. For instance, the *Amphiphila*, having built her cell, placed in it, as food for her young, the full-grown caterpillar of a moth, *Noctua segetum*. Now if the caterpillar were uninjured it would struggle to escape, and almost inevitably destroy the egg; nor would it permit itself to be eaten. On the other hand, if it were killed, it would decay and soon become unfit for food. The Wasp, however, avoided both horns of this dilemma. Having found her prey, she pierced with her sting the membrane between the head and the first segment of the body, thus nearly disabling the caterpillar, and then proceeded to inflict eight more wounds between the following segments; lastly, crushing the head, and thus completely paralyzing her victim, but not actually killing it; so that it lay helpless and motionless, but though living, let them hope insensible. M. Fabre, to whom they were indebted for a most interesting series of essays on that group of insects, argued that that remarkable instinct could not have been gradually acquired. Sir John Lubbock had suggested in a previous paper in what manner, as he supposed, that habit might have been gradually acquired, and he was interested to find in Mr. Darwin's 'Life,' that he had, in correspondence with M. Fabre, made a very similar suggestion. M. Fabre questioned that, in his recent work, maintaining that it could not be true, because habits were invariable. Sir John replied to that, giving many instances in which habits had altered, and showing that several gradations existed between Wasps which killed and those which paralyzed their victims. Though differing in that and some other points from M. Fabre, he warmly commended his interesting book and ingenious researches. One of the most interesting points connected with the habits of the insects was that there seemed strong evidence that the mother could control the sex of the egg. In conclusion, Sir John mentioned with regret the death of a Queen Ant which had lived in one of his nests since 1874, and must therefore have been above fourteen years old—much the oldest insect on record.

Prof. Marsh contributed a paper on "The Restoration of *Brontops robustus* from the Miocene of America," in which he said the animal had not yet been found in Europe.

“Heredity in Cats with an extra number of toes” was the subject of an interesting address by Mr. E. B. Poulton.

Papers were also read by Dr. Gadow on “The nature of the Geological Terrain as an important factor in the Geographical Distribution of Animals,” and by Mr. J. J. Lister on “The Natural History of Christmas Island.”

On September 6th, Professor Newton, M.A., F.R.S., addressed the Section, “On the Irruption of Pallas’s Sand Grouse, *Syrrhaptes paradoxus*.” He began by referring to the fact that at Newcastle, twenty-five years before (almost to the very day), he made a communication to the Section with this same title, and then hazarded the statement that the irruption of 1863, with which he then dealt, would be repeated. Events, and especially those of the present year, have justified that anticipation. After briefly tracing the early history of, and pointing out the wonderful peculiarity of, this very singular form of bird, he recounted its various visitations to Europe. In 1859 it was observed at seven places—Vilna, Jutland, Holland, Norfolk, North Wales, Kent, and Perpignan in France. In 1863 was the former great irruption, which extended in the north to the Nord Fjord in Norway and to the Færoes, to Donegal in Ireland to the westward, and to the southward to Biscarolles in France and Rimini in Italy. In 1872 a flock was observed in two places—Beal in Northumberland and Girvan in Ayrshire. In 1876 birds were seen near Winterton in Norfolk, and near Modena in Italy (both in June), and in the county Kildare in Ireland (in October). The irruption of the present year had been on a scale at least as large as that of 1863, and it had occurred at least a month earlier. So far as information was at present received, it had not extended quite so far to the northward, the Hardanger Fjord in Norway being the furthest point, but it had reached further to the westward (Belmullet in the county Mayo), and much further to the southward—Orvieto in Italy and the Albufera of Valencia in Spain—its first appearance in that kingdom—but information of further extension in all three quarters might still be expected. It was shown on a map that all these visitations were essentially similar in direction, and all seemed to have the same “radiant point”—on which it was hoped that Russian observers might be able to throw some light. As to the causes of these wonderful movements, the author said it behoved us to be very cautious. For himself he was not inclined to accept the suggestion of their being due to any “convulsion of nature,” as some supposed, but rather to stand by that which he had before made—namely, that the impulse came from a redundant population striving for the means of existence. Into the details of the present irruption there was no time to go, for there were observations by the hundred. As to the breeding of the bird in this country, a very unworthy trick had been attempted—perhaps in more than one instance—to pass off eggs of foreign origin as having been laid in England. However, the author said that two cases had

come to his knowledge, on authority that seemed to be satisfactory, in which eggs had been laid—both in the East Riding of York. He thought that if the birds had not been prevented, they might have produced young, which in their turn would have become regular visitants—but he never had any faith in the species becoming resident. In the course of the discussion which followed, Canon Tristram expressed his belief that the coast of Northumberland, which had been in three years visited by *Syrrhaptēs*, might prove a congenial home for a colony, and regretted that the bird was not more protected by law. Mr. Elwes doubted whether there was any tract of country east of the Volga that was suitable to the requirements of the bird; he thought that in Southern Russia it might establish itself and live for many years without being noticed. He also referred to his having obtained on the frontiers of Tibet four living examples of the larger species, *S. tibetanus*, which, however, soon succumbed apparently to climatic effects when brought into the lower country. Sir George Campbell was beginning to speak of Sand Grouse in India, when he was stopped by the Chairman (Dr. Sclater), who pointed out that he was mistaken in supposing that any species of *Syrrhaptēs* inhabited that country. The usual vote of thanks to the author of the paper was passed. Through the kindness of that venerable naturalist, the Rev. Leonard Blomefield, specimens of *Syrrhaptēs paradoxus*, the property of Mrs. Mackay, of Bennett Street, Bath, were exhibited.

In a discussion on Coral-reefs between the Biological and Geological Sections, Mr. Thiselton-Dyer said it was a question which at the present moment was attracting the interest of both biologists and geologists. In consequence of the explorations of her Majesty's ship 'Challenger,' a series of facts were brought before the scientific world which, in some degree, made it extremely probable that Mr. Darwin's views did not form the only explanation to which these curious phenomena are susceptible. A distinguished individual had thought fit to bring before the scientific world the preposterous assertion that they were leagued together in a conspiracy of silence with the object of suppressing the progress of scientific truth. He thought he might claim that their minds were absolutely open, and that they attributed no weight to the authority of tradition, however eminent. The only thing they really wanted to know was what was the conclusion that commended itself to their minds with the greatest probability, and which was based on the largest number of ascertained facts.

#### MAMMALIA.

**The Feral Deer of Barbuda.**—The deer now running wild on Barbuda is the Fallow-deer, *Cervus dama*. Last month Captains Harding and Standish, of the East Yorkshire Regiment, visited Barbuda on a shooting

expedition, and on their return here supplied me with the following information. The only deer on the island of Barbuda is the Fallow. They were introduced from England by a member of the Codrington family. The natives talk of there being as many as five thousand deer on the island; but Capt. Standish considers this statement a great exaggeration, probably five hundred being nearer the mark. These gentlemen shot seven deer, but all the bucks had their horns in velvet, and too soft to be worth bringing away. The prevailing colour in the herds is dappled-dun, though the ordinary light-coloured type is common. These deer are hunted in the bush with small cur-dogs that run mute, and pick their way over leaves, dead branches, and other obstacles with the greatest caution; when close to the deer they drop noiselessly, and the sportsman has then to peer about through the bush until he can see the quarry.—H. W. FEILDEN (Barbados, August, 1888).

**White Variety of the Mole.**—I have been shown by Mr. Martin, gunsmith, Glasgow, a curious variety of the common Mole, which was taken at Gigha, on the Cantyre coast, on the 20th June last. Its nose is perfectly white, as are also its hind quarters, the rest of the body being of a decided orange tint, especially about the cheeks. This makes the third specimen of the kind I have been shown in Glasgow within eighteen months.—W. HANNAN WATSON (Secretary, Zoological Soc. of Glasgow).

**Bottle-nose Whales on the Norfolk Coast.**—On the 28th August last a female *Hyperoodon rostratum* came ashore on the Norfolk coast at Snettisham: it was alive when stranded, but near the dorsal fin was a large harpoon wound. Two days later a young individual of the same species was stranded at Heacham, the next parish to Snettisham; both were towed to Hunstanton, a watering-place close by, and there exhibited. The old female measured twenty-five feet in length, and the young one fourteen feet. This species has frequently been captured on the Norfolk coast, invariably in the autumn, on its southward migration, and generally, as in the present instance, accompanied by its young one; the adult male apparently follows some other time of migration, and has never been met with here. I am indebted to Mr. Hamon le Strange for the particulars of this occurrence.—T. SOUTHWELL (Norwich).

**Decrease of Seals on the Coast of Greenland.**—In a letter written on board the sealing-ship 'Jason' in Denmark Sound, Dr. Nansen draws attention to the scarcity of Seals on the coast of Greenland in recent years. Only ten years ago they were so plentiful and tame that thousands could be clubbed with the greatest ease, whereas now they have become scarce and shy. Dr. Nansen is of opinion that the ruthless persecution of these animals since 1876, when the first sealer appeared in Denmark Sound, has caused them to alter their habits. Formerly they were found on the

edge of the drift-ice, where they were safe from their only enemy, the Polar Bear, though falling an easy prey to the sealer. Now they gather on the ice close to the shore, whither vessels cannot penetrate, and where they are, at all events, safe from one enemy. This, says Dr. Nansen, was fully demonstrated on several occasions, particularly on July 2nd, when Seals were seen lying in thousands close under the shore to the north and north-east as far as the eye could reach from the mast-head. To the north especially, the ice was for miles one mass of dark animals. Dr. Nansen advocates a closer preservation of the Seals. This year the seal-fishery has proved a failure, and the sealers report that the ice-masses were enormous.—‘*Nature*,’ August 30th.

#### BIRDS.

**Reported nesting of Pallas’s Sand Grouse in Cumberland.**—In our last number (p. 348), we mentioned the fact of our having seen two eggs of a Sand Grouse which were emphatically stated to have been taken near Carlisle in June last, and which, if the statement were true, could only have belonged to *Syrnhaptes paradoxus*. These two eggs, which struck us as being somewhat larger than one which was laid by a Sand Grouse in the Zoological Gardens some years ago, were nevertheless similar to it in shape and colour. They were offered for sale at Messrs. Stevens’s Auction Rooms in August last, and the biddings not reaching the reserved price put upon them (which we understood to be £5) they were not sold. We are sorry to learn from our esteemed correspondent Mr. H. A. Macpherson that a gross imposition was attempted in this case, and not only were the eggs not found near Carlisle as alleged, and as the result of enquiry clearly proved, but they may have belonged to some other species of Sand Grouse which has never visited the British Islands. The name of the person who attempted this fraud upon unwary egg-collectors has not been disclosed to us, or we should not hesitate to make it known as a warning. As it is, we can only say that no reliance is to be placed upon the unconfirmed report to which we gave credence in our last number, and of which we became aware too late in the month to make enquiries before printing it. *Verbum sap.*

**Pallas’s Sand Grouse in Dorset.**—As a supplement to my former note (p. 264) on the occurrence of this bird in Hampshire, I may mention that, as late as the end of June, or beginning of July, a flock of these birds frequented a sandy piece of heath land on the borders of Dorset, and several were killed and eaten. I saw the feathers of one or more of them, so there is no doubt about the species, and eggs are also said to have been taken in the same locality, but up to the present time I have been unable to verify this statement. I think it very possible, if not probable, that the birds in question were those seen by my friend (mentioned in my former note), as the two localities are but a few miles apart, and when he saw

them they were flying in a direct line to the locality in which they are said to have nested. A male bird of this species was also killed on the 18th of June last in a garden not far from Wimborne, but it was terribly mutilated.—G. B. CORBIN (Ringwood, Hants).

**Reported occurrence of the Cream-coloured Courser in Lancashire.**—In the 'Birds of Lancashire' (p. 175), I stated that I had examined a Cream-coloured Courser which had been shot in this county, and it is with mingled grief and joy that I have to advise you, firstly, of an error in identification, and, secondly, of an addition to the British list. The bird in question, having come into the possession of Mr. W. H. Doeg, of Manchester, was submitted by him to Mr. Seebohm, and he has pronounced it to be the Sociable Lapwing, *Vanellus gregarius* (Pall.). With the twenty years' reputation of the specimen as a Courser, and being only able to look at it by candle-light in a crowded case, perhaps I may be forgiven for having been deceived by the superficial resemblance between the two, and for having attributed such discrepancies as I could perceive, to the vagaries of country bird-stuffing. However, the credit of the determination belongs entirely to the gentleman named; and possibly Mr. Seebohm, to whom I have sent all the information I could get, may refer to the matter more fully.—F. S. MITCHELL (Clitheroe).

**Wood Pigeons in the London Parks.**—I notice this year a great increase of the Wood Pigeon (*Columba palumbus*) in Hyde Park. I remember the first pair coming, five years ago. The male bird is now lame; his plumage is almost black from the London smoke. Recently I counted forty-seven, old and young, feeding on the lawn to the north of Rotten Row. No doubt some of the birds from St. James's Park and Buckingham Palace Gardens have also come, attracted by the maize which is daily put down by the gardener. I have watched early and late, but have never seen either the Stock Dove (*Columba anas*) or the Turtle (*C. turtur*). It is remarkable that the Wood Pigeon, which is so shy in the country, should become so tame in London; one pair have reared two broods this season in the same nest close to "the Row." The young birds find their way readily to the food, though in the country they seem unable to shift for themselves, and if not fed by the parent birds, they frequently die. I have often found them starved to death, even near the stubbles in autumn. In the country the Wood Pigeon does not come much to feed; but in Suffolk, where the Turtle abounds, we get them regularly, and I have counted over thirty within twenty yards of the windows, feeding on white peas, of which they seem very fond, and some of them come from a wood three miles distant, morning and evening. The Turtle Dove generally arrives the last week in April, and does not come much to feed after the 1st of August, during which month the majority of these birds depart, although I have killed them

as late as the middle of September when partridge-shooting. A pair of Waterhens, by the Serpentine Dell, have reared two broods this summer; these birds generally leave the Dell as the autumn advances, and they, no doubt, are migrants. I notice that this bird is largely a night-feeder, during which time a very curious weird cry is kept up; one dark evening in August the place for many yards round seemed alive with them. I saw a Goldfinch the other morning, in the Dell, feeding on the seeds of *Rudbeckia Newmanni*, but it is possible that—being so tame and quite alone—it may have recently escaped from a cage.—W. H. TUCK (47, Cathcart Road, South Kensington).

**Black Redstart nesting in Essex.**—The Natural History Museum has recently received an interesting acquisition in the shape of an undoubted nest, with two eggs, of the Black Redstart, *Ruticilla tithys*, taken in Essex. This is the first authentic instance, I believe, which has been recorded of this bird breeding in England. The nest referred to was presented by the Hon. Mrs. Ronald Campbell, who found it at Danbury Palace, Chelmsford, the seat of her father, the Bishop of St. Albans. She describes the circumstances of this interesting discovery as follows:—"The nest was in a hole in an ivy-covered oak-tree, which is more like a wall than a tree, and stands a few yards from a dairy in a dark sheltered corner. It was about four or five feet from the ground, and there were four eggs in it. The nest was found by some village boys who come to the dairy for milk, and their constant passing close to the nest must have caused the bird to forsake it. They showed it to my boys, and we watched it carefully, and saw the bird fly off twice—a dark-coloured bird with a red tail. This first made me think it was a Redstart, as they abound about here, but I could not understand the white eggs. They were a delicate pinkish white before being blown, like pink pearls. The nest was built early in May. . . . I am sorry one of the eggs was accidentally cracked. The other two were the same size as the cracked one. One of them was broken in the nest when we first saw it, and the other was given by my boys to a friend who had a good collection." The egg which is not cracked is considerably smaller than the injured one, which, as stated above, was the same size as the twoothers. I hope to have the pleasure of exhibiting this most interesting nest and eggs at the next meeting of the Zoological Society.—W. R. OGILVIE GRANT (Natural History Museum, South Kensington).

**The Raven in Dorsetshire.**—A friend of mine, Commander J. B. Young, R.N., writes me the following interesting account of a pair of Ravens which nested this year on the west cliffs of Portland. The first nest was in a cave about five feet square entrance, and about thirty-five feet down a perpendicular cliff, and contained six incubated eggs on the 13th March last, which were taken. The second nest was about 500 yards

from the first, and placed on a ledge overhung by a portion of the cliff, and some fifty or sixty feet from the summit. This nest contained six fresh eggs, which were taken on March 29th. The birds then returned to the first nest, and laid two more eggs, which were also taken—cruel to relate—on April 11th. I do not think they laid again, but am not sure, as the cliff was not revisited by my friend after the third nest was robbed.—E. A. BUTLER, Lieut.-Col.

[The Raven is now so rare a bird in the South of England that it is deplorable to hear of such persecution as that above reported. Surely one "clutch" of eggs ought to have satisfied the collector!—ED.]

**Hawfinch nesting in Norfolk.**—I found a Hawfinch's nest in my garden, on the 18th May, containing five fresh eggs. It was built on one of the outside boughs of a tall cedar, about eighteen feet from the ground, and composed of dead sticks, lined with fibrous roots, with white lichen round the edge and on the outside of the nest. Old birds are very shy and seldom seen, although the tree was on the lawn, close to the house, and within a few yards of my window. I heard of three other nests this year near Lynn, one of which was low down on an elder-bush, nine feet from the ground, the other two about twenty feet. Another nest was taken at Aldeby, near Beccles, by a son of Col. Freeland.—E. A. BUTLER, Lieut.-Col.

**Red-breasted Flycatcher in Ireland.**—A specimen of *Muscicapa parva* was killed by striking against the lantern of the Arklow (South) Lightship, seven miles from shore, on October 23rd, 1887, and was forwarded to me in a semi-decomposed condition. Only the head, wings, legs, and tail could be saved. The entry in the schedule for October 23rd is as follows:—"Several small birds from 7 p.m. to 5 a.m. about lantern; wind W.S.W., fresh, gloomy. Several killed and fell overboard. Two sent by post." The two birds sent by the mate of the lightship (Mr. A. B. Wall) were a Red-breasted Flycatcher (which is labelled "name unknown") and a Black Redstart, which struck the lantern at 3 a.m. Prof. Newton and Mr. Howard Saunders have both seen this specimen, in which the essential characters of *Muscicapa parva* are well shown, and agree in the determination of the species. With the exception of one killed at Berwick-on-Tweed, on Oct. 5th, 1883, this species does not seem to have been recorded from any portion of the British Isles during the last five-and-twenty years, since three were obtained in Cornwall and Scilly in 1863 and 1865, in the months of January, October, and November respectively.—RICHARD M. BARRINGTON (Fassaroe, Bray, Co. Wicklow).

**Pied Flycatcher in Ireland.**—Referring to my friend Mr. Warren's note (p. 267), I may remark that the Pied Flycatcher has occurred on two occasions at Irish light-stations. I possess a wing and leg of one taken at 8 p.m. on Sept. 21st, 1886, at the Tearaght Rock Light. This rock is

very wild, 600 feet high, and nine miles off the coast of Kerry, the most westerly land in Britain. I have another leg and wing from the Fastnet Rock, seven miles south of Co. Cork. This bird was killed by striking against the lantern at 4 a.m. on October 5th, 1886. The remarkable thing is that the Pied Flycatcher has not been met with in Ireland except at light-stations, if we except Mr. Warren's specimen killed in April, 1875, in Mayo. The light-keepers do not know the bird, and sent the specimens in accordance with instructions printed on the migration schedules. These instructions, as to legs, wings, &c., were first generally complied with in 1886.—RICHARD M. BARRINGTON (Fassaroe, Bray, Co. Wicklow).

**Dipper nesting in a Tree.**—In the last two numbers of 'The Zoologist' mention is made of this bird nesting in a tree, and as it seems to be of rather rare occurrence perhaps the following may be of interest:—In April, 1885, when salmon-fishing on the Dee, near Banchory, Aberdeenshire, I saw a Dipper fly into a large bunch of grass which was hanging from a branch about four feet above the river. This bunch of grass had been left there when the river had been in flood: the branch had dragged on the top of the water, and collected grass and other things brought down, and when the water fell, it was left in a large bunch high and dry. Seeing the bird go in many times, I sent my gillie, who in the centre found a nest, with four eggs, which he brought me; it was lined with brown leaves of beech.—J. WHITAKER (Rainworth, Notts).

**Manx Shearwater near Croydon.**—On September 6th a Manx Shearwater was flying over Haling Park, Croydon, mobbed by Swallows. A man saw it fly against a tree and fall in a stunned or exhausted state; he picked it up and took it to Thorpe, a taxidermist here, who kept it alive for a day or two, but as he could not make it eat anything he killed and preserved it.—PHILIP CROWLEY (Waddon House, Croydon).

**Nesting of the Peregrine and Kestrel.**—Has anyone ever seen either of these species carrying material to build a nest, or (if their eggs have been found in a nest) has it been anything more than the deserted nest of another bird? I am led to this enquiry by seeing in 'Birdsnesting,' by Miller Christy (1888), that the materials used by the Peregrine are "Sticks, sea-weed, dry grass, and other vegetable substances," and that those used by the Kestrel are "Sticks, dry grass, and wool." Similar statements have been made by previous writers, and by some of high authority. My experience of the breeding habits of the Peregrine extends over six seasons, and I have annually descended to several eyries of this species, numbering eleven in 1888; and I have been familiar with the habits of the Kestrel since I was a boy. I once took some Peregrine's eggs from the deserted nest of a Raven; and Mr. A. W. Johnson, of Newcastle, tells me of a similar instance that occurred this year. With these two exceptions, I have

always known the Peregrine to lay in a little hollow scraped by her in the earth on her breeding-shelf in the cliffs, which earth sometimes is mixed with a quantity of the bones left by her when rearing former broods. I have always found the Kestrel, when breeding in cliffs, act in a similar manner. I saw the eggs of a Kestrel in a deserted nest of a Hooded Crow in the sea-cliffs this year; but otherwise have always found them on earth upon a ledge, or in a recess of the cliffs, or in the deserted nest of a Magpie or Crow when in a tree, without any addition having been made by the Kestrel. That either species should bring materials to construct a nest, or to add to a deserted nest, is so contrary to my experience that the oft-repeated statements to that effect seem to require thorough investigation. In forest regions, like Pomerania, the Peregrine is stated to breed in trees; but has anyone known this bird to *build*, or does she merely lay her eggs in the deserted nest of some other bird? Mr. Christy also enumerates "wool and dry grass" among the building-materials of the Heron. Who has seen this? Has it simply been copied from the earlier editions of "Yarrell"? Did Mr. Yarrell ever climb to a Heron's nest? I have found nothing but sticks, lined with twigs, and sometimes a few coarse stems, such as bracken?—R. J. USSHER (Cappagh, Co. Waterford).

[The Editor once climbed to the nest of a Heron in Wanstead Park, Essex. It was situated on the top of an elm, and was composed of large twigs, principally elm and willow, and lined with smaller twigs, fibre, and dry grass.]

**Stock Dove laying three Eggs.**—The normal number of eggs laid at one time by Pigeons is well known to be two, and instances in which more than two are laid in a nest by the same bird are probably rare. On the 21st April last, I found a nest, in an ivy-covered thorn, containing three fresh eggs, all apparently laid by the same bird, as only one pair were seen in the vicinity, and the hen bird was on the nest.—E. A. BUTLER, Lieut.-Col.

**Golden Oriole at Harrow.**—A Golden Oriole was, I am sorry to say, shot in the garden of the Park, Harrow, in May last. It is now in the Harrow School Museum. This year a Kestrel's nest was obtained not far from Harrow; this is a rather uncommon nest to find in that locality.—G. BARRETT-HAMILTON (Kilmanock, New Ross, Co. Wexford).

