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EDITED BY

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PREFACE.

With the present number another annual volume is brought to a close—the sixth of the New Series.

On looking over the list of contributors for the year, the Editor cannot but congratulate himself upon the support which he has received, no less than upon the number and quality of the contributions which have appeared. For these his best thanks are due to the writers. While looking with satisfaction on the past, he is encouraged to look also with hope to the future, in the expectation of receiving no fewer favours in 1883 than it has been his good fortune to receive in 1882.

But one word is ringing in his ears—Progress! There is room for improvement, there is reason for advance, and it is believed that some advance may be made in a new direction which will be agreeable to the readers of 'The Zoologist.'

Commencing with the number for January, 1883, it is proposed to enlarge the scope of the "Occasional Notes" by substituting the heading "Notes and Queries," in order to enable readers who may not have any facts to communicate, to ask questions, if they are so minded, which will be printed with the replies, either in the same or a succeeding number, as the nature of the questions may permit.

The adoption of this plan will lead to another innovation. It has been a special feature in 'The Zoologist,' from its very commencement, that no anonymous communications have been printed, and it is still the Editor's opinion that all statements of facts should be attested by genuine signatures. In this lies the value of the contributions. But in regard to "Queries" the case is different, and the Editor has good reason to know that many persons whose only desire is to obtain reliable information, have a reluctance to append their names to questions which may perhaps appear simple to more experienced naturalists than themselves.

It will therefore be competent to correspondents sending "Queries" to adopt, if they please, some pseudonym or initials; but in such cases they should always communicate their real names and addresses

privately to the Editor, who will not make the same known without their consent. It is hoped that in this way much information of general interest may be elicited during the year.

The Editor would also be glad to receive for insertion, under the same heading, any items of news which are likely to be of interest to naturalists; such, for instance, as reports of successful collecting tours both at home and abroad, with brief summary of the results; the building or endowment of new museums; the announcement of completed or forthcoming works on Zoology; the dates of projected field meetings of local Natural History Societies, and so forth. Such topics, it is believed, would be especially acceptable to country readers, who, from the fact of their inability to attend the *conversaziones* of the Scientific Societies in London are precluded from hearing the zoological news which is verbally circulated at such meetings.

There is yet another novelty for the New Year. Hitherto this journal has dealt almost exclusively with "the zoology of the present." Now "the zoology of the past" has many charms, and to all reflecting minds the two subjects, although in a sense distinct, are intimately connected; an accurate knowledge of the past helping us to a better understanding of the present. The "archæology of zoology," as it may be termed, is a subject which may well be cultivated, and the Editor would be glad to see, under the heading "Archæologia," the discussion of such items as discoveries of fossil remains; early notices of British animals; titles and editions of scarce and local Faunas, or overlooked works containing zoological notes of value; discoveries of authorship of original statements hitherto quoted without a reference; etymologies; and folk-lore relating to animals.

All these subjects have a value of their own, and would, if discussed, give a greater fulness and variety to the pages of 'The Zoologist,' which, it is believed, many would be glad to see.

Any suggestion on this head from correspondents will be welcome, and shall receive full consideration.

With regard to the projected General Index to 'The Zoologist,' its utility seems to be universally admitted, but at present the number of copies subscribed for does not justify its preparation. At least 200 copies at £1 should be ordered in advance before the work can be commenced; and the Editor would therefore urge upon all working naturalists, for their own sake, the extreme desirability of forwarding to Messrs. West, Newman & Co., as soon as possible, an expression of their willingness to take copies.

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THIRD SERIES.

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THE PAST AND PRESENT DISTRIBUTION OF SOME OF THE RARER ANIMALS OF SCOTLAND.

BY J. A. HARVIE BROWN, F.R.S.E., F.Z.S.

IV. THE BADGER.

ALTHOUGH still a common British quadruped, the Badger is not nearly so numerous or so widely distributed as formerly. Proofs of its former abundance are forthcoming from almost every county of Scotland; topography teems with places called after the "Brock." The following are only a few instances from many selected to illustrate its former distribution:—*Alt-nam-broc*, in Rosshire; *Carn-broc*, Ayrshire; *Eas-nam-broc* ("the Badger's Waterfall"), Invernesshire; *Strath-broc*, Linlithgowshire; *Monia-broc*, Stirlingshire; *Mona-broc*, Renfrewshire (the two latter meaning Badger's Hill); *Craig-nam-broc*, Argyleshire.

In nearly all of these counties many more instances might be given of the use of the name in topography; and in England also are many, as Brockley Hill in Middlesex, Brockhurst in Shropshire, and Brockworth in Gloucestershire. Many of these localities are still known as the haunts of Badgers at the present day, and have, in most cases, been frequented by Badgers from an extremely early date. They are also still far from uncommon in England, and recent reports have been received of their occurrence within a few miles of London. Thus, at Dollis Hill Farm, Willesden, as I am informed by Sir Dudley Marjoribanks (now Lord Tweedmouth), a Badger was dug out about five years

ago (say 1876), and many other notices might be gleaned from 'The Field,' 'The Zoologist,' and other periodicals. But the distribution of the Badger in Scotland is far from being general, many large tracts being unfrequented, and others well stocked. Protection has a good deal to do with this in certain localities, and persecution in others, apart from the amenity of the situations.

Owing to the trade in live Badgers, and the escape of individuals from confinement, some of the records may not be considered so reliable for the purpose of comparing the past and present distribution, as if they all related to truly wild animals; but it would be next to impossible to separate these two classes of records, and I have not attempted to do so in the present article. Proof of its former abundance also may be gathered from the fact that of old there was no specific name in Gaelic for a fox-hunter, but such a man was invariably known as a "Brocair," *i. e.*, the Badger-man, or Badger-killer.

It is curious to find that no mention is made of the Badger, or Brock, in the 'Boke of St. Albans,' one of the oldest books in the English language,* nor do we find any notice of it in Maddox's 'History of the Exchequer,' or in Burke's 'Heraldic Illustrations'; but later, in heraldry, we find it in common use. Thus, in 'The List of the Baronetage,' the crest of the Brokes, and also of the Brookes of Colbroke, was a Badger.

One of my correspondents remarks, no doubt correctly, that 1842 was a sad year for the poor Badgers, owing to the revival of the Highland dress after the Queen's visit to Scotland.

The Badger occurs, or occurred, all over the mainland of Scotland, but does not appear to be indigenous to any of the islands, specimens which were caught in Jura about twenty-five years ago by Mr. Cox, gamekeeper at Culzean, Ayrshire, having in all probability been introduced. Badgers have also been introduced to the island of Ailsa Craig. Five were obtained from Peebleshire about six years ago, and were put upon the Craig by Mr. Cox, and the introduction has been successful, as young ones have been seen there since.

From the following notes, collected from various parts of Scotland, some idea may be formed of their past and present

* In 'The Boke of St. Albans' the Badger is referred to (f. iiij rev.) as "the Graye," a name by which it is frequently mentioned in mediæval Household Books.—Ed.

distribution, though the said notes do not profess to exhaust the subject. Commencing in the North of Scotland, and travelling southwards, the comparison between the notes under each county will, I believe, be made easiest:—

Caithness.—From this county I have no returns, as I have hitherto failed to obtain a regular correspondent in it.

Sutherland.—This county appears eminently suited to the habits and requirements of the species, especially in the more mountainous districts of the north and west, and of the east. They are preserved in the Duke of Sutherland's own Forest of Dunrobin, and they breed there every year. A male, caught in a trap in Balblair Wood in October, 1866, was at once liberated, but a sow, caught in a trap in 1870, was not so fortunate, but died before it could be released. Elsewhere, in the east of the county, they cannot be said to be plentiful. Mr. T. E. Buckley, indeed, who lived there for many years, and is intimately acquainted with the district, writes me that he never heard of the Badger in the district until 1879, when one was killed at Dunrobin: "but," he adds, "they used to be present on this ground, as there is a barn on Gordon Bush called *Alt-nam-broc*. In the Reay country it still exists in small numbers. Two were trapped about 1875 or 1876 on the march of the Reay forest, in a fox-trap baited with a hare.*

Rosshire.—In many parts of this county, where it was, not many years ago, abundant, it is now nearly or quite extinct. In the parish of Gairloch it is considered quite extinct by Mr. Osgood H. Mackenzie, who is intimately acquainted with the fauna of his district. He records the last killed twenty years ago (say 1860) at Inverewe. In May, 1879, distinct evidence of the presence of a Badger was seen by the forester in Fannich Forest, it having passed the winter in a den there. In the preceding spring a Badger was trapped in the neighbouring Forest of

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* I may mention here that I have a great many returns of vermin killed in this county for many years back, from which I could cull many facts of the past and present distribution of this species; but I prefer to retain these notes for the present, or at least only occasionally to refer to them, as I think that the material will accumulate sufficiently to make a fuller paper upon "Past and Present Distribution of so-called Vermin," and will be more interesting in this form.

Braemore, a few miles from where the above evidence was seen. These are the only ones heard of or seen in the district for a very long time. In the east of the county it appears to be equally rare, as it is now more than twenty years since the last one was killed on Balnagown by a keeper of the name of Scott. A little further inland, in Strath Conan, it is reported as having been very common before game was preserved, but does not appear to have been common for the past twenty years (or say since 1860). The last killed was about eight years ago (say 1872). At Struy, also in the east of the county, it is reported as being almost extinct, and this extermination has taken place since 1874, between which date and the present eight have been trapped.

Invernesshire.—In this county it still holds its own fairly well, though not so abundant as formerly. In some places, where once common, it has become quite rare. The last Badger seen on Guisachan, in the east of the county, was trapped at Cogie, four miles from Guisachan House, in the winter of 1855, and none have since been seen or tracked in the snow, as I am informed by Lord Tweedmouth. Its former residence there is shown in the name of a waterfall close to Guisachan, called to this day *Eassan-nam-broc*. A little more inland, in Glen Urquhart and Glen Morrison, it still exists, though not very plentifully. "At the present moment," writes my informant, "there are two Badgers within two miles of where I write." This was in March, 1880. It is reported also as not yet extinct in the Glenmore district, south of the Spey. Further west, and north of the Caledonian Canal, it is still abundant about Fort Augustus. In Badenoch Badgers are counted rare, but are still present in Ardverikie or Ben Aulder Deer-forest. Two were got in 1880 also at Corrie, Invereshie, on the property of Sir George Macpherson Grant, Bart. Four were killed within three miles of Loch Errochd Lodge in 1878, and an informant told a correspondent of mine that two years ago he counted no less than thirteen Badgers sunning themselves in a choice spot not far from Ardverikie Lodge. They are carefully preserved here—as indeed are all the native wild animals—by the proprietor, Sir John Ramsden, Bart.

Nairn, Elgin.—A very marked cause of their decrease here is stated by the Brothers Steuart, in their 'Lays of the Deer

Forest,' where it is stated that many were killed at Tarnaway in the violent floods of 1827 ('Lays of the Deer Forest,' vol. ii., p. 268), so graphically described by Sir Thomas Dick Lauder ('Account of the Moray Floods).' It is now scarce, and indeed has been for a good many years- They still exist in Darnaway Woods, and seventeen years ago, at Dalry, they were numerous, and Mr. Grant, keeper there at that time, kept a lot of rough-haired terriers on purpose to hunt them. The last killed at Dalry was about four years ago (say 1876). In the Keith district the last killed was a sow, along with four young, which were trapped upon Keith Lodge shooting about thirteen years ago (say 1868). Speaking of Badgers at Dalry, Mr. Grant tells me of one Badger which became so tame that it followed one about like a dog, and use to go out with the shooting party regularly, and keep close at their heels like a terrier. It would not, however, take the water, and, when they crossed a certain burn, it used to run along the bank until it came to a foot-bridge, when it would cross and follow on their track like a dog. Captain Dunbar Brander recollects the Badger as very abundant in Elgin forty years ago. He has a distinct remembrance of no less than five earths within a radius of three miles of his house. These earths now are occupied only by rabbits, and the last Badger occurred there in 1854 or 1855, when in company of the late Mr. Charles St. John, author of 'The Highland Sports,' &c., he saw one dug out.

Aberdeenshire.—In the Don Valley the only Badgers in the district at present are strictly preserved by the proprietor. The locality is pretty far up the river, but it is not necessary to name it. In the Dee Valley they are not quite so scarce, but they are far from numerous. In Glen Tanar, Dee Valley, ten Badgers have been trapped or otherwise obtained between 1870 and 1880. It is reported as not yet quite extinct in the north-east of Aberdeenshire, being still found on one or two properties. On most of the lower reaches of the Dee it is probably verging on extinction, if not indeed already extinct. Long ago they were present at Crathes. Until six years ago, however (say 1874), Badgers were to be seen, and some were frequently killed in the woods of Hazelhead, about three miles west of Aberdeen. The last seen there, of which Mr. George Sim has any knowledge, were a male and female which had taken refuge in a waterlade,

and had been drowned when the water was let down upon them. At Park Hill, where they had a stronghold, they were killed out about ten years ago (say 1870). Park Hill is about six or seven miles north-west of Aberdeen. Mr. Sim says he is not aware now of any places in the county which can be said with certainty to hold Badgers, excepting one property, which he mentions by name. At this place they were extirpated about forty years ago, but have lately reappeared, and they are now carefully preserved, and looked upon as harmless by the proprieter. In the extreme north-east of the county, the Rev. W. Gregor got one twenty-four years ago (say 1856), and reports it as being now very rare in the district; it is indeed, I think, probably extinct. A few still, in 1880, exist about Braemar, however, and their tracks were seen in 1880—81 on the snow near Old Mar Lodge, and I have record of one killed in 1856 on the braes of Mar, but none since then.

Argyleshire.—In Sunart there are still a good many Badgers, but few fortunately are killed, as they go deep into carns of stones. One was killed on the top of Ben Resipol by terriers when hunting for foxes in April, 1876, and the keeper trapped another in May of the same year on the "rough side of Glentuirc" in a trap set for Hooded Crows. It is somewhat curious that they seem to be quite unknown in the adjoining promontory of Ardnamurchan, west of Salen, which marches with Sunart. Mr. J. J. Dalgleish, who has known the place since 1856, has never known of Badgers there, nor have any been seen by the keeper since he came there in 1862. The tangled woods and rocky and almost unapproachable places overlooking Loch Sunart, however, might possibly harbour a few of these animals for a long time without much chance of their detection, especially of late years, since the woods have got up. The Rev. A. Stewart, of Ballachulish, seems to consider the Badger much rarer in Strontian Locheil and Lochaber. He can only instance very few having been killed during the last twenty years. Twenty years ago (say 1861) he saw a living female with two cubs, which had been captured previously about ten miles north of Fortwilliam. About twelve years ago (say 1870) he saw a very fine and savage old male in the possession of a shepherd at Strontian. It was afterwards sent south to a friend in Dumfriesshire. About five years ago (say 1877) a female was killed in Glen Etive. There is

also—or was—a stuffed specimen in Balachulish House. It was killed, Mr. Stewart was told, in Glen-a-Chaolis, about a mile and a half inland from the present hotel. I have few returns of consequence from other parts of Argyleshire, but they are still found in many parts of the county, and I know of one locality, not far from the Pass of Brander, where they have existed almost from time immemorial, and are still to be found every season. I shall be glad to receive further statistics from this county.

Kincardine.—Fifteen years ago at Benholm Castle, the keeper at that time there, killed ten Badgers the first season. After that he received instructions not to kill any more. They are reported as plentiful in the county up to 1847, when a litter was destroyed; and in 1865 one was shot, but was supposed to be a wanderer.

Forfarshire.—From this county I have scarcely any returns, and would be glad to receive some. At Gray House one was caught in 1849, as I am informed by Capt. H. W. Feilden.

Fifeshire.—Along the sea-coast, in the east of Fife, it was at one time abundant, but is much rarer now, as well as in the interior. They lingered in Kinglassie Wood until 1848, when two were trapped at Camber House. Kinglassie Wood has since been cut down, however, and, as far as I can learn, none have been seen there since. It was cut down in 1848—1849 (*vide* 'The Squirrel in Great Britain,' p. 140). A year or two ago one was caught on Bunarty Hill, which lies up towards the Cleish Hills, and is well wooded on the southern slope. It is forty-two years (say 1838) since a Badger was killed in the district around Largo, as far as my informant, Mr. Charles Harvie, can learn. The sea-cliffs east of St. Andrew's were their breeding haunts fifty years ago, and it used to be the practice to "draw the Badger" in a hole on St. Andrew's Links. Of later years they have been known to occur in the west of the county, but their occurrence in the east is doubtful. At Markinch, however, one was obtained on the 14th of February, 1880; but it is many years since any were seen here before.—('Scotsman,' 10th February, 1880.)

Kinrosshire.—In this small county I have no record of any specimens obtained of late years, but should be glad of data, if any such are forthcoming.

Perthshire.—This county still holds a prominent place in Scotland, notwithstanding the extent to which game-preserving is carried, as sheltering many of our rarer and most interesting animals, and the information obtainable is considerable as regards the Badger, amongst others. In the north of the county they were very abundant about 1842, and for a few years afterwards along Loch Erroch side, and also in Rannoch, but they are rare or almost extinct there now—some correspondents say "extinct." In the Upper Tay district and Breadalbane, however, they are still not uncommon, having been seen at Killiechassie and on the Cluny Rocks as late as 1880, and one having been killed in 1874. It is believed that they are still common in this locality, which is well adapted to their habits. In Remony and Breadalbane, further west, however, they appear to be scarce, and in one part of the district Mr. Dewar claims to have killed the last one seen, in 1844, a little west from Kinmore on the south side of Loch Tay; but on Mornish Hill, and above Finlarig, Mr. Dewar killed eight during the last ten years. In 1871 he got the mother and two cubs. At Chesthill, Glenlyon, two were killed during seven years since 1872, and they are not yet extinct there; while, about Glenhochy and Killin, four were killed in 1879. At Glen Queich, south of Loch Tay, near Easter Shian, it is probably extinct, and the last killed was about 1860, on the borders of Amulree and Easter Shian Moors. In the east of the county, between 1870 and 1880, five were obtained, but Mr. Paterson, of Dalnaglar, thinks they must have come long distances, and were not really daily inhabitants of the glen. A few still exist about Dunkeld, but it is thought will soon be extinct unless preserved. In the Carse of Gowrie and the Sidlaw Hills, Colonel Drummond Hay remembers them as very abundant about 1820—24, but they have been extinct now for many years. At Dupplin several have been killed of late years. From all the Valleys of the Earn and Allan west of this, I can hear of none obtained in late years. In the west of the county Mr. Macpherson killed one on Ben More, and they are still not extinct on the Braes of Balwhidder, where one was got in 1879, and another the same year at Glenbucket. Nor are they extinct around Callendar. One was killed at Blairgany three years ago (1877), and now, if any remain, they are preserved. They were once abundant at the head of Edinchip Glen amongst the great

loose carns, and in Glen Ogle above Loch Earn, but it is doubtful if they now exist there. It thus appears that the Badger has become rarer or extinct in the north and a great part of the south of the county; also in the south-east and east, but retains a hold in the west and central portions. Again, in the south-east, one was caught about seventeen or twenty years ago (say 1860—63) by a poacher named Frank Morgan, along with two others, Peter Allison and John Pryde (all still alive), who caught the said Badger in a common Hare-net at a gate. It was kept alive, but again escaped. This happened on the Estate of Cromlix.

Dumbartonshire.—In 1873 Mr. John Colquhoun, in his 'Feræ Naturæ of the British Isles,' wrote, "Each rocky carn capping the Glenfalloch range of the Grampians has its family of Badgers." How far this is true at present I cannot exactly say, but I do not think they are now so generally abundant. In Arrochar, however, they are still very plentiful, and are unmolested. There are many colonies between Arrochar and Luss, and on the hills of Glenfalloch; the whole ground being rooted up by them, as I am informed by Mr. Colquhoun. He adds, "There have been Badgers in Glenfinlas from time immemorial, though in all probability they will in time be rooted out."

(To be continued.)

NOTES AND OBSERVATIONS ON BRITISH STALK-EYED CRUSTACEA.

By John T. Carrington, F.L.S., and Edward Lovett.

(Continued from vol. v., p. 461.)

Pilumnus hirtellus, Leach.

Being the only British representative of this genus, it will not be necessary to consider separately the generic features of this species. It is somewhat diminutive in size, scarcely attaining, and rarely exceeding, an inch in breadth of carapace. The latter is of very compact form, rather convex, and covered on the anterior portion with closely-set hairs. The anterior margin is denticulated and the lateral margins are straight, narrowing towards the

posterior margin, which is also nearly straight. The abdominal segments are seven in number in both sexes, those of the male tapering off after the third segment, whilst those of the female are, as usual, much broader on account of the protection required for the ova.

The external antennæ are long, and the third joint longer than the second; the internal antennæ are club-shaped. The anterior pair of legs are very powerful in comparison with the size of the animal, thick and somewhat cylindrical in form. Perhaps the most remarkable feature in connection with them is, that one anterior claw is almost always nearly twice the size of the other, and that this disparity is not constant, for in some cases the right and in others the left claw is the larger. This does not appear to be the result of difference in sex, or locality, but is apparently a chance phenomenon. The remaining pairs of legs are rather plano-convex in form, the convex surface, of course, being the upper one. They are very hairy.