**Girl Bunting in Hampshire.**—On the 20th June last I took a Girl Bunting's nest, containing four eggs, in a hedge not a hundred yards from Queenwood College. They are very typical specimens of the eggs of this species. On the previous day I had obtained four more eggs of the Girl at a cottage about a mile off. Three others, in a collection of one of the pupils here, were bought from some country boy near here. Until last year, when my son took a nest with three eggs, I had not come across the Girl Bunting in this neighbourhood. It is evidently not common, or with the

zeal shown amongst the pupils in egg-collecting more specimens would doubtless have been obtained.—JOHN H. WILLMORE (Queenwood College, Stockbridge, Hants).

**Honey Buzzard in Staffordshire.**—A fine specimen of the Honey Buzzard, *Pernis apivorus*, was shot in the Marquis of Anglesea's park at Beau-Desert, Rugeley, Staffordshire, on the 27th July. It is a rare visitor to the Midland Counties.—J. S. ELLIOTT (Bourne Street, Dudley).

#### REPTILES.

**Palmated Newt in Carnarvonshire.**—In June, 1887, I found this species in some numbers in two shallow pools of water at the top of the cliffs in Porth Ceiriad, a small bay about eight miles S.W. of Pullheli; and on the 24th of May last I took the specimens sent herewith, at the same place. So far as I know, *Molge palmata* has not been recorded previously for any county in Wales.—CHAS. OLDHAM (Ashton-on-Mersey).

#### FISHES.

**The Twaite Shad on the Cornish Coast.**—A specimen of the Twaite Shad, *Clupea finta*, was taken in a draw-seine off St. Michael's Mount, on the 25th August last. The fish is rare in our waters (much rarer than its congener the Alice Shad, *Clupea alosa*), and therefore I note it. This specimen weighed five pounds twelve ounces, and is set up for the collection of Lord St. Levan at the Mount.—THOMAS CORNISH (Penzance).

[According to R. Couch, the Twaite Shad is found in the west of Cornwall in rather large numbers towards the latter part of the summer Pilchard fishery, and early in the autumn Mackerel fishery, and is frequently taken in Mackerel drift-nets off Scilly, moving E. or N.E.—ED.]

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## SCIENTIFIC SOCIETIES.

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### ENTOMOLOGICAL SOCIETY OF LONDON.

September 5, 1888.—Dr. D. SHARP, F.L.S., President, in the chair.

Mr. M. Stanger Higgs, of St. Leonard's, Gloucester, was elected a Fellow of the Society.

Dr. Sharp mentioned that he had received, through Prof. Newton, a collection of Coleoptera from St. Kilda, consisting of *Carabus catenulatus* (1), *Nebria brevicollis* (12), *N. gyllenhalii* (3), *Calathus cisteloides* (20), *Pris-tonychus terricola* (1), *Pterostichus nigrita* (71), *Pt. niger* (31), *Amara aulica* (4), *Ocypus olens* (1). The species being nearly all large Geodephaga,

he thought probably that many other Coleoptera inhabited the island. He remarked that these specimens showed no signs of depauperation, but were scarcely distinguishable from ordinary English specimens.

Mr. South exhibited a melanic *Aplecta nebulosa* from Rotherham, bred with five others of ordinary form, and an albino of the same species from Devonshire; a very curious dark variety of *Plusia gamma*; two dark *vars.* of *Eubolia limitata* from Durham; *Dicrorhampha consortana* from North Devon.

Mr. Champion exhibited *Harpalus cupreus*, *Leptusa testacea*, and *Cathormiocerus maritimus* from Sandown, Isle of Wight.

Mr. Elisha exhibited the following Micro-Lepidoptera; — *Æneana atricapitana*, *turionana*, *juliana*, *derasana*, *capreana*, *pomonana*, off *Sorbus aucuparia*; *sodaliana*, *zephyrana*, *trigeminana*; also *Schiffermulleriella*, *horridella*, *alpella*, *fuscoarella*, *therinella*, and *semidecandrella*, on *Cerastium tetrandrum*.

Mr. Jacoby exhibited three boxes of Coleoptera, collected partly by Mr. Fruhstroffer, containing some rare *Cetoniidæ*, *Paussidæ*, &c.

Mr. E. Saunders exhibited *Amblytylus delicatus*, Perr., a new British bug, taken at Woking.

Mr. Jacoby mentioned that he had taken the larva of *Vanessa cardui* on a narrow white-leaved plant in his garden.

Mr. Enock mentioned that out of a batch of two males and six females of the Hessian Fly kept together, all six females had laid fertile eggs, so that each male must have impregnated more than one female.

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## NOTICES OF NEW BOOKS.

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*The Fauna of British India, including Ceylon and Burma. Mammalia (Part I).* By W. T. BLANFORD, F.R.S. 8vo, pp. 250. London: Taylor & Francis. 1888.

So long ago as 1883 the Secretary of State for India in Council, upon the recommendation of the Government of India, gave his sanction to the publication of a series of volumes on the Fauna of British India. Such a work is now seriously needed, for it cannot be said that the publications of Jerdon, Blyth, Hume, Legge, Günther, and Day, excellent as they are in their way, adequately represent or embody anything like the information which is now available on the subjects upon which they treat. None of them can be called recent publications, and

some of them have been printed more than twenty years. It is quite time therefore that an attempt should be made to bring together, with the aid of specialists, the best and latest information which can be collected—building up, as it were, a more modern structure upon the good foundations already laid by the authors above mentioned. The task is by no means a light one, for the amount of available materials is now very considerable, and it will require the exercise of much skill and judgment to bring together in a condensed and convenient form just such information as is most desired by students of Zoology at the present day.

In entrusting the general editorship of these volumes to Mr. Blanford, it will be generally conceded by those best qualified to express an opinion that a wise selection has been made. Mr. Blanford's long residence in India, where his work on the geological survey afforded him constant opportunity of studying the fauna of the country, his thorough acquaintance with the works of his predecessors in the same field, and his well-known ability as a practical zoologist, combine to fit him admirably for the post; and we cannot doubt that, under his editorship, the scheme will be successfully carried out.

To save time, as well as to ensure the best possible results, the principle of a division of labour will be adopted, and different specialists will undertake different parts of the work. For the present it is proposed to restrict the publication to the *Vertebrata*, and to complete the work in seven volumes of about 500 pages each; the Mammals (one vol.) being undertaken by Mr. Blanford himself; the Birds (three vols.) by Mr. E. W. Oates, author of the 'Birds of Burma'; the Reptiles and Batrachians (one vol.) by Mr. Boulenger; and the Fishes (two vols.) by Dr. Day, who has already bestowed considerable attention on the subject in his work on the 'Fishes of India,' which may doubtless serve as a groundwork, with necessary modifications and additions.

The first instalment of this important work is now before us in the shape of the first half of Mr. Blanford's volume on the Mammalia, and augurs well for what is to come.

Adopting the classification proposed by Prof. Flower (Proc. Zool. Soc. 1883, pp. 178—186), as "the best hitherto published," the descriptions of genera and species, as well as the measurements, have been taken from specimens whenever possible, and

in the few cases in which specimens were not available, the characters have been copied from descriptions by previous writers. The notes on distribution and habits have been compiled from various writers, especially from the works of Jerdon, Blyth, Hodgson, Elliot, Kelaart, Tickell, Sterndale, M'Master, Forsyth, Sanderson, and others, supplemented by the Editor's own observations made during a sojourn of more than twenty years in India.

The result is that we have an excellent digest of all that is important in regard to the better-known mammals of India, while, as regards the rarer species, seldom met with, and difficult to procure, we are furnished with transcripts of the original descriptions, with references to such supplementary information as has since been published concerning them.

Referring to the present distribution of the Lion in India, Mr. Blanford says (p. 57):—

“In India the Lion is verging on extinction. There are probably a very few still living in the wild tract known as the Gir in Kattywar, and a few more in the wildest parts of Rajputana, especially Southern Jodhpur, in Oodeypur, and around Mount Abu. About twenty years ago Lions were common near Mount Abu, several were shot near Gwalior, Goona, and Kota, and a few still existed near Lalitpur, between Saugor and Jhansi. One is said to have been killed near Goona in 1873. In 1864 one was killed near Sheorajpur, twenty-five miles west of Allahabad; and when the railway was being made from Allahabad to Jubbulpoor in 1866, a fine Lion with a good mane was shot by two of the engineers near the eightieth milestone from Allahabad. About 1830 Lions were common near Ahmedabad. Several years previously, in the early part of the century, Lions were found in Hurriana to the northward, and in Khandesh to the south, in many places in Rajputana (one was shot in 1810 within forty miles of Kot Deji in Sind), and eastward as far as Rewah and Palamow. It is probable that this animal was formerly generally distributed in North-western and Central India. I have never heard of Lions in Cutch, and suspect Jerdon was mistaken in supposing them to be found there. Eastward and northward of India the Lion is not found, and almost the only part of Western Asia in which it is common is in Mesopotamia and part of South-western Persia.”

Mr. Blanford is of opinion that there is only one species of Lion common to Asia and Africa, regarding the so-called “maneless Lion of Guzerat” as merely a variety, and described from an immature example.

Comparing the Lion and Tiger, he says :—

“Lions are perhaps bolder than Tigers, and certainly much more noisy, their habit of roaring, especially in the evening and at night, having necessarily attracted the attention of all who have been in countries infested by them. Of the two, the Tiger, though standing lower, is heavier in the body, and I think the more powerful animal.”

The dimensions of a full-grown Lion are given as “head and body,  $5\frac{1}{2}$  to  $6\frac{1}{2}$  ft. long; tail,  $2\frac{1}{2}$  to 3 ft.; the female considerably smaller.” The dimensions of an adult Tiger are almost identical.

The usual measurement of Tigers by sportsmen is from the nose over the curves of the head and back and along the tail to the tip. Thus measured, says Mr. Blanford, full-grown Tigers are generally 9 to 10 feet long, Tigresses 8 to 9; but Tigers have been killed which measured as much as 12 feet in length.

The present distribution of the Tiger is described as “throughout India, Burma, and other parts of South-eastern Asia, Java, and Sumatra, but not in Ceylon, nor, it is said, in Borneo. It occurs in suitable localities throughout a great part of Central Asia, and is found in the Valley of the Amur, the Altai Mountains, around Lob Nor in Eastern Turkestan, about the Sea of Aral, on the Murghab near Herat, on the southern coast of the Caspian (Hyrcania), and in the Caucasus, but not in Thibet, Afghanistan, Beluchistan, or Persia, south of Elburz Mountains on the Caspian.”

With regard to Afghanistan, we believe, Mr. Blanford is mistaken; for, if we are correctly informed, Dr. Aitcheson sent home from that country to the Zoological Gardens, a Tiger-cub, which he had secured there rather more than a year ago.

There is still much to be ascertained about the geographical distribution of Indian Mammals. The Cheetah, or Hunting Leopard, according to Jerdon, is not found in Ceylon, but how far south it ranges in India has not been precisely ascertained. Mr. Blanford thinks its range is probably the same as that of the Indian Antelope, upon which it preys. In capturing this fleet animal its habit is to stalk up to within a moderate distance of between 100 to 200 yards, taking advantage of any cover that will conceal it, and then to make a rush. Its speed for a short distance is remarkable, far exceeding that of any other beast of prey, even of a Greyhound or Kangaroo-hound, for no dog can at first overtake an Indian Antelope or a Gazelle, either of which

is quickly run down by the Cheetah if the start does not exceed about 200 yards. M'Master saw a very fine Hunting Leopard catch a Blackbuck (*Antelope cervicapra*) that had about that start, within 400 yards. It is probable, says Mr. Blanford, that for a short distance the Hunting Leopard is the swiftest of all mammals.

This swiftness, coupled with its docility, has led to its being tamed and trained for the chase by native sportsmen; but, contrary to what would be supposed, only adults are captured, Indian shikaris considering that the young can only be properly trained by the parents.

By many writers, and amongst Indian naturalists by Sykes, Elliot, Horsfield, Hodgson, and Sterndale, it has been thought that, besides the Cheetah, there are two species of Indian Leopard, a larger and a smaller. Even Jerdon appears to have been in doubt on the subject. Mr. Blanford suspects that the supposed difference is very often due to age, and states that he has for years endeavoured to distinguish the two forms, but without success.

Much has been written about the combats between the Mongoose\* (*Herpestes mungo*) and venomous snakes, and the supposed immunity of the former from snake-bite. The prevalent belief throughout Oriental countries is that the Mongoose when bitten seeks for an antidote—a herb or a root known in India as *manguswail*. The story, however, is without foundation, though there is some evidence to support the impression that the Mongoose is less susceptible to snake-poison than other animals. Upon this point Mr. Blanford agrees with Jerdon and Sterndale, that “the Mongoose usually escapes being bitten by his wonderful activity. He waits until the snake makes a dart at him, and then suddenly pounces on the reptile’s head, and crunches it to pieces.” He adds, “I have seen a Mongoose eat up the head and poison-glands of a large Cobra, so the poison must be harmless to the mucous membrane. When excited it erects its long stiff hairs, and it must be very difficult for a snake to drive its fangs through this, and through the thick skin which all kinds of *Herpestes* possess. It has been repeatedly proved by experiment that a Mongoose can be killed like any other animal, if

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\* A corruption of “Mangús,” the native name for this animal in the Deccan and Southern India.

properly bitten by a venomous snake, though even in this case the effects appear to be produced after a longer period than with other mammals of the same size."

The Mongoose is an excellent rat-killer, and it is stated (Proc. Zool. Soc. 1882, p. 712) that within the last fifteen years the introduction of this animal into Jamaica has resulted in a saving of from £100,000 to £150,000 annually, owing to the decreased number of rats which destroy the sugar-canes.

We have been interested to learn what Mr. Blanford has to say about the so-called "Wild Dogs" belonging to the genus *Cyon*, and upon the question whether there is more than one species. Upon this point much difference of opinion has been expressed, and notwithstanding that Blyth, Jerdon, Murie, and others have opined that there is only one species existing throughout the Oriental Region, Mr. Blanford inclines to the view that two distinguishable forms inhabit the area, the fauna of which he is investigating, and of these two forms *Cyon dukhunensis* and *C. rutilans*, he gives the specific characters.

The term "wild dog," he says, applied to these animals, is clearly a misnomer, for in every important detail in which the genus *Cyon* differs from *Canis* (Wolves and Jackals)—in the form of the skull, the dentition, and the number of mammae—domestic dogs agree with the latter and not with the former. The name has doubtless been applied to the present genus on account of its hunting in packs, like hounds, its fine handsome and bold appearance, and its courage.

We have not space to say more on this first instalment of what promises to be a most valuable work on the fauna of British India. So far as his own share of the work is concerned, he has spared no pains to bring together the most reliable information that can be procured respecting every species to be included, while in regard to those classes of Vertebrates with which he himself is not so familiar, he has secured the co-operation of specialists whose names sufficiently guarantee the excellence of the contributions they have promised.

The numerous woodcuts with which the text is interspersed will materially assist the student in acquainting himself with the generic and specific characters.

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# THE ZOOLOGIST.

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ON THE GEOGRAPHICAL DISTRIBUTION OF SEALS.\*

BY F. H. BALKWILL.

PINNIPEDS form a very natural and circumscribed suborder of Mammalia, and some of the facts of their comparative anatomy, habits, and geographical distribution are in favour of the hereditary derivation of different species from the same ancestry—the doctrine of Evolution.

J. W. Dawson, in his excellent little work, 'The Chain of Life in Geological Time,' written ostensibly to controvert the evolutionary theory, remarks of Seals, "They are more elevated than Whales in type, appear much later, and without any probable ancestry." The latter part of this sentence I cannot accept. In the first place, notice the close affinities which constitute Pinnipeds a natural suborder. They are all distinctly marine in their habits; with two exceptions, never frequenting rivers or lakes at any distance from the sea. There are two other marine mammalian suborders inhabiting similar localities—the *Sirenia* (Dugongs and Manatees) and the *Cetacea* (Whales). From these they are distinguished by the fact that they are all well covered with hair or fur; have hind as well as fore limbs; tail small, in no case broadened into the piscine-like member of the other two groups; and possess also the power of erecting and turning the head with a double angle, more or less like the letter Z, in a dog-like way. This, in the eye of common

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\* A lecture, delivered at the Plymouth Institution.

observation, has always saved them from the ignominy reserved to cetaceans of being generally classed with fishes.

Another striking point of affinity in which they differ from other marine mammals is that they all bring forth and suckle their young out of the water, for which purposes they resort to rocks, beaches, or ice; and it is on this necessity in their economy that the hunters place their principal reliance for a supply. These rendezvous, to which many of the species resort in vast numbers, are sedulously sought for, and in some cases carefully preserved. In others indiscriminate slaughter has sometimes destroyed the whole species inhabiting the locality.

The characters of their teeth differ entirely from those of the Sirenia which have broad or flat-topped teeth, suitable for vegetable feeding, and closely approximate the terrestrial Carnivora, on the one hand, whilst on the other they show a slight tendency to degenerate towards the dentition of the Dolphins, and as this point is interesting as suggesting a possible derivation for the latter cetaceans, it will be dealt with a little more in detail.

In the skull of an Ichthyosaurus we have a long series of slightly recurved acute cones arranged along the sides of each jaw in two nearly parallel or converging lines, continued so as to meet in the front of the mouth. As we advance higher in the scale of life these teeth are gradually differentiated, those in front becoming chisel-shaped for cutting, those at the angle being greatly elongated and strengthened for seizing; those next in order shortened and made more blade-like for splitting or breaking; and those behind blunted on their crowns and gradually transformed into grinders. The differentiation between these teeth at first is not very marked, the intermediate teeth often partaking of an intermediate character; but as the teeth become more highly specialized the intermediate forms are eliminated, the jaws shortened, and the teeth reduced to four or fewer definite classes of teeth, each being often very distinct from its neighbours. These four classes are known as incisors, canines, premolars, and molars.

In the land Carnivora these teeth are all more or less marked. They have six incisors above and below with one or two exceptions, two canines above and below of the highest type, and behind these, premolars and molars of at least two

definite forms and functions ranging from a large amount of grinding surface in some mixed feeders, as Bears and Badgers; to teeth almost entirely formed for splitting bones and cutting flesh, as in the Cats, &c.

The Dolphins show a degradation, or reversion, towards the older type of animals which had long narrow jaws, and rows of similar conical teeth.

Seals show some tendency in the same direction, inasmuch as whilst their general cranial and dental aspect is unmistakably canine or leonine, the teeth behind the canines approximate more or less to this type of a series of cones. The teeth of various genera and species differ a good deal, but they all agree in this, that in each species all the teeth behind the canines are similar; there are not here as in the land Carnivora two or more distinct sorts of teeth,—and where the species differ, they still keep up the type of a series of recurved, more or less acute cones.

A very early form of carnivorous tooth was perhaps taken as the pattern of an old-fashioned spear-head, having a central sharp blade supported on each side by two smaller cusps to help give it grip and steadiness in action; such teeth are quite common in the land Carnivora, as anyone may judge by examining a cat or dog. Such teeth are the basis of the pattern of the back-teeth of Seals.

Sometimes, as in *Lobodon carcinophaga*, a Seal from the Antarctic Seas, there are three minor cusps behind the principal one, as well as one in front, making five, whilst in others, as in our own *Halichærus grypus*, the inferior cusps are reduced to a mere indication, and the teeth have all nearly arrived at the degradation of a merely conical type. Still in each case all the teeth behind the canines are similar.

Pinnipeds include the Eared Seals (*Otariidæ*), the “Sea Lions,” and Fur Seals: the Walruses (*Odonbænidæ*) and the ear-less or true Seals (*Phocidæ*) comprising the Common Seals, the “Sea Leopards” of the South Pacific, and the “Sea Elephants.” It has often been suggested that an affinity between the Walrus and the Dugong is indicated by the tusks of the latter; but the relationship is only superficial, the tusks of the Dugong being enlarged incisors, while those of the Walrus are the canines. The Dugong is a true vegetable-feeder, whilst the Walrus—in spite of a recent writer in the ‘Century’

Magazine, who considers it a vegetable-feeder—is a true carnivore, the peculiar conformation of the skull being correlated with the support and use of its enormous tusks. With these it digs up the mollusca which form its principal food.

The *Otariidæ*, or Eared Seals, form the first division; these are chiefly distinguished from their congeners by the following characters:—They all possess external ears or conches, turn the hind limbs forward to aid in terrestrial progression, and are distinctly and jealously polygamous in their habits. Some of the species are commercially valuable, as furnishing the “seal-skin” of fashion; these, which are known as “Sea Bears,” are smaller than those without this valuable coating, which are called “Sea Lions.”

In his ‘History of N. American Pinnipeds,’ Mr. Allen recognizes nine species of *Otariidæ*, of which five are hair Seals, or Sea Lions, and four are fur Seals; but as they are very widely distributed and still imperfectly known, there are probably a greater number. They are:—

1. *Otaria jubata*. The large “Sea Lion” of the south coasts of South America.
2. *Phocarcetos hookeri*. Auckland Isles.
3. *Eumetopias stelleri*. The large northern “Sea Lion” of the coast of California, and North of Japan.
4. *Zalophus californianus*. The lesser “Sea Lion” of California and Farallone Islands.
5. *Zalophus lobatus*. The lesser “Sea Lion” of the Australian coast, with soft under fur.
6. *Callorhinus ursinus*. The northern Fur Seal of California and Japan northward to Behring Strait.
7. *Arctocephalus australis*. Round the south coast of South America, from Galapagos Isles to Rio de la Plata.
8. *Arctocephalus antarcticus*. Cape of Good Hope.
9. *Arctocephalus forsteri*. The Fur Seal of Australia and New Zealand.

Of the Walruses, Mr. Allen labours hard to establish two species, which he names:—

1. *Odobænus rosmarus*. The Walrus of the North Atlantic and Arctic Oceans.
2. *Odobænus obesus*. The Walrus of the North Pacific.

The differences which he points out, however, are slight, and as the ‘Vega,’ in its N.E. passage to the Pacific, found the Walrus in nearly all parts of the Arctic Ocean, it seems more

probable that his second species is only a variety which has attained a larger size than its congener by obtaining better food, or being less disturbed.

The Walrus is ear-less, like the true Seals, but differs from them in its huge canines, and in the fact that it bends its hind legs forward to assist in progression on ice or land. It is also truly Arctic in habitat, abounding in all parts of the Arctic Ocean from which it has not been driven by man. Mr. Allen speaks of it as polygamous in its habits, whilst other authors assert it to be monogamous; it is, at any rate, not so decidedly polygamous as the *Otariidæ*.

The true or ear-less Seals have hairy bodies, but no fur, have the hind limbs bent backwards so as to serve as a tail in swimming, and are incapable of turning them forward to assist in progression on land. The most noticeable species are:—

1. *Phoca vitulina*. The common Seal of our Islands; ranges all round the Arctic Circle from the North Atlantic to the North Pacific and Japan.
2. *Phoca grænlandica*. The Greenland Seal, the Seal of the Newfoundland and Jan Mayen Fisheries.
3. *Phoca fatida*. North Atlantic, North Pacific, and Arctic Oceans.
4. *Phoca caspica*. Caspian and Aral? Seas.
5. *Phoca siberica*. Lakes Baikal and Oron?
6. *Histiophoca fasciata*. The Ribbon Seal of the North Pacific.
7. *Erignathus barbatus*. The Great Seal of the Arctic Circle from the Atlantic to the Pacific.
8. *Halichærus grypus*. The Grey Seal of North Britain and Newfoundland northwards.
9. *Monachus albiventer*. Mediterranean and Black Seas, Canaries, East Coast of Africa.
11. *Cystophora cristata*. The Bladder-nosed Seal, North Atlantic and Arctic.
12. *Macrorhinus leoninus*. Sea Elephant, South Pacific, South Indian, and Antarctic Seas.
13. A variety of above. Coast of West Mexico and South California.