The colour of this species is usually of a warm reddish brown, with paler speckled markings. The forceps are pale brown. Like many others, the colour of this crab seems to be modified in some degree by the locality inhabited by the animal. Some specimens that we obtained from Weymouth were all of the tint referred to by Bell as occasionally occurring; whilst others that we obtained from the Sussex coast were reddish brown, and in some instances very pale. Here we have two different localities, not only geologically, but in the development of their marine flora, and hence possibly the variation in this, as in many other species.

Pilumnus hirtellus is with ova during the summer months. The eggs are yellowish when first exuded, becoming darker in colour as they mature; they are exuded in the arly summer months in warm localities, but later in less favourable places. Bell mentions that he only found one female, and that dead and mutilated, among twenty or thirty specimens. We have, however, obtained a number of specimens of this sex from various localities.

This crab, though well distributed, is evidently a frequenter of warm areas; not only is it found on our southern and western coasts, but it is a fact to be noticed that the finest specimens we have ever seen were from the Channel Islands and the Devonshire and Dorsetshire coasts.

Other species of this genus seem to be widely distributed, and are recorded from such localities as the Mediterranean, Red Sea, Australia, east and west coasts of East Indies, and South America.

As regards the British Isles, we have obtained *Pilumnus hirtellus* from many localities of the south-western coasts, as well as from the Channel Islands. Bell states that it appears from Mr. Thompson's catalogue to be widely distributed on the coasts of Ireland, but in small numbers. It is, however, elsewhere recorded as common near Galway, and was washed up near Dublin after severe gales. It is frequent at Plymouth. Prof. Stalio gives it as occurring in the Adriatic Sea.

Pirimela denticulata (Leach).

The carapace of this rare species is roughly circular, being nearly as long as it is broad; the anterior margin is much denticulated, and the lower lateral margins converge towards the posterior margin; the upper surface is decidedly convex, the regions being well marked. The anterior pair of legs are equal in size, carinated, and the fingers grooved and serrated on the inner margins; the remaining legs are somewhat flattened and slightly fringed with hair on the edges. The abdomen is seven-jointed in the female and five-jointed in the male.

In size this beautiful little crab rarely exceeds an inch in diameter of the carapace. Its colour varies somewhat, being usually of a brownish tint, with occasionally a tinge of green.

It is evidently one of our rarest species. Bell records a few isolated cases of its capture on the coast near Sandwich, Bantham, Torquay, and Compton, Isle of Wight, as well as from Scotland and the Antrim coast. It has been recorded from St. Andrews (rare), Galway (rare), Belfast, and South Devon. Mr. Norman has obtained it at Guernsey and Herm in the pools accessible at extreme low tide, where it had probably gone for exuviation. In Cornwall it is sometimes found amongst trawlers' refuse. We have received specimens from the Channel Isles, Sussex coast, and Brixham.

In the 'Natural History Review' (vol. iv. p. 156) Dr. Kinahan gives an interesting account, with plate, of the zoæa form of this rare crustacean.

Carcinus mænas, Leach.

Again we have an instance of a genus represented by a single species, which is the commonest British crab. It is popularly known as "The Shore Crab," which is so commonly met with in our sea-side rambles. Although so extremely plentiful, it is not, on account of its small size, much used as an article of food, except in some districts by the poorer classes, although its flavour is decidedly sweet and pleasant. It is not unusual, however, to see barrows laden with this species hawked by costermongers at the east end of London.

The carapace of *Carcinus mænas* is slightly convex, regularly denticulated on the anterior margin, which is an even curve. The lateral margins converge towards the posterior margin at an angle of about 45°. The posterior margin is quite straight, with an elevated waved margin, when viewed vertically. The anterior pair of feet are of moderate size, the wrist toothed and the pincers denticulated.

The chelæ are of great service to the owner, for no other crab has such pugilistic and predatory habits as *Carcinus mænas*. If driven to defend itself, it will fiercely attack with these by no means insignificant weapons. If, however, it can burrow in the sand or mud of the shore it will do so, leaving its eyes, antennæ, and anterior legs uncovered. In this position few of its enemies will dare to attack it. The remaining legs are somewhat simple and smooth, the fifth pair having a few hairs on their lower margin.

The abdominal somites are five in number in the male and seven in the female, the latter being, as usual, broad and adapted to cover a large mass of ova.

In the case of this crustacean the ova are not of so brilliant a colour as are those of many other species, being of a dull yellowish brown tint. They are not fixed in such definite groups either, as many of those we have referred to, but are arranged in rows attached to a common centre, each ovum being attached to a main ligature by an equal-sized stem. This arrangement is dissimilar to the usual method on which the ova of the *Brachyura* are attached. The eggs are exuded at intervals extending over a long period. We have obtained the female with spawn from spring to autumn, but consider that this is due, to a great extent, to the more or less favourable conditions under which the animal exists.

The colour of this common but interesting species varies more than that of any other of the British Crustacea, and it is no doubt from the protection that is derived from its very close resemblance in this respect to its surroundings that it is of such wide distribution. On the sandy beaches of most of our shores this crab is invariably of a yellowish or reddish brown colour, the latter tint being more prominent in localities where the sand partakes of a ferruginous character. In estuaries or on shores of a clay or mud deposit, such as at the mouth of the Medway, the colour again becomes assimilated to the surroundings, the animal being of a dull brown, frequently tinged with green. In the rock-pools, however, of such highly favoured localities as the Channel Islands, where, in hollows in the syenitic or dioritic rocks, the *Zostera*, *Ulva*, and other richly tinted Algæ are in almost tropical profusion, there it is that the most beautiful colours of *Carcinus mænas* are developed. Instead of the sombre shades of the inhabitants of sandy or muddy shores we have here specimens marked with the brightest green mottled with white. So striking is the resemblance to its surroundings in these localities that it is at times almost impossible to detect the animal unless it moves.

Even in the tanks of the Westminster Aquarium, this adaptation of colour, as a means of protection, can be clearly observed. Specimens from different localities and of different shades have become of one hue after a short existence under such new conditions of life, those inhabiting tanks with a sandy bottom becoming unicolorous, whilst those in tanks with a shingly floor assume a mottled appearance.

The geographical distribution of *Carcinus mænas* is remarkable; not only is it extremely abundant on almost all parts of the coasts of the British Islands, but according to the 'Annals and Magazine of Natural History' (1874, vol. xiii. p. 405), quoting the 'Proceedings of the Asiatic Society of Bengal' (November, 1873), Dr. J. Anderson is stated to have taken it at Point de Galle. Besides this it has been recorded from the coasts of North and South America, as well as from the Arctic Ocean and the Mediterranean.

Carcinus mænas is of much service as well as of considerable annoyance to fishermen. It is crushed and used by them as bait for the whelk-pots. At Shoreham the children are often employed

catching them for this purpose, their apparatus being simply a piece of string with a fish's head tied at the end of it. A steady trade also exists in catching and sending away Shore Crabs from the Wash and Lincolnshire coast to the south-coast fishing towns, where they are used as just mentioned. Immediately after exuviation this crab is a tempting bait for some kinds of fish; in this soft state they are known as "peelarts." As an annoyance to fishermen, it not only walks off with the bait from ground-lines, but often when fishing from a boat the hooks upon being drawn up are found to be occupied by several of these crabs, to the exclusion of any fish.

On the Sussex coast the Shore Crab is called the "Jack Avell;" on the Norfolk coast, "Swinard;" and in Jersey, "Verte Crabbe."

Portumnus latipes (Pen.).

Although this remarkably interesting little crab is the only one of the genus yet known from the British seas, several others exist and have been described. M. Milne-Edwards places them in the genus *Platyonychus*. The two generic names seem to have given rise to some slight confusion, and we would refer our readers to Bell's explicit table of characteristics of the two genera.

The carapace of this species is usually about an inch long, and the same across the broadest part. The anterior margin is rounded, the orbits forming circular indentations in the curve; on each latero-anterior margin are three tooth-like notches, and between the orbits are three others, the centre one being the longest. The carapace is smooth and shining, of a dull whitish brown, with just a tinge of purple, and having a pitted appearance.

The chelæ are equal in size, the movable forcep much curved, the claws slightly ridged and fringed with short hairs. The remaining legs are also slightly fringed with hair. The antennæ are short. The eyes are somewhat prominent and fixed on stout peduncles.

We have had an opportunity of examining the ova of this species, which are very beautiful. We obtained specimens with spawn in the month of May. At that time the ova were of a beautiful straw-colour, and so clear as to be almost transparent when examined microscopically; they are, as usual, attached by

viscid ligatures, but in long strings instead of in bunches—in this respect resembling the foregoing species.

Portumnus latipes is by no means a common species, and, owing to its habit of burrowing, its exuviated shell is more frequently found than the living animal. We have obtained these casts from the Channel Islands, and when at Boulogne, in June of this year, we found a great number of them, very small in size, scattered over the broad reach of sand on the coast there. In May of this year we obtained about a score of living specimens, taken in one haul of a seine-net, at Shoreham. One female was with exuded ova, and others with ova not exuded. Carapaces only have been recorded from sandy ground at St. Andrews and Galway; at Dublin it has been washed up after gales; from South Devon, rare; and from other localities carapaces only are recorded, thus bearing out the idea that it is owing to its habits of life that it is apparently rare, and not often seen alive.

(To be continued.)

OCCASIONAL NOTES.

The Beaver in Scandinavia.—In continuation of my notes on the Beaver in Norway, which appeared in 'The Zoologist' last year, I have now to add that I cannot hear of so much as one individual of this species in Sweden, though I visited last autumn the two neighbourhoods in which I had had reason to suppose it likely that some few might still remain. I came down the whole length of the Torne River from Naimakka (passing on the way the late Mr. J. Wolley's collecting grounds), and could not learn that any Beaver had been heard of in the neighbourhood of that river for about thirty years, which is the most definite information I could obtain. I think this, however, leaves very little room to doubt that they are extinct thereabouts, for a Beaver is not an animal that hides its light under a bushel. The man (a Quän, or Finn), who gave me this information, knows the animal, for he used to see them up to about the time mentioned, but said that they used to be in the small streams, and never in the big river. I returned westwards, *viâ* the Stor Sjön, a locality I had had great hopes of, as the majority of people whom I have questioned on the subject in any part of Sweden referred me to Jemtland; and Lilljeborg mentions the Stor Sjön as being a possible locality. I was here again assured that it was years since any had been heard of thereabouts, and that they had existed most recently in the Fjeld districts, and not down in the lake.

I had a short-lived false alarm here, a gentleman telling me he had seen a Beaver-skin in Ostersund last winter. On pursuing my search to head-quarters, I found that it was nothing more than one of the ordinary stock of American furs in a furrier's shop! Of course, merely travelling through a district is a very different thing from thoroughly searching it; but, though so many people outside Jemtland were confident that Beavers existed therein, yet no one in the province with whom I conversed held out the slightest hope of such a thing; and, though I am very far from being in a position to assert positively that no Beaver exists at the present time in Sweden (and should be very glad to find myself entirely wrong), yet I cannot help being now extremely doubtful about it. In Jemtland I was generally referred to a certain other province, which I hope to visit some day, but do not at all expect my wish to find Beavers there realised. Besides these localities, I naturally heard occasionally of some other locality where Beavers were supposed by my informant to exist; but further inquiries in each case satisfied me that such was no longer the case.—Alfred Heneage Cocks (Great Marlow, Bucks).

Uncommon Bat near Dublin.—On the 22nd June last, at half-past ten in the morning, I saw a large black Bat hawking for flies over the River Dodder, near Miltown Bridge. The sun was shining brightly at the time, and, as I watched it from the bridge, it frequently came quite close, sometimes above, sometimes beneath me. Its ears seemed short. From its dark colour I saw it was not the Noctule, which, from its size, I thought it might be when I first noticed it. It was in company with numbers of Swifts and Swallows. My friend Mr. More, of the Dublin Museum, who is familiar with the Serotine, agrees with me that it might perhaps have been that Bat, which, I believe, has not yet been noticed in Ireland.—Percy E. Freke (Rosemount, Dundrum, Dublin).

[The Serotine can hardly be described as black, or even dark-coloured. It is perhaps more likely to have been Leisler's Bat, which has already been noted in Ireland. See Zool. 1874, pp. 4071, 4236; and 1875, pp. 4419, 4532.—Ed.]

Ornithological Notes from Northamptonshire.—Mr. W. Tomalin, of Northampton, informed me by letter that he shot a Rough-legged Buzzard, *Buteo lagopus*, at Weston Favell, October 5th, 1881, and has recorded this occurrence in the 'Field' of October 15th. A Great Grey Shrike, *Lanius excubitor*, was shot by my friend Mr. George Hunt near Thorpe Waterville, November 1st, 1881, and sent to me in the flesh; this specimen is a female, and I think a young bird of the year. A Ruff, *Machetes pugnax*, was shot by my gamekeeper in a meadow near Pitchmarsh, November 2nd, 1881, and sent to me. I consider this fact worthy

of record, because the above is only the second instance of the occurrence of this species in our own immediate neighbourhood which has come to my knowledge, though the Ruff bred in the Cambridgeshire Fens, at not more than fifteen miles distance from Lilford, well within my recellection. I subjoin the dates of arrival of some autumnal migrants about Lilford, as observed by myself and Mr. G. Hunt above mentioned;—Redwing, *Turdus iliacus*, September 30th; Jack Snipe, *Gallinago gallinula*, October 10th (very unusually late); Grey Crow, *Corvus cornix*, October 11th; Wild Goose, *Anser* sp.?, October 15th; Teal, *Anas crecca*, October 19th (very late); Widgeon, *Mareca penelope*, October 28th; Fieldfare, *Turdus pilaris*, October 29th; Golden Plover, *Charadrius pluvialis*, October 29th; Woodcock, *Scolopax rusticula*, October 31st (about a week later than usual). We had but very few Snipes about our meadows on the Nen till the end of October, about which time a considerable flight dropped in, and upwards of one hundred, amongst which were a large proportion of "Jacks," were bagged by Mr. Hunt and the Lilford gamekeepers between November 1st and 10th. The annual arrival of travelling Wood Pigeons, *Columba palumbus*, took place about the end of October. Mr. Hunt, writing to me from Wadenhoe House, Oundle, November 1st, says:—"The Wood Pigeons have come; they are in flocks of hundreds and hundreds up round the woods, and will soon clear up all the acorns." A large number of these birds breed in our woods and plantations, but we always have an immigration of strangers in the autumn, their numbers apparently depending on the abundance or scarcity of acorns and beechmast, both of which were very plentiful in Northamptonshire last autumn.—Lilford.

Ornithological Notes from Dublin.—We were visited by a terrible sou'-wester on Sunday, November 20th, which extended over the whole of Ireland, and during the week following specimens of Leach's Petrel were observed at the undermentioned places:—At McGilligan's Strand, Lough Foyle, seashore, one; Malahide, Co. Dublin, seashore, one: Clontarf, Dublin Bay, seashore, six; Edenderry, King's County, inland bog, one; Turbotstown, Co. Westmeath, inland lake, two; Ballinasloe, Co. Galway, thirty miles inland, one. At Turbotstown a pair were seen following a boat on the lake; a gentleman, who watched them, mistook them for little hawks. They flew along the margin of the lake for several hours against the wind to the upper part, then settling, drifted back again, keeping head to wind all the time. The stomachs on dissection contained the usual oily matter, and a number of round semi-transparent objects resembling the seeds of aquatic plants. The rusty, faded looking plumage of both, with the exception of the wings, was in an advanced state of moult, some of the tail-feathers being only half-developed, the new dark grey feathers making their appearance about the head and neck. Of those taken at Lough Foyle

and Malahide, there is no information as to whether they were alone or formed part of a small party. Six were seen at Clontarf estuary, Dublin Bay. The Great Northern Railway cuts across the mud-flats, forming a sheltered expanse about a quarter of a mile long and a few hundred yards wide. Up and down and round this place the Petrels kept flying in a zigzag course, following each other in single file, and reaching the margin of the tide for food. Outside an archway in the embankment, where the water rushes out at the fall of the tide, seemed to be a favourite place for them, and here, among the small waves, the little Petrels (looking like large black Swallows), hovered head to wind, and kept tipping the water with their tiny black feet. They were, however, well able to take care of themselves, keeping just out of gunshot, and it was with difficulty that one specimen (in an advanced state of moult) was obtained. The Petrel from Ballinasloe was picked up dead in a field about three miles from that town, and thirty miles from the west coast. As the telegraph wires run through the field, it may have been blown against them during the gale. The bird from Edenderry, King's County, far inland, was put up by a Snipe-shooter at the edge of a bog. On November 22nd, after the gale, I saw a specimen of the Pomatorhine Skua at Sutton, Bay of Dublin; it was chasing a Black-headed Gull when seen first, and was observed a few days later in the same place. On December 2nd I had a good opportunity of observing a flock of thirty or forty Snow Buntings; they were very tame, allowing me to walk up to them within five yards whilst feeding among the sand-hills. They were in various stages of plumage, the beautiful white-winged adult birds being mixed among the grey and dark brown plumaged birds of the year.—A. Williams (7, Grantham Street, Dublin).

The Peregrines of Salisbury Cathedral.—They are old friends of mine, and I believe they have inhabited the spire of our Cathedral from time immemorial. I have been here since 1861. The first time I think I noticed them must have been in 1864, and no doubt I ought to have done so before had my eyes been open; but never thinking of seeing such birds, they may have ere that escaped my notice. It was, then, in 1864, or possibly in 1865, that, being in the confines of the Close of Sarum, I was attracted by the piteous cry of a Peewit far above my head, and, on looking up, saw a Falcon and Plover both climbing the air as fast as they could go, the Peewit ringing in small circles, the Falcon making bold sweeps and mounting so quickly that she seemed almost to be walking upstairs; as soon as she ascended high enough, down she came at the Plover, but failed to strike it, the Plover descending in spiral curves like a corkscrew. After seeing this I kept my eyes open, and soon found that a pair of Peregrines roosted on the spire regularly every night. During that year I was constantly down in our water-meadows shooting, and I picked

up four different kinds of birds killed by them, *viz.*, Wood Pigeon, Moorhen, Partridge, and Wild Duck, the last so fresh that I took it home and dined off it; I might possibly have disturbed her. I used then to go up to the eight doors of the Cathedral (*i. e.*, where the spire springs from the tower, the tower being 207 feet and spire 193), and there I used to find various remains left by the Falcons, showing that it was a favourite resort of theirs. Amongst other things I picked up there was a Snipe's leg. On one occasion, when I was up at the eight doors, a fine Falcon (hen bird) settled on the fretwork just above my head, some sixty feet or more, and she did not seem to take the least notice of me. I could see every feather on her, and she was in good adult plumage. This must have been about 1867—1868, so it certainly was not the "Queen of Sheba" [a trained hawk that was lost and supposed to have taken up her quarters on the spire]. About 1864 or 1865, I one day noticed no less than four Peregrines, all soaring round the spire at the same time, one of which perched on the knob of the cross above the weathercock. This certainly looked like the old ones with their young, but unfortunately I cannot remember the date or time of year, though I feel sure it was in the late summer or early autumn. In 1866 the spire was restored, and, after returning from a six weeks' outing, I heard that one of the workmen had shot one of the "big hawks." I immediately inquired, and found the foreman had it, and valued it as a memento of his work at the Cathedral. I went to him, and, after seeing my birds, he let me have it for a consideration. It was villanously stuffed. I sent it up to Ward, of Vere Street, to be redone. Two days after I returned I was working in my garden in the Close, when I heard a noise, as I thought, of a plank thrown down on the roof of the Cathedral. But my man, who was with me, said "That's the other big hawk shot; I know the man was looking out for it." The next night but one the man brought it down to me. It was the Falcon, a fine adult female, evidently having previously been caught in a gin, her upper mandible being broken, and one toe of the left foot being wanting. He had taken it round the town to sell it, and at last, hearing that the foreman had given me the other, he brought it to me. He said there were two others there, and he would get them for me. These I saved, however, telling him I knew the Dean would not like it, and would send away any man who killed them. The Falcon was in the middle of the autumn moult, and therefore rather ragged in plumage; the Tiercel, killed about a month before, was in adult plumage, and had finished moulting. Since that date (1866) I have on and off always seen the Peregrines round the spire, especially in the winter, when they frequently roost there, our water-meadows affording them fine wintering grounds. About 1872 or 1873 I had a fine view of a pair flying about some fine elms in a park in front of the vicarage. I watched them for half an hour or so; at last the Tiercel flew off to the Clarendon Woods, and, giving a peculiar cry, the Falcon who

had stopped behind darted after him, and the rapidity of her flight when she went away in earnest was something marvellous, being out of sight, with a clear horizon, in a few seconds. In 1879 there was a great talk in Sarum about the Peregines on the spire, the majority of people not having apparently noticed them much before; and they were said to be building there. This proved to be more or less correct, for the boy who rings the bell got up and took the eggs. As far as I could discover there was no nest, however, the eggs being laid in the gutter. There was quite a *furore* about it, and the boy was warned that if he ever disturbed them again, he would be dismissed on the spot. In 1880 it was reported that they were building there again. The eight doors, therefore, were locked, and no one was allowed to go up, for I asked myself; but the answer was that strict orders had been given by the Dean and Canons that no one was to go up there until the birds had flown. However, about a month or so afterwards one of the Canons, whom I know personally, went up to inspect, as he took an interest in such matters, and there he found two eggs laid in two different gutters, but no attempt at a nest made, the eggs having evidently been there for a month or more. These two eggs he has now himself, and will, I think, give them to the Museum. This year (1881) apparently no eggs have been deposited there. I was up at the eight doors about the middle of April, and found remains of pigeons, &c., but nothing else, and the Canon told me, on the last day of May, he had not seen or heard of the hawks for the last two months, whereas before that time he heard them regularly about eight o'clock in the morning, making a great noise, which was just as he entered his study, and when he always looked for them. The workmen, in 1866, used constantly to see them bring up various birds to devour there. It is quite possible that the "Queen of Sheba" may have paid the Temple a visit, hoping to find a Solomon who could answer the "hard question" where to build her nest in safety in these perilous days; but I think the subjoined account militates against her, or proves anyhow that we are independent of her.—A. P. Morres (Britford Vicarage, Salisbury). [Communicated by Capt. F. H. Salvin.]

Habits of the Storm Petrel in Captivity.—I was much interested in the notice of the habits of the Storm Petrel which the Rev. Mr. Mathew quoted in 'The Zoologist' for December last (p. 489). However, I do not agree with the statement that these birds "never take the water like ducks," &c., and being forced into it "would perish as certainly as any land bird." During the years 1871-2 I had very many opportunities of observing this species, and have often observed it alight on and rise from the surface of the sea. I particularly remember one very calm day near the equator, when hardly a breath of wind was to be felt and the sea was as smooth as a mirror, that a great many Storm Petrels were noticed resting on the water. On lowering the gig and pulling towards them they swam

slowly from us, till, on getting too close, they rose one by one, only to settle down a little farther off. This was repeated several times with the same result. On the other hand, some Albatross, that were also near, seemed far more reluctant to rise, and did so only after great difficulty, striking the water for several yards with feet and wings before they got fairly "under weigh," and sometimes disgorging their finny prey to lighten them. It was only in calm weather, though, that I ever noticed the Petrels alight; at other times they were always on the wing.—J. M. Campbell (Kelvingrove Park, Glasgow).

[It is not at all unlikely that the captive Storm Petrel referred to by Mr. Mathew was in ill health, and the oil-gland affected; hence the bird was unable to keep its plumage waterproof.—Ed.]

Fork-tailed Petrel.—Two specimens of this species were killed in November in the West of Scotland, one at Oban, the other a day or two after at Mearns, a village in Renfrewshire, a considerable distance from the sea, where it had been driven by one of the recent gales.—J. M. Campbell (Kelvingrove Park, Glasgow).

European Birds observed in North America.—I shall be obliged by the insertion of the following corrections in my article on this subject, which appeared in 'The Zoologist' for September last:—Mr. Ridgway informs me that *Phylloscopus borealis* (Blas.) has been found breeding in the Yukon district, Alaska. *Parus cinctus* (Bodd.) breeds in northern Alaska; the eggs have been obtained lately from the Arctic coast at either Fort Rae or Fort Anderson. *Mareca penelope* (Linn.) breeds at the Aleutian Islands. This is in accordance with what I stated in the introduction, when I said, "Of those species which I have retained, some will, I believe, eventually be found breeding regularly in North America, and will be included in its fauna." Mr. Dresser also informs me that he has a specimen of an undoubted Iceland Falcon obtained from the Labrador missionaries.—Percy E. Freke (Dundrum, Dublin).

Errata.—P. 368, for *Larus marinus* read *L. minutus*. P. 376, *for* Brewer *read* Brewster, as the authority for the occurrence of the Ruff in Maine.—P. E. F.

Spotted Crake on the Island of Fetlar, Shetland.—I have lately received from Mr. Ritchie, of Unst (the northernmost of the Shetlands), a specimen of the Spotted Crake, *C. porzana*, shot by him on the adjacent island of Fetlar, on October 25th. This bird was killed among some long reeds growing upon the excellent snipe-ground with which the island is for a great part covered. Mr. Ritchie killed two Water Rails and a large bag of Snipe the same day. As Dr. Saxby makes no mention of the Spotted Crake in his 'Birds of Shetland,' this specimen, so far as I know, is the first recorded example from the islands.—C. Chambers (High St., Edinburgh).

Buffon's Skua and Little Auk in Co. Waterford.—On the 14th October an immature specimen of Buffon's Skua was shot on the Comeraghs, at a distance of fifteen miles from the sea. It attracted the notice of the gentleman who shot it by swooping down like a hawk at some Golden Plover. On the 19th November a Little Auk was found alive in a ditch about seven miles from the sea. After its capture it was placed in a large tub of water, but has since died. It is an adult bird in beautiful plumage, and not very thin. A Storm Petrel and a Turtle were washed ashore at Tramore a few days ago.—J. C. Baker (Newtown, Waterford).

Osprey and Buzzard in Lincolnshire.—Mr. Barber, taxidermist, of Lincoln, showed me an Osprey and a Honey Buzzard, both of which were recently shot in the neighbourhood of Lincoln. Two or three specimens of the Rough-legged Buzzard and one at least of the Common Buzzard were shot not far from here at the end of last year. Mr. Barber also showed me a white Jay, without a single normal marking, taken this year from a nest which also contained a pied specimen.—W. W. Fowler (Lincoln).

Glossy Ibis in Lincolnshire.—An immature specimen of this bird was shot at Skegness, Lincolnshire, on the 9th September, 1881. On dissection it proved to be a male.—J. Cullingford (University Museum, Durham). [This is the specimen to which reference is made, Zool. 1881, p. 469.—Ed.]

Spinous Shark at Penzance.—Two fishermen of St. Michael's Mount, fishing with hook and line within the headlands of the Bay in about fourteen fathoms water, caught a Spinous Shark on the morning of December 12th. Before I saw the fish it had been completely gutted and very much cut up, and buried in a pile of manure; but I had it dug up, and saw the remains of the head (the jaws had been cut out). All the back part of the belly and the dorsals and caudal fin were entire. The fish measured eight feet four inches over all, and I was told that it weighed three hundredweight, with which statement my judgment agrees. The head was very rough, with tubercles on it, but there were no spines. All over the back and two dorsals, and over the thicker part of the tail, there were the irregularly-placed sharp spines characteristic of the fish, but they were not so numerous nor so long as those which I had before seen, and I could find none on the part of the belly which I saw. I was particular in examining this, because I had been told beforehand that there were no spines on the belly. The tail was very large, and had both lobes fully developed. The stomach of the fish contained a rusty conger-hook, and nothing else. This is remarkable, isasmuch as in nearly, if not all, the recorded specimens, of which the stomachs have been examined, the same emptiness has been observed. It is probable that the fish may have been near the ground on which it was

caught for ten days or a fortnight, because our fishermen of Penzance have noticed during that period an unusual scarcity of fish there. And, assuming this to be so, it may point to some power on the part of the fish of ejecting the contents of its stomach under the terror of capture. So far as I could judge of the fish in its damaged condition, it was a flabby Ground Shark, not a Sarimmeo.—THOMAS CORNISH (Penzance).

THE DORSE, OR GOLDEN COD, ON THE BANFFSHIRE COAST.—A fine specimen of the Dorse, *Gadus callarius*, was taken in the Bay of Cullen, a small town on the Banffshire coast, on December 3rd. Examples have been met with both in England and Ireland, but though a northern species I am not aware of its being met with before in Scotland. As it is a rare visitor to Britain, and apparently but little known, perhaps a brief account of the specimen in question may be worth recording. The description is as follows:—Length nearly 2 feet; circumference across the middle of first dorsal fin, 12½ inches; length of head, 4¾ inches; fin rays—first dorsal 19, second and third rays the longest; second dorsal 20, fourth, fifth and sixth the longest; third dorsal 21, seventh and eighth the longest; pectoral 18, third and fourth longest; ventral 7, third longest; first anal 21, seventh, eighth and ninth longest; second anal 20, fifth, sixth and seventh longest. The caudal, which was slightly forked, being injured, I could not make out the exact number there, but I think there were over forty. The colour of the fish above and descending slightly below the lateral lines, as also on the top of the head, was of a beautiful golden yellow; the sides were of a silvery hue, which extended to the belly and on to the cheeks. All the fins and tail were likewise tinged with a delicate golden hue. The sides and head had a few dark markings here and there; the whole, however, had a very glossy and metallic lustre. The head was of a very peculiar shape, the sides being literally perpendicular, whilst the crown from about an inch and a half from the mouth to beyond the eyes was perfectly flat. It then rose into a rather sharp ridge, which extended back to the first dorsal fin. The mouth appeared very small for the size of the fish, the gape being only about an inch and a quarter. The barbel was scarcely a quarter of an inch in length. Both jaws were armed with very minute teeth, a few on the vomer, but none on the tongue. The eye was very large, fully an inch and a half across. The lateral line in this case had two slight curves, one upwards above the end of the pectoral, the other downwards from near the end of the second to about the middle of the third dorsal, then straight to the tail. The upper jaw projects considerably beyond the lower. The head as a whole looks rather diminutive for the body of the fish; at least, so it appears to me. The stomach contained live crabs,—a Cleanser Crab and a minute Porcelain Crab,—thus showing that the fish had been feeding along shore.—THOMAS EDWARD (Banff).

THE DIGESTIVE ORGANS OF THE PILCHARD. — While visiting the S.W. coast of England during the past autumn, the food of the Pilchard, *Clupea pilchardus*, and the anatomy of its digestive cänal, claimed my attention. The fishes upon which my investigations were first made come inshore of an evening in order to obtain food; so, after sundown, nets were shot between their feeding grounds and the deep sea to intercept their return. On opening one of these fishes one sees the three separate portions of the stomach; anteriorly the œsophageal going from the mouth to the sac-like second or cardiac division; while the pyloric part passes laterally from between the two first portions to the commencement of the small intestines, and appears solid to the touch. On slitting them up we see, on the inner surface of the œsophageal portion, several rows of large proventricular glands, behind which the mucous membrane is plicated into longitudinal or slightly oblique folds: these are interrupted opposite the opening into the pyloric portion, but reappear in the cardiac part. The walls of the pyloric portion are at least twice as thick as those at any other part of the stomach, while the mucous membrane is densely studded with round but small glandular prominences. In every instance, out of hundreds examined, this division of the stomach was distended by what may be likened to a sausage-shaped mass, consisting of an outer covering formed by secretion from the glandular mucous membrane, which was distended by the remains of Crustacea in their zœa-form, while similar food was likewise present in the cardiac portion of the stomach, but not enveloped by any unorganised membrane. Having subsequently received some more examples which were not so distended with food, still this remarkable membrane, hitherto, as I believe, unnoticed among fish, was found. Weber, in 1820, pointed out that the air-bladder of the Herring possessed a posterior opening into the progenital canal, which I likewise found to be the case in the Pilchard and in the common Sprat.—FRANCIS DAY (Cheltenham).

RARE STAR-FISHES ON THE COAST OF ABERDEEN.—On the 10th of May last one of my fisher friends brought me a fine specimen of *Strichaster rosea;* and in June a specimen of *Astronyx loveni* was brought to land by one of our "great line" fishers. As both the above were new to me—the former described by Forbes as "*Cribella rosea*," the other not known when he wrote—I took both to London, and, through the kindness of Professor Jeffery Bell, had them identified from specimens in the British Museum. *Astronyx loveni* was first described by Miller and Loschell in 1861, and the only British specimen known apart from mine was described by John A. Stewart of New College, Edinburgh. The dimensions of the one now referred to are as follows:—Longest ray, part of which is wanting, 18 in. long; second and third, also imperfect, 14 and 15 in. respectively; fourth, perfect, 15¾ in. Of the fifth only 2½ in. remain. On the upper side of the

body two rosy, round, irregular-edged plates run from the base of each of the rays, and nearly meet in the centre of the disk, the spaces between being of a soft leathery-like substance, and of a dark brownish colour; rays and dorsal plates white.—George Sim (Aberdeen).

Morphology of the Temnopleuridæ.—The following is an abstract of a communication by Prof. P. M. Duncan, read before the Linnean Society, December 15th, 1881:—The *Temnopleuridæ*, a subfamily of Oligopores, are remarkable for their sutural grooves and depressions at the angles of the plates. The author examined the grooves and depressions, or pits, in *Salmacis sulcata*, Agass., and found that these last are continued into the test as flask-shaped cavities, sometimes continuous at their bases, which are close to the inside of the test, but do not perforate. This is the case in the median vertical sutures of the interradium and ambulacrum. Between the interradium and the poriferous plates of the ambulacra are numerous pits in vertical series, which are the ends of cylinders closed and often curved within. Altogether the undermining is considerable. The grooves over the sutural margins are losses to the thickness of the test. The edges of the contiguous plates are sutured together by a multitude of knobs and sockets one-eighth of an inch in diameter, visible with a hand lens. In the vertical sutures there is an alternate development of knobs and sockets on each plate, corresponding to a similar development on the opposed plates, and these structures lining the pits. Between the horizontal plate-edges are sutures remarkable in their distinctness and position. The apical edges of the interradial plates have multitudes of sockets, and the actinal edges have, correspondingly, knobs; whilst the apical edges of the ambulacral plates have knobs, and the actinal ones have sockets. The ambulacræ, on their interradial edge, have nothing but knobs, and the interradial plates corresponding sockets; so that a great series of knobs and sockets ("dowelling") prevails. *Temnopleurus torematicus*, Agass., gave similar results, modified by the great development of the grooves, and the young form was shown to differ from the adult, and to have rows of knobs and sockets and barely penetrating pores. The arrangement in *Salmacis bicolor* and *Amblypneustes ovum* was considered. The pits have an importance, for they increase the superficies of the derm, and near the peristome, as indicated by Lovén, they contain *Sphæridia*. The paucity of knowledge respecting the union of the plates of the Echinoidea was noticed, and the nature of the suturing of an *Echinus* and *Diadema* was explained, the first resembling part of that of a young *Temnopleurus*, but it was without knobs and sockets. The author concluded by separating the *Temnopleuridæ* into two divisions—those with pores, and those with grooves without pores. The last are the oldest in time, and resemble young modern forms, which subsequently develop pits. He reduced the number of genera considerably.

PROCEEDINGS OF SCIENTIFIC SOCIETIES.*

Linnean Society of London.

November 3, 1881.—Sir John Lubbock, Bart., M.P., F.R.S., President, in the chair.

In opening the session, the President regretted it to be his melancholy duty officially to announce the death of the Treasurer, Mr. Frederick Currey, who was held in universal esteem. Thereupon a resolution was proposed, which was sympathetically spoken to by the former President, Mr. George Bentham, and his former colleagues and Secretaries, Messrs. H. T. Stainton and Prof. St. G. Mivart, which resolution was carried unanimously.

The Rev. W. H. Jones and the Rev. W. Moyle Rogers were balloted for and elected Fellows of the Society.

Prof. T. Spencer Cobbold exhibited under the microscope about a hundred eggs of *Bilharzia hæmatobia*. They were taken from a gentleman who had just arrived from Egypt, and who was the victim of hæmaturia, induced by the parasites in question, and supposed to have been contracted during a hunting expedition. By adding water nearly all the eggs were hatched during the meeting, and the rare opportunity was thus afforded of witnessing the behaviour of the newly born ciliated animalcules.

Mr. R. M'Lachlan exhibited and made remarks on a parthenogenetically bred beetle (*Gastrophysa raphani*). The specimen had been the second reared by Dr. J. A. Osborne in Ireland. The egg which produced it was one of a batch of forty-two laid by a virgin female on June 14th, and was hatched on the 24th. Moults occurred on the 1st and 5th July, metamorphosis to pupa July 14th, and the imago appeared July 23rd.

A description of some new birds from the Solomon Islands and New Britain, by Mr. Edward P. Ramsay, of Sydney, was then read by the Secretary. The new species are:—*Ceyx sacerdotis*, *Pomara* (*Monarcha*) *ugiensis*, *Calornis feadensis*, *Carpophaga Finschii*, *Baza Gurneyi*, and *Astur pulchellis*.

December 1, 1881.—Sir John Lubbock, Bart., M.P., F.R.S., President, in the chair.

The following gentlemen were balloted for and duly elected Fellows of the Society:—Capt. P. Greene, G. S. Jenman, W. Landau, E. G. Warnford Lock, Rev. J. P. A. Sturges, Lieut.-Col. C. Swinhoe, G. C. Walton, C. S. Wilkinson, G. S. V. Wills, and the Rev. George Wilson.

Mr. J. Harris Stone exhibited specimens of the dried plant, and made remarks on *Lychnis viscaria* as a trap for ants. He pointed out that three or four glutinous, sticky rings are situate immediately underneath the nodes in the flowering stalks. Ants climbing are arrested and die in numbers at the sticky zones. In Norway he had observed 95 per cent. of the plants with dead ants thereon; and he submits (1) whether the zones are a protection to the flowers, (2) the ants noxious, or (3) their dead bodies serve as nutriment to the plant?

Dr. Cobbold exhibited diseased roots of *Stephanotus*, which he had received from Dr. Masters. They swarmed with myriads of nematode worms, and were also covered with minute Acari. He referred the worms to the genus *Leptodera*, and stated that thirty years back he discovered similar parasites on the shrivelled leaves of Gloxinias.

Prof. Owen read a paper "On the Homology of the Conario-hypophysical Tract; or the so-called Pineal and Pituitary Glands." He propounds the view that it is the modified homologue of the mouth and gullet of Invertebrates; that the subœsophageal ganglia or ganglionic masses, or neural cords, constitute the centres whence are derived and caudally continued the homologues of the vertebrate spinal cord.

The President, Sir John Lubbock, then read a paper "On the Sense of Colour among the Lower Animals," containing an account of some experiments made on a species of *Daphnia*, a small fresh-water crustacean, in order to determine its power of distinguishing colour and the limit of its power of vision. If a beam of light is passed through a prism and thrown on a white surface, we get, as everyone knows, a spectrum consisting of the colours of the rainbow, beginning at one end with red and ending with violet. But though the red and the violet are the limit of our powers of vision, it is hardly necessary to say that the rays of light extend farther in both directions; that is, beyond the red at one end and the violet at the other. It is an interesting problem, then, whether the limits of vision of other animals are the same as ours, or whether they are able to perceive any of the rays which are invisible to us. M. Paul Bert, some years ago, made experiments with *Daphnias*, and came to the conclusion that their limits of vision are the same as ours. Nay, he even felt justified in extending their generalisation to all animals. Sir John Lubbock, however, has already shown that ants do possess the power of perceiving the ultra-violet rays. His present experiments were made on *Daphnias*. He pointed out that if his conclusions differed from those of M. Paul Bert, it was probably because—thanks to Prof. Dewar and the authorities of the Royal Institution—he was able to experiment with more perfect appliances. He considers that *Daphnias* have certainly the power of perceiving the ultra-violet rays considerably beyond the limit visible to our eyes. This fact opens up various physiological questions of much interest, as for instance,

whether these animals perceive a colour different from any of those known to us, and of which, indeed, we can form no idea.

Mr. M'Lachlan communicated a paper "On the Neuroptera of Madeira and the Canary Islands," prompted by the researches of the Rev. A. E. Eaton in November and December, 1880. The author gives a *resumé* of all that had been published on the subject, and a tabular statement of the species found in the islands, indicating those known also to exist in Europe. In all about fifty-three species had been noticed from the islands, of which nineteen are known inhabitants of the European Continent, and four African; thirty-seven species had been found in Madeira, thirty-one in the Canaries, sixteen being common to both. The paper concluded with a detailed account of the species, including descriptions of several new ones.

December 15, 1881.—George Busk, F.R.S., Vice-President, in the chair.

Messrs. W. H. Coffin, E. Milner, and S. H. Parkes were balloted for and elected Fellows of the Society.

Prof T. S. Cobbold exhibited a large Guinea-worm (*Dracunculus*), taken from a pony, and forwarded by Vet.-Surg. Frederick Smith from Madras. Only one previous instance of the occurrence of this parasite in the horse has been mentioned, and its authenticity was doubted by Fedschenko and other helminthologists.

Prof. Duncan gave the gist of a paper "On the Morphology of the Test of the *Temnopleuridæ*," for a notice of which see p. 25.

A communication was read from Dr. Geo. Edw. Dobson "On the Digastric Muscle, its modifications and functions;" and part xi. of the "Mollusca of the 'Challenger' Expedition," by the Rev. R. Boog Watson, was read in abstract.—J. Murie.

Zoological Society of London.

November 15, 1881.—Prof. W. H. Flower, F.R.S., President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the months of June, July, August, September and October, 1881, and called attention to certain interesting accessions which had been received during that period.

Prof. Newton exhibited a specimen of *Emberiza rustica*, recently shot on the coast of Yorkshire. [See 'Zoologist,' 1881, p. 465.]

The Rev. Canon Tristram exhibited and made remarks upon skins of a Darter and Pigmy Cormorant procured in June of this year on the Lake of Antioch.

Mr. Sclater exhibited a specimen of the Glossy Ibis, *Plegadis falcinellus*, belonging to Sir Henry Mildmay, Bart., which had been shot in Hampshire in September last. [See 'Zoologist,' 1881, p. 494.]

A communication was read from MM. L. Taczanowski and J. Stolzmann on the habits and various plumages of the rare Humming-bird, *Loddigesia mirabilis*.

Communications were read from M. L. Taczanowski on two nearly allied species of Humming-birds of the genus *Steganura* from Peru, and on a new species of *Mustela* from North-Eastern Peru, which he proposed to call *Mustela Stolzmanni*.

Mr. W. A. Forbes read notes on the structure of the palate in the Trogons (*Trogonidæ*), and on the systematic position of *Eupetes macrocercus*.