Four Sea Leopards in Antarctic and South Pacific, New Zealand, Lord Howe's Islands, &c.; viz.:—

14. *Ogmorhinus leptonyx*. New Zealand coast.
15. *Lobodon carcinophaga*. Antarctic Seas.
16. *Leptonychotes weddelli*. East Patagonia.
17. *Ommatophoca rossi*. Antarctic Seas.

Of these it will be seen that four, namely, *P. vitulina*, *P. grænlandica*, *P. foetida*, and *E. barbatus*, range from the North Pacific across the Arctic into the North Atlantic.

One, viz., *H. fasciata*, has its habitat where the North Pacific and Arctic join.

Two, viz., *H. grypus* and *C. cristata*, range down from the Arctic Ocean north of the Atlantic, into the latter ocean.

One, *Monachus*, is certainly found in the Mediterranean and tropical Atlantic, although the Seal of the West Indies is supposed to be of a distinct species. (See Zool. 1887, p. 191.)

One, *Macrorhinus*, is found in the tropical Pacific, coasts of Lower California and Mexico, and in the South Pacific and South Indian, and Antarctic Oceans; whilst four species of the genus *Leptonyx* are found in the Antarctic Ocean and the southern parts of the oceans bordering thereon.

One great distinguishing feature between the true Seals and the Eared Seals is evident. The true Seals and the Walrus are more capable of bearing cold, and as none of the *Otariidæ* reach above Behring Straits, the Seals diminish in species and numbers as they approach the Equator. It is also noticeable that the Eared Seals are not found in the Atlantic north of the Cape of Good Hope; nor are there any Pinnipeds in the North Indian Ocean.

I will now give a few extracts from Mr. Allen's work on the life-histories and manner of hunting some of these animals, beginning with the *Otariidæ*. The most interesting account, perhaps, is derived from the culture of the Northern Fur Seal, *Callorhinus*, by the United States on the Prybilov Islands,—two small islands near Behring Straits, which they received with Alaska territory from Russia. These islands were leased to the Alaska Commercial Company, with the right to take 100,000 skins annually, and of course it became a matter of pecuniary importance to take these in their best season and value, so as to keep up the stock on the island. The number of Fur Seals present on St. Paul's Island, as estimated by Mr. Elliot in 1872, was three millions, and on St. George's 163,000.

A party of natives live on the islands to attend to the interests of the Company, and collect the skins. At first, when indiscriminate slaughter was allowed, the yearly take was reduced to 7000 or 8000 in 1882; but by preserving them, and driving

away the "Sea Lions" so as to give more room, they have increased in numbers, so that it was calculated there were over 4,700,000 on the islands; and Mr. Elliot conjectures that this is as many as that breeding station will hold.

St. Paul's, which is the largest island, has a coast line of 42 miles, of which  $16\frac{1}{2}$  miles of sandy beach are occupied by the Seals. To these beaches the old males begin to resort about the middle of May, when, till about the middle of June, there is a continual accession to their numbers, each on its arrival taking the best position closest to the water which it can. By the 12th of June all the best positions have been appropriated and fought for by the strongest males, who are, as a rule, never under six years of age. These stations are about ten to twelve feet square, and are jealously guarded. Those who cannot keep or get in the front rank take the next, and so on till the whole beach is full to a depth of five or six rows, and each "bull," after occupying a position, never leaves it an instant till the end of the season in August, being thus three months without food, and undergoing the most arduous exertion in maintaining his position.

Some of these "bulls" show wonderful strength and courage. Mr. Elliot remarked one veteran on the water-line, where at least fifty or sixty battles were victoriously fought by him. The fighting is mostly done with the mouth, opponents seizing each other with the mouth, clenching the jaws, each bite leaving an ugly wound, shredding the skin into ribbons.

About the middle of June the females begin to arrive, and are received by the males with much attention; but no sooner is wife No. 1 fairly installed in the home of her master than he sees another about to land whom he immediately approaches to escort, and, whilst so engaged, the male on the station next above his reaches out his great neck and abstracts wife No. 1 to be placed in his own pen; and this process is repeated until the whole of the pens are supplied, averaging to twelve each. The cows have one "pup" within a few days of landing, so that family life on the beach is tolerably stirring. By the 8th or 10th of August the pups born nearest the water begin to swim, and by the 9th of September the colonies are broken up.

It will be noticed that only males of six years old and upwards are able to keep their ground as beach-masters, and

the younger males range in large squads in the sea and on the beach, and from these bachelor squadrons are taken those which furnish the required 100,000 skins. It is found that the young four-year-old male furnishes the best skin, and the natives select by careful management droves of these, and drive them further inland, where they kill and skin them.

A small colony of "Sea Lions" is preserved on the islands for the subsistence of the natives, who find its flesh more palatable and its skin more useful than that of the Fur Seal.

All writers agree in describing the very playful character of the young, and many intelligent traits might be mentioned. One hunter had his rifle in hand levelled at the head of an old "Sea Lion" which was roaring and barking at him from the water, and had his finger in the act of pulling the trigger, when a cub swam up to the irascible parent and put up his nose for a kiss, which was immediately bestowed. This had such an effect on the sealer's heart, he not having seen his own family for some time, that his gun was lowered and the beast allowed to go in safety. Another observer coming suddenly upon the nursing of some "Sea Lionesses," said that they looked at him with so intelligent, so distressed, and yet so lady-like an air, that he retired with the sense of having committed an impropriety.

The Walruses (whether two or one species) may be considered as now nearly confined to the Arctic Ocean, though at one time they came much further south. In 1534 they occurred as far south as Cape Sable in Nova Scotia, exemplifying the rapidity with which Pinnipeds are exterminated on their breeding-grounds. In the sixteenth and seventeenth centuries great numbers were killed in the Gulf of St. Lawrence. They are now found in Western American waters, south of Davis' Straits, and the north part of Hudson's Bay. East of Greenland they are still met with on the N.E. coasts of Spitzbergen and the eastern shores of Nova Zembla in considerable numbers. In the Pacific they occur on the American and Asiatic coasts as far south as the Aleutian Islands, and in numbers (according to a late writer in the 'Century') in Bristol Bay and Norton Sound.

The chase of the Walrus has been so often and so popularly described that I need not dwell upon it. In one respect this animal differs remarkably in its domestic economy from its congeners. The young is suckled by its mother until nearly

three years old; for, living upon mollusca principally, it cannot get its own living until its tusks have grown a certain length, to enable it to dig for them itself.

Besides a great number caught locally by the native Esquimaux in America, and Tchuckchees and other tribes inhabiting the north shores of Europe and Asia, there are two large Seal "fisheries" carried on in the North Atlantic; one, a small area about 200 miles N.E. from Jan Mayen's Island (about the middle of April), where annually some 200,000 are killed. The majority of these are young Greenland Seals. Their rapid increase in size is remarkable; at birth their weight is 6 or 8 lb.; they are suckled for fifteen or eighteen days, in which time they increase to from 55 to 60 lb., of which the skin and fat—alone the object of pursuit—is about 40 or 45 lb. It is at this age that the sealers prefer to take them, as they are then left by their mothers to shift for themselves, and consequently for some time they deteriorate in condition.

Another great breeding station is on the loose ice off the coast of Newfoundland, where the season begins about the middle of March, and lasts for two months. About 500,000 are annually taken here.

In the Pacific, South Atlantic, and South Indian Oceans the only true Seal that has been found in sufficient numbers to form a regular "fishery" is the Sea Elephant. This immense beast is described by the first observers, Peron, Anson, Pernety, and others as from 25 to 30 ft. in length, with a circumference of 16 to 18 ft. Modern observers do not find them of this size; but as two authentic skeletons measured 16 ft., which would make the animal when in the flesh about 22 or 23 ft. long, it is probable that the systematic hunting to which they have been subjected, does not allow them to attain their full growth. This species was formerly found by Peron in large numbers on the Falkland Islands, where it is now extinct, and along the west coast of Patagonia. It was also taken in large numbers off the coast of Mexico and Lower California. Mr. Allen thinks this a distinct species; it is said to occur still in small numbers at St. Barbara and Cerros Islands, in this locality. In the South Indian Ocean, the Crozets, Kerguelen and Heard Islands used to be regular stations for these Seals; but they are probably only to be found in any great numbers now on Heard Islands. In

Kerguelen Island they would long ago have become extinct, but for one inaccessible beach, "where they still haul up every spring (October, November); the beach is limited at each end by precipitous cliffs, across which it is quite impossible to transport oil in casks; nor can boats land from the sea, or vessels lie at anchor in the offing, as the beach is on the windward side exposed to the full violence of wind and waves." So that here, at all events, there is some hope of the species being preserved.

I possess an interesting account of these Seals, with a narrative of four years spent on the Crozets, after shipwreck there by a sealer named Goodridge. One habit is generally noticed of this species, although it is common to the group, which is to swallow large quantities of stones. Sealers and sailors usually attribute the function of this action to its use as ballast; some naturalists seem not disposed to allow this, and attribute it to a digestive craving. The point may be one for discussion; I rather incline to the sailors' theory, for the reason that fishes seem to require some means of altering their gravity, which is furnished by an air-bladder, and as Seals have not this arrangement, the taking in stones as ballast would seem to fulfil the need very well.

Now I think that the facts of distribution, &c., recapitulated all point to Behring Straits as the centre of distribution of Seal-life. Here, and here only, the three large groups meet. Here are Walruses, Eared and Earless Seals. From here we may suppose the Walrus and Earless Seals spread over the Arctic Circle into the Atlantic Ocean, one species, at any rate, reaching as far as the Mediterranean. From here the Eared Seals, accompanied by ear-less species, spread all down the Pacific coasts of America, doubling Cape Horn, and creeping up the South Atlantic shores of South America, perhaps to the Gulf of Mexico; another stream, following the Antarctic ice, reached up to the Cape of Good Hope and some of the islands in the South Indian Ocean; but we do not find that any reached the eastern coast of Africa, the coasts of India, or the Malay Peninsula. Another stream seems to have migrated from Behring Straits down the Japan Archipelago and part of the N.E. coasts of China. Whether it was this stream which supplied the Seals of the South Pacific, Australia, and New Zealand, or the one from

round Cape Horn, remains to be settled by reference to the affinities of the different species.

How Seals came in the Caspian Sea and Lake Baikal are two distinct problems. That they exist in both is beyond doubt. On the Caspian is a regular "fishery," where some 100,000 are annually taken; and various trustworthy travellers and missionaries give details of the native "fishery" for Seals on Lake Baikal. As to Seals reported to exist in the Sea of Aral, or Lake Oron in Siberia, I can find no authentic account. The Caspian being below the general ocean-level, and the species being similar to Arctic species, points to some former connection between these oceans. Lake Baikal, however, is several thousand feet above the sea-level, the River Yenisei running down some 1200 miles from it into the Arctic Ocean. If Seals have ascended this distance from the coast, the case is unique; for nowhere else are they found much above the tidal part of a river. This case therefore remains a mystery.

Behring Sea is also the head-quarters of the Sea Otter, *Enhydra lutris*, which occurs from Behring Island down the N.W. coast of North America as far as Upper California. In many respects this animal forms a sufficiently good link between River Otters and Seals to emphasize the locality as the centre of distribution and evolution of the group of Pinnipeds. Its fur, the most costly of any, has more affinity to that of an Eared Seal than that of any other Otter. In size it approaches many Seals. Its feet are more webbed and its tail shorter than in River Otters; and, lastly, its pelagic habits make it a very good forerunner of *Otariidæ*. If we assume that one branch of the Otter family acquired pelagic habits and a beautiful fur, its exclusively piscine food gradually tending to the differentiation of its molars and premolars into a series of tridents,—whilst another branch of the family, preferring crustacea and mollusca, developed its hind teeth into sufficient shell-crackers, and, requiring more prehensile power in its paws to search for its prey under stones, &c., did not develop these so completely into fins as its congener,—the relative geographical distribution of the different species seems sufficiently plain.

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## ON THE BIRDS OF THE ISLE OF EIGG.

BY A. H. MACPHERSON, B.A., AND H. A. MACPHERSON, M.A.

STRANGERS who scan this island from the decks of the numerous steamers which ply between Oban and the Gairloch, usually offer a few speculations on the famous Scur Rock, which like a couching lion crowns its southern summit. Their curiosity sometimes induces them to enquire the whereabouts of the Macdonald's cave; but here their enquiries cease, and they pursue their journey imagining that Eigg is a fine island, capable of pasturing many black-faced sheep, but certainly of no special interest to the public at large. Nor is this surprising, for it is only when the island has been traversed on foot in all directions, that the mind becomes sensible of the immense variety of physical beauties here massed together within a comparatively small area. North and south, sweeping precipices of igneous formation roll down to a low shingly beach, or drop sheer into deep water, in which Seals (*Phoca vitulina*) may often be seen.

Turning inland, we wander over long stretches of purple heather and meadows crowded with summer flowers; or visit the lochs where trout are leaping, far away from even shepherd's shieling.

Such conditions as these are eminently favourable to both muir-fowl and sea-fowl, but at first sight there does not seem to be much cover for the smaller land birds. Fortunately, on the eastern exposure, the nakedness of the land in this respect is hidden by a luxuriant growth of mixed timber, which, though planted within recent years, has already assumed fair proportions.

This being the general appearance of the island, it only remains to say, before proceeding to describe its avifauna, that Eigg is separated by a narrow strait from Rum on the west, and is distant from Arisaig, on the opposite mainland, some ten miles; and secondly, that our information consists of personal observations, recorded in our note-books during various short summer visits to the island, chiefly during the last seven years.

Long protection has encouraged many species to haunt the grounds of the proprietor. On his gables we have heard the Song Thrush singing nightly; Blackbirds are attracted by ripening fruit in the kitchen-garden close by, and even the shy Ring Ouzel

(*T. torquatus*) leaves its haunts at Laig and Grulin, venturing in search of some more dainty morsel than the rocky grounds which it chiefly affects can afford.

Wheatears (*Saxicola ananthe*) find secure nesting-quarters in deserted rabbit-holes, and are everywhere very numerous; many broods of young Whinchats (*Pratincola rubetra*) enliven the hay-fields early in July; while the Stonechat (*P. rubicola*) frequents heathered patches in the centre and west of the island, but only in limited numbers. Around the doors may be seen the mottled nestlings of the Redbreast (*Erithacus rubecula*), which has been known to rear its young inside the house; the nearest undergrowth of weeds holds a few pairs of Whitethroats (*Sylvia cinerea*). The sharp cry of the Goldcrest (*Regulus cristatus*) among the larches, recalls more than one dainty suspended nest; while family parties of the Willow Wren (*Phylloscopus trochilus*) may be seen exploring the remotest coppices in the island, never relaxing their vigilant search for the *Aphides* which form a large portion of their subsistence.

Beside a running brook are located one or two couples of Sedge Warblers (*Acrocephalus phragmitis*), a species detected here first in 1888 by A. H. M. Near here a pair or two of unobtrusive Hedge Sparrows may be noticed prying for insects among the fallen leaves; and a short ramble thence conducts us to a burn, often frequented by the Dipper (*Cinclus aquaticus*). The fir plantations re-echo the sibilant cry of the Coal Tit (*Parus ater*), but are less attractive to the Blue Tit (*P. cæruleus*), than sycamores and the other smaller trees. The Wren (*Troglodytes parvulus*) is quite as much at home in the loose crumbling dykes as on heathery knolls and the mossy ledges of the rocks. The Pied Wagtail (*Motacilla lugubris*) is a scarce bird in Eigg, though it is far more plentiful than the Grey Wagtail (*M. melanope*), a species only observed once, in August, 1887.

As early as May 22nd, we have found young Meadow Pipits (*Anthus pratensis*) in the nest; along the shore this species is replaced by the Rock Pipit (*A. obscurus*), of which the nestlings are rare adepts in catching midges. A good many Spotted Flycatchers (*Muscicapa grisola*) ply their calling on the skirts of the plantations, all the more usefully since the Swallow (*Hirundo rustica*) only occurs as a passing straggler. Some doubt was once expressed as to the existence of the House Sparrow,

but in 1885, we discovered a flourishing colony in certain ivy-covered rocks near the farm of Kiel. This colony is increasing, and a second now occupies the farmsteadings at Laig (1888). Unfortunately, no such increase can be reported of the small establishment of Tree Sparrows (*Passer montanus*),—discovered in 1884 by Mr. W. Evans as tenanting the ruins of St. Donnan's shrine,—though watched assiduously from year to year. Nevertheless it appears to be double-brooded; we have both examined very young nestlings in mid-July. Here, as elsewhere, we have enjoyed the low, sweet song of the males, which we suspect may sometimes interpair with the House Sparrow, having observed them together in the nesting-season. The seeds of dockweed are eagerly devoured by this species.

Our earliest date for the fledged young of the Chaffinch is May 25th; in 1886 a bachelor of this species frequented the garden-lawn all summer, leading an idle life in contrast with the energetic labours of paired couples.

In August, 1887, we met with three examples of the Linnet (*Linota cannabina*) for the first time, and in 1888 detected the Lesser Redpoll (*L. rufescens*) among the young timber. The Twite (*L. flavirostris*) is numerous on the moors, and we have occasionally seen it feeding on ripening heads of dandelion.

On July 3rd (as already announced, p. 349), our plantations received a visit from a large flight of Crossbills (*Loxia curvirostra*), which first attracted attention by curvetting like a flock of Starlings before our windows. They allowed us to approach closely and observe them through binoculars; the majority were in female dress, unaccompanied, so far as could be ascertained, by the dark striations that characterise the nest-feathers; only one or two wore red plumage.

The birds, when first approached, proved to be feeding on a species of aphid affecting the under surface of the leaves of the elm, and this food was procured by a method which we had not previously observed. Applying both rami of the scissor-like mandibles to sever the stem of an affected leaf, the Crossbill would fly to a bare branch, and holding the divided leaf between the toes of the left foot, proceeded to scoop up "seriatim" the aphides, securing them with the fine points of the bill, assisted by the tongue; a leaf was no sooner cleared than dropped at our feet. Some apprehension was awakened between 3 and 4 p.m.,

by the fact that several parties of Crossbills deliberately left the island, on which they had probably arrived during the morning hours; these squads of birds flew high, and departed with a N.E. wind, apparently shaping their course across the sea to strike the mainland, a point or two north of Ardnamurchan. However, a few birds lingered, and at the end of the month came under the notice of A. H. M., who observed them feeding on larch cones, and described their call-note as "trutt—trutt."

A Corn Bunting (*Emberiza miliaria*) was noticed on July 29th, 1888, with a malformation of both mandibles, possibly induced by old age.

About our doors Yellow Buntings (*E. citrinella*) may always be seen, never failing to bring their young ones to share in the bread crumbs daily thrown out for them. A few mossy spots tempt the Reed Bunting (*E. schoeniclus*) to breed in Eigg, though in limited numbers; nor does the Starling increase and multiply as rapidly here as in some other parts of the Hebrides. The sweeping precipices that on the west side overhang Cleadale, were formerly the home of a few Choughs (*Pyrrhocorax graculus*), now exterminated, probably by the Peregrine Falcons. A single Chough was observed at Laig, in August, 1876, by Mr. W. H. Macpherson; and John Macleod, a native of the island, possessed a tame bird about the same time. Would that the same evil fortune had accrued to the Hooded Crows (*Corvus cornix*)! Usually the Hoodies are content to nest in the sea-cliffs, but a pair lived this year in the plantations, and a second couple obtained the rights of sanctuary by nesting in the garden of the manse. In 1885, a few Rooks (*C. frugilegus*) built in the plantations; and though their design of becoming permanent settlers was speedily checked, yet they constantly infest the island during August, some scouring for food, and others roosting in the plantation, whence they return to the mainland at daybreak. Though we dislike these arrant and vulgar poachers, we desire to encourage and protect the unjustly disparaged Ravens (*Corvus corax*). Three couples of these birds reared their dusky broods at the north and south extremities of Eigg this year. The Skylark nests in the short heather, but in small numbers; nevertheless, daybreak is everywhere enlivened by the Cuckoo, especially on the west side of Scur. Though pellets of Owls occur in the fir-woods, the only Owl that both of us have seen repeatedly is the Barn

Owl, nesting among the rocks in the centre and west of the island.

Thirty years have passed since a thoughtful individual introduced rabbits into Eigg, and they have multiplied at so great a pace, that they have proved a valuable consideration to the fine pair of Buzzards (*Buteo vulgaris*), which utter their melancholy cry beside the overhanging cliff where their young are reared. We have picked up their cast feathers as they circled over the sea, occasionally troubled by the Herring Gulls which love to buffet their formidable neighbours.

Whether the Golden Eagle has ever bred in Eigg is more than doubtful, but from time to time the island receives a visit from one of those that nest in Rum. When Mr. W. Macpherson visited friends in Rum in 1833, he was playfully rallied on the visits paid by "Dr. Macpherson's Eigg Eagles" to the flocks in the sister island. At that time, at least three eyries in Eigg were tenanted by the White-tailed Eagle, and a pair nested there until 1879, when they were driven away by the malevolence of an English gentleman. A report that Eagles nested in Eigg in 1887 appears to be ill-grounded. A female of this species which attracted the admiration of our friend the late Mr. R. Gray, was killed in the island some years ago, in consequence of its continued depredations on young lambs. It proved to have lost three toes in a trap, and was not an Eigg bird, but a visitor from some other quarter. The Sparrowhawk occurs as a straggler from the mainland; the Peregrine rears its young in safety in most seasons, but this year we were pained by the apparent absence of both old and young birds. The value of the Kestrel in checking the increase of the Short-tailed Fieldmouse (*Arvicola agrestis*) can hardly be exaggerated. Fortunately a good many pairs breed, and we have had both live Kestrels and Buzzards brought to us as pets.

The Hebrides offer a scanty subsistence to Wood Pigeons (*Columba palumbus*), but a few pairs nest in the island almost every year; even the hardy Rock Dove (*C. livia*) is pinched in winter; four of the Eigg caves are inhabited by these birds. The introduction of the Partridge has succeeded, and a few coveys are bred annually on the east side; but the Hooded Crows have proved very detrimental to the increase of Grouse. In the winter of 1878-9, some Water Rails frequented a wet

bottom, and one of them was shot by Mr. Scott. Their relative, the Corn Crake, serenades our summer nights, and a pair or two of Moorhens frequent a moss near Laig. Golden Plover breed sparingly in the hills, and the eggs of the Ringed Plover may be found on the sands at Laig or near Kiel; the number of resident birds being increased by autumnal visitors. A few pairs of Lapwings breed on Castle Island and behind Kiel farm, and have done so for some years. The Oystercatcher nests at several places along the coast; an abundance of fresh springs invites large flights of Woodcock; the Snipe may be heard "bleating" on the same mosses in early spring. Dunlins (*Tringa variabilis*) appear in small numbers in August, even before the hordes of Common Sandpipers (*Tringoides hypoleucus*) take their departure south. It is not unusual to see a few Redshanks (*Totanus calidris*) tripping over exposed reefs at low tide, and Curlews (*Numenius arquata*) are sometimes to be seen in large flocks; neither species is known to nest in Eigg, though present all the summer. It is only in spring that the Whimbrel (*N. phaeopus*) lingers on our shores. Some needless doubts as to the presence of the Cormorant (*Phalacrocorax carbo*) have found their way into print; but it is only present in small numbers, nor have we seen more than single birds. The Shag (*P. graculus*), of course, musters strongly, breeding in a cave at the south end of the island, and occasionally travelling out to the deep waters, fished by fleets of snowy Gannets (*Sula bassana*). As a visitor, the Heron (*Ardea cinerea*) exacts heavy black mail from the burn trout; in 1882, the eggs of this bird were taken in the west side of Eigg.