A communication was read from Mr. E. P. Ramsay, containing an account of the true habitat of *Pycnoptilus floccosus*, Gould.

A communication was read from Mr. E. L. Layard, containing a note on the South African mollusk, *Cœliaxis Layardi* of Angas.

A communication was read from Mr. Edgar A. Smith, containing notes on the shells of the genus *Chilina*, with a list of the known species.

Mr. Arthur G. Butler read a paper on some Butterflies from Japan, with which were incorporated notes and descriptions of new species by Montague Fenton.

Mr. H. J. Elwes read a paper on the Butterflies of Amoorland, Japan, and Northern China.

November 29, 1881.—Dr. A. Günther, F.R.S., Vice-President, in the chair.

A letter was read from Dr. A. Frenzel, announcing his success in breeding Parrots of the genus *Eclectus* in his aviary at Freiburg, in Saxony.

A communication was read from Dr. A. B. Meyer, containing the description of a new species of *Eclectus* received from Timorlaut Island, which he proposed to name *Eclectus Riedeli*.

Mr. R. Bowdler Sharpe read a note on the genera *Schœnicola* and *Catriscus*, and pointed out that these genera were identical, but that the South-African *S. apicalis* was specifically distinct from the Indian *S. platyura*.

Mr. G. A. Boulenger gave the description of a new species of *Anolis* from Yucatan, proposed to be called *Anolis Beckeri*.

Mr. W. A. Forbes gave an account of the observations he had made on the temperature of the Indian Python, *Python molurus*, during her incubation in the Gardens of the Society in June and July last. The result arrived at was that in the present case there was a difference on the whole average of 1°·4 Fahr. in favour of the female as compared with the

non-incubating male when the temperature was taken on the surface, and of more than double that amount when the temperature was taken between the folds of the body.

Dr. Gwyn Jeffreys read the fourth of his series of papers on the Mollusca procured during the Expeditions in H.M.SS. 'Lightning' and 'Porcupine,' 1869 and 1870. This part concluded the *Conchifera* or Bivalves. Eighteen additional species, chiefly belonging to the genus *Neæra*, which is peculiar to deep water, were described. The geographical, hydrographical, and geological distribution, as well as the synonymy of all the species named in the paper, were treated of.

A communication was read from Dr. G. Hartlaub, describing the birds collected in Socotra and Southern Arabia by Dr. E. Riebeck. Among the Socotran birds was an example of a new species of Finch of the genus *Rhynchostruthus*, which he proposed to call, after its discoverer, *R. Riebecki*.

December 13, 1881.—Prof. W. H. Flower, 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, and called attention to certain interesting accessions which had been received during that period.

Mr. Sclater exhibited and made remarks on two skins of a Rail from Macquarie Island, south of New Zealand, which had been sent to him by Sir George Grey, K.C.B.

Mr. H. Seebohm exhibited and made remarks on specimens of the Rusty Grakle, *Scolecophagus ferrugineus*, and Pallas's Great Grey Shrike, *Lanius major*, which had been shot near Cardiff, and were new to the British avifauna.

A communication was read from Mr. Clements R. Markham, containing an account of his researches into the former Whale Fishery of the Basque Provinces of Spain.

Messrs. J. J. Lister and J. J. Fletcher read a paper on the condition of the median portion of the vaginal apparatus in the *Macropodidæ*, in which they arrived at the following conclusions:—(1) In the *Macropodidæ* the median vaginal canal is closed in early life. (2) In the genera *Macropus*, *Halmaturus*, and *Petrogale* (and perhaps also *Dorcopsis* and *Deudrologus*) an opening is formed, leading directly from the median vaginal canal into the urogenital sinus, which opening most probably gives passage to the young. This opening may be formed early in life, as is usual in the genus *Halmaturus*, or not till young are about to be produced, as in *Macropus rufus*. (3) The evidence with regard to *Macropus major* is conflicting; in one case the median canal has been found open after parturition, and in two others closed. (4) In *Hypsiprymnus Gaimardi* (and propably in *H. murinus*) the median canal remains closed, and the young passes down the lateral

vaginal canals, which present a different structure from that found in other examples of the *Macrodidæ*.

A communication was read from the Rev. Canon Tristram, containing the description of a new Fruit Pigeon of the genus *Carpophaga*, from the Louisiade Archipelago, which he proposed to name *Carpophaga Salvadorii*. —P. L. Sclater, *Secretary*.

Entomological Society of London.

October 5, 1881.—H. T. Stainton, Esq., F.R.S., &c., President, in the chair.

Mr. R. M'Lachlan exhibited a female specimen of *Gastrophysa raphani*, Fabr., bred from a parthenogenetic ovum by Dr. Osborne, of Letterkenny, Donegal.

Mr. T. Wood exhibited a specimen of *Notiophilus biguttatus*, Fabr., having two impressions on the right elytron and one on the left. It was captured at West Wickham last August.

Mr. R. Meldola, on behalf of Mr. W. J. Argent, who was present as a visitor, exhibited five varieties of Lepidoptera captured in Britain during the present season.

Mr. H. B. Pim exhibited a specimen of *Harpalus discoideus*, Fabr., captured at Gravesend on July 26th of this year.

Mr. E. A. Fitch exhibited males, females and workers of *Lasius mixtus*, Nyl., which had been taken this year, for the first time in Britain, by Mr. G. C. Bignell, at Bickleigh, Devon.

Mr. E. Saunders said that this species was now generally considered to be only a form of *L. umbratus*, Nyl., differing from typical specimens in having a narrower head and the pubescence more scattered.

Mr. A. S. Olliff exhibited an abnormal specimen of *Papilio americus*, Koll. (*sadalus*, Lucas).

The Secretary read a letter, addressed to Mr. A. R. Wallace, from Mr. James Blyth, of Vanualevu, Fiji, to the effect that the cocoa-nut trees there were suffering more severely than usual this year from the ravages of an insect called by the natives "mimimata," and that the planters wish to introduce some bird that will clear the trees of the insects, and yet not destroy the early flower of the nut or pick the berries of the coffee plant, or the ears of the maize.

Mr. C. O. Waterhouse expressed the opinion that the *Phasmida* referred to were no doubt *Lopaphus cocophages*, Newp., and *Phibalosoma Apollonius*, Westw.; specimens of the latter were in the British Museum Collection from Vanualeru; also specimens of *Phibalosoma Pythonius*, Westw.—rather the larger species—from Ngau, Fiji.

Mr. E. A. Fitch said of course the *Phasmidæ* were protected species,

but the introduction of the Kingfisher (*Halcyon sancta*, Vig.) might prove useful, as Mr. E. L. Layard had related in 'The Field' (August 10, 1878), that this bird fed greedily on *Cicadidæ*, &c., in New Caledonia. *Lopaphus cocophages* was the species mentioned by Mr. Nightingale (Trans. Ent. Soc. Lond. i. p. lxiii; Proc. July 6th, 1835) as so very destructive to the cocoa-nut trees in the neighbouring Friendly Isles.

The Secretary read a communication received from the Colonial Office with reference to the report upon the insect which attacks the eggs of locusts; also an enclosure from Sir Robert Biddulph, High Commissioner of Cyprus, enquiring whether the insect itself might not be destructive to crops and vegetation; and further, an extract from a letter from Lieut.-Col. Sir C. Wilson, H.M. Consul-General in Anatolia, recommending certain mechanical steps to be taken with a view to the limitation of locust attacks, also suggesting the introduction of the Russet Starling, or Locust-bird, (*Pastor roseus*, Linn.).

Mr. D. Sharp communicated the descriptions of "Some new Coleoptera from the Hawaiian Islands."

Mr. C. O. Waterhouse read a paper "On some new South American Coleoptera of the family *Rutelidæ*," resulting from the examination of some *Rutelidæ* collected by Mr. Buckley in Ecuador; which were described, together with others already in the British Museum Collection.

Prof. J. O. Westwood communicated the "Description of the immature state of a Ceylonese insect (*Dyscritina longisetosa*) apparently belonging to an undescribed genus."

Mr. P. Cameron communicated some "Notes on Hymenoptera, with descriptions of new species."

November 2, 1881.—H. T. Stainton, Esq., F.R.S., &c., President, in the chair.

Mr. C. O. Waterhouse exhibited a variety of *Urapteryx sambucaria*, L., captured at Wandsworth. Also a specimen of a recently characterized Hemipteron, *Aëpophilus Bonnairii*, Sign., discovered in the British Museum Collection, labelled "Polperro, Cornwall," no doubt of British origin.

Mr. W. F. Kirby exhibited a new species of *Antheræa* (*A. macrophthalma*, Kirby), received from the Gold Coast.

Mr. Kirby also exhibited, on behalf of Mr. P. Cameron, numerous microscopic preparations of the saws, mouth parts, and other details of various *Hymenoptera*.

The Rev. A. E. Eaton exhibited pieces of honeycomb, constructed, by a community of hive-bees, in the open air, upon the outside of an exposed bare wall, quite unsheltered from the afternoon sun. At the end of last May, Mr. W. Herbert Evans, of Forde Abbey, Dorset, noticed a protuberance on the western wall of the principal wing of his residence placed just under-

neath a string course in the masonry, about 40 ft. from the ground and 10 ft. below the battlements. He at first supposed it to be a curiously coloured swallow's nest, but on looking more carefully he perceived that it was the commencement of a honeycomb, in course of construction by the bees of an adjoining crevice. The comb eventually consisted of four slabs, hung parallel with the face of the wall, measuring each of them about 2 ft. by 2½ ft. The larger part of the combs was blown down during the gale of October 14th, when many of the cells were found to be tenanted by bee-grubs; but the bases of the combs remained *in situ*, and on November 2nd were not deserted by the bees. The fragments exhibited were picked up from the ground under the nest on the 26th ult., after the bees had forsaken them and the grubs had departed.

The President remarked that he knew no other instance on record of the hive-bee building in the open air.

Mr. Eaton also exhibited specimens and coloured figures of new varieties of *Armadillium vulgare*, L., and *Porcellio scaber*, Latr., together with a typical example of the latter species from Iceland.

Dr. H. C. Lang exhibited a specimen of *Lycæna Icarus*, Rott. (*Alexis*, W. V.), var. *Icarinus*, Scriba, in which the basal spots on the under side of the fore wings are absent. Dr. Lang thought it would be difficult to distinguish the female of this variety from *L. Medon*, Esp.

Mr. J. Jenner Weir remarked that he possessed specimens of this variety, but he believed it to be of very rare occurrence in Britain.

Mr. W. L. Distant exhibited a specimen of an undescribed species of *Cicada* from Borneo.

Mr. T. R. Billups exhibited a female specimen of *Dufourea vulgaris*, Schk., captured on a bloom of ragwort on the banks of the Basingstoke Canal at Woking, August 1st, 1881. This was the first female taken in Britain.

Sir Sidney S. Saunders said he captured a male near Chewton, Hampshire, in August, 1879. He believed this genus was rare on the Continent, as Lepeletier de St. Fargeau had never met with specimens himself, but described a male and female from Latreille's collection.

Sir Sidney S. Saunders exhibited a species of *Scleroderma* received from an entomologist of Lyons, and specimens of two dipterous insects, *Oscinis frontella*, Fall., and *Drosophila fenestrarum*, Fall.; the former reared from wild figs forwarded by Mr. Frank Calvert, of the Dardanelles; the latter from Egyptian sycamore figs. In both instances the parent flies appeared to have entered these figs after the *Cynipidæ* (reared therein on the seed-germs) had escaped through a large aperture which they make by gnawing around the crown until this falls in. The slender white worm-like larvæ of the *Oscinis* were wriggling about amid the pulp of the fig, together with many of the fragments of the former occupants, chiefly males which never quit the fig; and a large number of the *Oscinis* pupæ—some

of these obtained from their larvæ placed apart for identification—were found attached to the paper wherein the figs were enveloped, the flies emerging about three weeks later in September. These figs were sent with the object of possibly obtaining from that locality specimens of the *Cynips Psenes* of Linnæus, found by Hasselquist near Smyrna in the figs of the "*Ficus Caricæ orientalis*," as described in his 'Iter Palæstinum,' edited by Linnæus in 1757, and therein adverted to under the names of *C. Ficus* and *C. Caricæ*. The types of *C. Ficus* exist in the Linnean Cabinet at Burlington House, but no one appears to have met with it since that period.

Mr. M'Lachlan remarked that he had lately examined the Linnean Collection, in company with a German botanist interested in the fig insects, and had failed to find the types of *Cynips Psenes*.

In reply Sir Sidney Saunders stated that the specimens of *C. Ficus* in the Linnean Cabinet, although unlabelled, correspond with Hasselquist's description, in their rufous colouring.

Mr. H. T. Stainton exhibited some curious cases said to be constructed by lepidopterous larvæ found by Dr. George Hay, Port-Surgeon at Aden.

Mr. Stainton said it was remarked in the 'Proceedings' of this Society (p. xxii) that "no other insect [than *Dolerus palustris*, Klg.] was known to feed on *Equisetum*." He was requested by Mr. Buckler to refer to his description of a larva of *Hydræcia micacea*, Esp., found feeding on the roots and stems of *Equisetum arvense* and later on *E. fluviatile* (*cf.* Ent. Mo. Mag., vi. 164).

Mr. Stainton exhibited a specimen of *Cerura vinula*, L., which had been bred by Mr. Piffard from a larva found in Hertfordshire, and which from the description (more especially of the larva) in Kirby's 'European Butterflies and Moths,' p. 136, had been referred by him to *C. erminea*, Esp.

Mr. A. G. Butler communicated the completion of his "Descriptions of new Genera and Species of Heterocerous Lepidoptera from Japan," treating of the Pyrales and Micros.

Prof. J. O. Westwood communicated a memoir entitled "Notæ Dipterologicæ. No. 6.—On the minute species of dipterous insects, especially *Muscidæ*, which attack the different kinds of cereal crops"; giving a *resumé* of the descriptions and habits of the various species. Special reference was made to a species (*Oscinis avenæ*, Bjerk.) which this year had proved very destructive to housed oat grains, near Winchester.

Mr. Fitch remarked that Curtis's *Oscinis granarius* was most probably synonymous with this species, and the same which the Rev. O. P, Cambridge had found in great numbers in Dorsetshire in a loft where barley had been stored. Mr. Fitch also mentioned that on the heavy clay-land of Essex it was remarkable that wheat after a whole summer's fallow was almost invariably attacked by the young stem-feeding larvæ of *O. vastator*, Curt., locally known as "white maggot."—E. A. Fitch, *Hon. Sec.*

NOTICES OF NEW BOOKS.

Allgemeine Zoologie oder Grundgesetze des thierischen Baus und Lebens. H. Alexander Pagenstecher. Berlin. I.—IV. 1878—1881.

The appearance of the fourth part of Prof. Pagenstecher's very elaborate 'General Zoology' seems to be a suitable opportunity for directing the attention of our readers to the scope and object of this work, the fourth volume of which, larger somewhat than its predecessors, contains more than 950 pp., while the four parts together present us with as many as 847 figures. Professor Pagenstecher may justly be congratulated on his activity, and the German world of science on this valuable addition to their already noble monument of conscientious laboriousness. While saying this we are bound to add an expression of sympathy with the learned author. In the preface to the second part of his work he had to express a regret for the delay in its appearance, due to an attack of inflammation of the eyes, which for seven months precluded all work. Illness and other circumstances have prevented the publication of the fourth volume, the mere printing of which is stated to have taken as much as fifteen months; and we can well believe it.

Some general considerations immediately arise when we proceed to take a comprehensive survey of this work. Obviously enough, we have not here to deal with any elementary introduction to the science, and any criticisms on the score of its length may therefore be regarded as being fairly beside the question; though, on the other hand, one who was a student in one of our ancient Universities, and is a teacher in one of the great centres of population, might well question whether he finds more leisure as professor than he found as student. From such a point of view as this, Dr. Pagenstecher's work might meet with severe treatment. The second and third volumes contain more than 900 pages, or as much as the fourth itself; but with all this mass of printed matter, nowhere is there an index, nor any list of the figures in each part, while the table of contents for each may, not unfairly, be spoken of as meagre. Secondly, we have to find fault

with the complete absence of any kind of bibliography; the author is so careful to refer to his authorities by name that he makes this absence all the more felt; and, if he would have us compare him with the author of that great work which is still in some points unequalled,—with the veteran Von Siebold,—he stands, in this particular at any rate, on a level so much lower as to be beyond comparison. In a work now appearing in its fourth edition, with which we shall compare his in a moment,—the 'Zoologie,' namely, of Prof. Claus,—we find sufficient references to direct us to the monographs on which works such as these must always be based, and the want of which must be so much felt by the student of Pagenstecher that we hope the author will find it possible to issue some systematically arranged list of the papers which he has consulted.

As to the question of figures, the three notable German works on Zoology,—those of Siebold (or Siebold and Stannius), of Carus and Gerstaecher, and of Claus,—are all without illustrations; on the other hand, Owen and Huxley, in this country, have always presented a certain number of figures or diagrams, more or less satisfactory. There are, therefore, two points of view; the former has the advantage of forcing the student to consult the original monograph from which the parts are drawn; the latter has the advantage of being much more compendious. From Prof. Pagenstecher we never learn anything as to the existence of those monographs, which are the veriest treasures of the thorough student, and he is therefore bound to atone for this defect by being compendious. As to the figures themselves, one has to speak with some difficulty, for while some are passable and clear, others are badly printed and almost unintelligible; on the other hand, it is true that our old favourites are welcomely absent, and the monographs of which we have spoken have been largely and justifiably drawn upon.

On the whole, then, it would seem that a general treatise, like a simple manual, of Zoology can never be prepared without meeting with somewhat severe, though, we trust, not in this case carping or ungracious, criticism. Even yet another trouble remains,—due, however, to a cause which we can hardly lament,—"Den während dieser Zeit im überreichen Flusse der zoologischen Literatur erschienenen werthvollen Arbeiten." The third volume of this work is completely devoted to the organs of respiration;

that volume bears date 1878, and so when we put it into the hands of a student we find ourselves presenting him with a book in which not a word is said, nor could have been said, of Prof. Huxley's ingenious classification of the gills of the Crustacea. Well may the writer of systematic anatomical works stand by the rapidly growing stream of zoological literature and cry with Horace's peasant, "Labitur et labetur in omne volubilis ævum."

But, were he to stand and wait for the stream to flow past, we should never be able to hail the appearance of a book like that in hand; one in which there is no speculation, and too little of the author himself, but one which has, at any rate, this considerable recommendation, that it exhibits throughout that principle which John Hunter has, for this country, made for ever classical, and which the College of Surgeons as their conservators have brought to a point of perfection which is the admiration of comparative anatomists; the method, that is, of dealing, from the lowest to the highest, with that set of organs which, for each, subserves the same function.

In a day when embryology and phylogeny have given a somewhat different aspect to morphology, it is well, if only for the purposes of rivalry, that a teacher should still be found who insists without reservation on the importance of complete comparison.

Cameos from the Silver-land; or, the Experiences of a Young Naturalist in the Argentine Republic. By Ernest William White, F.Z.S. Vol. I. London: Van Voorst. 1881.

This volume of 412 pages contains a certain amount of information, conveyed in the "tallest" language. It is difficult to conceive why these sketches should have been termed "Cameos," nor does the writer give any clue to his reasons for such a title. The work appears to be intended as a kind of handbook to the Argentine Republic, which, according to the accompanying map, includes the whole of the Pampas, Patagonia, and even Tierra del Fuego and the outlying islands as far as the western exit of the Straits of Magellan (!)—an overlapping of the territory of Chili which will scarcely be acknowledged by that Republic. The various provinces comprised in these vast claims, which extend

from Cape Horn to Bolivia and Brazil, are described in rhapsodical style. The author talks familiarly of the Patagonian Indians, whom he terms "huge Macropods," whilst the Pampeans are "Longobardi Centaurs," whatever that may mean; and he sprinkles his pages with sketch-lists of the principal plants and animals, each with a Latin name, thus making a brave show of scientific knowledge. So far, however, as this volume goes, Mr. White's experiences seem to have been confined to the familiar route by steamer and rail from Buenos Ayres to Córdova; thence by rail and diligence to Mendoza; with a few excursions in those neighbourhoods. To make amends for his own want of experience, he appears to have jotted down everything that he was told, and being somewhat deficient in critical faculty, he gives us a good many so-called "facts," which render the book highly amusing; it is indeed a long time since we have so thoroughly enjoyed a work on South America. Many passages might be cited in illustration of this, but as we are noticing the work on its Natural History merits, we will endeavour to confine ourselves to that topic.

The following extract will convey some much-needed information, and will at the same time give a favourable impression of the author's style:—

"The Museum of Buenos Aires is doubtless rich, perhaps richer than any other, in palæologic edentate osteology: those huge monsters which once lazily trod its (*sic*) surface, are brought from their oozy tombs by the wand of science, to astonish mankind by their massiveness and uncouth forms, to attest zoologic degeneracy and themselves to witness how the mighty have fallen in the puny pigmy forms which now surround us. Fancy with what contempt must the huge *Glyptodon clavipes* look down upon his tiny modern representatives the *Dasypus peba* or the still smaller *Chlamydophorus truncatus;* the gigantic Megatherium, twenty feet long, and with bones more massive than an elephant, or his ancient brother the Mylodon somewhat less ponderous, with what a derisive smile must they not view the efforts of their feeble modern vicar (!) the *Bradypus tridactylus:* and so on of the rest."