Though the rocky shores of Eigg are ill suited to meet the requirements of the estuary-loving Sheldrake (*Tadorna cornuta*), yet stragglers visit the bays on both sides of the island, and one or two pairs nest on the east side. The lochs on Scur have owned many pairs of Mallard (*Anas boschas*) to our own knowledge since 1870. Quite recently the Eider (*Somateria mollissima*) has frequented the Castle Island and reared one or two broods, enabling us to enjoy the spectacle of a little file of youngsters paddling pluckily after their mother in a considerable swell. The haunts of the Eider are in this case well suited to the Merganser (*Mergus serrator*); yet we have searched in vain for its nest, and have only met with single and unpaired birds.

The shallows of the coast are often visited by Arctic Terns (*Sterna macrura*), and less frequently by some Common Terns (*S. fluviatilis*), but neither species has nested there. Although eggs of the Kittiwake (*Rissa tridactyla*) were obtained on the east side some eighteen years since, we cannot positively state that it now breeds with us; it is certainly numerous all summer. Numbers of Herring Gulls (*Larus argentatus*) nest at Grulin, and the Lesser Blackbacked (*L. fuscus*) and Common Gulls (*L. canus*), are also very common. The Great Blackbacked Gull (*L. marinus*) breeds at Grulin and on the lochs at Scur in some seasons. In August it is not unusual to see a few Blackheaded Gulls (*L. ridibundus*), chiefly immature birds. We have not observed any of the *Stercorariinæ*, nor have we obtained any Petrels, though the late Mr. R. Gray received an example of *Thalassidroma leachii* from Eigg. Passing over the Manx Shearwater (*Puffinus anglorum*) which has been recently dealt with at some length (p. 372), the Divers that frequent our shores are chiefly *Alcidæ*. Small parties of Razorbills (*Alca torda*) and Guillemots (*Uria troile*) fish in the sound; cream coloured varieties of the latter occur. Black Guillemots (*Uria grylle*) nest in the rocks below Grulin; it is interesting to watch them feeding their young. There is no nesting-place of the Puffin (*Fratercula arctica*) in Eigg, but its presence on the coast in summer is a fact of daily observation.

Having thus enumerated the species which have come under our notice, it may be well to state the census of the avifauna.

In 1885, our friend Mr. W. Evans published a list of the birds of Eigg, compiled from his own journal and other sources of information (Pro. R. Phy. S. Edin. viii. pp. 430—448); this list included 82 species. Of these, in our opinion, five must be rejected, as included on insufficient evidence, *viz.*, Bullfinch, Short-eared Owl, Slavonian Grebe (?), Greater Shearwater, and Storm Petrel, leaving a total of 77 species. Of these 77 species, five have never occurred to us, *viz.*, the Long-tailed Tit, Swift, Nightjar, Jack Snipe, and Great Northern Diver; nor do we regard them as regular visitors to the island. Our own notes comprehend 85 species, and a grand total of 90 species is thus arrived at. Of these, at least 58 nest in Eigg. While, therefore, this list is confessedly incomplete, it is based on a fair knowledge of the island, and will no doubt be added to from time

to time. There can be no doubt that the Wigeon, Teal, Goldeneye, and probably the Greylag Goose, Glaucous Gull, and other species occasionally visit Eigg in winter, but it is to be regretted that no professed ornithologist has hitherto spent a winter in this island.

It only remains to explain, that while we have avoided presenting these notes in the form of a catalogue, the arrangement of 'The Ibis' list has been followed. All the species here recorded from Eigg have occurred in the adjoining island of Skye.

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NOTES ON THE OCCURRENCE OF PALLAS'S  
SAND GROUSE IN LINCOLNSHIRE.

BY JOHN CORDEAUX.

THE first part of these notes has reference to the occurrence of the Sand Grouse in Lincolnshire in 1863, and is corrected and enlarged from the notice of this species published in the 'Birds of the Humber District' in 1872. The second portion (1888) is taken from my note-book for the current year.

1863.

A flock numbering from forty to fifty was seen in the parish of Saltfleet-by-all-Saints about the latter part of April or early in May, 1863, and they remained about the sand-dunes on the coast till July, after which date they disappeared. Of these, twenty-two were shot by Mr. William Larder, of that place, and a pair by Mr. Stubbs, since dead. Some of Larder's birds were sent for preservation to Mr. Kew, of Louth, by the Rev. E. Freshney, then residing at Skidbrooke. Mr. Clayton, also a birdstuffer of Louth at that time, personally informed me that in that year seven or eight pairs passed through his hands; some others of these birds, their rarity and value not having been recognised, appear to have been sold for food. About the same time, also, several Sand Grouse, whose history cannot now be traced, were brought to Louth by the marsh carriers, and sold to the game-shops, or otherwise privately disposed of.

In a letter which appeared in 'The Field' of July 9th, 1888, the Rev. J. E. Wallis Loft states, on the authority of Mr. Kew, taxidermist, of Louth, that the Sand Grouse were sent to him by

Mr. Freshney in the summer of 1864. I have been at considerable trouble to get at the facts, and have no hesitation in saying this is, in all probability, an error. Larder's birds were shot in 1863, and not in 1864 as stated, and the evidence in my possession seems conclusive on this point.

In the second week in May, one which I saw in the flesh was picked up dead in the parish of Little Cotes, near Grimsby. Prof. Newton ('Ibis,' vol. vi. p. 205) states that, out of a flock of thirteen, a male and female were shot on May 25th, at Leake, in South Lincolnshire. Two were shot by Mr. Francis Cooke, of Huttoft, near Alford, on the 7th or 14th of August, 1863, out of a flock of about twenty flying with great speed from the eastward over his head, when lying on the sand-hills near the coast. It is possible these may have been the remainder of the large flock—known to have been reduced to about that number—seen at Saltfleet-by-all-Saints up to July, Huttoft, also a coast parish, being about ten miles south of that place.

#### 1888.

May 18th.\*—A flock of ten or twelve in a grass-field on the wold, in the parish of Irby, six miles S.W. of Grimsby; these were first observed by a boy called Grimoldby, who was tenting birds; charging his gun with shot, he succeeded in killing three, and wounded a fourth, subsequently picked up. Three of these were eaten, the fourth (an adult male) came into my possession. The boy described them as running not unlike partridges, but with a rolling sort of gait.

May 22nd.—Four seen on Swallow Wold, and one shot: stated on the authority of the Rev. J. E. Wallis Loft, the Rector of that parish.

May 23rd.—One shot, from five, at Epworth, Isle of Axholme, and recorded in 'The Field' of June 2nd, by Mr. S. Hudson.

May 25th.—A pair reported as seen on Tetney foreshore by one of Mr. G. H. Caton Haigh's keepers.

May 28th.—Two, a male and female, shot by Mr. C. Robson in the parish of Cawkwell, near Louth, and now in the collection of Mr. J. Topham, of Wooton Grange.

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\* Sand Grouse are reported to have arrived at the Spurn and Flam-borough Head at the same date, also in Oxfordshire and Herts.

A flock of twenty-six at Tetney Lock, about the end of May, seen by the son of Mr. Stubbs, a well-known wildfowl shooter, living near that place.

June 2nd.—One, a female, killed on the Bourne and Spalding Railway, and taken to Mr. Evans, of Bourne. Five seen in a field between Lincoln and Reepham by my friend Mr. Jacob Marshall, who was travelling by rail at the time. One shot by Mr. Longstaff, of High Toynton, near Horncastle, and recorded by the Rev. J. E. Wallis Loft. Eight found dead in a field at Fulstow, a coast parish, and identified by Mr. G. H. Caton Haigh: they are supposed to have been killed by eating poisoned barley, of which their crops were full. These birds were so far decayed that two only could be skinned and preserved.

June 4th.—One seen on Cabourn Wold, and recorded by Mr. Loft in 'The Field' of June 9th.

June 9th.—One, as I am informed by Mr. J. Eardley Mason, of Alford, was shot from a flock of twenty to thirty at Asserby, in the parish of Bilsby. They had been observed to frequent a barley-field for two or three days previously.

June 14th.—Twenty-one on the wold at Horkstow, near Barton-on-the-Humber. My informant, Mr. J. E. Turton, says, "In their flight, which was from N.W. to S.E., they strongly resembled Golden Plover, only they seemed reddish-brown birds with long tails, and they had a peculiar clucking note, which I heard before they appeared and after they were out of sight."

June 15th.—A small flock of seven seen by Mr. Beulah, of Raventhorpe, in the Forest-field, adjoining Bromby Common. On the 17th, in the same place, five and nine, and on the 20th two, a seven and a five—obviously the same as were seen on the 17th. The field is one of fifty-five acres, very quiet and retired; half was sown with turnips. Mr. Beulah says, "I first saw them on the sandy soil running like partridges, but when they rose I noticed their long, pointed wings and grouse-like flight." They were last seen in the neighbourhood on July 9th.

June 18th.—About this date two flocks of eight and twelve on Humberstone fitties, lingering about the neighbourhood to the end of the month; two were shot.

A flock of fifteen, seen by Stubbs, about the end of June, near Tetney.

July 8th.—Mr. J. Eardley Mason writes that Mr. Spencer

Robinson, of Authorpe, near Alford, reported several small parties of Sand Grouse about that parish; they fed undisturbed, and seemed likely to stay.

July 20th.—Two received by Mr. Evans, of Bourne, shot in the parish of Holbeach.

July 28th.—A pair, also from the same parish, sent to Mr. Evans for preservation.

August.—About the middle of the month, five were seen on the wold by Mr. J. Sowerby, of Cuxwold Hall.

August 30th.—Two, as Mr. Haigh informs me, were shot from a flock of about forty, at Mablethorpe, on the coast, and purchased by Mr. Kew, of Louth.

September 13th. — Twenty seen together near the coast at North Cotes, by the son of Mr. Stubbs, the wildfowl shooter, and mistaken at the time for Dotterel. Mr. Haigh says the lad seems to have been particularly struck with the dark markings on the under parts, and recognised the call as the same as that of the birds he had seen in May.

October 3rd.—Mr. Haigh informs me that a small flock of five were seen by Stubbs, who was engaged in plover-netting; they flew across the "fitties" near Tetney Lock, coming from the direction of the Spurn, and, crossing the sea-bank, went inland.

October 10th.—One, a female, which I saw in the flesh, was shot at Summercotes. The feet and tarsi were much coated with clay, and the tail-feathers and primaries soiled and draggled; so that I question if the bird would have been equal to re-crossing the North Sea, although otherwise it was plump and in fair condition. The gizzard contained a grain or two of wheat and some vegetable-fibre, and an unusual quantity of small quartz-stones, exactly similar to those which I had taken from the stomachs of Sand Grouse on their arrival in May. Another from the same locality was sent to Mr. Kew, of Louth, about the same date. On the 10th also, Mr. Haigh saw six in a barley-stubble at North Cotes; they would not permit him to get nearer than seventy yards, when they rose and crossed the sea-bank.

When dealing with such restless wanderers as the Sand Grouse, which are here one day and may be gone the next,—able to pass in a single flight across the length and breadth of

the country,—it is impossible to give more than an approximate estimate of their number.

Exclusive of the flocks seen near the coast late in August and in September and October, which may probably be referred to birds coming from the interior, and approaching the sea before taking their departure, the number actually recorded as visiting Lincolnshire is, as far as I am able to ascertain, about one hundred and eighty-four. Making a liberal allowance for flocks seen more than once, we may certainly estimate the number as considerably exceeding one hundred. I am strongly inclined to think that, taking the dates as they occur, the number in each flock, and the localities in which the birds have been seen, I am justified in placing the actual amount at about one hundred and forty to fifty between May 18th and July 28th. The number killed being twenty-five, of which sixteen were shot, eight died of poisoned grain, and one was killed on the railway.

It will be seen by reference to the notes that there are indications of a second and very considerable arrival of Sand Grouse about the middle of June, either the result of birds changing their locality, or perhaps a fresh arrival from the Continent. In 'The Naturalist' for July, 1888, Mr. Matthew Bailey records several flocks of Sand Grouse as appearing at Flamborough between the 15th and 18th of June; and in one of the Migration Schedules recently received from Mr. John Odgers, of the High Light, Whitby, are the entries:—"June 16th. Four Sand Grouse, 2 p.m., calm, o. c. p.m., in field close to lighthouse. June 17th. Three Sand Grouse, 10 a.m., N.W., close to lighthouse."

I have no information to lead to the conclusion that any Sand Grouse have nested, or attempted to nest, anywhere in this county.

[A Report on Pallas's Sand Grouse in the North-West of England has recently been published by Mr. H. A. Macpherson in the 'Transactions of the Cumberland and Westmoreland Association for the Advancement of Literature and Science' (No. XIII., 1888, pp. 59—75); and we are glad to announce the promise of a similar Report from Norfolk by Mr. Thomas Southwell, which we hope to publish in our next.—ED.]

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## NOTES AND QUERIES.

**The Fauna of the Outer Hebrides.**—We are glad to hear that Messrs. J. A. Harvie Brown and T. E. Buckley have in preparation a work on the Vertebrate Fauna of the Outer Hebrides. It will form a companion volume to their lately published work on the Vertebrate Fauna of Sutherland, Caithness, and West Cromarty, and will be illustrated by views of scenery, and maps of the main range and outlying islands, with sea views of the same vignettted upon the maps. It is announced as shortly to be published by Mr. David Douglas, Edinburgh.

## MAMMALIA.

**The Distribution of Natterer's Bat in Great Britain.**—It is proposed to publish at an early date an article on Natterer's Bat, in continuation of the series on British Chiroptera, in which several species have been already dealt with. An excellent drawing from life has been furnished by Mr. G. E. Lodge; and the Editor would be glad to receive notes of the occurrence of this bat from any hitherto unrecorded localities, and any observations on its habits, if peculiar.

**A new Australian Mammal.**—A small mole-like animal, which appears to be new to science, has been forwarded by Mr. A. Molineux, of Adelaide, to the South Australian Museum. It was found on the Idracowie Castle Station, at a distance of about 100 miles from the Charlotte Waters Telegraph Station, on the overland line from Adelaide to Port Darwin; but the circumstances of its capture are not yet to hand. The collector, however, reports that it must be of rare occurrence, as on questioning the aboriginals of the locality, there was only one old woman who said she had seen it before, and that upon a single occasion. Mr. E. C. Stirling, of Adelaide, who communicates the discovery to our contemporary 'Nature,' states that it is evidently an underground burrowing animal, resembling the Cape Mole (*Chrysochloris*) in its general external appearance, but differing in many respects. The total length is 13 cm. inclusive of the tail, which is 2 cm. long. The head, relatively shorter than *Chrysochloris*, has a rounded muzzle, the dorsal surface of which is covered by a horny shield. Nostrils transversely slit-like. No eyes visible, the skin passing uninterruptedly over the ocular region; but on reflecting the skin on one side of the face, a small circular pigment spot is visible in the position of the eye. No apparent bony orbit. Tongue fleshy, broad at the base, and tapering to a blunt point. No external ears; but the ear-openings distinct, 1 mm. wide, and covered over with fur. The fore limbs are short, resembling somewhat those of a Mole; but the manus is

folded, so that the large nails of the fourth and fifth digits only are visible in the natural position of the limbs. The hind limbs are also short, with the soles turned outwards. The tail 2 cm. long and 5 mm. wide at the insertion tapers to 3 mm. and terminates in a knob-like tip. About 15 mm. in front of the vent, there is a pouch in the integument about 4 mm. wide, with the opening directed backwards and having a depth in a forward direction of from 4—5 mm. The surface of this pouch is devoid of hair, but the bare area is surrounded by thick fawn-coloured fur, with a slightly reddish tint; it is possible, however, that this reddish tint is due wholly or in part to some ferruginous-looking sand, which is much mixed up with the fur. The body generally, with the exception of the lower two-thirds of the tail, which is bare, is covered with fur of a rather lighter tint. The intestines had unfortunately been removed, but in a small part of the lower bowel which was left, the remains of ants were found. With regard to the lower jaw and the general characters of the teeth, Mr. Stirling was struck with their resemblance to these parts (as figured in various osteological works) of *Amphitherium*.

#### BIRDS.

**Pallas's Sand Grouse in Norway.**—An example of Pallas's Sand Grouse was obtained at Røraas, Norway (in lat. 62° 36' N.), in April of this year. It is now preserved in one of the stations on the Thronhjelm-Hamar Railway. The station-master expressed himself as sure of the month, but his answer to my further question, as to whether there had been more than this one individual, was lost in the noise of the train as it moved out of the station. I could easily write and ask for further particulars, if this should chance to be the most northerly record of this species in this year's visitation, or if it is of special interest on any other account.—ALFRED H. COCKS (Great Marlow, Bucks).

**Tree Sparrow breeding in Middlesex.**—In 'The Zoologist' for September last (p. 355), Mr. Barrett-Hamilton pointed out the omission of Middlesex from the counties in which, according to Yarrell, it has been found breeding, and after expressing his doubt whether it has since been recorded from Middlesex, concluded by stating that it breeds annually near Harrow. An editorial note appended to this communication was intended to refer to a previous volume (Zool. 1877, p. 24), in which the Editor had commented upon the same passage in "Yarrell," and recorded the nesting of the Tree Sparrow at Hampstead. By an unfortunate printer's error, however, the reference was given as "Zoologist, 1887, p. 24" (instead of ten years earlier), and so the whole point was lost. Mr. Barrett-Hamilton, and perhaps others, may be glad to have the correct reference.

**Pied Flycatcher in Ireland.**—The rarity of *Muscicapa atricapilla* in Ireland has already been noticed (pp. 267, 391). On October 4th I received

from Mr. George Dunleany, light-keeper on the Fastnet Rock, Co. Cork, a Pied Flycatcher, in the flesh, found dead on the rock on Sept. 30th. From Mr. P. Corish, Tuskar Rock Lighthouse, Co. Wexford, I have just received (October 16th) the remains of another of these birds, procured Sept. 28th, making the fifth Irish specimen recorded.—RICHARD M. BARRINGTON (Fassaroe, Bray, Co. Wicklow).

**Velvet Scoter at Exmouth.**—My friend Mr. P. Brutton, of Exmouth has recently presented me with a specimen of the Velvet Scoter, *Ædemia fusca*, a very rare bird in that neighbourhood; and what is more rare in the case (it being so purely an oceanic duck), it was shot in the estuary of the Exe, some three or four miles up from the sea, nearly opposite Lympstone. Possibly this may be worth recording.—W. TAYLOR (10, Chad Road, Edgbaston).

**Manx Shearwater in Skye.**—My friend Mr. F. W. Johnson has recently made the interesting discovery that the Manx Shearwater nests on the Skye coast. In proof of this, he was kind enough to send me a fine nestling last August. This is no surprise, for as long ago as in 1882 I expressed, in 'The Zoologist,' my impression that colonies of the Shearwater would be found on the Skye coast; and this has been confirmed by my more recent notes, and by those of Mr. Harvie Brown and Mr. Johnson. I have only, however, once visited the locality which Mr. Johnson kindly undertook to search this year, and the Fulmar was then the object of our quest. It is, in fact, a lonely place, and no one but a local resident would be likely to discover it, so that the birds are safe from molestation. But the curious fact about it is that the Herring Gull nests on the same grassy ledges as the Shearwater—a fact entirely new to my experience. Doubtless some other fresh facts will come to light on further investigation, and I have no doubt that other colonies of Shearwaters exist on the coast of Skye, though possibly they are inaccessible, or nearly so.—H. A. MACPHERSON (Carlisle).

**Habits of the Manx Shearwater.**—I venture to trouble you with a few remarks on the above subject, in case others have not written to you in the same strain. While at Scilly this year I visited a breeding-colony of the Manx Shearwater. When drawn from their burrows in broad daylight these birds were at first quite unable to rise from the level ground, or even from a gentle slope. This I attributed to the sudden change from darkness to light; but Mr. Barrington's observations show that the supposition was, at any rate, only partially correct. Undoubtedly the Shearwaters' sight was much affected, for I observed that the nictitating membrane was frequently drawn over the eye, and even when I tossed two or three birds into the air they fell helplessly to the ground. After remaining a short time on the ground the Shearwaters took wing with difficulty, acquiring a sufficient

impetus by half flying, half running. Out of the fourteen or fifteen birds I handled, one only attempted to peck my finger. A very slight pinch was the result, although I tried to stimulate its energy by teasing it with my finger. The other birds persistently refused to "bite." There were, however, no young to defend. The scent which pervades the Shearwater's burrow is, although faint, an almost unerring guide to an inhabited or recently-used hole. Ornithologists who carefully used their noses would seldom have to dig in vain. With regard to the food of the Manx Shearwater, the Rev. H. A. Macpherson's observations are surely not sufficiently precise to establish as a fact that it consists largely of surface-fish. If he actually saw the Shearwaters catching the fish on which he assumed that they and the Herring Gulls were feeding, of course the question would be set at rest. Neither does the substance, pronounced by Dr. Fletcher to be fish-muscle, seem to throw much light on the subject; for it may as possibly have been some scrap of floating offal as a portion of a fish caught alive by the bird. The absence of bones, which would probably be last digested, is also significant. The bill of the Manx Shearwater is slender and weak, so that if this bird does, as is likely enough, occasionally feed upon fish caught by itself, its prey is probably very small fry. One would suppose further that a bird so weakly armed for offence or defence as the Shearwater must stand a poor chance of getting more than hard knocks when feeding with such strong and greedy robbers as the larger Gulls.—  
C. R. GAWEN (Chetwynd Park, Newport, Salop).

**Habits of the Turtle Dove.**—My brother's note (p. 389) has suggested to me that some further particulars of the Turtle Doves which he incidentally mentions may be acceptable to some of your readers. For the last few years of my father's life he was an invalid, and used to derive much amusement from watching and feeding the birds which frequented his garden. The graceful beauty of the Doves, and the fact that they alone of the summer migrants could be brought up close to the house by feeding, made them his special favourites. They were fed with turnip-seed and white peas, of which they seemed to be very fond, and doubtless the Wood Pigeons and Stock Doves, which remained with us all the winter, served as decoys for the Doves. These used to appear about the end of April, the earliest date being the 24th, and throughout the months of May and June they increased in number almost daily. The largest gathering of Doves of which I can find any record in my father's notes is fifty-four, counted on June 21st, 1886. In July and August the numbers rapidly diminished, and by the end of August hardly one could be seen. The old birds very rarely brought their young ones to be fed, but seemed rather to take them away to the fields. I should say that not one-sixth of the number which came to feed nested anywhere about the property. In 1884, a white Turtle Dove appeared once or twice with the others. I did not

see this bird, so cannot express an opinion as to whether it was a variety of the wild species, or an escaped bird of the kind frequently kept in aviaries. Some birds, probably the older males, are very handsome and rich in colour, and a group of twenty or thirty busily engaged in feeding is a very pretty and interesting sight, especially when Wood Pigeons and Stock Doves join them. The effect produced by several birds "purring" at the same time is rather curious. They are still protected, and fed, and I have no doubt that on any fine afternoon in May or June next I could show a fairly large number to any lover of birds who may wish to see them.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

**Food of Wild Ducks.**—At the beginning of August last, when the shooting season commenced, a friend kindly sent me a couple of full-grown "flappers." When picked, I noticed how unusually distended the crop of each appeared to be, which, to the touch, was apparently filled with something coarse and rough, like small pieces of chip. Curiosity led me to open them, when I found the whole cavity completely crammed with cases of caddis-worms, some containing the larva and others empty, as if the birds in their eager feeding had indiscriminately swallowed the cases, whether containing worms or not. I am not versed enough in the Trichoptera to say to what species the cases were referable,—probably more than one,—but I was surprised at the quantity the birds had taken at a single meal, and when turned out, it did not seem possible that the two crops could have contained such a mass, especially when we consider the nature of the materials of which caddis-cases are built, for I should imagine that if the mass had been weighed, the smaller half only would have been digestible, even in the stomach of a duck, but I suppose the wild birds of this family resemble their tame relations in their voracity.—G. B. CORBIN (Ringwood, Hants).