Worthy of the foregoing is the description of the presiding genius of this Museum:—

"The stranger would hardly expect to find buried here amongst his ponderous tomes, one of Europe's savans: yet so it is, the curator Dr. Hermann Burmeister, whose twenty years' residence in the Argentine

Republic has not dimmed but enhanced the lustre of his fame, is a philosopher who has already celebrated his golden wedding to science: spare and tall, eagle-eyed, fibrous, his whole frame bristling with intellectual energy; such is the courteous but independent autocrat, whose figure stands out amongst the literati of South America, as did Saul's amongst the Israelites."

But we must tear ourselves away from Buenos Ayres, where the President daily converses with his ministers by telephone; "and the time seems looming when man will hardly need bodily presence and activity, but the subtlety of ethereal intercourse banishing corporeality he will begin his immortality on this side of the grave;" a very consoling reflection for South American Presidents, who, like Irish landlords, were evolved to be shot at, and sometimes hit. And, glancing at the cemetery where "the loved head which ought to have been tenderly laid in the family vault at home, lies here expatriated till the last trump unites all stragglers"—a sentence suggestive of dynamitic operations; we follow our author to the railway which takes him to Campána, on the river Paraná, where the "Dipterous plagues are unusually large and bloodthirsty," and one species of "the Culicides, a very numerous family in this neotropical region," emits a delicious flowery fragrance when crushed. Ascending the river to Rosario, the railway is again taken to Córdova, and we are informed that "on a late occasion a countrywoman of ours, an authoress of repute, visiting the Republic for the first time, and crossing these Pampas, actually preferred to ride on the cow-catcher in the midst of a pitiless Pampero, her dress and locks streaming in the wind, whilst the worthy engineer of the line, a victim to gallantry, was obliged to share her company on that dangerous and exposed seat." Who can this celebrity be?

From Córdova Mr. White made the excursion to Cosquin, the narrative of which has already been published in this journal (Zool. 1878, pp. 155-60) under the title of "Condor-hunting in the Sierras," in which a great deal of lead was wasted, and one Condor was secured—with a lazo. The nests were not then visited, apparently from fear of the birds, for "woe betide the daring plunderer, if the old birds should return during the burglarious attempt;" but we are now told that "the nest usually is composed of a few sticks merely, and contains two eggs, each about four inches long;" whereas in the first account

it is stated that "the universal testimony is that the Condor lays but one egg." Condors on this side of the Andes seem to have several peculiarities not noticed elsewhere: their fierceness—or the dread of it—is greater, and they appear to be more amenable to swan-shot than to a bullet, "as the skin is so closely covered with hard glossy plumage that the latter is more liable to glance off"! The same will probably hold good of buck-shot. Further on we are told that the Condors "select a calf four or five months old and wait till the mother is at some distance, then suddenly swooping down and striking the animal to the ground, to *rip out its tongue* either as a 'bonne bouche' or *to prevent the utterance of any signal of alarm*"!—the italics are ours. Has Mr. White ever seen this? We trow not: our experience is that the Condor invariably begins operations *at the other end* of the victim.

From the pleasant city of Mendoza, at the foot of the Andes, Mr. White made an excursion to hunt Huanacos, and so far as the hunting was concerned he succeeded admirably, but he bagged no game. At an elevation of 8300 feet he observed two specimens of the Mountain Biscacha, *Lagidium Cuvieri*, the occurrence of which we do not remember to have seen previously recorded from this side of the Andes. The most interesting expedition was, however, the one to the neighbourhood of La Paz (a settlement about forty leagues from Mendoza, and not to be confounded with the Bolivian city of the same name), the "Médanos," or sand-hills of which, are the stronghold of the curious *Chlamydophorus truncatus*, known in Argentine Spanish as the "Pichiciego," an obvious corruption of "Bicho-ciego," or blind animal, a "beautiful little plantigrade aberrant member of the Armadillo family." Full notes on a single specimen obtained after six days' search by a large number of men, will be found in the 'Proceedings of the Zoological Society,' 1880, pp. 8-11.

Here we must take leave of the first volume. A second is promised, and as we see by the last 'Ibis' that Mr. P. L. Sclater has described two new species of birds obtained by Mr. White on recent visits to Oran, in the province of Jujuy (not Salta), near the Bolivian frontier, and to Catamarca, it is possible that the next instalment may be more instructive to the naturalist, even if somewhat less amusing to the ordinary reader.

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THE PAST AND PRESENT DISTRIBUTION OF SOME OF THE RARER ANIMALS OF SCOTLAND.

By J. A. HARVIE BROWN, F.R.S.E., F.Z.S.

IV. THE BADGER (*concluded*).

In the South of Scotland the Badger is still far from uncommon in certain districts, though of course in numbers not to compare with what were to be found only a few years ago. The Border Counties and those with coast-lines seem to harbour these animals most plentifully at the present time, as the statistics, I think, pretty clearly show. They have sooner become scarce in inland localities, owing, no doubt, to the accessible nature of most of their haunts there, while the more rugged coast-haunts have longest withstood the attacks of the poor Brock's enemies.

Stirlingshire.—There is plenty of evidence to show that Badgers were abundant in this county, especially along the great central range of hills, which form the highest ground in the county, with the exception of the hills to the east of Loch Lomond, including the lofty Ben Lomond. The 'Old Statistical Account' of the parishes shows this with tolerable distinctness, and a very fair idea of their former distribution may be gathered from the notices of it in that work.* The grouping of the more important localities

* Some years ago I had been at the trouble of indexing fully the whole twenty-one volumes of the 'Old Statistical Account of Scotland' for my own use. I afterwards offered this index to the publishers (Blackwood, Edinburgh), but it was refused, although their own index is far too imperfect

shows the preference the Badger had to the central range. Thus it is specially mentioned as common in Gargunnock parish on the north, Killearn on the west, and Campsie and Kilsyth on the south side of the hills. Perhaps of all these Campsie held the largest numbers, owing to the particularly suitable cliffs and carns of the Campsie Fells. The reverend author of the account of Campsie (Rev. James Lapslie) seems to have paid considerable attention to the local fauna, and gives a very full and interesting list—*i. e.*, interesting after sifting the chaff from the grain. Of the Badger he says:—"There are two species of Badger found among the loose rocks of Campsie Fells, the one somewhat resembling a sow, the other a dog: the first is more arched in the back, and is not so nimble in turning itself." The Campsie Fells still hold a few Badgers, but they are now quite scarce. The last I have record of was trapped on Ballakinrain estate in 1875, which property lies somewhat to the N.W. of Campsie, but has the range of fells continued to it. Another was trapped on Aucheneck in the same year. Another was trapped on Woodburn estate, Campsie parish, in 1874. On the Campsie Fells, in 1867, a keeper of the name of Mathieson trapped a Badger, which is the next latest date I have note of, though I believe they have continued to exist there almost uninterruptedly. About seven years ago two were taken on the Strathblane Hills and sent to Culzean, in Ayrshire.

Linlithgow.—It is feared the Badger is here extinct. The stream Broxburn runs through Strath Brock, indicating its former presence, but there is little to show it in the 'Old Statistical Account.' About 1838, or between that year and 1845, David Carr trapped and killed three Badgers at Lochcote, and caught four more, which were taken alive to Wombwell's Menagerie. At this locality Badgers had taken up their quarters in some old lime mines underneath Bowden Hill, which is about three miles S.W. of Linlithgow. There are also some Badgers' earths at Nancy's Hill, near Champfleurie House, about two miles east of Linlithgow; and one was seen by Mr. Henderson, on Broomieknowe Hills about 1854.

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to be of much real or ready use to naturalists. I have, however, found this MS. index most useful for my own purposes, and do not in the least regret the labour I expended upon it. Except to verify a quotation I scarcely ever require now to handle a volume of the 'Account' itself.

Midlothian.—Formerly abundant, as statistics show. A keeper, Mr. Nichol Kerr, trapped a number of them, both in this and the adjoining county of Haddington. They appear to be not yet extinct in the county. In 1880 a fine Badger was advertised for sale in the 'Scotsman' of April 25th, but the owner (Carfrae, bird dealer, Frederick Street, Edinburgh) knew nothing about it further than that it had been sold to him by a man, and that it had been trapped "oot sooth o' Pathhead," and brought to Edinburgh by the Pathhead carrier. The south-west of the county (parishes of Borthwick, Temple, Crichton, Heriot, Tala, Stow), with its numerous "deans," still probably harbour a few Badgers, as there is great store of good earthing ground, but they are probably very scarce. Mr. Ritchie, of Middleton, writes me that between 1866 and 1880 his keeper had only heard of one Badger being caught near Roseberry, parish of Temple, and Mr. Wood, late keeper on Blackshiels-shooting, caught one some years ago.

East Lothian.—Formerly common, and not yet extinct in this county. The Rev. Thomas S. Marjoribanks, of Preston, informs me that there are Badgers still in the wooded hill above Presmennan Loch on the Biel estate, belonging to Lady Nisbet Hamilton, and that he saw one which had been recently captured there. At Whittinghame the last seen was fifteen years ago (say 1867). Dr. J. L. Crombie writes me that a year or two ago one was seen in Tynninghame Woods, where there are many foxes' earths. In 1870 two were caught in Presmennan Wood, before noted, and Dr. Crombie has a young one in his collection shot above Haddington about twelve years ago.

Berwickshire.—Still abundant, mostly so on the rugged coastline. It is very common still in Upper Berwickshire, especially in the parishes of Gordon, Earlston, and Legerwood. Mr. R. Small has seen them frequently in these parishes, and remembers seeing one taken from a drain in the village of Earlston about twenty-two years ago (say 1859). The animal was seen running along the street at day-dawn, and had taken refuge in the drain. They are scarcely so common, however, as they were twenty-five years ago. Around Jedburgh it is still not rare, and within the last twenty years has been frequently found in Black Burn, Greypeel Burn, and about the Merlin Dean, all of which localities are within two miles and a half of Jedburgh. Mr. James Hardy, of Old Cambus, writes me:—"Though diminished in numbers it still maintains

its place over a large area. One was caught in the Peasedean last winter (1880-81), and fortunately escaped. Its diminution here has been entirely owing to rabbit-catching, and the prices obtained for Badgers for the purposes of baiting. Now that rabbit-catching is likely to pass into the farmers' hands the old animals may regain a footing at least in wild places, as the Peasedean and by the sea-coast."

Peebleshire.—Not extinct, but are much scarcer than in some of the neighbouring counties. In 1878 Mr. A. Wood got one alive opposite the foot of Manor Water on Edstone farm, and five years ago (say 1875) one was obtained on the Eshiels Hope. A pair killed in 1859 are in the possession of Mr. James Anderson, Chambers Nest, Peebles; they were got at Portmore, Eddleston. At Stobs Castle Mr. Alexander Taylor has only killed one in thirty-eight years, and none have been seen during thirty-one years on Traqueer by the keeper there. On Dry Grange estate, near Melrose, Mr. Clark killed four old ones and two young half-grown about fifteen or sixteen years ago (say 1867). They are probably extinct on that estate now. On Moffat Water one was seen three years ago (1878), and one was trapped at Dumcrieff, one mile from Moffat, no doubt the same. One was seen near the head waters of Etterick, not later than nine or ten years ago (say 1870). As already noticed, Mr. Cox, at Culzean, Ayrshire, obtained five from Peebleshire about six years ago, and put them upon Ailsa Craig, where they have since thriven and bred.

Ayrshire.—At Culzean they are reported as having been extinct for twenty years, or since 1860 or thereabouts. Two tame ones were brought from the Strathblane Hills in Stirlingshire over seven years ago (say 1873), and placed in Culzean kennels. About eight years ago (say 1872) one was trapped near Kilkerran kennels, which must have been a stray one or an escape, as none have been seen since. I lack other data from Ayrshire, but I believe it to be scarce over all the county, unless perhaps in the extreme south, where it is most likely to linger longest.

Dumfriesshire, Galloway, The Stewartry.—At one time, as, Dr. Grierson, of Thornhill, informs me, Badgers must have frequented various places in the district. The last killed was taken at Clachrie Burn, parish of Closeburn, about twenty-five years ago (say 1857), which is now in Dr. Grierson's Museum. Another taken about the same time in Galloway is also in the

Museum. The latest on record I have was killed by the keeper on Cowdenknowes in 1880. Further S.W. it is still common at sea-coast stations; also not rare on Mabie and generally throughout the Stewartry.

In concluding the present series of papers on the past and present distribution of our rarer British animals, I may state that I have accumulated a large mass of notes upon the class of animals usually called "vermin," including Squirrel, Dipper, Jay, Rook, Magpie, "Hawks," Hooded Crow, Common Crow, Raven, and others, besides the *Carnivoræ*. I still want further particulars with a view to perfecting the subject, and if any one can render assistance by forwarding to me lists of vermin killed during the past ten, fifteen, or twenty years on any Scottish estate, I shall be obliged. I believe that the results, if carefully analysed and compared, will reveal some curious causes and effects, and interesting statistics in connection with this subject. The series of papers now concluded is confessedly imperfect, and must be regarded rather as an aid to further investigation, with a view to more general results at some future time. With such an end in view I can only repeat that any data of a kindred nature will be thankfully received by me, and will be carefully preserved for future use.

THE BIRDS OF BRECONSHIRE.

By E. Cambridge Phillips,
Member of the Woolhope Naturalists' Field Club.

(Continued from vol. v., p. 409.)

Raven, *Corvus corax*.—Still common, and I think will remain so, a great part of the county being unpreserved, and these birds frequent the mountains and highest hills, which are very little disturbed. Wherever you happen to come across a dead sheep you are sure to hear the hoarse croak of the Raven. This bird lives to a great age. When a boy, in Wiltshire, I used to pay a visit—generally on a Sunday—to some friends that lived in an old manor house where there was a tame Raven; he was then about twenty years old, and full of all sorts of mischief and iniquity, but being a great favourite and a good talker he had pretty much his own way. I remember him well, for on one

occasion he took a small slice out of my leg, *ut mos fuit*, and retired to the top of a spout to digest it, amidst my yells and the threats of the whole party. Happening to be near the place twenty-five years afterwards, I ventured to ask for my old friend, and to my surprise out he came with the same sidelong hop, the same malicious twinkle in his eye, and looking more sleek and diabolical than ever. I only heard of his death last autumn. He took a similar liberty with a large dog that he did with my leg, and got a nip in return that killed him. He must have been fifty years old when he died, and was one of the finest birds I have ever seen. The Raven is a bird of ill omen amongst the Welsh, and for that reason is seldom, if ever, kept as a pet by them.

Crow, *Corvus corone*.—One of the commonest birds in the county, and one that we can well do without. I believe this bird does more mischief than any hawk; he is always about the same place, and always on the look out, not for carrion, but for something better; a small leveret, a partridge's nest of eggs, or a half-grown rabbit—it all comes the same to him; whilst a weakly lamb has its eyes out before he well knows where he is. Although they generally work in twos and threes they come home to roost together, in numbers of from twenty to thirty, to the same roosting-place, and by waiting them in a few may be killed; but by far the best way to kill them is to trap them with an egg and a common gin.

Royston or Hooded Crow, *Corvus cornix*.—I have never yet seen this bird alive in the county, and can only record with certainty one instance of its having been met with here.

Rook, *Corvus frugilegus*.—Plentiful, there being several large rookeries in the county. I once visited a rookery near Brecon, composed of oak and other trees with a very large ash growing in the centre, and the owner informed me that, although he had lived there many years, he had never seen the Rooks build in that tree. Sometimes, indeed, a pair of young ones would begin to build a nest there, but it was instantly torn to pieces by the older birds, with every symptom of disapprobation. Why they should avoid this particular tree, which was quite sound, he could not say, but their continued and determined rejection of it showed a unity of counsel and fixity of purpose which to me was inexplicable. Only once during my residence here have I seen a

pied or parti-coloured Rook, and that was a bird with whitish wings.

Chough, *Pyrrhocorax graculus.*—Although it occurs sparingly amongst the rocky cliffs of the Glamorganshire coast, I am unable to include it amongst the birds of this county.

Jackdaw, *Corvus monedula.*—Very common indeed, particularly about the tower of the grand old priory church of Brecon. Sometime since I saw a curious specimen of a white Jackdaw; the plumage of this bird was not only pure white, but its legs, claws, and eyes were white. I think among the Crow family an albino is very rarely seen.

Jay, *Garrulus glandarius.*—Very common in all our woods; in the hard weather of last winter the poor Jays were put to great straits and came into the town gardens for food. One was caught feeding with my poultry in one of the aviaries, where it must have pushed itself between the wires to get at the food. For a shy bird like the Jay this was somewhat singular.

Magpie, *Pica caudata.*—Very common, and, like the Raven, considered to be a bird of ill omen. Indeed I know of no bird that is more generally noticed in this respect, and the old adage,—"One, sorrow; two, mirth; three, a wedding; four, a birth,"—seems implicitly believed in by many of the country people.

Nutcracker, *Nucifraga caryocatactes.*—I have seen but one stuffed specimen in Wales, and that was a bird in perfect plumage, which was killed many years since in the adjoining county of Glamorgan.

Starling, *Sturnus vulgaris.*—Although this bird breeds here pretty plentifully, yet the number that roost in the reed-beds of Llangorse Lake during the autumn must come from other parts. If you are on the lake about four o'clock in the afternoon you will see flock after flock flying over and pitching in the reeds, and this continues until they are all come; then with a roar—and no other word expresses it—the whole flock rises in one living mass, sweeping over the lake close to the reeds in a black moving cloud; then threatening to settle again, then up and round once more, with a regularity and precision of movement that is beautiful and wonderful to witness, until at length, their drill being over, they finally pitch and roost for the night. Their numbers on these occasions must be in thousands, and during the time they are

settled they keep up a continual chattering, but are silent whilst on the wing.

Rose-coloured Pastor, *Pastor roseus*.—I have the pleasure of recording the occurrence of one of these beautiful birds, if not actually in the county, at least close to the borders. It was shot in an apple tree at Cynghordy (one of the ancient seats of the Gwynnes), not far from Llanwrtyd, and was fortunately preserved. It was an adult male, in good plumage, and when alive must have been a splendid bird. It had been stuffed some years when I examined it, and the delicate rose-colour had somewhat faded.

Hedgesparrow, *Accentor modularis*.—Pretty plentiful with us, but not nearly so much so as in England. Probably it is rather too cold here for it in winter.

Robin, *Erythacus rubecula*.—Common. The country people here say that the year-old bird kills the two-year-old bird, but I think the weaker generally goes to the wall. Only the other day a man called my attention to two Robins fighting, and one killed the other in an incredibly short space of time; he then picked up and showed me the dead bird, and it certainly was a fine old male, in beautiful plumage. It appeared to have been choked by the victor, as its plumage was almost unruffled.

Redstart, *Ruticilla phœnicura*.—Is invariably called here the "firebrand-tail," and is very common in the gardens around Brecon and in the woods of the county.

Wheatear, *Saxicola œnanthe*.—Common on our hills and moors, but in no great numbers.

Stonechat, *Saxicola rubicola*, and Furzechat, *S. rubetra*.—Both common, especially the latter, there being still a great quantity of furze on the lower part of most of our hills. They affect favourite localities, for whilst in some places covered with furze they may be constantly observed, on other hills equally well covered they are hardly ever to be seen.

Sedge Warbler, *Salicaria phragmitis*, and Reed Warbler, *S. strepera*.—Both fairly common, particularly in the neighbourhood of and around Llangorse Lake, where there is an abundant growth of reeds.

Nightingale, *Philomela luscinia*.—Sparingly scattered over the county. There is a saying common here that the Nightingale is never heard westward of the Bwlch, which is distant about eight miles from Brecon, on the Crickhowell side of the county;

and although I have heard it near Brecon, ten miles on this side of the place referred to, I am disposed to believe that there is a great deal of truth in the saying.

Blackcap, *Sylvia atricapilla.*—Fairly common. It used to breed in my garden at Vennyvach, near Brecon, every year.

Garden Warbler, *Sylvia hortensis.*—Very rare here. I have only known of one instance of its occurrence, and on this occasion the nest and eggs were taken.

Whitethroat, *Sylvia cinerea.*—Very common here.

Lesser Whitethroat, *Sylvia sylviella.*—Very rare; I have never yet met with or seen a specimen. I give it place, however, among the birds of our county, on the authority of one of our resident landlords, himself a keen and observant naturalist, who has noticed it from time to time. Like many of our migratory birds (notably the Spotted Crake), it probably visits various places in the county year after year, whilst others are constantly avoided.

Wood Wren, *Phylloscopus sibilatrix.*—Very rare.

Willow Wren, *Phylloscopus trochilus.*—Fairly common.

Chiffchaff, *Phylloscopus hypolais.*—I have noticed occasionally, but do not consider it to be particularly common.

Golden-crested Wren, *Regulus cristatus.*—Very common, the numerous larch plantations in the county being most suitable to its habits. It is usually considered a scarce bird, probably from its small size and inconspicuous colour, but I see it constantly, and there can be no doubt of its abundance here.

Fire-crested Wren, *Regulus ignicapillus.*—Common, but not so much so as the last-named bird. I have had many specimens brought me, and have killed several myself for the purpose of identification. This and the Goldcrest are very hardy birds, and during the severe frost of January last, when so many other birds perished, these merry little fellows were actively searching for their food in the firs and larches as usual, not seeming to care for or feel the bitter cold.