**Notes from Dorsetshire.**—During the past summer a pair of Curlews, *Numenius arquata*, bred on the heath-land near Sandford Bridge, Wareham, and another pair near the third milestone on the Wareham and Bere road. I saw the brood of the latter (three in number), with the old birds, on August 11th, nearly full-grown. Two Whimbrels, *N. phaeopus*, were shot on the shore of the Poole Estuary on Sept. 16th; on the 24th I saw two others in company with seven Curlews. A pair of Redshanks nested and brought up four young ones, in June last, at Arne. The garrulity of the parents endangered their safety, but owing to the loneliness of the district they escaped. A pair of Dippers, *Cinclus aquaticus*, bred on the banks of the Frome, between Stoke and Bindon Abbey under a wooden bridge. This is its first recorded occurrence on the eastern side of the county. Three Knots, a Pochard, three Pintails, and two Grey Plover were shot by a Poole gunner on Sept. 8th.

I had the pleasure of seeing a pair of Choughs at Lulworth, and a Dartford Warbler near Wool on Sept. 20th. Both are nearly extinct in this county; I trust these survivals may forebode resuscitation. A Curlew, *Numenius arquata*, and a Wheatear forsook their usual habits of resting on the ground; the former was seen a few days ago perched on a high fir-tree, and remained there until disturbed; the latter flitted before me, alighting from sprig to sprig for a considerable distance, and unceasingly uttering its melodious call-note. In spite of the persecution to which Montagu's Harrier was subjected during the past breeding-season, I occasionally see one on our heaths. A Great Bustard, *Otis tarda*, has been frequenting the high land above Fontmill, near Shaftesbury, but has lately disappeared, and unharmed.—J. C. MANSEL-PLYDELL (Whatcombe, Blandford).

**Late nesting of the Corn Bunting.**—When shooting to-day (29th September), I found the newly-made nest of this bird, with three eggs, placed at the base of some thistles amongst a second growth of clover. I saw the bird fly from the nest close to my feet. The Corn Bunting is a notoriously late breeder, and we not unfrequently come across the nest with the eggs quite fresh, or only slightly incubated, in the last week in June when cutting clover. The occurrence of the nest with eggs at the end of September must, however, be considered very much beyond the ordinary season.—JOHN CORDEAUX (Great Cotes).

**Woodchat in Wilts.**—As the Woodchat, *Lanius pomeranus*, is not included in the Rev. A. C. Smith's 'Birds of Wilts,' the following note of its occurrence may be worth recording. On June 6th, 1884, in Savernake Forest, I saw a very brightly-coloured bird of this species. It was very tame, and I made a rough sketch of it at the time, which I afterwards compared with Dresser's plate. Then, in May, 1872, my cousin, the Rev. H. A. Macpherson, was shown, for identification, a Woodchat which had been sent, in the flesh, to a tradesman at Reading: this bird had been shot close to Salisbury.—ARTHUR H. MACPHERSON.

**Black Guillemot in the Isle of Man.**—Referring to the note in last month's 'Zoologist' (p. 331), it may be worth while to mention that the Black Guillemot, *Uria grylle*, has not quite ceased to breed in the Isle of Man. There was at least one colony nesting on the west coast last summer, in a locality regularly frequented by this species. In 1886 the birds were very numerous there.—P. RALFE (6, Woodburn Square, Douglas, Isle of Man).

**Merlin breeding near Brecon.**—As the fact of the nesting of the Merlin in this county has not, I believe, been recorded, perhaps you may think it worth notice that Mr. Edgar Thomas, on the 29th May last, found four fresh eggs which apparently belongs to this bird. He describes the hawk as being rather like a Kestrel, but smaller. He disturbed it from

its eggs when walking across a heathery moor, some twelve hundred feet above the level of the sea, and about ten miles from here. The eggs were placed in a slight hollow between two tufts of heather, and there was little or no nest. The eggs are much like a Kestrel's, but smaller, the markings consist of minute specks, and there are no blotches. One of the eggs, which would well represent the whole for size, measures 1.47 by 1.18 in.—E. A. SWAINSON (Woodlands, Brecon).

**Black Redstart in Merionethshire.**—On April 5th last I shot a Black Redstart, *Ruticilla titys*, on the Traeth Maws, an extensive marsh near Penrhynchendraeth, Merionethshire. In its actions when on the ground it closely resembled a Wheatear. It proved to be an immature male, and its gizzard was filled with small beetles, most of which were still entire.—G. H. CATON HAIGH (Grainsby Hall, Great Grimsby, Lincolnshire).

**The Protection of Sea Birds on the Farne Islands.**—We have been favoured by Mr. Hugh G. Barclay, of Colney Hall, Norwich, with a report of the results achieved by an association of naturalists in an attempt to protect the sea-birds which resort to the Farne Islands during the nesting season. He says:—"Notwithstanding a certain amount of opposition from fishermen residing near the islands, I think the birds were very fairly protected during the past breeding season. I visited the islands on three occasions, and had no reason to be dissatisfied with what I saw. My last visit was on the 21st of July, and I was glad to see large numbers of young birds of all the species which usually resort to the Farnes during the nesting season, thus proving that the means adopted for preserving the eggs had been effectual. The season was a most disastrous one, and large numbers of nestlings were destroyed by the rains and cold weather in the early part of July. This was very apparent on the Inner Farnes, where the number of dead nestlings fully confirmed the reports I had occasionally received from the watchers. My limited acquaintance with the islands previous to this year prevents me from giving any comparative statement as to increase or otherwise in any particular species of bird, but it should be borne in mind that during the breeding season of 1887 hardly a single egg was left on the islands before the 15th of June, when steps were taken to put a stop to further mischief. The following information may be interesting. The watcher on the Inner Farnes reported on the 15th July,—'I am rather doubtful I will not be able to answer your questions with anything like accuracy, but taking my nearest calculation I think there will be about 150 Sandwich Terns hatched off, and as for Arctic and Common Terns, it is impossible for me to give you any idea, for they are so numerous now. About Eider Ducks, we have about sixty-five hatched off. I have got twenty-five Sandwich Terns still sitting, and ten or twelve Eider Ducks not hatched off yet; and also a great many Arctic and Common Terns.' The

watcher on the Outer Farnes, on the same date, reported:—‘The Ducks, on the whole, I think show a very fair average, as I have seen a good many of their young ones.’ Mr. Paynter, who for many years has taken very great interest in the birds during the breeding season, writes:—‘I should say only about sixty Eider Ducks hatched off their broods, instead of a hundred. The Gulls, both Black-backed (the Lesser) and Herring Gulls are quite as numerous as ever; also the Terns, Oystercatchers, and Dotterels, about the same. Puffins and Guillemots, rather more numerous, especially the Bridled Guillemots. . . . If the weather had been warmer, and not so wet, I think there would have been far more young birds than usual. Cormorants were much the same, about fifty nests. As far as I could make out, there were only two pairs of Roseate Terns.’ Many visitors made excursions to the islands during June and July, and, except in two cases, the rules I drew up were strictly adhered to. I received many applications for leave to take eggs, but these, with one exception, I declined to grant. I gave permission to representatives from Her Majesty’s Office of Works to take some young birds from the islands, for the purpose of being turned out in the lake at St. James’s Park. With the exception of four or five young Puffins, they are all doing well, and next season I hope they will be an object of interest to many who frequent the Park, and who are never likely to have an opportunity of seeing such birds in their natural habitat. Some of the local fishermen were very troublesome. On several occasions they landed on the islands and took eggs away. In one instance the robbery was so open and determined, that I felt it impossible and inexpedient to pass it by without taking some steps to enforce our rights. Consequently, after consulting with Mr. Paynter, I commenced an action in the County Court against the most prominent offender, with the result that he (Robson) was fined £1 1s., and had to pay the costs of the action. This decision in our favour by His Honour, Judge Holl, I consider was most satisfactory, as it establishes the right of an owner or lessee to the eggs deposited on his property, and it will probably put a check on future robberies of eggs from the islands.”

**Spotted Crake in Holderness.**—A bird of this species was killed on the 21st September, by flying against a roadside telegraph-wire, during its autumnal migration, between Hornsea and Beverley. The only injury visible was an abrasion of the feathers in front of the head. The Crake is in beautiful plumage, and has the appearance of a bird of the present year.—PETER INCHBALD (Grosvenor Terrace, Hornsea).

**Unrecorded Habits of the Starling.**—Whilst sailing on the Thames just below Erith, on the 3rd June last, I was surprised to see some Starlings flying close to the surface of the water, and picking up pieces of bread floating there. When one had secured a piece, it immediately made

for the bank to eat it. I also noticed the other day a Starling hawking for insects in much the same manner as the Martins flying around it; so that Starlings not only imitate other birds' notes, but also their habits.—  
F. HAYWARD PARROTT (Walton House, Aylesbury).

[It is by no means unusual to see Starlings hawking for flies, in fine weather; but we do not remember to have seen them take anything off the water.—ED.]

A projected Volume on the Birds of Essex.—Will you allow me to state that I have for more than fifteen years past been collecting materials for a work on 'The Birds of Essex,' similar to other County Avifaunas already published. The information collected will be sufficiently complete to warrant publication in the coming year. I have already enough matter to ensure for the county of Essex a high position, ornithologically speaking; but am anxious to render my information still more complete, by appealing to all who take an interest in the subject, to supply me with intelligence of the occurrence within the county of any rare, or otherwise interesting birds, not hitherto recorded. I may add that I especially desire information as to the occurrence in the county of this following:—White's Thrush, Blue-throat, Marsh Warbler, Black-bellied Dipper, Richard's Pipit, Lesser Grey Shrike, Pine Grosbeak, Ortolan Bunting, Lapland Bunting, Squacco Heron, Night Heron, Ruddy Sheldrake, White-eyed Duck, Black Grouse, Crane, Collared Pratincole, Cream-coloured Courser, and Greater Shearwater. I shall also be especially glad of further information regarding the occurrence in Essex of the Dartford Warbler, Firecrest, Black Redstart, White Wagtail, Cirl Bunting, Golden Eagle, Goshawk, Gyr Falcon, and Glossy Ibis.—  
MILLER CHRISTY (Chignal St. James, Chelmsford).

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## SCIENTIFIC SOCIETIES.

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### ENTOMOLOGICAL SOCIETY OF LONDON.

October 3, 1888.—Dr. D. SHARP, F.L.S., President, in the chair.

Mr. F. P. Pascoe exhibited a number of new species of *Longicornia* from Sumatra, Madagascar, and South Africa.

Dr. P. B. Mason exhibited, for Mr. Harris, a specimen of *Chærocampa Nerii*, recently captured at Burton-on-Trent.

Mr. S. Stevens exhibited a specimen of *Vanessa Antiopa*, which he caught in the Isle of Wight in August last. Mr. Stevens asked whether Mr. Poulton or any one else present could inform him why, in British specimens of this species, the border of the wings was almost invariably a pale straw-colour.

Mr. E. B. Poulton exhibited a living larva of *Smerinthus ocellatus* in the last stage, fourteen larvæ of *Boarmia roboraria* and some cocoons of *Rumia cratagata*. The object of the exhibition was to show the influence of special food plants and surroundings on the colour of the larvæ and cocoons.

Mr. M. Jacoby exhibited a varied series of *Titubæa sanguinipennis*, Lac., from Central America. He stated that many of the varieties exhibited had been described as distinct species.

Mr. Billups exhibited specimens of *Bracon brevicornis*, Wesm., bred from larvæ of *Ephestia Kühniella*. He remarked that this rare species had only been recorded as bred on two or three occasions—*viz.*, by the Rev. T. A. Marshall, Mr. W. F. Kirby, Herr Brischke, and Mr. Sydney Webb.

Mr. W. Warren exhibited specimens of *Antithesia ustulana* and *A. fuligana*; also bred series of the following species:—*Eupæcilia Degreyana*, *Stigmonota pallifrontana*, *Cacacia decretana*, and *Gelechia peliella*.

Lord Walsingham exhibited specimens of several species of the genus *Cryptophasa* belonging to the family *Cryptolechidæ* of the Timeina, some of the most remarkable being males and females of *Zitua balteata*, Walker, bred by Mr. Sidney Olliff from pupæ found in January last, at Newcastle, New South Wales, in burrows in branches of a species of Acacia. Lord Walsingham also exhibited a male of *Zelotyphia stacyi*, received from Mr. Olliff.

Mr. F. D. Godman exhibited a larva of a *Cicada*, from Mexico, having a fungoid growth on the head.

Mr. H. J. Elwes exhibited a large number of Butterflies, representing about 180 species, recently collected by himself and Mr. Godman in California and Yellowstone Park. The collection included many species of great interest, amongst others a species described by Mr. W. H. Edwards as *Erebia Hadenii*, but which he considered would prove to be a *Cænonympha*; a very rare species of *Thecla*; and a remarkable series of species of the genus *Colias*.

Mr. H. Goss exhibited, for Mr. W. J. Cross, an extraordinary melanic variety of *Agrotis segetum*, caught by the latter near Ely in July last.

Mr. W. L. Distant read a paper entitled "An enumeration of the *Rhynchota*, received from Baron von Müller, and collected by Mr. Sayer in New Guinea during Mr. Cuthbertson's expedition."

Mr. Poulton read a paper entitled "Notes in 1887 upon Lepidopterous larvæ, including a complete account of the life-history of *Sphinx convolvuli* and *Aglia tau*"; and Mr. White exhibited specimens of preserved larvæ of *S. convolvuli*, *A. tau*, and other species referred to in Mr. Poulton's paper.—  
H. Goss, *Hon. Secretary*.

## NOTICES OF NEW BOOKS.

*A History of the Birds of New Zealand.* By Sir WALTER L. BULLER, K.C.M.G., Sc.D., F.R.S. Parts I—IX. Imperial 4to. Published for Subscribers, by the Author, at 8, Victoria Chambers, Victoria Street, Westminster. 1887—88.

IN July of last year Sir Walter Buller commenced the publication, in parts, of a new edition of his 'Birds of New Zealand,' the first edition of which, dated 1873, has long been out of print and scarce. Nine parts out of thirteen of the new issue have already appeared, and testify on every page to the industry and enterprise of the author. While he has adhered to the general method and style of the first edition, many alterations and additions have been made, whereby the work may now be said to represent very fairly, so far as New Zealand is concerned, the great advance which has been made in ornithological science during the interval which has elapsed since its first publication. The book itself is on a larger scale, being imperial instead of royal quarto, and the plates, inimitably drawn by Mr. Keulemans, instead of being hand-coloured lithographs, have been produced by the more costly, but more exact, process of printing in colours.

Although we must confess, that for our part we prefer hand-coloured plates for their greater softness and better perspective, it must be admitted that by chromo-lithography, the hardness of outline (especially where two bright colours come into juxtaposition) is compensated for by the greater uniformity which is secured throughout the whole edition, a result which is never obtained where hand-colouring is employed. For this reason, perhaps, most people will prefer the new plates to the old ones, and certainly many of them are beautiful examples of the chromo-lithographer's art. Each part contains facsimiles of four coloured drawings by Mr. Keulemans, under whose immediate direction all the colour-stones have been prepared, and the birds are represented as they appear in life, with accessories drawn from the native flora of the country. More than this can scarcely be desired.

That the time has fully arrived for the publication of a complete history of New Zealand birds as can be now

collected will be generally admitted ; for we learn with regret, that some of the native species are already dying out, while others are being gradually driven further and further from observation by the steady advance of colonization, with all the attendant evils which threaten the extinction of a native fauna and flora. It appears to be the fact that in parts of New Zealand, one may now live for weeks and months without seeing a single example of its indigenous birds, all of which, in the more settled districts, have been supplanted by the aliens that have been imported ;\* while further inland these last are daily extending their range at the cost of the endemic forms.

Professor Newton, in his Address to the Biological Section of the British Association at Manchester in 1887, put the case very well when he stated that these indigenous species are, with scarcely an exception, peculiar to the country, and from every scientific point of view are of the most instructive character. "They supply (as he says) a link with the past, that once lost can never be recovered ; and it is, therefore, incumbent upon us to know all we can about them before they vanish. The forms that we are allowing to be killed off, being almost without exception ancient forms, are just those that will teach us more of the way in which life has spread over the globe than any other recent forms ; and for the sake of posterity, as well as to escape its reproach, we ought to learn all we can about them before they go hence and are no more seen."

This excellent advice has not been lost upon the author of the present work, who has not only given an admirable description of every bird peculiar to New Zealand, but in an exhaustive Introduction has given a general view of this singular avifauna, both past and present, with clear diagnoses of the genera, accompanied by well-drawn woodcuts of the most important structural characters.

The first edition of this work (1873) contained descriptions of 147 species, and in his 'Manual of the Birds of New Zealand,' prepared at the request of the Colonial Government in 1882, 29 more species were added to the list. The present edition does not profess to add many more to the number ; but the

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\* The North-Island Thrush, *Turnagra hectori*, is said to be "rapidly dying out," while our English Song Thrush is "fast becoming established" (Introduction, p. xliii.).

classification and nomenclature have been revised, and a far more complete history has been given of each species than was possible before, seeing that the author has for a further period of fourteen years, enjoyed favourable opportunities for becoming better acquainted with the subject.

In regard to classification, he has departed considerably from the system followed in his first edition, but this he considered inevitable in order to keep pace with the progress of ornithological science.

The feature that first strikes the ornithologist in New Zealand, is the comparatively large number of apterous birds, or species in which the anterior limbs are so feebly developed as to be absolutely useless for purposes of flight. Conspicuous amongst these are the four species of *Apteryx*, the various kinds of *Ocydromus*, and the remarkable Ocydromine form, *Cabalus*, from the Chatham Islands; then the huge brevipinnate Rail, *Notornis*; a small flightless Duck, *Nesonetta aucklandica*, confined to the Auckland Islands; and finally the well-known Ground Parrot, *Stringops habroptilus*, in which the sternum is almost devoid of a keel. "The explanation in all these cases," says Sir Walter Buller, "is sufficiently obvious. In a country like New Zealand, where there have been no indigenous mammalia, and consequently (?) few birds of prey, species that habitually seek their food on the ground have no inducement to take wing, and from long disuse, continued perhaps through countless generations, lose the carinate character of the sternum, and with it the faculty of flight; for without the keel on the breastbone to give attachment to the great pectoral muscles, the wings, however ample they may be in their outward development, are practically useless for purposes of flight."

Another remarkable feature in connection with the carinate birds of New Zealand, is the number of endemic genera and species. Out of a total of 181 species no less than 93 are strictly endemic; and even among the most widely distributed orders, there are genera restricted in their range to the New Zealand rivers or coasts, or to the outlying islands. Thus among the Limicolæ there are two strictly peculiar genera, *Thinornis* and *Anarhynchus*, and among the Anseres two more, namely *Hymenolæmus* and *Nesonetta*.

The absence of Woodpeckers might have been expected, as

these birds do not extend beyond Celebes, never having been met with in the Moluccas, or in Polynesia, New Guinea, or Australia; but it is difficult to account for the non-appearance of Swifts and Swallows, except as occasional visitants from Australia. Parrots, on the other hand, are well represented. Besides the very typical *Stringops habroptilus*, there are seven species belonging to the genera *Platycercus* and *Nestor*, all of which are peculiar to New Zealand and her satellites. On the subject of Cuckoos, Sir Walter Buller has some interesting observations:—

“We have,” he says, “in New Zealand two species of Cuckoo belonging to different genera, both migratory and both parasitic. One of these, the Long-tailed Cuckoo, which is a native of the Society Islands, visits us in the summer and breeds here, entrusting the task of rearing its young to a little warbler not larger than an English Wren. It arrives year after year during the second week of October, and leaves again before the end of February—this migratory habit, persevered in through long generations, having become a necessary part of its natural existence. In the whole range of ornithological biography there is perhaps nothing more marvellous than this punctual annual migration across some 1500 miles of ocean. The other species, known as the Shining Cuckoo, visits us from Australia, performing its journey of 1000 miles with the same wonderful precision as to dates of arrival and departure, my register showing a maximum variation of only five days during a continuous period of ten years. Curiously enough, this wild little caterpillar-hunter entrusts the rearing of its young to the same bird that performs that friendly office for its predatory congener four times its size.” (Introduction, p. xli.)

Further on (p. lv) he remarks:—

“Seeing that the Shining Cuckoo (*Chrysococcyx lucidus*) is met with in New Guinea, and probably further west, that it is likewise found in tropical Australia, and that it comes to us from the north, or north-west,—for it always makes its appearance first at the extreme north,—it is easy to understand that the migratory impulse has been inherited from time immemorial, and the more so as the closely-allied species (*C. plagosus*) is also a summer visitant to the temperate and southern portions of Australia. But it is very difficult to imagine why the Long-tailed Cuckoo (*Eudynamis taitensis*), which hibernates in the warm islands of the Pacific, ranging over more than 40° of longitude, should make its annual pilgrimage across 1500 miles of ocean to New Zealand.”

Here, for the present at least, we must take leave of our author, although there is very much more in his Introduction

that we should like to quote, particularly his remarks on the geographical relations of the New Zealand avifauna. We can only add that whosoever desires to have a clear exposition of the character and extent of this remarkable Ornithology, should read carefully the pages xiii to lviii of the Introduction, after which the detailed descriptions and life-history of the various species as they are successively dealt with, leave practically nothing to be desired.

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*Curious Creatures : their Ways and Habits.* BY MARIANNE BELL.  
Post 8vo, pp. 266. London. 1888.

IN this little volume we have a collection of essays which were originally contributed to a magazine, and many of them possess considerable literary merit. But while there is much truth and pleasant reading in some of the chapters, there is here and there a leaven of heterodox teaching, against which the unwary reader should be placed on his guard. For example, one is scarcely prepared at the present day to read that "among the most remarkable of all the insects of the sea are the heavy armour-covered crab and lobster."

To such a sentence also as the following exception must be taken:—"The whole of the forelimb of birds is so constructed as to form the wing, which is useless except for flying." The author has overlooked the fact that in the case of Penguins, which are incapable of flight, the wings are extremely useful to them in their progress under water; while many birds, like the Common Guillemot and Razorbill, employ their wings in swimming as well as in flying.

A belief in dragons is implied in the statement that "Bats may be said to resemble dragons in being possessed of an equivalent to wings and forelimbs provided with claws, though they greatly differ in regard to their size and power of destruction."

The chapter on Frogs and Toads contains a few inaccuracies; for instance, the following:—"Thus we see the Tadpole is a fish, swimming with a fish's tail, gulping in water at his mouth and passing it out at the holes in his throat after it has been poured over his fish-gills." The many elementary works on Biology, in which the anatomy of the Frog is minutely described, ought to have saved the writer from this misapprehension.

Occasionally the want of acquaintance with some of the species referred to has led to misleading statements. For example, we are told that "the beautiful Otter in the museum of the Zoological Gardens (*sic*) is from Ireland, and is by some considered as a distinct species. It is chiefly found on the coast of Antrim," &c. There is, of course, only one species of Otter in the British Islands.

But we need not multiply instances of this kind, nor call particular attention to old fables revived. The reader who is sufficiently well versed in natural-history lore will be able to steer clear of such shoals and quicksands, and will find in many of the chapters much that is entertaining. The value of many statements which are undoubtedly accurate would have been enhanced had the species been named and the authority quoted. For example, it might have been well to give the name (*Birgus latro*) of the Great Cocoa-nut-eating Crab of the Philippines and elsewhere, which is noticed on p. 41, and refer the reader to the excellent account which is given of it in Forbes's 'Naturalist's Wanderings in the Eastern Archipelago.' One sees at a glance that the writer has a taste for Zoology, and has compiled from a good many authors; but for want of experience, has not always been able to separate the wheat from the chaff. We trust, however, that this criticism will not deter our readers from looking into the book, nor prevent its author from continuing a course of studies for which she has such aptitude, and which will soon overcome such shortcomings as we have briefly noticed.

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*British Birds: their Nests and Eggs.* By W. HARCOURT BATH.  
Small 8vo, pp. 112. London: Swan Sonnenschein & Co. 1888.

UNLESS for the purpose of forming one volume of a series of so-called "Young Collectors' Handbooks," without which the series would be considered incomplete, we cannot see that any need for such a volume as this exists. There are already several works on British Birds and their Eggs, in which the latest and best information may be found, and which, moreover, are well-illustrated. Cheapness is no recommendation unless the information supplied is accurate, however briefly it may be expressed, and this condition is not fulfilled in the present treatise. The opening sentence of the "Introduction" shows

that the writer's acquaintance with the literature of the subject must be very slight, if he believes that modern ornithologists are agreed to group the 12,000 species of birds which have been described and named, in so few as five Orders. For such a one surely the views of Huxley, Garrod, Newton, Sundevall, and Selater have been propounded in vain, and even the latest edition of 'Yarrell' (now made so accessible in price) can scarcely have been consulted.

With such an admirable series of preparations in the Natural History Museum, expressly designed to show the structure of a bird's wing, and in view of recently-published papers in 'The Ibis' and the 'Proceedings' of the Zoological Society, we should not have expected so many mistakes as appear in the first two pages of this "Handbook." Nor are the writer's views on classification either clear or orthodox. To confuse "classes" with "families," and to unite in one Order the *Passeres* and *Picariæ*, in another the *Columbæ* and *Gallinæ*, is to show a complete disregard for the teaching of modern systematists.

On taking up this little book, we were disposed to regard it favourably, as a healthy sign of the times, and likely to encourage a taste for Ornithology, while imparting accurate, if elementary, knowledge; but when (in addition to the above-mentioned failings) we read such items of intelligence as that "White's Thrush is supposed by some to be a mere variety of the Song Thrush"; that the eggs of the Goshawk are "generally a little more *ruddy* in appearance" than those of the Common Buzzard; that "the Capercaillie is not an indigenous British bird, having been introduced into this country by artificial means for purposes of sport"; that "the Red-legged Partridge was formerly considered a very rare bird in this country, but has of late years made its way over here from adjacent parts of the Continent, and has on several occasions been known to breed here"; and that "the Virginian Colin, though an occasional visitor to this country, has never been known to breed here";\* we close the book in despair for "the Young Collector."

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\* It may seem paradoxical, though it would be nearer the truth to assert that "this bird, although *not* an occasional visitor, has *often* been known to breed here"! Great numbers have been imported at various times from America, and turned out with more or less success in many parts of England.





L. Hutchinson lith.

West Newman & Co. imp

Whiskered Bat.  
*Vespertilio mystacinus.*

# THE ZOOLOGIST.

THIRD SERIES.

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THE WHISKERED BAT, *VESPERTILIO MYSTACINUS*.

BY THE EDITOR.

PLATE III.

IN 'The Zoologist' for May last we gave an account of this bat, perhaps the fullest account of it as a British species that has yet appeared. It had the good effect of eliciting further particulars of its occurrence in a locality not previously noted, and in fresh localities in a county where it had already been observed. Thus Mr. T. A. Coward (p. 222) reported it from Cheshire, and Mr. E. W. H. Blagg (p. 260) from Staffordshire.

When Bell wrote his account of this species (*Brit. Quadrupeds*, 1837, 2nd ed. 1874), it was evidently considered to be a rare bat in the British Islands; but since greater attention has been bestowed upon this order of mammals, its occurrence in about fifteen English counties, chiefly in the South, as well as in Wales, and in Ireland (once), shows that it is much more widely distributed than was at one time supposed.

Confirmation of its alleged occurrence in Scotland (p. 165) would be desirable, and further search might be made for it in Ireland, where, so far as we know at present, it has been met with only in the County Clare.

We are indebted to Mr. E. Hart, of Christchurch, Hants, for a freshly-caught specimen procured in that neighbourhood in April last, from which Mr. G. E. Lodge made a careful drawing, here capitally reproduced by Mr. Llewellyn Hutchinson.

NOTES ON THE OCCURRENCE OF PALLAS'S  
SAND GROUSE IN NORFOLK.BY T. SOUTHWELL, F.Z.S.,  
Member of the British Ornithologists' Union.

So much has been written of late on *Syrrhaptes paradoxus*, that I need not repeat what must be well known to readers of 'The Zoologist,' but will at once enter upon as complete a history of the recent "invasion" of this species in the county of Norfolk as personal observation, and the ample material which numerous correspondents in all parts of the county have kindly placed at my disposal, will enable me to do. At the outset I can but express my deep regret that the death of the able historian of the invasion of 1863 has caused the task which he would naturally have executed to fall on me; but I may mention that I have not been altogether without the late Mr. Stevenson's help, and that one of the last ornithological notes he made was on the moulting of this species. Happily the present record is not so entirely in the form of a list of killed and wounded as on the former occasion; but this fact greatly increases the difficulty of my task, for in a record of birds seen,—more especially with regard to a species so restless and so erratic in its movements as the present,—it is difficult to avoid chronicling the same flock more than once; this I have tried to do, but I fear, as explained further on, not always successfully. There is one feature of the present visitation which I feel satisfaction in recording: upon the attention of the great landowners and occupiers, and the renters of shootings, being called to the fact that upon their arrival many birds were killed, strict orders were very generally given that they should not be molested; and, although perhaps too late to enable them to settle to breed, the result has been that in some parts of the county large flocks long continued to frequent the same localities, and even now have not deserted the spots which they selected.

An interesting fact, hitherto I believe unrecorded, and quite unknown to most ornithologists, has come to light in the course of the investigation of the latest irruption. On or about the 21st May, 1876, as Mr. E. J. Boulton, now of Potter Heigham, informs me, he saw fifteen or twenty Sand Grouse, which rose from the south sand-hills at Winterton; they were very wild,

and went away at a great pace to the northward, and although Mr. Boulton spent two days in searching the neighbourhood with a view to obtaining specimens, he did not see them again. Mr. Boulton has no difficulty in fixing the date, as he was at school in 1875, and he distinctly remembers it occurred in the first summer that he was at home. The Rev. Maurice C. H. Bird, who first informed me of this interesting event, writes as follows:—"I am quite convinced that Mr. E. J. Boulton was right as to the identification of the species. I am sure he knows at sight any bird that would be likely to appear from among the regular migrants, and he was well acquainted with the appearance of Sand Grouse from specimens in Mr. Hume's collection, killed at Winterton in 1863."

It will be remembered that in June, 1876, a Pallas's Sand Grouse was killed near Modena (Ibis, 1881, p. 206), and in October of the same year two others were obtained in Ireland (Zool. 1877, p. 24); but Mr. Boulton tells me he was not aware of these instances, and accordingly his evidence, as that of an independent witness, is remarkably supported thereby.

The present year has witnessed the most remarkable influx of these birds hitherto recorded, and perhaps it might have been well to have deferred these notes till I could make them more complete; but as the matter is of so much interest, and the county of Norfolk appears to have proved so highly attractive to the interesting strangers, I have preferred, as was done on a previous occasion, to make a first report, which I close on the 31st October, and hope early next year, should you again place space at my disposal for that purpose, once more to return to the subject.

FIRST ARRIVAL IN NORFOLK.—On the 13th of May the first Norfolk birds were seen by Mr. E. R. Boulton, who observed a flock of fifteen feeding in a barley-field at Winterton, and they subsequently flew over his head towards the sand-hills on the coast. On the 14th a flock was seen at Docking, and two were killed there on the 16th, the first, I believe, which fell victims in this county. On the 22nd they were seen at Yarmouth, on the 24th close to Norwich, and from that time the records become so fast and furious that it is impossible to follow them up in detail.

CENSUS OF NUMBERS SEEN, AND DISTRIBUTION IN THE COUNTY.—It is most difficult to form anything like an accurate estimate

of the number of these birds which have visited Norfolk during the past summer. My detailed records of those seen and killed show that the number which arrived between the 13th May and possibly the middle of June must have been very great. On their arrival they consorted in large flocks, but they seem soon after to have broken up into small parties and even separate pairs were frequently seen, indicating an inclination to nest; but they were at that time very much persecuted, which doubtless assisted in their dispersal; the protection which followed probably came too late, as it would seem the desire of reproduction soon passed away, resulting in their again flocking together. I have met with nothing to lead me to suppose that the great immigration was at any time followed by a second "rush"; the fluctuating numbers afterwards observed at various spots were, I think, due entirely to local movements. After the 18th of June the records of birds seen or killed fall off rapidly; in July a large number were stationary in the county, but they do not appear to have been so generally distributed as in the previous month; in August the records which I have reason to believe are not duplicates still further decreased, and very few were killed either in this month or September,—a fact probably due, to a great extent, to the forbearance of those on whose estates they had concentrated their forces, for it is certain that many localities were at this time deserted, where earlier in the summer large numbers were seen. During all this time I believe there was a constant movement of detached parties passing from flock to flock, or disassociating themselves temporarily from the main bodies. After the middle of September the birds seem again to have become restless, and a movement set in towards the coast; flocks were seen at their favourite localities in greatly augmented numbers, and many reappeared in spots which had been previously deserted; this increase was particularly observable in the neighbourhood of Holkham, Wells, and Morston. Mr. Cordeaux tells me a similar movement occurred on the Lincolnshire and Yorkshire coast. This movement would seem to indicate symptoms of re-migration, but I have had no evidence of any actually leaving our shores, and my last reports are that since the 15th October the large flocks seem to be again breaking up into small parties, and that they have become exceedingly shy.

It will thus be seen how impossible it is, with such restless birds, to form anything like an accurate estimate as to their numbers; doubtless the same detached parties have again and again been seen and reported by different observers, and the main bodies have varied considerably in numbers at different periods. I think therefore that it would be well to mention in detail only what may be regarded as the main packs, and this I will do, beginning on the western side of the county at King's Lynn, and following the coast-line round to Great Yarmouth, returning along the inland boundary of the county westward by Suffolk and Cambridgeshire to the starting-point at Lynn, referring to the flocks frequenting the more central localities as I proceed. I adopt this method rather than a chronological arrangement, as it appears to me to convey a better idea of their dispersal over the county than would a mere enumeration of occurrences and dates.

The country round Castle Acre and Swaffham seems to have been the head-quarters of a considerable flock. Mr. Leeds noticed them at Castle Acre on June 15th, and many times subsequently; at Swaffham sixty were seen so late as 1st October, and several other flocks of like numbers are said to frequent the same neighbourhood still; at Lexham eleven were seen on the 31st May, and Mr. Harrison also observed small flocks on three different occasions in the same neighbourhood. Twenty-eight from time to time frequented Mr. Calthrop's farm at Weasenham, and others were seen at Gayton Thorpe. Possibly all these belonged to the Castle Acre flock. A flock, estimated at seventy, was seen at Hillington on the 21st September. On the 9th July, Mr. E. J. Silcock tells me he saw between forty and fifty at Snettisham; and about the middle of June, writes the Rev. J. G. Tuck, twenty-three were seen near the railway-station at Hunstanton and others at Holme-next-the-Sea. In the neighbourhood of Shernbourne they appeared early; a male bird was taken alive there on 26th May, and is still thriving in the possession of Mr. Sandford Parsons, of Shernbourne Hall, by whom a female bird was received on September 24th, which lived till October 10th. At Docketing they were observed as early as the 14th May; and on the 20th June twenty were seen at Burnham. Passing on to Wells and its neighbourhood, where large numbers have been seen, Mr. Napier informs me that the salt-marshes there

form a very favourite feeding-ground; forty were seen on the 16th June, and till the present time a considerable number still frequent this favourite locality; others have been seen at Warham. Perhaps the strongest party of all is that which took up its quarters at Morston, about midway between Stiffkey and Cley, the great attraction being doubtless the extent of salt-marsh bordered by sand-hills, between which and the large open fields on the higher ground parallel with the coast they spend their time. Here a large flock on Mr. Wood's farm has remained in the same locality all the summer, and the bulk of them are still there. In the month of July 180 birds are said to have been counted in a field at Morston by Mr. A. Bishop, and in the third week in October 160 were seen about the same place. On the 12th September Mr. Wood was kind enough to afford Dr. and Mr. F. D. Power, Mr. R. J. Howard of Blackburn, Mr. J. H. Gurney, jun., and myself the opportunity of seeing at least seventy-five of these birds on his farm. I have many other records from this neighbourhood, but probably they may all be referred to this flock or sections of the same. On the 13th June thirteen were seen at Hempstead, near Holt, and on the 22nd of the same month seventeen at the same place. On August 11th two were seen at sea off Cromer. In June twenty-five were seen at Southrepps by Mr. Ling. On the 27th May I saw a small flock of about seven at Mundesley, and on the 29th of the same month Messrs. C. H. and H. G. Master saw a flock, estimated at 200, a few miles farther on the coast, at Bacton; on the following day the same gentlemen saw from eighty to a hundred of these birds (probably part of the same flock) "come from off the land at Bacton, and go out to sea, flying almost due east." At Horsey, where they seem to have made themselves very much at home, four were killed out of a flock of twenty on the 1st June, and others at Waxham. At Somerton and Winterton a considerable number were seen; at the former place, on June 1st thirty-one flew over Mr. William Parry, offering a good shot, but although he had a gun in his hand he refrained from killing any, and on the 27th October, after a long absence, another flock of sixteen was seen in the same place; at Winterton Mr. E. R. Boulton exercised equal forbearance when, on the 13th May (the earliest record I have of their appearance in Norfolk), fifteen of these birds flew within range on their way to the sand-hills or the beach. The birds

observed at the two last-named places, as also fourteen, twelve, and twenty subsequently seen there, probably belonged to the same flock. About the 1st June they made their first appearance a little to the north of Great Yarmouth, and numerous parties of fifteen to twenty seen there during the greater part of the month (and subsequently) probably were more or less identical.

On the 24th May twenty-five were seen by Mr. Eldridge flying over Moushold Heath, near Norwich; on the 6th June sixteen were seen at Easton, and on the 25th ten at Hetherset, both also near Norwich. We now pass over a considerable tract of country in a westerly direction, till we reach Sturston, near Merton, where on the 14th September one of Lord Walsingham's keepers saw "upwards of 100 flying over a field" in a S.E. direction, at an elevation of from fifty to sixty yards, and on the next day eight others were observed, by the same person, also flying S.E. On the 18th June a flock of nineteen, which had been observed for several days at Wilton by Messrs. F. and E. Newcome, were shown to Prof. and Sir Edward Newton. These birds soon after disappeared, possibly they joined the flocks at Didlington. In September a small flock re-appeared at Wilton, and were again shown by Messrs. Newcome to Prof. Newton on the 8th October.

A flock of from 70 to 100 was continually seen at Didlington by one of Mr. Amherst's keepers in June or July. The tract of open country about Thetford, Elvedon (Suffolk), Brandon, and Wangford (Suffolk), is still, I believe, frequented by a considerable number of these birds; twenty were seen at Shadwell in June, and in the same month "another lot" at Wangford, as well as forty "near Thetford," all of which may be identical. Others have been met with at Outwell, near Wisbech; six were killed at Downham Market on 23rd May, and others at East Winch, near Lynn.

It will thus be seen that a very considerable number of these birds has been pretty generally distributed over the county, more particularly along the coast-line—probably large flocks having settled at, say, Snettisham, Wells, Morston, Bacton, Winterton, Yarmouth, and in the neighbourhoods of Thetford and Castle Acre, from which centres outlying parties have wandered in all directions. Eliminating from my list, as far as possible, all those which appear to have formed sections of those large flocks,

or which I have any suspicion of having been recorded more than once, I think we may venture to claim the very large total of between eleven and twelve hundred of these beautiful birds as having been seen in this county alone, exclusive of those killed, which will be made the subject of a separate estimate.

MORTALITY IN NORFOLK.—In endeavouring to arrive at an accurate estimate of the number of Sand Grouse killed in this county, a like difficulty arises as in the previous section, and from the same causes. It has frequently happened that the same birds have been recorded by more than one observer, and in some cases the dates and even the localities have been inexact, thus increasing the confusion. I have endeavoured to avoid these repetitions, and although I may not have been entirely successful, I think I have erred on the side of prudence; it is also quite certain that many birds have been killed of which I have no record. I think therefore in the following estimate I have rather under- than over-stated the number killed in each month. I estimate that there were 10 killed in May; 70 in June; 27 in July; 17 in August; 6 in September; 56 in October; or a total of 186 to 31st of October.

In many instances I was unable to ascertain the sex of the birds killed; but, so far as I am able to form an opinion, the numbers of each sex appear about equal, and nothing that has come under my observation leads me to suppose that they are either polygamous, or that the sexes during the months named are to be found in separate flocks.

HABITS AS OBSERVED IN NORFOLK. — Of the general habits I can say but little from personal observation, but Mr. Wood, of Morston, who has had a large flock under his close observation for some months, tells me that they frequent the same fields with great regularity; their favourite feeding-place being a large clover layer, from which, if disturbed, they fly across to some adjacent turnip-fields, choosing the bare patches for their feeding-ground; here they spread over a circle of some thirty or forty yards, separating, and diligently searching the ground until they appear to have exhausted the food in that particular locality, when they all rise together and repair to a fresh spot, which they exhaust in like manner. At stated times they depart for the salt marshes adjacent. On the Wells marshes, Mr. Napier tells me, they also keep together in flocks, which number

from ten to forty; they were first seen there on 16th June, and have remained close to the town of Wells up to the present time, spending the day on the uplands, and visiting the salt marshes in the afternoon, their favourite resort being a large flat covered with *Salicornia*, amongst which they feed. Their flight has been often described, but it is worthy of note, that although, as a rule, they go away at a great pace, and to a considerable distance, if not too often disturbed, they not unfrequently perform a large circuit, and return within sight of the spot from which they rose; they frequent very open localities, and are impatient of hedges, mounting to a great height to pass any suspicious obstacle. A marked feature has been their decidedly gregarious habits, also their exclusiveness, no single instance having come to my knowledge of their having been seen associated with other species of birds.

Mr. Sandford Parsons tells me that the bird in his possession, although it eats freely under observation, has never been *seen* to drink,\* and even now remains excessively shy; it decidedly prefers small seeds, such as dari, millet, and canary seed, but takes wheat and barley for a change. Mr. A. Napier tells me a curious circumstance in connection with so shy a bird; he was shooting on the Holkham sand-hills with Lord Leicester and party, on the 13th October, when they met with a flock of about thirty-five. "A single bird," says Mr. Napier, "which I came upon, I felt convinced must have had either a nest or young. When first I saw it, it fluttered along in front of me just like a partridge with young. It was so tame that I called Lord Leicester and the others up to see it, and it did not fly up until we had approached to within three or four yards of it. At first I thought it must have been a wounded bird, but I do not think so now, for it flew away very strongly, calling out most lustily. Its action reminded me very much of the Turtle Dove." Mr. Sandford Parsons also tells me, that on August 5th, the gardener at Shernbourne Hall came to his father to say, that a Sand Grouse was running about on the lawn; Mr. Parsons

\* It is worthy of note that two of these birds, belonging to Mr. T. J. Mann, which were for five weeks under the care of Mr. Mahon, of Docking, showed the same indifference to water; and the keeper of Mr. Gurney's bird, at Northrepps, tells me that he has never seen it drink: this appears quite contrary to their recorded habits in their native haunts.

went out to catch it, thinking his son's pinioned bird had escaped; on approaching the bird it "ran and skulked in a little ditch," and did not rise till just as he was about to put his hand on it when it flew away quite strong; he thinks it was a hen bird. Another, now in Mr. Gurney's aviary at Northrepps, was found, on the 31st October, floundering in a wet ditch at Suffield, and taken by hand. Such behaviour is difficult to account for.

FOOD.—The food of the Sand Grouse in this county has proved to consist almost entirely of the small seeds of plants which are usually regarded as "weeds." Very few instances have come to my knowledge out of the very large number which I have examined, or which have been reported to me, in which grain formed any part of their food; one was killed at Thornham on 18th September, which contained thirty grains of wheat; a second killed about the 5th October, near West Winch, contained both wheat and rye; a third killed near Swaffham, on the 1st October, contained the large number of 381 grains of wheat; and a fourth "telegraphed" at Roughton Heath, on 13th October, contained some grains of wheat in the husks. These, it will be observed, were all killed after the fields had been cleared at the close of our very protracted harvest. I have also heard of a few others which had to a limited extent been feeding on corn. Early in the season one sample of food produced 146 plants, eighty of which were *Polygonum aviculare*, a common and very troublesome weed known as knot-grass; forty-nine plants were *Ornithopus perpusillus*, the common birds-foot; and seventeen, a species of trifolium, not yet determinable. A later sample produced plants of *Trifolium procumbens* and saintfoin; a third, later still, consisted almost entirely of the seeds of the common chickweed, and a grass, very many plants of each. A very favourite food appears to be the seeds of a species of *Silene* and *Suaeda maritima*, intermixed with which I have found portions of the succulent leaves and shoots of the latter plant. *Convolvulus soldinella* and *Honckenya peploides* grow in abundance near some of their favourite feeding-places; but I have searched in vain for their large and apparently tempting seeds, the birds evidently preferring the minute seeds already enumerated. I am greatly indebted to Mr. W. Carruthers and Mr. Herbert Geldart, for assistance in determining the species of the seeds which formed the food of the Sand Grouse in this county.

Professor Newton has favoured me with the following list of plants determined for him by Mr. Robert Service, grown from seeds found in the crops of two birds killed in distant localities in Norfolk, about June 22nd and 25th; one produced, chiefly *Polygonum aviculare*, with a few white clover, and a species of *Agrostis*; and the other *Geranium molle*, with a few *Urtica dioica*, *Rumex acetosa*, *Stellaria media*, and a species of small grass.