Common Wren, *Troglodytes parvulus.*—Very abundant, and like the Robin, a universal favourite with the Welsh.

Great Titmouse, *Parus major.*—Very abundant. A lady living near us has continually suspended from her verandah a hard piece of fat bacon. Many birds come and feed on it; amongst others a great number of Tits, who seem to consider it their special property.

Blue Titmouse, *Parus cæruleus*.—Equally common with the last named, and one of the boldest and most attractive little birds we have.

Cole Titmouse, *Parus ater*.—Fairly common, as also is the closely allied Marsh Tit, *P. palustris*. I have often observed them both, and several specimens of each have been brought to me from time to time for identification.

Long-tailed Titmouse, *Parus caudatus*.—Plentiful. It sometimes leaves the woods and comes to our gardens for a very brief visit, always in small flocks, and always with the same eager and impatient movements, the same quick and restless flight, and uttering all the while its somewhat weak and plaintive note. Although the plumage of the bird is very loose, it seems to bear the cold here as well as the rest of the Tit family.

Of the British species of Wagtails, *viz.*, the Pied Wagtail, *Motacilla Yarrellii*, the Grey Wagtail, *M. sulphurea*, and the Yellow Wagtail, *M. flava*, all are very common here. The Usk being a good trout river, whenever there is a rise of the fly on, the Wagtails may be seen in numbers actively running along its banks, flying and hovering in the most graceful way over the water, and constantly seizing a fly, whilst the plash of the heavy trout, as they, too, take their share, complete a picture most pleasing to the eye of a naturalist.

Meadow Pipit, *Anthus pratensis*.—Not very abundant in the county, and certainly not about Brecon.

Tree Pipit, *Anthus arboreus*.—Very scarce.

(To be continued.)

THE DESQUAMATION AND DIGESTION OF SERPENTS, FROM A NEW POINT OF VIEW.

By Arthur Stradling, C.M.Z.S.

In these days of zoological gardens, travelling menageries, and private vivaria containing living reptiles, there can be few people who are not familiar to some extent with the phenonema incidental to a snake's "shedding its skin." Everyone knows that, at intervals varying from one to three months in a state of health, a serpent becomes partially lethargic, refuses to feed, drinks and bathes but little or not at all, is impatient of

disturbance though not active to attack unless touched, and loses its iridescence, while its intrinsic colouring becomes duller every day. Since the outer layer of the conjunctiva is continuous with the general cuticular surface, the *Ophidia* being destitute of eyelids, blindness more or less complete ensues, evidenced by the filmy or rather *ground glass* aspect of the eyes, and frequent failure of aim should the reptile strike at an object. Then, after a period ranging between five and twenty days from the manifestation of the first symptoms, if all goes well, the epidermis cracks at the inner margin of the lips or at some part of the body, and becomes rolled up or reversed as the snake emerges therefrom, hungry and active.

Such is, roughly described, the process of desquamation. But those who have closely observed these creatures in confinement will sometimes have remarked a rather curious anomaly. A snake, evidently on the verge of shedding, is seen suddenly to reassume its normal brightness of hue (though with altered sheen), to become lively and even anxious for food, and to present such appearances generally as to lead to the conclusion that it has cast its slough. No slough, however, is to be discovered; but within twenty-four hours it is shed in the usual manner, or may even be burst in the act of feeding. The immediate cause of this deceptive appearance is not difficult to ascertain. The discarded cuticle is always found to be wet in its recent state; and without doubt an exudation of fluid takes place beneath it shortly before it is cast off, rendering it transparent, so that, although separate from the true skin, it allows the ground colours of the latter to be seen through it in nearly their normal vividness.

It is a fact well recognised by keepers of reptile-houses that the health of a snake, whether as cause or effect, is coincident with the regularity of its desquamation. "Bad shedding" is looked upon by them as a certain sign of derangement in some way. Without reckoning minor *accidents*—such as the false cataract which ensues from accumulation of three or four old plates on the eye, or damage to the cornea from their being rudely stripped off *en masse*—there are two or three ways in which this bad shedding is manifested. The epidermis may detach itself in irregular flakes, instead of coming away as a whole; or it may be changed too frequently; or it may refuse to separate altogether. I may cite a Thick-necked Tree Boa

(*Epicrates cenchris*), which I brought to the London Zoological Gardens from Brazil about two years ago, as affording an example of the second form of abnormality (for the first is not of so much importance); when I was last in England it was desquamating at intervals of about a week, and was miserably thin and exhausted. I have often observed the same thing in snakes whose proper habitat is the palæarctic region when taken into the tropics; under these circumstances they usually die of marasmus. A River-jack Viper (*Vipera rhinoceros*) died a short time since at the Gardens, fifteen months after its arrival there, during which lengthy period it neither fed nor shed its skin; and one not uncommonly sees a snake—especially one not yet habituated to captivity—die suddenly and unaccountably in this state, the body being apparently healthy and well nourished, and the internal organs presenting no trace of disease.

Is the casting of the cuticle, with its attendant phenonema, to be looked upon as a mere mechanical process of purification and renewal, or are there other and more important physiological reasons, involving an excretory function necessary for the maintenance of the reptile's life?

To begin with, it hardly seems probable that the simple mechanical inconvenience caused by the presence of the effete membrane which clothes it is sufficient to account for the lethargy and evident general *malaise* preceding its separation. When we remember that a healthy serpent will contine to feed in spite of severe wounds or other extensive injuries, and its apparent indifference to pain,—moreover, that when the skin has cracked it will take its prey with avidity, even though the flakes are still adherent to it,—we can hardly refuse to entertain the hypothesis that some great vital change in the economy is taking place. From the fact that its retention is fatal, and by itself alone enough to cause death, I believe the exudation of fluid which lubricates the epidermis and renders it easy of removal, to contain some important excretion, the getting rid of which is the primary reason for its being poured out; and that some pathological effect analogous to uræmic poisoning or other toxæmia occurs if it fails to be produced. We know that in mammals which transpire by the skin, cessation of the cutaneous action inevitably results in death if prolonged beyond a certain time; and that if such an animal be varnished, even for no more

than one-fourth of its whole surface, it dies with shiverings, exacerbation of temperature, and other evidence of blood-poisoning, innocent as the constituents of the sebaceous and sudoriferous secretions appear to be. The chief point which I would advance in favour of this physiological and pathological analogy—for of course I do not compare the minute structure of the skin or its glandular appendages with that of a mammal—is that the slough, if examined during the time of its actual separation or immediately afterwards, is found to have a slight but well-defined acid reaction. What the nature of this acid may be I have had no means of ascertaining, nor should I in all probability be a sufficiently competent chemist to discover, even if I had the appliances for analysis at hand; for there can be no doubt, judging from its instability and rapid decomposition, that it is some very complex organic compound. Its disappearance is not dependent on simple evaporation or the drying of the slough. This instability and another reason which I shall mention presently in the second part of this paper preclude the possibility of its being uric acid, while experiment has demonstrated that it is not lactic or any other of the acids which commonly result from chemical changes in the tissues.

Furthermore, this exudation seems to be preceded by a rise of temperature, and accompanied by its remission—precisely similar to what would occur under parallel circumstances in more highly organized beings; but this last is a statement which I make guardedly and with some reserve, and should be glad of more certain information on that head from those who have better opportunities for observation than I have. Nearly all my experiments have been conducted at sea, where it is extremely difficult to register minute variations of temperature with accuracy. I believe that I have obtained an increase constantly, but, as might be imagined, the difference is very small, and the operation of taking it and guarding the thermometers from surrounding influences one of great delicacy and difficulty.

The excrement (for there is but one) of a serpent in health may be said to consist of three parts—1st, a dark mass, made up of the *indigestible* residue of its food, feathers, hair, claws, teeth, seeds or other vegetable matters from the stomachs, easily distinguishable with the naked eye, mixed with microscopic particles of the same, and a variable amount of *digestible* but *undigested*

matter; 2nd, a white or yellowish white substance, composed of nearly pure uric acid,—so nearly pure that it is purchased for use as a chemical reagent,—with a little urate of lime and ammonia, oxalate of lime, purpurate of ammonia (the latter discovered by Prout, and yielding a magnificent crimson colour known as murexide), and a few other salts in very trifling quantities; 3rd, more or less water, containing some of these salts in solution. During derangement these three become blended together sometimes. As would naturally be expected, there is more uric acid and less simple excrementitious matter in the dejecta of snakes which live on frogs and fish than in those whose food consists of birds and animals; while it reaches its maximum in one which has been persuaded to gorge itself on raw meat—as may occasionally be effected with some Colubers: I have known the Moccassin (*Tropidonotus fasciatus*) and *Xenodon rhabdocephalus* take dead meat in default of anything else. The fæces of a serpent probably yield more correct results when examined with a view to determining the proportionate relation of their constituents in character and quantity to that of the food taken than those of any other creature, from its habit of feeding copiously and at long intervals, and consequently the definite nature of its meals; the progress of the food may also usually be traced externally in its passage from the mouth to the anus, so that we have no hesitation in saying what it is—frog, bird, or beast, of such and such a weight—that is furnishing us with details. It is for this reason that one is able to exclude uric acid in investigation of the active principle of the excretory cutaneous exudation, since the whole possible amount can be accounted for in the fæcal evacuation. Now, it is found that external heat quickens a reptile's digestion—to use a common phrase which is not quite correct in its strict application, since by it is meant only that it hastens the process of defecation after a meal. Warmth, on which a snake's activity so much depends, doubtless increases the peristaltic action of its intestine in common with the rest of the muscular system; and if the fæces be analysed they will be found to contain less evidence of utilised nitrogenous elements in the form of uric acid, and more unused digestible matter. Thus the snake really derives less benefit from "quick digestion" than from slow, because the former is incomplete and allows it to extract less nutriment. The question which has suggested itself

to me, in consideration of these phenonema, is whether a mistake is not made in the reptile departments of menageries in keeping the inmates at too high or too equable a temperature. Even in the heart of the tropics, where there is very little distinction of season, considerable variation must constantly be experienced from local and accidental causes, and most likely this might be imitated with advantage to reptiles in captivity. I have obtained individuals at different times from broods born or hatched in our own zoological gardens and in continental collections,—pythons, boas, and various colubrine snakes,—and in every case mine have seemed to get on better than those which remained, though they are exposed to many apparent disadvantages in a seafaring life—irregular food-supply, exposure to air, and constant changes of climate. I have come at length to the conclusion that they owe their well-being to this change of climate and absence of *fixed* artificial heat; and I have never known any of them suffer from that irritable condition of the stomach, so often noticed in menageries, which gives rise to constant rejection of the food, and death from inanition—though I have occasionally caused them to vomit by inadvertently making their cages excessively hot in the winter. The purest uric acid excrement which a serpent produces is that passed immediately after its desquamation, because the long period of inactivity which precedes it has enabled it to convert all the nutritious material in its stomach. It has lately been demonstrated that in comparatively cold countries, where snakes have a well-marked and regular time of retirement during a certain portion of the year, they lay up a stock of adipose tissue in anticipation of their retreat, like other hybernating animals—though naturally less in proportionate amount, owing to the tardiness with which their vital functions are performed, and the small quantity of fuel necessary for their consumption.

There are probably many conditions under which the temperature of a reptile varies independently of external influences, which would be very interesting if properly worked out by patient observers. We have seen more than once how, contrary to all preconceived ideas and traditions on the subject, a pythoness actually generates heat during incubation; and it is not unreasonable to suppose that a similar development may take place concurrently with active digestion, impending suppuration, or the progress of disease.

ORNITHOLOGICAL NOTES IN FRANCE AND SWITZERLAND.

By Hugh A. Macpherson.

Rambling through Paris on June 21st, I came across three young Golden Orioles in a little dark bird-shop. I bought one, and a Wryneck, a Redstart nestling (with a white patch on its occiput), and a young Hoopoe. Tereus escaped, however, from my hand, squeezed through the interstices of a Venetian blind, and strutted up and down the hotel roof, where after a wild chase I left him. The Oriole refused to eat that night. At 4.30 on July 23rd he was clamorous, though covered up. The three nestlings at first slept together, huddling close to one another for warmth. Not being able to procure proper food for the Wryneck, I let him go (for he was well fledged), in a copse. Occasionally the young Oriole appealed piteously to the Redstart to feed him, especially when the latter was perched overhead. Both birds were interested when a fly approached the cage, though "loriot" was very young. It was interesting to see the feather tracts gradually expanding. The little Redstart soon fed himself, and was on the *qui vive* for food throughout the day, beginning about 3 a.m. The Oriole was latterly contented to wait until 6 or 7. On June 24th the Oriole would probably have left the nest, as the form of excrement changed. On June 24th he took several little flits in my bedroom; when I spoke to him he flew on to my shoulder, and fluttering up to my face, clamoured literally at my mouth for food. On June 27th his body, bare under the wings and on the neck on June 21st, was well covered; his tail, only sprouting on June 21st, was now well developed. His cry was a "chewit" or "pewit," piercing when he thought himself forgotten. When he received a morsel, he gave a little jubilant cry of pleasure, followed by the usual note, and mouth opened for a second morsel. I compared its expression on receiving food to the word "wethery-wethery." When bidden sternly to sleep, he sobbed himself gradually off, the "chewit" growing lower and lower, until he was fast asleep. His happiest moments were passed on my shoulders, to which he always essayed to ascend. Knowing my voice so well, he always called for food when he heard it: my sister feeding him when I was unable to do so, he

grew attached to her also. He often stretched his wings across his feet. He used to lower his neck and hunch his back. The feathers on the neck were the last to expand. The tufts of down on his head lingered until July 7th, when he scratched the last of it off with his foot. He became fond of drinking water. From an early age we had trickled drops down his throat, the weather being so hot. His early efforts to drink were comical, as he could not distinguish between the water and the rim of the continent glass, and so allowed his little beak to wander in all directions but the right one. He was fed on fresh meat and bread-and-milk, varied as far as possible with cherries, apricots, and other fruit. Unluckily, his voracious, cuckoo-like appetite, drove him into a fatal illness. I wanted to add ants'-eggs to his food, but being on the sick list could procure none. Though I have kept most of the British passeriform birds in confinement, I have never found any which interested me more than this intelligent Oriole. He died on July 12th, having been my constant companion for three weeks. Two gentlemen, whom we met afterwards at Montreux, told us that they had repeatedly procured young, well-fledged Orioles from Savoy peasants, but they had never kept them alive, on a fruit diet, more than a few weeks. I should be glad to know, if H. L. Mëyer is correct in stating that *Oriola galbula* moults in February.

We reached the medical spa of Mont Dore, in Auvergne, on the 24th of June last. Early on the 25th I saw, and heard the call-note of the Meadow Bunting, several of which haunted the left side of the Grand Cascade. On July 14th, a turning of the Clermont road brought me, unnoticed, within a few yards of a male of this species, singing lustily on the top of a bush his sweet, jerky, varied strain. The clear grey head, with its black stripes, contrasted prettily with the breast of reddish cinnamon. I tried unsuccessfully to obtain a nest of *Emberiza cia*. The peasant boys could bring me none of any kind, whilst the condition of my hands, confined for ten weeks in bandages of carbolic acid, applied for viper bites, made it extremely difficult, if not impossible, to get over rough ground. Half an hour before being bitten by the grey reptile, the movements of a pair of Whitethroats betrayed the whereabouts of their five callow young. Still unclothed July 4th, six days later, their feather tracts were well marked; at noon, July 7th, they were well feathered and

fast asleep. Besides *Emberiza cia*, a fine Black Redstart crossed my path on June 25th. Many sleepless nights, on and after June 30th, were gladdened by the refrain "cheerweeder—sweeter-weeder," commenced about 3.30 a.m., ceasing between 8 and 8.30 p.m. The stable roof haunted by this feathered minstrel was *vis-à-vis* to our rooms in the Grand Hotel. He seldom left his gable, but when he did so his visits to a pile of loose timber, stones, and rubbish immediately behind the *dépendence*, roused us to useless searches for his nest. About July 10th, his visits to the roof were few and far between; other adult males repeatedly passed us, carrying insects to their young. On July 16th two young male Black Redstarts issued unexpectedly from the loose crevices of a stone dyke; they bowed fearlessly, bobbed their tails and bodies, hopped energetically in and out among the pieces of loose grey rock; they also took short flits after gnats, sometimes perching on an ash tree with their presumptive parent. On July 20th one of these little fellows, which I had trapped the evening before to moult in confinement, expired from a slight fall, as we left Mont Dore for Clermont. Some Pipits, which haunted the plateau behind the town, on the cascade side, were probably *Anthus campestris*. The only bird of interest remaining on the list of those which I studied continuously (for I obtained glimpses only of the Rock Thrush and Oriole) is the Common Buzzard. A pair of adults, whose young were offered for sale by a guide, constantly worked the valley for food, as well as the heights around. About four miles from Clermont a Crested Lark rose close to our carriage; House Swallows and Sparrows, absent from Mont Dore, became numerous. Our tedious detention by ill health at Geneva was not quite barren. We closely examined the rarer birds in the museum, saw a wild Serin on the south of the town, and obtained from a tailor (the evening before we left) a couple of hand-reared Woodchat Shrikes. The female lived until the September following; at her decease she had lost no feathers. The male began to moult at once, and on October 24th the process was still incomplete, The medical station of St. Beatenberg was reached August 11th. Here the Black Redstart haunted châlet roofs; some constantly perched on the telegraph wires outside the Alpenrose Hotel. On and after August 15th the males only sang the first portion of their song; two old fellows exhibited short sprouting tails at this date, and a

Goldcrest had lost a number of wing-quills. On August 17th two broods of Black Redstarts haunted a manure heap, two doors from the post-office, in company with immature Chaffinches and Yellow Buntings; the youngest Redstarts were weak on the wing, and were partly supported by their parents. The youngest disliked the drizzling rain as much as did the elderly birds deep in moult. On the 18th I particularly noticed a male Redstart on the outskirt of Interlaken. His chest was literally naked. The feathers of the lower parts were darker than in the Auvergne nestling (which had died); both birds wore the yellow membrane of nestlings on the beak. On August 28th, in very bad weather, my spirits rose at a strange cry near the Kurhaus; a wary Nutcracker shortly afterwards flew from tree top to tree top near me. Another which settled in a fir on the valley side below the road suggested the Rook in outline, the long beak reminding me roughly of the Kingfisher. Taking a "header" downwards, he rose as he approached a second tree; once landed, he plumed his mottled dress, sprang lightly from bough to bough, and repeated many times a melody composed of the syllable "yerk," repeated each time that he performed, from five to eight times in close succession, while his throat vibrated visibly. Between this date and September 4th, Nutcrackers often passed our windows, flying from fir top to fir top. They appeared to leave the higher belt of fir in order to forage for nuts at a lower elevation. During flight the white extremities of the tail feathers are clearly seen. Despite the drizzling downfall of August 27th, an extremely large party of Titmice worked up the bushes on the right bank of the Alpenrose watercourse. Long-tailed Tits were as numerous as Blue, Great, or Cole; all, with one or two exceptions, shewed the pure white head of *Acredula caudata;* the exception or exceptions as certainly possessed the black stripes seen on the head of an ordinary example of our bird, *A. rosea.* Two Long-tailed Tits, the only members of a large party that I could examine closely, on the Rhone's right bank, 5th October, distinctly wore the black stripes of *A. rosea,* instead of the white head worn by all but one (or two) of the Beatenberg examples. I saw one of these Geneva birds pick off and eat a small caterpillar. Black Redstarts and Blackcaps were at Geneva on October 5th. As I returned from the snow-wrapt Gemmel Alp, September 2nd, a Crested Tit flew past me on the edge of the

wood. The next morning I found in the same place a numerous party of Great Titmice, Cole Tits, Goldcrests, and Tree Creepers, hunting together on the best of terms. No Marsh Tits were in the party, for they hardly reach this elevation; but the van was led by six or seven Crested Tits. The last-named were timid; again and again they disappointed me by flitting away nervously to tall trees, where they could hardly be discerned; but as I followed the party continuously through bog and brushwood, they gradually became accustomed to me, and even descended to *terra firma*, quite close to me. The quiet gray wings give the Crested Tit a sombre appearance when flying; on close inspection, the delicate crest, jet black throat, and pinkish under-parts render this titmouse highly pleasing. Although I possess a good ear for the notes of birds, I have as yet acquired no facility for putting their cries into words; once, the call of a Crested Tit very close to me on the Alpenrose road, reminded me much of *Parus ater*. On other occasions, I thought that the syllable "chrrit," or "prrit," repeated briskly, bore some resemblance to the note. I only heard the liquid little song uttered twice, when one individual pursued another. *Picus major* and *Loxia curvirostra* are the most interesting birds I find in my list of general residents. Twice I saw, as I believed, *Dryocopus martius*, but from the distance could not feel quite certain. It was well known to my *coiffeur*, the keenest *chasseur* in the village. Hawks were fairly numerous. Two old birds, often to be seen with two young ones, were apparently Goshawks, of which also we saw several stuffed specimens. As we awaited a Thun steamer on the 8th, a very large brown hawk, ostensibly an Osprey, descended upon some prey in the lake; when he rose, he flew with wild cries into the woods on the Jungfrau side of Interlaken. At Bern, on September 9th, the Black Redstart was once more in full song. On September 11th, I failed to identify, in the rain, two birds in the Villeneuve or Rhone marshes. Early on the 12th, a "reeling" sound in the same locality brought to mind a passage in Mr. Harting's 'Summer Migrants.' Following up, I was soon *vis-à-vis* with a small reed bird of some species. The breast and under parts were pale buff or white; upper parts, brown. From the note it might be the Grasshopper Warbler. Ten minutes, perhaps later, on this auspicious morning, a loud, clear "cluck" introduced the Aquatic Warbler, which ran up to the top a

neighbouring reed. The throat was whitish, but less clear than the under-parts. Above the eye ran a line of yellow; then came one of dark brown or black; down the centre of the head ran a median stripe of yellowish. The light brown back was marked with longitudinal black streaks; of these the broadest was in the centre of the back. The lively little fellow seemed to spend most of his time among the roots of the reeds; he ran up and down with great rapidity. Very early, September 14th, three reed birds shared possession of a faggot pile on the edge of the morass with *Passer domesticus*. Only one of the former awaited my arrival and subsequently close proximity; very fearless, its light, active movements reminded me of the Pekin Nightingale; its legs seemed long, its outline undulating. When it flew to a reed, which bent beneath its weight, its wedge-shaped tail was well displayed. Returning home the same forenoon, I saw a male Bluethroat alight on a vineyard wall, overlooking the road near the Castle of Chillon. Having studied this species on the Dovre Field for some days, in July, 1878, I saw with increased pleasure, that this Chillon bird wore the entire blue gorget assigned to *Cyanecula Wolfi*, in contradistinction to *C. leucocyana*. From its tameness I thought it a bird of the season. It foraged boldly round me, taking short flights in and out of a garden on my right, and even clinging to the perpendicular edge of the vineyard wall, to secure some fugitive insect. Not until September 30th, though I constantly passed this spot on perpetual but worthless expeditions to trap one or more of the reed birds, did I fall in with Bluethroats again. Meantime the *bec-figue* had departed, about the 24th, The solitary specimen met with on the outskirts of Interlaken had puzzled me, as did some Red-backed Shrikes. I did not at first recognise the owner of those well-marked grey or white secondaries. Those so numerous at Montreux hawked insects constantly, darting off the branches of the walnut trees in the way of the spotted flycatcher. But on September 30th, our last day at Montreux, a "red-tail" flew close to me in the marshes which could not belong to a Black Redstart; after plodding another mile through the tall reeds, I saw two Bluethroats quite close to me, in a comparatively dry spot. On my approach, one crossed the canal; the sun at that moment showed up the throat of the other, perfectly blue, but centred with a white or creamy spot. In colouration he other-

wise closely corresponded with the rather smaller bird seen on the 14th inst. He constantly vibrated his tail, but in silence; as he turned, his greyish back and whitish undertail coverts were well displayed.