PLUMAGE AND MOULTING.—Mr. Stevenson has given a very accurate description of the plumage as noted by him in birds obtained in 1863 ('Birds of Norfolk,' pp. 397-8), but few of those he saw were in the lovely new plumage, which most of those killed here after the middle of September had assumed; nor had he the opportunity of watching the process of moulting so fully as occurred during the present visitation. I may be excused, therefore, for saying a few words on each subject. On their first arrival here, their plumage, though clean, appeared worn; but by the middle of June, they began to present the dirty appearance referred to by Prof. Newton ('Ibis, 1864, p. 200.) On the 16th June two female specimens were much soiled about the head and breast, and from that time both sexes seemed to become more and more dirty and drabbled, until the new feathers made their appearance on the head and neck. The first signs of moulting noticed by me appeared in a male killed on 16th June; the two long median rectrices were missing, apparently from having been shed; the whole plumage was soiled and worn, and the feathers were loose, though no sign of their successors was visible. Another, a male, killed on the same date, was the first in which I detected new feathers; a few scapulars, and some of the secondary coverts in each wing had been replaced, but all the rest were old. Two other females killed at the same time were in a very shabby condition, and on skinning them the old feathers were found to be very loosely attached, and many new ones, still enveloped in the sheath, were making their appearance. On the 2nd July, a male had a few new feathers on the back and among the wing coverts, and between this date and the 14th July, several others occurred, presenting much the same appearance as that last described; but on the last-named date, a male, very dirty, and in plumage so worn, that the shafts of the long tail-feathers were almost bare,

and the primaries nearly as bad, still showed no new feathers ; and even on 21st July another male was in much the same condition. A male and a female killed on 5th August had new secondaries, some of the smaller primaries, and many new body feathers ; and a male and female killed on the 6th were both in full moult, and the new flight-feathers and coverts very conspicuous. On the 8th a male had so far assumed the new plumage, that only the first of the old quills in each wing remained, all the rest, and most of the body feathers, as well as the middle feathers of the tail were new, the latter reached  $1\frac{1}{2}$  in. beyond the others. On the 17th a male had retrieved all the wing-feathers, except the first primaries. The whole body plumage, which bore a most lovely bloom, was new except about the vent, only one middle feather in the tail extended beyond the others (the middle rectrices, although they appeared to be almost the first feathers shed, owing, probably, to their great length, were very late in attaining their full growth) ; and the tarsi and toes still retained the old feathers, but much worn and mixed with new feathers still in their sheaths. A female killed the same day presented much the same appearance, and still retained the first primary in each wing. Two males and a female killed on 22nd August had acquired new plumage, still with the exception of the first quill in each wing, and in one of the males, the middle feathers of the tail had not yet appeared. The next bird I saw in the flesh was on the 18th September ; it was a female, and the moult was complete ; the whole plumage was most beautiful, the colours being exceedingly delicate, and the contrasts lovely. Below the gular ring the throat and chest were an ash-grey, with a shade of lavender ; the middle tail-feathers measured  $6\frac{3}{4}$  in., and the wing in which the second quill was still the longest, measured  $8\frac{1}{4}$  in. from the carpal joint. This specimen is now before me, and has lost much of its delicacy and bloom. A male killed on 4th October was in very fine plumage, the delicate grey of the ear-coverts contrasting finely with the orange-buff of the head and throat, the iris dark brown, and the bare skin round the eye pale lavender ; the chest sooty-grey, with a shade of lavender, and the pectoral band most beautifully pencilled, the abdominal band almost black, the dove colour of the outer web of the primaries, and the rich chestnut bar on the coverts were most beautiful in their

contrast, the whole plumage was suffused with an indescribably delicate bloom, which I fear is very evanescent. Mr. Pashley, of Cley, mentions this beautiful bluish grey bloom on every part of the plumage of his late-killed birds.

It thus appears that the moulting commenced about 16th June, and probably by 18th September most of the birds had entirely assumed their new plumage. The process seems to have been much as follows:—first a few new feathers appeared among the scapulars and the wing coverts, also scattered over the upper surface of the body; then the secondaries, followed by the tail, and the remaining quill-feathers, next the vent and tarsi, and last of all the first primary in each wing. The length of the two middle feathers of the tail, measured from their insertion, varied very much, the longest I measured was  $8\frac{1}{8}$  in.; but one, a lovely male, received by Mr. Lowne on the 4th June, had these feathers  $8\frac{1}{2}$  in. in length.

Mr. Sandford Parsons, of Shernbourne Hall, who has had great experience in the rearing of domestic pigeons, watched the moult of the male bird which has been in his possession since the 26th May; and confirms my observations, based on the large series which I have had the opportunity of examining, as to the order of moulting, and particularly with regard to the flight feathers, of which he says, the tenth pair were shed first, the others following in gradual succession, always in pairs, and last of all the first primaries. At no period was the moult sufficiently severe to impede the flight.

CALL-NOTE.—The note of the Sand Grouse when on the wing is so peculiar, that it could not fail to attract attention. The first time I met with this bird in Norfolk, was when walking along the cliffs at Mundesley, which are very lofty at that spot, my attention was attracted by their strange note before the birds came in sight over the brow of the cliff, and went away inland still calling. At Morston we paid particular attention to the note with a view to reducing it to writing, and we had an excellent opportunity of hearing it on more than one occasion. It was distinctly audible at a distance which Mr. Howard and I estimated to be 400 yards, and we all agreed that it closely resembled the breeding-note of the Snipe, “Chuka, chuka;” but it appeared to have a more monosyllabic (if I may be allowed the expression) sound, and was uttered with a sort of whistling

intonation which is almost impossible to describe.\* I am afraid I have not been more successful in conveying an idea of this very peculiar call than any of the ten renderings from various sources I have now before me; but I think those who have been accustomed to hear the note of the Snipe before referred to, will be able to imagine that of the Sand Grouse. Whether or not this species utters any sexual cry, or alarm-note, I have had no opportunities of observation, but would refer the reader to Mr. Macpherson's observations on the subject, in a recent paper by that gentleman, which appeared in the 'Transactions of the Cumberland and Westmoreland Association for the Advancement of Science.' It is worthy of note, however, that a pair of birds of this species in the gardens of the Zoological Society, as I am informed by Mr. J. H. Gurney, jun., several times in his presence uttered a low cooing note, which could not have been heard many yards off; and Mr. Sandford Parsons tells me that a female which he had alive in his aviary from the 24th Sept. to 10th Oct., was constantly running round the male uttering a "curious disjointed 'purr,' rather like a cat," in which the male would join; but he states the sound was nothing like that of a pigeon, and his opinion should have great weight.

NESTING AND PROSPECTS OF NATURALISATION.—Many reports have been circulated as to the finding of nests of this bird in Norfolk, but the following is the only instance which has borne investigation. Mr. Wm. Tolman, of South Pickenham, in the last week of June, shot a Sand Grouse as it rose from the nest in that parish, and took from it three eggs: these he describes as "much like those of a water-hen in colour, but rather darker, largest in the middle, and tapered off towards each end"; one he sent to Col. Applewhaite, the other two he unfortunately broke. Col. Applewhaite tried to blow his specimen, but it broke in pieces; he thinks it would have hatched in three or four days. Although unfortunately the eggs are not forthcoming, there can be no question as to the good faith of both Col. Applewhaite and his tenant Mr. Tolman; and I think their description of the nest and eggs, as well as a bird having been shot as it left the nest, leaves little room for doubt in this instance.

The generative organs were most fully-developed in the earliest birds. Of two females killed near Thetford previous to

\* Then it resembles the call-note of *Tringa canutus*.

June 3rd, Mr. Newby, of that town, tells me "one was very forward with egg, having one fully formed, bar the shell; the other was not so forward but full of fry. The breast of one of the males was almost bare, and the development of the generative organs in both males was very pronounced."

Mr. Pashley, of Cley, received a female on 4th June, which "had eggs about the size of a Hedge Accentor." Mr. Pycraft, of Yarmouth, received a female on 2nd June, the ovary of which he sent to Prof. Newton, who, he informs me, said it had all the appearance of that of a bird about to breed. Mr. Gunn measured the testes of a male killed about 6th June, which were 15 and 13 mm. in length respectively. From that date the generative organs appear gradually to have decreased in size, till on 6th August Mr. Gunn received a pair from the same locality, in which the testes of the male did not exceed 7 mm., and the whole ovary of the female was not more than 10 mm. at its greatest length. I should be inclined to the opinion that this shrinking of the generative organs indicated that the breeding season was over, in addition to which the plumage of the birds soon after their arrival here became very ragged, and moulting commenced. It would seem probable that the birds arrived here at a period when they would naturally have been about to nest, and that before they could settle in their new quarters, every man's hand at first being against them, the season for reproduction had passed; the unfavourable weather also experienced in the past summer must be taken into consideration; if so hardy a bird as the Partridge was seriously affected by adverse climatic influences, how much more trying must it have proved for these strangers! Should this be the true interpretation of their sterility this season, it leaves a hope that some of the birds which may survive till next spring, may still propagate their species and their offspring may become naturalised. It has been noted in the 'Field,' that the late-killed birds were very much emaciated, and that their feet were clogged with soil; this is entirely the reverse of my experience; only one in the large number of these birds which have come under my notice was at all emaciated, and that proved to have been wounded; whilst those killed in September and October, were all exceedingly fat, some weighing as much as  $12\frac{1}{2}$  oz., and in even better condition than those killed in May. The only bird with a foot clogged by

soil which I heard of in Norfolk, was received by Mr. Pycraft, of Yarmouth, on 2nd June, and weighed 10 oz. ; this immunity from clogging, notwithstanding the wetness of the season, is surprising, and, I think, compares favourably with other birds.

In compiling these notes I am greatly indebted to numerous correspondents, who have kindly furnished me with information from their respective localities. Chief amongst these I have to thank Mr. Alex. Napier, of Holkham, and Mr. Wood, of Morston; I have also to thank Mr. H. Sandford Parsons, of Shernbourne, the Rev. J. G. Tuck, Mr. E. R. Boulton, the Rev. Maurice C. H. Bird, Mr. E. J. Silcock, of Lynn, and many others. Mr. J. H. Gurney, jun., has given me the use of all his notes. To the various bird-preservers in the county I am also greatly indebted for information, and especially to Mr. Cole, Mr. Gunn, and Mr. Roberts, of Norwich, who most kindly allowed me to examine all the birds they had sent to them; also to Mr. Dack, of Holt; Mr. Pashley, of Cley; Mr. Wilson, of Lynn; Mr. Newby, of Thetford; and Mr. Clarke, of Snettisham. From Mr. Lowne, of Yarmouth, I had some very useful notes; as also from Mr. Pycraft of the same place. There is one other name which I have left till the last; it is that of Prof. Newton, to whom I am, as on many previous occasions, deeply indebted for valuable advice and assistance.

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## NOTES ON THE ORNITHOLOGY OF NORTHAMPTONSHIRE AND NEIGHBOURHOOD.

BY THE RIGHT. HON. LORD LILFORD, F.L.S., &c.

(Continued from Zool. 1887, p. 457.)

WE left Lilford for Bournemouth on Oct. 19th: the following notes up to June, 1888, are taken from letters.

Oct. 16th. Two Bramblings (first of season) seen at Achurch.

Oct. 27th. A flock of about fifty Fieldfares passing southwards over our decoy.

Nov. 4th. Jack Snipe (first of season) shot near Lilford. About this date, a "yellow" Blackbird (*cf.* Zool. Sept. 1884) seen near Achurch.

Nov. 12th. Fifty-three Ducks and Mallards, one Wigeon, and one Teal, taken in one drive on the decoy, leaving about sixty of the first-named species on the pool.

Nov. 14th. My falconer wrote under this date:—"I have not seen a Swallow since 11th; there are a great quantity of Bramblings in the neighbourhood, also Coal, Marsh, Blue, and Great Tits, all feeding on beech-mast." Goldeneye near Tichmarsh Mill, and Short-eared Owl mobbed by Rooks at decoy.

Nov. 22nd. Decoyman wrote:—"I saw one Golden-eyed Pochard on decoy on 19th; the frost is set in very sharp, and the fog is very thick." My falconer wrote under last date:—"Ten Teal on park pond on 14th; since that quantities of Plovers (Green and Golden) passing over, and on 18th from twenty-five to thirty Geese going S.W."

Dec. 3rd. Eight Siskins caught near Lilford. Capt. J. Vipan, writing under this date, states:—"I killed a Great Northern Diver on the Wash, Nov. 18th—the first I have met with there; it weighed  $11\frac{1}{2}$  lb. On Dec. 1st I shot a Long-tailed Duck, in immature plumage, at the mouth of this river (Nene). On Nov. 16th I saw three male and one female Shovellers; they were very wild, and would not let me 'set up' to them."

To avoid constant repetition, I shall, for the future, only indicate my falconer and decoyman by their respective initials, R. C. and R. S., at the end of my extracts from their letters. Gamekeepers, D. M. and S. J.

Jan. 13th, 1888. "A pair of Coots made their appearance at Pilton Bridges (close to the house, at Lilford) on the 2nd; I have seen them there daily since."—R. C.

Jan. 17th. "I saw four Brent Geese on 12th."—R. S.

Jan. 20th. "The four geese as I saw were not the black geese; they are what I call the Scotch Brent Geese; they have two or three black spots on the breast the size of a penny-piece."—R. S. The writer has since identified these geese from a picture in Meyer's 'British Birds' as the White-fronted, *Anser albifrons*, not a very rare bird in our valley.

Jan. 27th. "I have only seen one Woodcock this winter, but have seen several falcons, also a Merlin hawk yesterday; another Merlin was seen by my watcher near Lowick a few days ago. I have only seen one lot of Wild Geese this winter—that was ten days ago."—D. M.

Jan. 30th. I received a Woodcock shot at Lilford on the 28th inst., which without feet weighed full  $14\frac{1}{4}$  oz., and was the heaviest of thirteen received by us from Northamptonshire,

Lancashire, Kent, and Pembroke during the season of 1887-88. A very fine adult male Pochard shot below Lilford.

Feb. 10th. My son wrote:—"I saw on Monday last in the Rectory curtilage at Achurch a yellow Blackbird. It was pure yellow, without a black spot on it, and of a lighter colour than the Blackbird that appeared some years ago in the Cuckoo-pen" (*cf.* Zool. Sept. 1884).

Feb. 16th. "The snow lies from six to eight inches deep; I was at the Hut (for hawk-catching) alone, about 8.30 a.m., a Peregrine tiercel came in the field, and made one stoop at my pigeon, but did not binō; he did not return that day, frightened, I think, by men carting stone from the pits."—R. C.

The Rev. H. H. Slater, of Irchester Vicarage, who kindly went, at my request, to Rushden to verify a report that had reached me some time ago of the occurrence of a Cormorant in that neighbourhood, wrote on Feb. 21st:—"I hunted up Mrs. Allen, who allowed me to examine the bird, as far as possible, considering that it was in a case. It is a young Shag, *Phalacrocorax graculus*, the top of the head and back, and especially the primaries, having in some degree their bottle-green sheen. . . . Mrs. Allen informed me that she thought another was caught at the same time; and, after some inquiries, I came upon the owner, who had an exactly similar specimen. His wife informed me that it was a Sunday about the middle of August last, probably the 21st, as they were standing at their door (which is in a new street), watching some pigeons, when two curious birds came flopping down between two of the unfinished houses opposite; he went and collared one and young Allen the other; he kept his for three days, and fed it upon worms; the former one was stuffed at Irthlingborough,"—by Mr. C. F. Dyer, who gave me the original information of the occurrence in a letter dated Jan. 6th, 1888.

Feb. 29th. A female Pochard shot close to the house at Lilford.

March 1st. "Ward (one of our watchers) saw four Peregrines playing and screaming together over the park."—S. J.

March 4th. "One male Pintail and fifty Wild Ducks on decoy."—R. S.

March 5th. "Saw four Pintails near the house; they came straight across the meadow over my head; I could plainly see the long feathers in the tails of two of them."—D. M.

March 9th. "Whilst I was at the hawk-hut to-day, a man on the other side of the river disturbed a flock of twenty or thirty ducks; they flew in my direction, so near that I could plainly see four Pintails amongst them: a male of that species visited the aviary-pond on the 7th and 8th."—R. C.

March 15th. "At 4 p.m. I saw a Wild Swan fly slowly up the river; it wheeled round a few times to look at those on the park-pond. As yet I only know of one Wild Duck's nest with eggs."—R. C. "Thirty Wigeon this morning on flooded meadows below the house. About 100 Golden Plovers passing over. Shel-drake seen up the river yesterday near Thorpe."—S. J.

March 20th. "Three Swans near Lilford boat-house."—R. C.

March 22nd. "There are twenty Ducks, three Teal, twenty-eight Wigeon, and one Red-headed Pochard on the decoy. I saw 150 Ducks on the floods yesterday, also six Snipes and thirty Stints. One Curlew on the 18th. I saw a large, very dark hawk on the 21st; a large number of Golden Plovers on the meadows."—R. S.

April 5th. "There are thirty Ducks, forty Wigeons, and eight Teal on the decoy. I saw a Summer Teal drake on the decoy on the 2nd, and on the 3rd a pair of Shovel Ducks and five Red-shanks. There are several Snipes still about."—R. S.

April 6th. "The weather is so cold that birds are very backward—indeed everything else is much behindhand. I forward six Plover's eggs found yesterday; they are the first I have seen this year. No arrival of spring birds as yet; the Grey Crow and Field-fare are still here."—D. M.

April 11th. "Just caught a young Falcon (at the hut); she is last year's bird, very high in condition, well-made, with beautiful sharp-pointed sails; she made fifteen stoops at my pigeon without binding till the sixteenth."—R. C.

April 13th. "I saw three Herring Gulls going N.E., and on 14th four large flocks of Fieldfares going S.W. On the 14th a Kestrel came at my pigeon on the rere-pole (at the hut), and got hold of it; the pigeon used her wings freely, and away underneath her turf, followed by the hawk, who had to return quick; the pigeon was best man."—R. C.

April 24th. "I saw four large Sea-Gulls and two Snipes, and on the 26th three Snipes. The floods have put all the Green Plovers off our meadows now."—R. S.

The following list of dates of appearance of spring migrants at and about Lilford may be relied upon, as far as it goes, but is lamentably deficient:—

April.	April.
2. Garganey.	28. Spotted Flycatcher, Whitethroat.
3. Wheatear, Shoveller, Redshank.	29. Wryneck, Nightingale, Blackcap.
4. Chiffchaff, Dunlin.	
15. Swallow.	May.
17. Cuckoo, House Martin, Redstart.	1. Sedge Warbler.
18. Sand Martin, Yellow Wagtail.	2. Reed Warbler, Landra
19. Willow Wren.	3. Nightjar.
21. Tree Pipit.	5. Common Sandpiper.
25. Ring Ouzel.	10. Pied Flycatcher.

It will be observed that in the above list there is no mention of several of our regular spring visitors—*e. g.*, Red-backed Shrike, Swift, Lesser Whitethroat, Wood Wren, Whinchat, Turtle Dove, or Hobby. I can only say that all these species were here in early June in about their usual numbers, except the Swift, which was very much more abundant than I ever knew it to be. The Shoveller, Garganey, and Pied Flycatcher are scarce in our locality; a fine male of the latter species shot on May 10th is the first that has ever been obtained near Lilford, to my knowledge.

A Tern (in all probability *Sterna fluviatilis*) was seen near the decoy on May 22nd.

My falconer, R. C., writing on May 29th, stated;—"I found a Hawfinch's nest in a thick yew-tree close by the aviary; it was going on well till yesterday, and one of the three eggs in it got broken; the birds deserted it, and I took it away." When we returned to Lilford, in June, and I examined this nest, I had no difficulty in discovering the species of the egg-breaker by the well-known and very pungent odour that a Squirrel had left behind him therein.

A nest of the Lesser Spotted Woodpecker containing five eggs was found on the lawn at Lilford on May 29th: the hole was in a decayed bough of an old whitethorn-bush, at about 18 feet from the ground, and very well concealed by surrounding foliage. This little Woodpecker is exceedingly common at Lilford, but we have not often succeeded in our numerous searches for an occupied breeding-hole; in this instance two of the eggs were taken, and the remaining three safely hatched out.

June 27th. A fine adult male Red-backed Shrike was brought

to me, which had been caught by one wing in a common vermin-trap set for a cat or stoat near Thorpe.

June 28th. One of our gamekeepers brought me four eggs taken from a nest of the common Grey Partridge, in which ten young birds were hatched a few days ago; two of these four were of the normal colour, but rather smaller than an average-sized Blackbird's egg; the other two—much more green in colour, but of about the same dimensions—had each a sort of horn or spout at the centres of their thick ends. These appendages appeared to be a sort of prolongation of the shell, and were hollow, filled with indurated matter, some of which projected slightly from their exposed ends. I never saw any eggs at all resembling these monstrosities; but Professor A. Newton, to whom I sent them, informs me that he has met with a closely similar deformity in a Pheasant's egg. A Robin's nest was found on the wall of our engine-house containing three pure white eggs. This aberration from the normal type in eggs of this species seems to be by no means uncommon in our neighbourhood.

July 8th. Mr. Hunt picked up an old male Lesser Spotted Woodpecker in his garden at Wadenhoe, evidently killed by flying against wire-fencing.

July 10th. My falconer went to look at a nest of Pied Woodpeckers, with a view of taking a young one or two to rear, but found that the birds had left the breeding-hole, and one of the young was lying fully fledged, but dragged to death, at the foot of the oak in which it had been born. A Nightingale reported in full song this morning near our entrance-lodges.

July 14th. First Green Sandpiper of the season seen near Wadenhoe Woods.

July 19th. A good specimen of the Black Tern was shot on our river, near Aldwinkle, and brought to me. For some time before and after this date, I received many reports of one—and now and then two—Hobbies seen near our park-lodge; but the weather was so incessantly wet and boisterous that no one could discover the nest of these birds, which I have no doubt might have been found within a mile of the house at Lilford in more favourable weather. A Peregrine or two were often seen near Lilford throughout the summer, and are still (October) about the neighbourhood.

July 25th. A vast influx of Rooks noticed. These birds have

been virtually absent from the rookeries for the last five weeks. I have noticed this habit of a summer excursion of several weeks' duration in every year that I have been at home at this season, the many well-tenanted rookeries in our immediate neighbourhood being, regularly and almost entirely, deserted during the latter half of June and nearly the whole of July.

July 26th. My falconer came in this morning with a report of a "fowl" entirely unknown to him seen at our aviary-pond yesterday evening. Colonel Irby, who was staying with us, and my son snatched a gleam of sunshine between the constant heavy showers, and in a few minutes the former came in with a female Indian Black-backed Tree Goose, *Sarcidiornis melanonota*, which rose wildly from the bank of the pond on the approach of the investigating expedition. This bird was of course an "escape," but I have not up to the date of this writing been able, in spite of many enquiries, to discover the loser of this (as I believe it to be) uncommon and valuable water-fowl.

July 29th. My neighbour, Mr. G. Hunt, called upon me this evening, and reported having just seen a solitary specimen of Pallas's Sand Grouse in the meadow below his house at Wadenhoe. This bird passed within fifteen yards of my informant, flying comparatively slowly, and appeared to have its feet clogged with clay. Mr. Hunt told me that it "chuckled" loudly as it passed him. This is the first information that reached me of the occurrence of the Sand Grouse in Northamptonshire this year. Complaints reach me from our own gardeners, and from many of our neighbours of the very unusual abundance of Hawfinches, and the damage done by them amongst the green-peas. From about this date till the middle of October I had many reports from various quarters in our neighbourhood of so-called *white* Starlings. It seems that one or two broods containing pied birds of this species must have been reared in our district.

July 31st. Rumours of three Sand Grouse seen, in the first instance flying over the deer-park at Lilford, by one of our gamekeepers, and soon afterwards by Mr. Hunt's keeper on the Wadenhoe manor, bear to my ears the impress of truth and correct identification.

August 2nd. My falconer found and brought in two young Hobbies from an old Carrion Crow's nest in a high oak-tree in the same wood, and at a short distance from the trees from which

he took three of these little falcons in 1886 and 1887 (*cf.* Zool. 1886, pp. 468-9, and 1887, p. 454). The woodman averred positively that four young Kestrels had been hatched in, and flown from, the nest in which this year's Hobbies were found, about the beginning of June last. At a few feet below these young hawks was a Wood Pigeon's platform with two small young birds upon it.

Aug. 6th. A small flock of Gulls, apparently *Larus canus*, passed over the house in a southerly direction.

Aug. 11th. The decoyman brought in a Spotted Crake, alive and quite uninjured, caught at the decoy in a snipe-springe this morning. This bird has done well in a cage up to date of this writing (Oct. 26th). A Snipe taken at the same spot, on Aug. 13th, declined to feed, and died very shortly after capture.

Aug. 15th. I received a fine male Crossbill in good red plumage, with two Hawfinches, shot this morning in the kitchen-garden at Tichmarsh Rectory. This is a rare bird in Northamptonshire, and this is the first county-killed specimen that has come fresh into my hands. Our butler, who has a very good knowledge of British birds, described three birds seen this morning by him between Thorpe and Achurch, which could hardly be other than Pallas's Sand Grouse.

Aug. 30th. After three days of violent wind-squalls, with heavy rain and occasional thunder, the Swallows and House Martins—which had swarmed about the house at Lilford between the 24th and 28th inst.—suddenly and entirely disappeared. A little band of some half-dozen Swallows passed rapidly up the river on the 31st, and on Sept. 1st, with a change of wind from N.N.E. to W.S.W., a good many of that species were hawking about the willows below our boat-house, and I noticed them, in about their usual numbers, till the usual time for their departure, but with the exception of six or eight House Martins recorded on the 13th, I did not see one of these latter birds after Aug. 28th.

Sept. 4th. The decoyman reports fifteen Whimbrels passing over the meadows in a southerly direction.

Sept. 7th. I heard reports of a large brown round-winged hawk as seen about Lilford by various persons during the last week. I heard many accounts of this unknown bird till the 16th, when our butler saw it close to Lilford, and recognized it without any doubt as a Common Buzzard. Twenty Wild Geese reported as "going southerly" over Tichmarsh. On this day I received a

letter from Mr. C. F. Dyer, of Irthlingborough, who informed me that whilst out partridge-shooting with some friends in that neighbourhood on the 6th inst., he distinctly recognized and twice flushed a solitary Sand Grouse, which flew away unharmed. Mr. Dyer is dumb on his own merits, but I have every reason to believe that this Sand Grouse owed its life, or escape, entirely to his efforts, and I think that such instances cannot be too highly praised or widely made known.

Sept. 12th. Saw the first Grey Wagtail of the season.

Sept. 13th. My son shot a Spotted Crake in a rough grass-field near Tichmarsh.

Sept. 14th. Under this date, Mr. Oliver V. Aplin wrote to me:—"I have recently examined a Spotted Redshank in the plumage of the first year, which was shot at Canon's Ashby, Northamptonshire on August 28th." I do not remember to have heard of any previous occurrence of this species in our county. This bird has, through the kind offices of Sir Henry Dryden, lately come into my possession, and appears to be a male in plumage of the first year.

Sept. 17th. A solitary Golden Plover (first of the season reported) and several Whimbrels passing southerly.

Sept. 18th. One of the gamekeepers brought in two Spotted Crakes, shot near Thrapston, and another brought in a Common Snipe, weighing full  $5\frac{3}{4}$  oz.

Sept. 20th. First Jack Snipe of the season seen near Achurch. Water Rail killed by telegraph-wires near Wigsthorpe brought to me. Two Wigeon, first of season, seen by Mr. G. Hunt, near Wadenhoe.

Sept. 21st. A solitary Curlew going southward up our valley.

Sept. 22nd. Mr. Hunt sent me fragments of a Wagtail shot by him in his garden at Wadenhoe this morning, which looked to me much like those of *Motacilla flava*, but were impossible to identify, and may have formed part of a specimen of *M. rayi*, though the locality was unusual, and the date very late, for this latter race in our neighbourhood. In 'The Field' of this day's issue, a Mr. Betts records the recent slaughter of a Hoopoe at Ketton, Rutland, within a very short distance of our county boundary.

Sept. 25th. First Merlin of season seen near Lilford.

Sept. 27th. First Fieldfare of season seen near Aldwinkle.

Sept. 29th. My falconer, who was at the hawk-catching hut to-day, reported two Hobbies, two Merlins, and large numbers of Tree and Meadow Pipits travelling southwards, and a pied Goldfinch near our Lilford stone-quarries.

Sept. 30th. The Rev. H. H. Slater, in a most interesting letter of this day's date, informs me that a very fine old Lesser Black-backed Gull was shot at Knuston, on April 28th ult., and brought to him. This species is not exceedingly rare in the Nene Valley, but I have very seldom seen, and never handled, an *adult* Northamptonshire specimen. Mr. Slater writes:—"It had on the second primaries, as well as on the outer ones, a subterminal spot of white, showing it to be a very old bird." In connection with the very unusually early appearance of the Fieldfare near Aldwinkle, above recorded, I may add that Mr. Slater informs me that a flock of some twenty of these birds passed close to him near Kingston, Cambridgeshire, on the 5th inst. First Redwings of season seen near Thorpe.

October 1st. First Grey Crow of season seen near the decoy. Twenty-five Mallards and Ducks and one Wigeon taken in one drive on the 4th inst.

Oct. 4th. Two pied Goldfinches (*cf. supra*) and first Twite of season taken by a birdcatcher in my employ at Lilford stone-quarries. These Goldfinches were a pair of young birds, and differ from the normal type in having all the parts that are usually a fine brown of a pale buff or fawn-colour.

Oct. 6th. In 'The Field' of this day, Col. E. R. Cottingham, R.A., records having shot a Rose-coloured Pastor in his garden at Weedon on Sept. 10th. At my request, Col. Cottingham most obligingly sent this bird to Lilford for my inspection; it is, I think, an adult male, with good crest, and in fair colour. This is the first occurrence of this species in our county that has come to my knowledge. Col. Cottingham has made me a present of this specimen.

Oct. 8th. The falconer caught a young male Sparrowhawk at the hut, and reports that a female of the same species came at his pigeon whilst the male was struggling in one of the nets, but the lady declined to "bind to."

Oct. 10th. A reputed Little Auk picked up near Pipewell Hall, Kettering, early in April last, was sent me to-day for inspection, and proved to be, as I expected, a young Puffin.

This is the third Northamptonshire Puffin that has been sent to me as a Little Auk. First Brambling of the season seen near Thorpe, and first Ring Ouzel on Upper Pilton.

Oct. 18th. First Woodcock of season found and missed by two of our shooting party near Tichmarsh. I had a rumour of a Woodcock from a very credible source on the 2nd inst, but did not record it under that date, as the identity of the bird was not positively proven.

Oct. 22nd. A female Shoveller appeared on the decoy, but disappeared at flighting time, and had not been seen again up to the day of our departure from Lilford for Bournemouth, October 25th.

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## NOTES AND QUERIES.

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### MAMMALIA.

**Mice versus Cockroaches.**—Can any of your readers tell me how these two kitchen pests are antagonistic one to the other? In my house Cockroaches have been very numerous for some few years past, but this year they have quite disappeared before an invasion of Mice. In about two weeks we caught thirty Mice, or even more, but no Cockroaches can be found. Do Mice eat Cockroaches, or only drive them away by their objectionable presence, or by consuming their food? My house is in the west end of London. A brother of mine, living in a fashionable seaport town, has also noticed this disappearance of Cockroaches before Mice. Has this year been prejudicial to Cockroaches, but beneficial to Mice?—  
J. L. COLLISON-MORLEY.

**Rudolphi's Rorqual on the Coast of Essex.**—In an article contributed to the 'Rochester Naturalist' (a publication which has only just been brought to our notice), Mr. Walter Crouch gives an account of the capture last August, in the River Medway, of a specimen of this whale. From this article, which is too long to be quoted *in extenso*, we extract the following particulars;—On the 30th August last a female specimen of this Whale, *Balænoptera borealis*, Lesson, was observed in Gillingham Reach by some fishermen, and, approaching too near the shore, was driven into shallow water, and as the tide ebbed was left floundering on the mud. It was at last killed, and, a rope being inserted in the lower jaw, as the tide rose in the afternoon it was towed to a small landing stage, at the back of the White House Inn, where it was exhibited for several days, and attracted hundreds of visitors. The carcase was sold by the Deputy Receiver of Wreck (by order of the Board of Trade) on Sept. 1st, and was knocked

down for £6 to Thomas Jewess, by whose exertions it had been secured. As usual, decomposition rapidly set in, and in a few days the carcase was taken down the river and buried in the mud. I went to see it on the 1st September, identified the species, and made a measured drawing of it as it lay on its side. The general colour of the smooth skin of the upper portion, the fins and the tail, was glossy black; the underside from the lower jaw, white or whitish, extending more or less to the genitalia, thus bringing into strong relief the series of plications, or furrows, which extend from the symphysis of the lower jaw towards the belly; the margin of the lower jaw wide and somewhat keeled in front; the eye, as usual, small, about the size of a bullock's; the aperture of the two blow-holes large and well marked; the wreath of baleen (whalebone) in the upper jaw was perfect but short (as it appears generally in females), and the colour black, with greyish hair on the inner margin, the shorter blades towards the beak somewhat lighter in colour; the pectoral fins long and narrow; the dorsal fin small and thin, but very curved, ending almost in a point, and deeply emarginated behind. The following are the more important measurements;—Length, rostrum of lower jaw to end of tail, 32 ft. 2 in.; of upper jaw to end of tail, 31 ft. 7 in.; of upper jaw to end of dorsal fin, 21 ft. 7 in.; end of dorsal fin to end of tail, 10 ft. 6 in.; rostrum of lower jaw to eye, 6 ft. 2 in.; eye to end of pectoral fin, 7 ft. 4 in.; length of pectoral fin, 3 ft. 4 in.; width of ditto, 9 in.; base of dorsal fin, 15 in.; height of dorsal fin (from ridge of back), 9 in.; length of tail flukes, 6 ft. 6 in.; girth at the eye, 12 ft. 6 in.; at dorsal fin, 10 ft.; baleen, longest blades, outside length,  $12\frac{1}{8}$  in.; inside (in curve),  $15\frac{1}{4}$  in.; width at attachment to maxilla,  $4\frac{3}{4}$  in. From the above it is manifest that this Whale was not fully grown, the average length of an adult being from 45 to 50 feet, but the body was plump and in good condition; and it was probably a straggler from the North Sea, where these Whales appear as summer visitors. On the 28th August several Whales were stranded near Hunstanton (Norfolk). The two stranded at Snettisham and Heacham have been identified (p. 387), by Mr. T. Southwell, as old and young females of the Bottlenose Whale, *Hyperoodon rostratus*. Another Whale, about 37 feet in length, has also been reported at Sea View, Isle of Wight, on 21st December, and from the description and photograph I have received I think it is probably a young specimen of *B. musculus*. A male specimen of Rudolphi's Rorqual was stranded on 19th October, 1887, at the Tilbury Docks (Essex), which measured 35 ft. 4 in.; and some notes on it which I gave to the Essex Field Club were printed in the 'Essex Naturalist' for April, 1888. The skeleton is now prepared, and will shortly be removed to the Natural History Museum at South Kensington. All the species of *Balanoptera* are (as the name implies) distinguished by a dorsal fin and by a series of plications on the throat extending towards the belly. The body

is also long and narrow, with a sharp ridge along the dorsal line, the head being less than a quarter of the whole length, the skull tapering towards the lower jaw, and the baleen never exceeding two or three feet in the largest species. The general colour of *B. borealis* is greyish, or bluish black, which becomes darker after death, with lighter spots or patches. Below the margin of the lower jaw the throat is white, which makes the plications well marked, while cloudings of white and grayish white, varying in individuals, extend more or less along the belly. The baleen in adults is always deep black, but some of the smaller blades (and in younger specimens the whole of the wreath) are often clouded or mottled with white.

#### BIRDS.

**The Gull Bunting in Hampshire.**—With reference to Mr. J. H. Wilmore's note on this subject, I should fancy that the Gull Bunting is pretty generally diffused in Hampshire. A few years ago I had no difficulty in obtaining several specimens, in spring plumage, from a correspondent in the neighbourhood of Botley, where they appeared to be quite common. Whilst in the train, close to Basingstoke, early one morning in July, 1887, I saw a fine male sitting on the telegraph-wires, which were very low there; and I have also met with the Gull Bunting in the Isle of Wight, near Ryde.—OLIVER V. APLIN (Bloxham, Banbury).

**Breeding of Pallas's Sand Grouse in Fifeshire.**—Col. H. M. Drummond Hay, in a communication written in September last and published in 'The Scottish Naturalist' for October (p. 349), says:—"It is with much pleasure I have to state, from information received from Mr. Alexander Speedie, of Kinshaldy, on Tents-muir, that from the number of birds on the ground at present there is every reason to believe that the breeding has been successful; in confirmation of which I may mention that in cutting a field of rye on the above-mentioned property, about the 18th of last month (August, 1888), five young birds were captured. These were strong, well grown, and full-plumaged birds, with the exception of the pointed tail-feathers not yet matured. A pair were sent alive (by Mr. Speedie) to the Zoological Gardens in London, which they reached (August 24th) in safety: the remainder were kept for some time in captivity, but were found to be so impatient of confinement that they were again restored to liberty."

**Sand Grouse in Warwickshire, Berkshire, and Oxfordshire.**—A female Sand Grouse, which I examined in the flesh, was shot near Radway, Warwickshire, on June 22nd. At a birdstuffer's in Newbury I examined, or heard of, the following Berkshire examples:—One, of a flock of thirty, killed by striking against the telegraph-wires on Compton Downs, early in June; two shot near Newbury; one at Clifton, near Hungerford; and two

at Peasmore. In Oxfordshire flocks appeared at Bensington and Lower Heyford in May (as reported in the 'Field' and 'Standard'), remaining in the former locality until July, and in the latter until the early part of October. The occurrence of others in July, in the district between Chipping Norton and Burford, has been reported to me.—OLIVER V. APLIN (Bloxham, Banbury).

**Sand Grouse at London Poulterers.**—My sister, who knows birds well, informs me that on October 12th she saw and handled two Sand Grouse at a poulterer's shop in Jermyn Street, which, however, she did not consider to be in sufficiently good order to secure as specimens. She describes them as having been in wretched condition: in fact, they seemed to have been starved to death. The proprietor of the shop said that he had received twelve in one consignment, and that the other ten had all been taken by one purchaser, adding that they had been sent up from Norfolk.—JULIAN G. TUCK (Tostock Rectory, Bury St, Edmunds).

**Unrecorded Habits of the Starling.**—These habits referred to by Mr. F. H. Parrott (p. 431) were noticed in 'The Field,' about two years ago, by Mr. A. E. C. Streathfield, as follows:—"I shall be very glad to know whether the observations of others amongst your readers confirm what I saw when coming up the Thames in the steamer from Bordeaux last Sunday. There were a good many Starlings about the river just below Gravesend, and I saw several, when a long way from shore, fly to the surface of the water and apparently pick up something. That some substance floating on the water attracted the birds' attention was clear from the way their course was suddenly changed, and I can only suppose they picked up some scraps of food floating on the water. The Starling is a most active and intelligent bird; may we think he has learnt a lesson from the Gulls?—J. L. COLLISON-MORLEY.

**Diving of the Manx Shearwater.**—Mention is made (p. 374) of the Manx Shearwater diving. This fact seems hitherto to have escaped much observation. Mr. C. M. Adamson, in his 'More Scraps about Birds' (p. 209), speaks of the Shearwater being "well adapted in structure for diving"; and the late Mr. D. W. Mitchell, in his account of the species quoted in 'Yarrell' (4th edit., vol. iv., p. 29), speaks of wounded birds diving. I am not aware of any other references to the fact, and, as the subject has some bearing on the debated question as to what they feed on, the following may be of some interest:—In July last, when in the Island of Eigg, I was watching an immense flock of Shearwaters one calm afternoon; they were sitting on the water between Eigg and Rum, in a long line, and evidently feeding, as they constantly changed their position. Soon after settling on a new spot, the birds at the latter end of the line would fly forwards and settle again in the very front of the column, and begin diving

vigorously, disappearing for a moment right under the surface. Dr. Fletcher, of Edinburgh, was with me at the time, and, as neither of us had previously seen the Manx Shearwater dive, we watched the proceedings for some time through our binoculars. I may add that a fisherman of the island, who knows this bird well, told me afterwards that had sometimes seen it dive, although it more often dipped only its head and upper parts under water, leaving its tail exposed like a duck. It is certainly a habit in which it does not very frequently indulge, for when disturbed or frightened it invariably escapes by flight.—ARTHUR H. MACPHERSON.

**Food of the Manx Shearwater.**—The inference drawn by Mr. Gawen (p. 426) from my remarks (p. 374) is misleading, and requires correction. It is not the case, as he supposes, that the Shearwater whose food I examined had been feeding on offal, and his assertion that bones were absent is not warranted by what I wrote. Your readers may rest assured that the bird had been feeding, as I distinctly stated, on fresh fish,—probably the young of the Coalfish. The bill of this Shearwater, instead of being “weak,” as alleged by Mr. Gawen, is a very powerful instrument, and is used in excavating the Shearwater’s long burrows in the soil.—H. A. MACPHERSON (Carlisle).

**Food of the Manx Shearwater.**—I was surprised to see, from the remarks of Mr. H. A. Macpherson (p. 374) and Mr. C. R. Gawen (p. 426), that there is still any doubt as to the nature of the food of the Manx Shearwater. The first Shearwaters I ever shot (over thirty years ago, off Cork Harbour) fully and satisfactorily proved to me that their food is much more substantial than oil floating on the surface of the water. Wounded birds, when closely pursued, disgorged solid matter, as Gulls do, to lighten them when trying to get away; and one bird, on being seized hold of, threw up two full-grown sprats and the entrails of some fish which had been evidently thrown overboard from one of the fishing-boats at anchor close by.—ROBERT WARREN (Moyview, Ballina).

**Swans with white Cygnets.**—I should like to place on record the fact that during the past year the pair of tame Swans whose abnormal broods I have before mentioned (Zool. 1887, pp. 463, 464) produced seven cygnets, of which three were of the usual colour, and four were white. I saw them alive a few days since in their ditch in the grounds of St. John’s College.—ALFRED NEWTON (Magdalene College, Cambridge).

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## SCIENTIFIC SOCIETIES.

## LINNEAN SOCIETY OF LONDON.

November 1, 1888.—W. CARRUTHERS, F.R.S., President, in the chair.

The following were elected Fellows of the Society:—William Overend Priestley, M.D., F.R.C.P.; John Way, M.D.; and John Evans, Esq.

Prof. Bower exhibited, and made remarks upon, some adventitious buds on a leaf of *Gnetium gnemon*.

Mr. John Young exhibited (1) a rare bird, *Pluvianellus sociabilis*, unobserved for fifty years, and lately rediscovered by him in Patagonia; (2) a cluster of nests formed of lichen (*Usnea*) by a Swift, as supposed, of the genus *Collocalia*, from a cave in Eimeo, one of the Society Islands; (3) remarkably elongated tail-feathers of domestic cock (11 ft. in length), artificially produced by the Japanese; (4) nest and eggs of the Snow Bunting, *Plectrophanes nivalis*, taken during the past summer in Scotland.

Mr. Thomas Christy exhibited a new method of transmitting light to a microscope by means of a curved rod of glass.

The Rev. R. Baron read a paper on the Flora of Madagascar, in which he gave an interesting account of his explorations and collections in that island. In a second paper entitled "Further contributions to the Flora of Madagascar," Mr. J. G. Baker, F.R.S., described the principal novelties brought home by Mr. Baron, and paid a well-deserved tribute to his energy and ability as a botanical explorer.

November 15.—W. CARRUTHERS, F.R.S., President, in the chair.

Mr. J. W. Stroud was elected a Fellow of the Society.

On behalf of Mr. Harry Bolus, Mr. J. G. Baker exhibited a specimen of *Eriospermum folioliferum*, a plant showing a very remarkable type of leaf-structure. It was figured by Andrews, in his 'Botanist's Repository,' in 1807, and lost sight of until recently refound by Mr. Bolus in Namaqualand.

Prof. Stewart exhibited a substance which had been picked up on the sea-shore, the nature of which it had puzzled many to determine, its structure being regarded by some as animal, by others as vegetable. He proposed to submit it to careful microscopical examination.

Mr. J. E. Harting exhibited a South American Bat, from Trinidad, *Noctilio leporinus*, alleged to be of piscivorous habits, and remarked upon a similar habit which had been observed in a species of *Pteropus* in India.

A paper was read by Mr. B. D. Jackson, on behalf of Mr. H. Chichester Hart, "On the mountain range of flowering plants in Ireland," and was criticised by Mr. J. G. Baker, who gave an interesting sketch of the characteristics of the Irish flora.

Two papers were then read by Mr. Sladen on the Mammalia and Birds collected by Mr. H. N. Ridley in Fernando Noronha, in the determination

of which the author had been assisted by Messrs. O. Thomas and R. B. Sharpe.

The next meeting of the Society will be held on December 6th.

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ENTOMOLOGICAL SOCIETY OF LONDON.

November 7, 1888.—Dr. D. SHARP, F.L.S., President, in the chair.

Mr. H. Stuart Fremlin, M.R.C.S., of Mereworth, Maidstone, and Mr. G. V. Hudson, of Wellington, New Zealand, were elected Fellows.

Mons. A. Wailly exhibited a large and interesting collection of Butterflies recently received from the Gold Coast and other parts of West Africa. The collection included about forty-seven species belonging to the genera *Papilio*, *Diadema*, *Salamis*, *Romalæosoma*, *Charaxes*, *Harma*, *Eurypheme*, *Junonia*, *Aterica*, *Hypanis*, *Eurytela*, *Mycalesis*, *Cyrestis*, *Nepheronia*, *Mylothris*, *Belenois*, &c. Mons. Wailly stated that several of the species were undescribed, and were not represented in the British Museum Collections.

Mr. Jenner Weir exhibited four bred specimens of Ant-lions, two of which were from Saxon Switzerland, and the other two from Fontainebleau. He stated that he believed the specimens belonged to two distinct species. Mr. M'Lachlan said that the specimens all belonged to one species, viz. *Myrmeleon formicarius*, Auct. = *europæus*, M'Lach.

Mr. W. C. Boyd exhibited an example of *Pterophorus zetterstedtii*, taken at Sydenham. He remarked that this species had hitherto only been recorded from Lynmouth and Folkestone.

Mr. Enock exhibited specimens of *Cecidomyia destructor* (Hessian Fly), illustrating the life-history of the species, and made remarks on them.

Mr. Wallis Kew exhibited a specimen of *Dytiscus marginalis* having a small bivalve shell attached to one of its legs. The bivalve had apparently attacked the *Dytiscus* and refused to relax its grasp. A discussion ensued, in which Dr. Sharp, Mr. Stainton, and Mr. Kew took part.

Mr. W. E. Nicholson exhibited several specimens of *Acidalia immorata*, Linn., caught by him near Lewes. Mr. Jenner Weir remarked that the species had only recently been added to the British list, and that it was remarkable how so comparatively large a species could have been hitherto overlooked. It was also remarked that a specimen of this species from the collection of the late Mr. Desvignes had been exhibited by Mr. Stevens at the meeting of the Society in November, 1887.

Dr. Sharp exhibited a large number of species of Rhynchophora, collected by Mr. George Lewis in Japan.

Mr. F. P. Pascoe read a paper entitled "Descriptions of new Longicorn Coleoptera."

Dr. Sharp read a paper entitled "The Rhynchophorous Coleoptera of Japan."—H. Goss, *Hon. Secretary*.

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JUNE, 1888.

[VOL. XII., No. 138.]

# THE ZOOLOGIST

A Monthly Journal

OF

NATURAL HISTORY.

EDITED BY

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

MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION.

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