Despite a cruel wind at Geneva, myriads of House Martins hawked up and down the streets; over the Rhone played nearly an equal number of Swallows and some Sand Martins. In the market, October 5th, the most interesting bird was a female Gelinotte.

At Paris, on October 9th, a Stone Curlew shared the honours of a stall with numerous bunches of Thrushes. In the *Marché des Oiseaux* were Ortolans, many Serin Finches, Short-toed Larks, and a Crested Lark. An old birdstuffer, near the Rue St. Honoré, showed me Paris examples of *Lanius collurio* and *auriculatus*, remarking that the latter bred regularly near the city. Some Palmate Newts, which I detected in a bottle crammed with the two common species, had not lost the fine tip which I think is stated to be generally absorbed before winter. They reached home safely, in company with some Montreux examples of *Rana esculenta*, caught for my friend, Mr. O. Aplin. As recently as the 30th of September, there were Villeneuve examples of *R. esculenta* in all stages of the or tadpole state.

ORNITHOLOGICAL NOTES FROM DEVON AND CORNWALL.

By John Gatcombe.

On March 8th I watched through a powerful telescope a fine Black-throated Diver near the shore; it was in winter plumage, the uniform light sides of the neck at once distinguishing it from the Great Northern Diver, the dark bands on the neck of which are always more or less observable at all seasons. Many Razorbills were also on the coast at that date, and two large flocks of Ducks and Curlews were seen flying up the Tamar. The Black-headed Gulls had assumed the complete dark head, and the Herring Gulls were constantly uttering their breeding cry. By March 12th several Wheatears had arrived, and many Lesser Black-backed Gulls were to be seen in full spring plumage. On the 16th I examined a recently-killed Northern Diver, the

stomach of which contained three small flatfish, and from its gullet were taken several large prawns. On March 24th a Garganey was obtained.

I saw a large immature Glaucous Gull on the coast on April 9th, rather a late date for that species in this locality. Whimbrels I heard and saw on the 24th, and by the 28th, with the wind S.W., Swifts had also arrived.

On May 2nd I examined a Swallow which had been picked up on the rocks at the base of the new Eddystone Lighthouse, against which no doubt it had flown during the night. By the 21st the Herring Gulls at Wembury had many nests with eggs in them; and I observed some Shags in their beautiful shining bronze-green plumage, but which had already lost the peculiar erect and curved crest of early spring.

At the end of June a young Jackdaw (pure white) was captured alive on the cliffs near Mount Batten, Plymouth; it had pink eyes, showing it to be a true albino, and was altogether the handsomest variety of the species I ever saw. Several young and a few adult Greater Spotted Woodpeckers were obtained about this date, I am sorry to say; for the species is by no means common in this locality.

Many Whimbrels returned from their breeding places about July 21st, and I was told of some having been heard several days previously.

Young Herring Gulls made their appearance in the Sound and harbour on August 7th, and I remarked that their flight was very different from that of the old ones, being lighter and more buoyant. On the 10th an adult Common Tern was seen hovering over a school of mackerel, reminding me that "Mackerel-bird" is a common name for this species on some parts of the coast of Devon; it was rather early for its appearance in this neighbourhood, for we seldom see any before September. On the 23rd I noticed the last Swifts for the season, and the same day a young Puffin was brought to one of our birdstuffers, which had been caught with a hook and line. About the same time some Manx Shearwaters, Common and Sandwich Terns were sent from Carbis Bay, near St. Ives, Cornwall, to be preserved: the Shearwaters were adult, but in full moult after the breeding season, and their plumage very dull; the leg of one specimen had been shot off just below the tarsal joint apparently some

time previously, for the end of the stump had perfectly healed and had become covered with a smooth skin: the Terns also were adult and in excellent plumage, scarcely showing any sign of moult. Sandwich Terns are very uncommon on this part of the coast: young ones are sometimes met with in the autumn, but adults rarely. On the 26th a young Black Tern was brought to a Stonehouse birdstuffer, also a female Peregrine Falcon, both obtained near Plymouth. Common Sandpipers had by this time returned to the coast from their breeding places on the moorland streams.

On October 7th a young Peregrine Falcon with jesses on was sent to Stonehouse from the neighbourhood of St. Germans, where it had been unfortunately shot by a gamekeeper; it was afterwards found to have been lost with another at Quethiock, near Liskeard; on examination I found it perfectly gorged with a recently-killed Wood Pigeon. What a pity it is that gamekeepers cannot be taught to spare Falcons, especially trained ones, which the presence of jesses should surely protect! Several Short-eared Owls were shot as early as October 3rd. Plymouth Sound and harbour in October were full of Gulls, and among them I noticed one with *white* flight-feathers; this I think must have been a small Iceland Gull, or possibly an Ivory Gull, but I could not get near enough to be quite certain. Some Curlew Sandpipers were sent from Wadebridge, Cornwall; and I also heard from a friend in Ireland that several had been killed about this time on the margin of Lough Neagh. Numbers of young Razorbills and Guillemots were daily to be seen along the coast, apparently in a very weak and starving condition, and a great many were easily caught; I am unable to account for this, for we had had no long-continued gales. On October 12th a young Honey Buzzard in an interesting state of plumage was killed at Spriddlestone, near Plymouth, and brought to Stonehouse to be preserved; its forehead was almost pure white, and the feathers on the top and back of the head were tipped with the same, reminding one much of the markings on the head of the young Osprey; it also had long mystachial bands, which I do not remember having before observed on the Honey Buzzard, but all the specimens which had previously come under my notice were adult. When raised, the basal half of all the feathers appeared to be white; the tail was marked as usual with broad and

narrow bands. The stomach, strange to say, contained nothing but a quantity of white feathers (apparently its own) in a similar state to those which are often found compressed in the stomach of a Grebe. I expect there must have been a regular migration of these birds, for the person who killed it was told that many large hawks had been daily seen in the same neighbourhood. Several Common Buzzards were also obtained, and the stomach of one I examined contained nothing but the remains of Coleoptera. A Pomatorhine Skua (in change) was also killed, having two odd-coloured legs, one being wholly black, the other partly light blue and partly black, similar to that of the so-called Black-toed Gull. It is somewhat remarkable that the stomach of this bird, like that of the Honey Buzzard just mentioned, contained nothing but feathers: I think it probable, however, that these feathers might have been accidentally swallowed by the bird when constantly picking itself during the moult. An immature Great Crested Grebe and an adult Arctic Tern were killed in October on the St. Germains River; the Tern still retained its summer plumage, and the man who killed it called it the "Pearl Gull." Another Common Buzzard and some Oystercatchers were obtained later in the month, and many Widgeon and Golden Plover, with two or three grey ones among them, were brought to the market.

On November 5th I watched a large Northern Diver and a Sclavonian Grebe off the Devil's Point, Stonehouse. It was very interesting to observe the action of the Grebe when diving in deep water, taking a leap upward to gain impetus enough to reach the bottom. On the same day I saw a Snow Bunting, a very uncommon bird in this locality. The weather was then very mild, after a dense fog, and the Sound and harbour were full of Kittiwakes, with a few Terns. I examined a Long-eared Owl, killed in the neighbourhood, the stomach of which contained the remains of a large rat. On November 18th I observed two immature Black Redstarts on the rocks at the Point, Stonehouse, and a Grey Phalarope was also seen. Since that date more Black Redstarts were noticed in another locality, and on the 23rd a Wheatear; there appeared to be something wrong with one of its wings, which slightly drooped, and this perhaps operated to prevent its departure at the usual time.

Mr. Clogg, of Looe, informed me in a letter that he had seen

but two Black Redstarts during the previous year (1880); one, early in adult plumage, and another (immature) that had been caught in a greenhouse, and which I am glad to say he set free. I do not think that I saw one during the whole of that year. A curious variety of the Common Linnet which I examined had the whole plumage pure white, with the exception of a few dark feathers in the wings and tail; it was caught in October last, and soon after being caged sang beautifully, but unfortunately died suddenly shortly afterwards. Late in November two rather remarkable varieties of the Blackbird daily visited our garden; one of these had a perfectly white head and neck, the other was marked like a Magpie; both no doubt belonged to the same brood.

OCCASIONAL NOTES.

Badgers in West Cornwall.—*Apropos* of Mr. Harvie Brown's article on the Badger in Scotland, I may mention that this animal is of very frequent occurrence in West Cornwall. I myself know by repute of two coverts in my neighbourhood which are never drawn blank for a Badger; and a few of my friends who have been giving especial attention to Badger-hunting have since last April, within an area of a mile from Prussia Cove,—a fishing nook in Mount's Bay which is a favourite place of resort with me,—killed twenty-one Badgers.—Thomas Cornish.

[The destruction of so many Badgers within so short a period in one district we cannot regard but as a senseless persecution of a comparatively inoffensive animal. What a contrast is here afforded to the treatment which the Badger receives in a certain part of Leicestershire, where a gentleman of our acquaintance affords this animal every possible protection! He has a pair close to his house which he feeds regularly, and which bring out their young for his inspection, affording him the greatest pleasure, from the observation he is able to make of their habits.—Ed.]

Variety of the Irish Hare.—From some of the midland counties of Ireland I have occasionally received a curious variety of this animal, the upper parts being bright buff-colour, deepest along the back, and graduating into white on the under parts. Near Dublin, on a property at Donabate, they have become numerous, and from thence spread northwards for some miles. A single young one of this variety is often discovered in company with a pair of the common kind in the breeding-place; and again one of the common Hares is found with a pair of the variety. Have any of your

correspondents met with anything similar amongst English Hares?—A. Williams (2, Dame Street, Dublin).

Black Rat in the Channel Islands.—The present distribution of the Black Rat being a matter of interest to zoologists, the following notes concerning it may be acceptable. It is still pretty numerous in Jersey, especially in the eastern part, and in Guernsey. In Sark, where its rights have not been disputed by its brown relative, it is abundant. The fact of no vessels coming alongside in this latter island, all landing of goods and passengers being effected by means of small boats, accounts of course for the non-introduction of the Brown Rat. How the Black Rat came there, or whether its occupation of the island dates from the time that it was continuous with the mainland, are interesting matters for speculation.—J. Sinel ("Bagot," Jersey).

Cormorants breeding on an inland Lake.—Towards the end of June, 1876, while driving through the Ox Mountains, Co. Mayo, I noticed a large number of Cormorants, *Phalacrocorax carbo*, roosting on an island in a lake, Lough Attymas, about eleven miles from the sea. On making inquiry among the peasants I was informed that about eight years previous to my visit there had been a cabbage-garden on this island which was made a cover for the illicit distillation of whisky, or "poteen," and when the still was discovered and seized by the police, the spot was first taken possession of by a colony of Herons, *Ardea cinerea*, which built their nests on some small sallows and bushes, and they continued to frequent the spot regularly for a few years until they were driven off by the Cormorants; these latter, coming in large numbers, held undisputed possession of their lonely home until I visited their retreat. There had not been a boat on the lake for several years, so I was obliged to send one out from Ballina, and this proved so leaky that I had great difficulty in carrying out my project, but on reaching the island I saw a wonderful sight; the bushes half-dead, killed, I suppose, by the fresh guano, were laden with nests wherever room could be found, and the ground was so closely occupied that I had considerable difficulty in walking without treading on the nests. The old birds were so tame that they would not fly away when I landed, so I went round and drove them away with an oar, but as fast as I had chased them off on one side they returned on the other, so I left them alone and betook myself to examining the nests; where the still had formerly been placed was a circular wall about 2½ ft. high, and the nests were crowded as close together on the top as they could be: there were, I should say, seventy or eighty nests altogether on the island, and in the greater number of them were young ones; but I took three or four dozen of eggs. The stench was intolerable, and, when I walked under the trees, the young birds above

would open their mouths and void the contents of their crops, as I have seen young Herons do; in fact, after a stay of ten minutes, I was glad to get off again. The wind had freshened a good deal since I started, and I had some difficulty in making land: by the time I got to shore the cot was nearly full of water, and most of the eggs, which were lying loose in the bottom, were broken; however, I brought home a dozen or so. On a later visit I had a terrier dog with me, and he seemed so anxious to attack the Cormorants that I took a young bird, about half-fledged, from the top of the still, and put it into the water to let the dog have a swim after it; but to my great surprise, though the bird could never have been in the water before, it dived away with great rapidity, not leaving the terrier the least chance of catching it. The year following my raid a young man commenced to cultivate the island again, and he drove off the Cormorants by lying out in the evening when they were coming in from the sea, and shooting at them: so they deserted the place; but I was told that this year, 1881, a few pairs again built their nests on the island. The peasants living on the bank of the lake informed me that the number of fish, which are chiefly pike and perch, had much diminished since the Cormorants took up their residence there. I saw myself a large drove of the birds swimming along in a close body, and here and there I saw one dive, and then another, so that no doubt the fish had a hard time of it. — J. J. Folliott Darling (Ballina, Co. Mayo).

The Nostrils of the Cormorant.—Having had my attention directed by Mr. Romanes to the fact that Cormorants during a long flight, and for some time after roosting, hold their heads agape as if panting, and it having been suggested by him that this fact is presumably due to a remarkable condition of the nostril which he had observed, I undertook an anatomical investigation of the latter point, with the following results:—The external nostril in *Phalacrocorax carbo* is a mere slit situated at the end of a shallow superficial groove, which runs backwards along the beak parallel with its lower edge, and lying between its lower and middle third. When a bristle is introduced into the slit, it never succeeds in forcing a passage into the nasal cavity. If the skin which forms the outer boundary of the slit is carefully reflexed, a groove is exposed which runs from the external slit-like nostril to a narrow canal lined apparently by modified mucous membrane. This canal, when the mucous membrane remains, is externally from 1½ to 2 millims. in diameter; but it rapidly diminishes, and appears to end blindly. In all the specimens examined, however, when the skin has been reflexed, it is possible to pass through this canal, without forming a false passage, a bristle about the size of an ordinary horse-hair—*i. e.* less than 1 millim. in diameter. The bristle is more easily passed in young birds than in old ones: this seems to be due to the osseous canal being relatively larger than in the former. Almost immediately beyond this narrow passage

is the large nasal chamber, lying above and internal to the palatine bone, and in free communication with the buccal cavity. The mucous membrane lining the nasal chamber has the same structure and the same nerve-supply as in other aquatic birds. The nasal region of the Cormorant, and to some extent also in the Gannet (*Sula*), thus differs chiefly from the nasal arrangement in other birds—(1), in having a very small external nostril, the passage in this slit-like aperture being almost obliterated; (2), in having the osseous canal only 1½ to 2 millims. in diameter externally, and scarcely 1½ millim. at its narrowest part; and (3), in having the nasal chamber in very free communication with the mouth. This state of things, it may be presumed, explains the gaping of the bill, in the case of the Cormorant, to obtain air needful to sustain the increased activity of respiration which is produced by the exertion of prolonged flight.—J. C. Ewart, M.D., *in the* '*Journal of the Linnean Society (Zoology)*,' 1881, p. 455.

Supposed Occurrence of the Hairy Woodpecker in Oxfordshire.—A short time back I bought of the birdstuffer here a skin of a Woodpecker, the history of which he gave as follows:—It was shot between Hook Norton and Chipping Norton, in this county, about five years ago. He skinned it in a great hurry, being then engaged in other business, and put it away till he should have time to attend to it. It was forgotten, and remained lost till a month or two ago, when, on turning out some old boxes, he came across it. He thought at the time he skinned it that it was a variety of *Dendrocopus major*, not being acquainted with the rarer Woodpeckers. As I was not sure of the species myself, I sent the skin to Mr. Harting, who very kindly examined it,—submitting it also to Prof. Newton,—and decided that it was a skin of the Hairy Woodpecker, *Dendrocopus villosus* (Linn.), remarking, however, that considering how easily foreign skins are now-a-days obtained, and how easily they may get mixed up if not immediately labelled, he could not help thinking that some mistake had probably been made in the present instance. Of course some doubt must rest on the skin in question being really that of the specimen killed near Chipping Norton; but the birdstuffer is so certain that it is the identical specimen, and so clear in the history of it, that I hardly like to let it pass unrecorded. He, moreover, states that he never had any foreign specimens of the larger Spotted Woodpeckers in his possession.—Oliver V. Aplin (Banbury, Oxon).

Abnormal Eggs of Hooded Crow.—In his new edition of Yarrell's 'Birds,' Prof. Newton mentions an instance of a curious variety of the Raven's egg. I possess an egg of the Hooded Crow of a dull brick-dust red colour, and my friend Mr. Harry Leach, who gave it to me with other eggs of the usual type of that bird, has another of this strange variety. They are like pale-coloured Kestrel's or perhaps Hobby's eggs, with darker

markings of the same colour. He thus writes to me on the subject:—"My friend Henderson procured the eggs about May 1st, 1877, at Dunessan, in Mull, and gave them to me on the day I arrived there (May 5th). He took the two eggs out of one nest; there were three eggs in the nest, but he broke one in blowing it. He had taken some marked very similarly a few days before out of a nest in which there were eggs of the usual marking. I did not come across any of these unusual eggs myself, though I examined at least fifty nests."—Robert H. Mitford (Weston Lodge, Hampstead).

Colour of the Legs in Lesser Black-backed Gull.—On October 3rd a specimen of the Lesser Black-backed Gull was shot on Dovercourt Beach. It is in mature plumage, but with this peculiarity: one leg and foot is of a bright yellow colour, whilst the other is a pale flesh-colour. Can this bird be a hybrid between a Greater and a Lesser Black-backed or a Herring Gull, as mentioned by Mr. Cecil Smith (Zool. 1881, p. 450).—F. Kerry (Harwich).

The owner of the specimen writes:—"On the 3rd October last, while staying at Dovercourt, Essex, I shot a Gull in mature plumage, of which the following is a description:—Length from back to tail, inclusive, nineteen inches; height, fourteen inches; beak, light yellow, with a red spot in the apex of the lower mandible; eyes, straw-coloured, with a black pupil; head, breast and tail, white; mantle and wings, brownish black; the longest feather only of the primaries has a white spot near its tip; the secondaries have an angled, thread-like, white fringe; the under feathers of the middle and large wing-coverts have white edges; and lastly, one leg is yellow and the other is flesh-colour. Is this likely to be a hybrid between the Lesser and Greater Black-backed Gulls? I should be obliged if any of your readers could give some information on the subject."—C. A. Marriot (11, George Lane, Lewisham, Kent).

[Mr. Howard Saunders, to whom we have submitted the foregoing, writes as follows:—"Judging from the description, the Gull is probably a Lesser Black-back, *Larus fuscus*, which has only recently assumed the adult plumage, probably at the last moult, for there is a sub-apical white spot or speculum on the first primary only, whereas if it was a really *old* bird it would also have a small speculum on the second primary. The variation in the colour of the two legs is interesting, but I do not consider that it in any way indicates that this example is a hybrid between *L. fuscus* and *L. marinus*. I do not believe in hybrid Gulls in a wild state, and in spite of the one point of resemblance, *viz.*, the dark mantle, yet, in other respects, the Lesser and the Greater Black-backs are far wider apart than *L. fuscus* is from the *Larus argentatus* group, with the allied *L. cachinnans*, *L. affinis*, and *L. occidentalis*, which is confined to the coasts of California, British Columbia, &c. But *Larus marinus* has no very near allies still

existing; once he had, no doubt, but they are dead, and *L. dominicanus* of the Southern Hemisphere is perhaps his nearest surviving relative."—Ed.]

Iceland Gull and Great Grey Shrike in Somerset.—The Iceland Gull visits this county so seldom that it seems worthy of a passing notice when it does so. I therefore send a note of the occurrence of one at Somerton, in this county, on the 12th of December. I saw the bird at Mrs. Petherick's, the bird-stuffer, at Taunton, on the 14th. She also showed me a note which was sent with it, stating that it had been shot at Somerton on the date above-mentioned, and that the owner wished the Sea Gull which was sent with the letter made into a screen for a lady, in the same way Mrs. Petherick had done once before for him. Like the writer of the letter, Mrs. Petherick was rather hazy about the identity of the bird, as she called it a "sea gull" when she showed it to me, and asked what it was, having some idea, she said, that it was a young Black-back. I put her right as to the identity, and told her to try to get it for the Archæological and Natural History Museum at Taunton, as I knew there was not one there; but the owner stuck to his former order, and desired it to be made into that receptacle for moth and dust, a feather fire-screen, in which state I saw the bird yesterday. It was a young bird in the first year's plumage. Though occurring as an occasional straggler almost every year on the south coast of Devon, this is only the second Iceland Gull I have heard of as occurring in Somerset; the first was at Weston-super-Mare, on the 28th of December, 1870, and was recorded by me in 'The Zoologist' for 1871. It was in more mature plumage than the subject of the present notice; probably as near as possible one year older, for some of the pale grey feathers were making their appearance on the back, and the primaries were not nearly so much marked with pale brown. Whether this bird had wandered inland as far as Somerton, which is almost in the middle of the county, rather nearer the borders of Dorset than the Bristol Channel, by itself, or accompanied a flock of Herring or Common Gulls, large flocks of both of which have been unusually numerous in the ploughed fields and newly-sown wheat, I have not been able to ascertain. A Great Grey Shrike was killed at Ilchester, on the 12th of this month, the same day as the Iceland Gull, and was also shown me in the flesh at Mrs. Petherick's; it is not, however, nearly so uncommon a visitor to this county. —Cecil Smith (Bishop's Lydeard, Taunton).

Effects of a Snow-storm on Animal Life in the Transvaal.—On the 27th of August, 1881, and two successive days, we had the most wonderful snow-storm here, the heaviest ever known to have fallen in this country; I do not remember to have seen much heavier at home whilst it lasted. A good many natives and a few white men lost their lives, being overtaken by it in the open country; very many persons, more especially in the Orange Free State, are ruined, or nearly so, by the almost total loss

of their sheep and cattle. Springbok and Blesbok and other game died by hundreds, besides Bustards and other large birds. It killed thousands upon thousands of small birds, such as *Ploceus oryx* and *Ploceus taka*, and many other species, which from being plentiful are now comparatively scarce: the small birds in some places were lying dead under the mimosa trees, not having been able to obtain their usual grass seeds on the ground, and pinched to death with the cold and the wet thaw.—Thomas Ayres (Potchefstroom). [Communicated by Mr. J. H. Gurney.]

Small Birds carried by Cranes in their Migrations.—In a letter to our contemporary, 'Nature,' on this subject, to which attention was directed in 'The Zoologist' (1881, p. 260), Dr. J. Rae says:—"The account of Wagtails taking a passage on the backs of Cranes in a long flight resembles so much a somewhat similar story told and believed in by the Indians in several parts of North America, that I venture to send you an account of it. All the Indians (Maskegon Crees) round the south-western part of Hudson's Bay assert that a small bird of the *Fringillidæ* tribe takes a passage northward in the spring on the back of the Canada Goose (*Anser canadensis*), which reaches the shores of Hudson's Bay about the last week of April. They say that they have often seen little birds fly away from Geese when the latter have been shot or shot at. An intelligent, truthful, and educated Indian named George Rivers, who was very frequently my shooting companion for some years, assured me that he had witnessed this, and I believe I once saw it occur. It is only the Canada Goose that these little migrants use as an aërial conveyance, and certainly they both arrive at the same date, which is a week or two earlier than the other kinds of Geese (*A. hyperboreus* and *albifrons*) make their appearance. I knew the little bird well and have preserved specimens of it, but it is so long ago that I have forgotten the name. The Indians on the shores of Athabasca and Great Slave Lakes—both great resorts of wild Geese—tell a similar story. If a fabrication I do not see why it should be invented about the Canada Goose only, and not about other species which are equally numerous. It may perhaps be necessary to explain that all the Coast Indians of Hudson's Bay devote a month or more every spring to wildfowl (chiefly Geese) shooting, the game killed forming their entire food for the time. As soon as the Geese begin to arrive, the Indian constructs a concealment of willows and grass, usually near a pool of open water, at the edge of which he sets up decoys. When Geese are seen approaching—usually flying at a great height—the Indian imitates their call, and the Geese on seeing the decoys circle round, gradually coming lower down until within shot, when they are fired at. It is from these high-flying Geese that the small birds are seen to come. If the Geese are flying low it is a pretty sure indication that they have already rested on the ground somewhere near, after their long flight, when of course their tiny passengers have alighted."

Small Birds carried by Cranes in their Migrations.—At page 260 of 'The Zoologist' for 1881 there is an extract from 'Bible Customs in Bible Lands,' referring to an alleged custom of large birds carrying small ones on their backs during migration; and you, Sir, ask if any of your correspondents can furnish confirmatory evidence of this. The following fact was related to me by Mr. Wilson, the foreman on the South Gare Breakwater at the mouth of the Tees; it bears directly on the subject named, and I will give the story in my informant's own words, as nearly as possible. Wilson said:—"I was at the end of the Gare on the morning of the 16th of October—[the day named, the 16th October, 1879, was fine and cold, wind northerly; two days before, the 14th, was the last of the N.E. storm which brought the remarkable flight of Skuas]—and saw a 'Woodcock' Owl (Short-eared Owl) come flopping across the sea. As it got nearer I saw something sitting between its shoulders, and wondered what it could be. The Owl came and lit on the gearing within ten yards of where I was standing, and, directly it came down, a little bird dropped off its back and flew along the Gare. I signalled for a gun, but the Owl saw me move and flew off across the river. We followed the little bird and caught it, and and I sent it to Mussell to be made into a feather for my daughter's hat." The little bird was a Golden-crested Wren. I have asked Mussell about this affair, and he tells me Wilson gave him exactly the same version as above, and that he has heard him tell the story several times since without the least variation. Wilson could have had no inducement in telling me other than the truth, and I have every reason to believe that what I have written is correct. It does not necessarily follow that the Goldcrest came the whole way across the North Sea on the back of the Owl; but I think it is quite possible that, feeling tired on the way, it might have availed itself of the assistance of its *compagnon de voyage*, and so be carried to shore. Wilson further told me he had seen another Wren on an Owl's back about a fortnight after he saw the first one.—T. H. Nelson (Redcar).

Leach's Petrel in Oxfordshire.—A specimen of Leach's Petrel, *Procellaria Leachii*, was picked up dead, in a very emaciated condition, at Lower Heyford, in this county, early in December.—Oliver V. Aplin (Banbury, Oxon).

Red-necked Phalarope and Little Gull on the Lincolnshire Coast.—On September 26th I received an immature specimen of the Red-necked Phalarope, which was procured near Boston; and on October 25th a Little Gull, also a young bird, obtained on the same part of the coast. Amongst other more or less uncommon birds procured in the county and forwarded to me last autumn, I may mention a Great Grey Shrike on October 7th, a male Grey Phalarope on October 18th, and a Peregrine Falcon on November 4th. On Oct. 7th another Grey Phalarope

was shot, while swimming in a pond at Little Eaton, near Derby, and on November 29th a Fork-tailed Petrel was caught by a dog whilst flying low along the ground in Markeaton Park, near Derby.—A. S. Hutchinson (18, Green Lane, Derby).

White's Thrush in Yorkshire.—Early in January a specimen of White's Thrush, *Turdus varius*, was obtained at Waplington Manor, near Pocklington. According to Messrs. Clarke & Roebuck's recently published 'Handbook to the Vertebrate Fauna of Yorkshire,' this makes the fourth example of this bird taken in our country. From its size and markings I incline to regard it as a male bird, but as the sex was not ascertained when the bird was skinned, so far as I know, it is difficult to pronounce with any certainty.—J. Backhouse, Jun. (York).

Ornithological Notes from Ireland.—A specimen of the Honey Buzzard, in immature plumage, was obtained last autumn near Newbridge, Co. Kildare. The stomach and gullet were tightly filled with large earthworms, nearly two inches long. A Pomatorhine Skua, in immature plumage and in very fat condition, was killed as it was regaling itself upon the carcase of a dog, on the sea-shore at Glenties, Co. Donegal. A Sclavonian Grebe was obtained in the same locality. Another Pomatorhine Skua, in adult plumage, was killed late in October, at Dingle, Co. Kerry, and a Glaucous Gull, in the pencilled plumage of the immature stage, was shot early in November. From a party of seven Grebes seen on the Shannon, one was shot with a rifle-bullet, and proved to be a Sclavonian Grebe. A White Water Rail was shot at Mullingar. With the exception of the long wing-feathers and tip of the tail, this bird was of a beautiful white, not cream-colour, with beak and legs flesh-colour.—Williams & Son (2, Dame Street, Dublin).

Kentish Plover on the Lincolnshire Coast.—On the 8th October last I received in the flesh an immature specimen of the Kentish Plover, *Ægialitis cantiana*, which was shot on the coast at Friskney, near Boston. Mr. Cordeaux, in his 'Birds of the Humber District,' refers (p. 93) to this species as rare, and mentions only two instances of its occurrence in his district, both on the Yorkshire coast, in May, 1869. The bird now in my possession seems to be the first of its kind procured in Lincolnshire, and the occurrence therefore is worth recording.—A. S. Hutchinson (18, Green Lane, Derby).

[The description of the plumage and colour of the soft parts, notified by our correspondent, but omitted here for want of space, indicate that he has correctly identified the species.—Ed.]

Curious Capture of a Pochard.—About ten o'clock on the night of the 9th December last the inmates of a house in this town were startled

by the smashing of glass in an adjoining outhouse. On going into the place they found that a duck (which was quite uninjured) had dashed itself through the skylight. I went down to see the bird, and found a fine male Pochard, *Fuligula ferina*. A faint light was shining on the glass, which was frosted over, and I imagine the bird mistook it for a patch of water, and accordingly pitched on it.—Oliver V. Aplin (Banbury, Oxon).

The Dorse, or Golden Cod, in Cornwall.—I must demur to Mr. Thomas Edward's statement (p. 23) that the Dorse is "a rare visitor to Britain." In my experience it is a fish of which, in Mount's Bay, you may certainly expect to have many specimens in the spring and early summer every year. The fishermen mistake it for a dark-coloured Common Cod, and as Cod is, at the period of the appearance in our waters of the Dorse, a fish out of season, the latter is seldom to be seen in the market. As a fact the Dorse in spring is in very good condition for the table, and is in my opinion at all times of much more frequent occurrence in these western waters than the Haddock, which is recognised, I believe, as a fish of common occurrence in British seas.—Thomas Cornish (Penzance).

The Black-fish, *Centrolophus pompilus*, in the Colne.—On the 20th December last Capt. Cranfield, of Rowhedge, captured a specimen of this apparently rare fish at the mouth of the Colne. Its unusual appearance and black colour led to its being forwarded to me to name. In the authors to whom I have access I can only find a record of five specimens.—Henry Laver (Colchester).

Errata.—Page 24, line 28, for "progenital" read "urogenital"; p. 24, l. 31, for "Strichaster" read "Stichaster"; same page, l. 37, for "Miller and Loschell," read "Müller and Troschell"; p. 35, l. 4, for "1878" read "1873"; p. 37, l. 14, for "the College of Surgeons *as* their conservators" read "the College of Surgeons *and* their conservators."

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

Linnean Society of London.

January 19, 1882.—Sir John Lubbock, Bart., M.P., F.R.S., President, in the chair.

The death of Mr. Richard Kippist, the Society's former Librarian, was announced, and the meeting recorded its sense of his efficient and faithful service for nearly half a century. A valuable donation of books from the late Treasurer (Mr. F. Currey) was also announced, and the Society's thanks accorded.

There was exhibited for Mr. W. Bancroft Espent an albino specimen of Bat (*Molossus obscurus*, Geoffr., from Jamaica, albinism in the *Cheiroptera* being said to be extremely rare

Dr. T. Spencer Cobbold called attention to living examples of *Leptodera*, shown under the microscope.

Mr. W. Percy Sladen read a paper on the *Asteroidea* of the 'Challenger' Expedition (part i. family *Pterasteridæ*). After some preliminary remarks and a synopsis of the genera, he observed that hitherto this family has been represented by a very limited number of forms, only nine species being on record. Eight of these belonged to the genera *Pteraster* and *Retaster*, and the ninth was the type and solitary representative of *Hymenaster*—a genus established by Sir Wyville Thomson for an extraordinary asterid discovered during the cruise of H.M.S. 'Porcupine.' Thirty-four species of *Pterasteridæ* have been obtained by the 'Challenger,' only two of which were previously known. Of the thirty-two new species three belong to *Pteraster*, four to *Retaster*, and the remarkable number of twenty to *Hymenaster*, a genus which is now found to possess a world-wide distribution in deep waters. The remaining five species are the representatives of three new genera—viz. *Marsipaster*, two species; *Benthaster*, two; and *Calyptraster*, one. Thereafter the author referred to the terminology used by him, and there followed a description of the new deep-sea forms.—J. Murie.

Zoological Society of London.

Jan. 17, 1882.—Prof. W. H. Flower, 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 December, 1881, and called special attention to a young male Guemul Deer, *Furcifer chilensis*, from Patagonia, and a Germain's Peacock-Pheasant, *Polyplectron Germaini*, which were new to the Society's Collection.

Prof. Newton exhibited (by favour of Messrs. Hallett & Co.) the skin of an example of *Notornis Mantelli* recently received from New Zealand. This was stated to be the third example of this almost extinct bird which had been yet obtained.

Mr. W. K. Parker read a memoir on the structure and development of the skull in the *Crocodilia*.

Mr. Oldfield Thomas gave an account of a series of Rodents lately collected by Mr. Stolzmann in Northern Peru. The chief interest in the collection was stated to lie in the fine series of Mice of the genera *Hesperomys* and *Holochilus* contained in it.

A communication was read from Mr. T. E. Buckley on the variability of plumage exhibited by the Red Grouse.

A communication was read from Mr. G. B. Sowerby, jun., containing

descriptions of some new species of Shells in the collection of Mr. J. Cosmo Melvill.

Prof. F. Jeffrey Bell read descriptions of several new or rare species of *Asteroidea* contained in the collection of the British Museum.

A communication was read from Mr. W. L. Distant, containing the characters of some undescribed species of *Cicadidæ* from the Australian and Pacific regions.—P. L. Sclater, *Secretary*.

Entomological Society of London.

December 7, 1881.—H. T. Stainton, Esq., F.R.S., &c., President, in the chair.

A. J. Scollick, Esq. (Albion Lodge, Putney, S.W.), was balloted for and elected a Member of the Society.

Mr. W. C. Boyd exhibited a variety of *Ennomos tiliaria*, Bkh., captured last autumn at Cheshunt.

Mr. C. O. Waterhouse exhibited specimens of *Scenopinus fenestralis*, Latr., with their pupa-cases, bred from dried roots of *Aconitum;* a specimen of *Phora rufipes*, Meign., bred from *Nematus ribesii*, and specimens of *Oscinis pusilla*, Zett., bred from stems of barley.

Mr. G. H. Verrall expressed surprise that the larva of *Scenopinus* should be found feeding on the *Aconitum* roots. This species was commonly known as "the carpet fly," and its larva mostly fed on old cotton or woollen materials, frequently on old greasy horse-cloths, the fly being a general inhabitant of stable-windows; hence its name.

Mr. E. A. Fitch remarked that he had bred *Phora rufipes* in some numbers, also a specimen of *Phora minor*, Zett.?, from the larvæ of *Nematus salicis*.

Mr. Verrall stated that he once boxed a living hornet (*Vespa crabro*) and several specimens of one of the *Phoridæ* emerged from it, after death.

Mr. F. P. Pascoe exhibited the larva of an ant-lion, taken alive by a London grocer from a barrel of currants received from Zante. Mr. Pascoe said that it had lived in his possession for more than a month, but apparently in a semi-torpid state, and he could not induce it to eat anything.

Mr. R. M'Lachlan exhibited a curculionideous larva found by Mr. G. F. Wilson, of Weybridge, feeding in the bulbs of lilies (probably from Japan), which had proved very destructive to some of those plants grown in pots. It resembled an *Otiorhynchus* larva, but was probably more closely allied to that of a *Brachycerus* (*cf.* Ann. Soc. Ent. France, 1875, pp. 95-6; 1874, pl. iv. fig. i.).

Mr. A. S. Olliff exhibited a specimen of *Harpalus cupreus*, Dej., captured in the Isle of Wight by Mr. A. C. Horner, of Tunbridge.

Mr. H. B. Pim exhibited a specimen of a *Telephorus* which he captured

last summer at West Wickham. This had been pronounced by the Rev.W.W. Fowler to be "possibly a variety of *T. lituratus*, Fall., but probably new."

The Secretary exhibited a box of locust egg-cases, with specimens of the Bombyliid larvæ found feeding on the eggs, transmitted by Sir Robert Biddulph from Cyprus; he also read a communication received therewith from the Colonial Office, with a report on the same.

Mr. W. L. Distant read "Descriptions of new species belonging to the Homopterous family *Cicadidæ*." Twenty-two new species were described, three from the Neotropical, three from the Ethiopian, thirteen from the Oriental, one Palearctic, one Australian, and one from the Pacific Regions.

Mr. A. G. Butler communicated a "List of Heterocerous Lepidoptera collected in Chili by Thomas Edmonds, Esq. Part I. Sphinges and Bombyces."—E. A. Fitch, *Hon. Sec.*

NOTICES OF NEW BOOKS.

A Hunter's Wanderings in Africa. Being a Narrative of Nine Years spent amongst the Game of the far interior of South Africa By Frederick Courteney Selous. 8vo, pp. 448, with nineteen full-page illustrations. London: Richard Bentley & Son. 1881.

Of the numerous books which during the last few years have been written about Africa, the majority have appealed chiefly to the sympathies of geographers, and are notable for the important additions which they have been the means of making to our knowledge of the geology and geography of that vast, yet still too little known, continent.

The present work has a very different aim. It is a book for sportsmen, and especially for those whose delight is in the pursuit of what is generally termed "big game." To compass the death of Elephants, Rhinoceroses, Giraffes, Buffaloes, Elands and other Antelopes, has been apparently the author's sole object in life for the last nine years, nor has the king of beasts escaped the bullet, when by chance he has been encountered. Primarily, the inducement to "wander" in Africa seems to have been ivory, which, if it can only be procured in sufficient quantity, enables the hunter not only to pay his way, but to put something handsome in his pocket at the end of every expedition.

Mr. Selous found, however, that the profits of the professional

Elephant hunter are, after all, somewhat precarious, depending not only upon a considerable amount of personal exertion, but also, to a great extent, upon the luck of falling in with herds from which fine old tuskers may be killed. Considering that most of the Elephants killed by him were hunted on foot instead of on horseback, he seems to have been wonderfully successful. In the course of four months he killed to his own gun forty-two Elephants, eleven of which were big bulls, whose tusks averaged 44 lbs. apiece. He also shot several very fine cow Elephants, whose tusks weighed from 15 lbs to 16 lbs. The tusks of the largest bull killed, when thoroughly dried out, weighed 74 lbs. each. The weapon used was a smooth-bore elephant gun, carrying a four-ounce round bullet hardened with zinc and quicksilver, and backed by 15 drachms of coarse powder—in other words, a charge *five* times as heavy as that used by the majority of sportsmen for shooting game in England! The man who can stand the frequent employment of such a charge as this must indeed have nerves of iron.

But it is not only in the light of a successful Elephant-hunter that the author is to be regarded. During his explorations beyond the Zambesi, on the River Chobe, and in the Matabele and Mashuna countries, his powers of observation were fully exercised in noting the species of large Mammalia met with, especially the Antelopes, and in recording particulars of their geographical distribution. His remarks on this subject, accompanied with drawings of the heads of the different species of Antelopes, seen or shot by him at various times and in various places, are of special interest to naturalists, since they not only embody the results of many years personal experience, but in many cases convey information concerning the haunts and habits of species about which hardly anything was previously known.

Chapter XII. entitled "Notes upon South African Rhinoceroses," and Chapter XIII. "Notes upon South Central African Antelopes," may be specially mentioned as containing valuable statistics, and must be regarded as affording the latest and best information on the subjects of which they treat.

On the whole, although the book is chiefly occupied with hunting incidents, and furnishes, it must be confessed, a record of terrible slaughter, it contains many observations on the habits

of wild animals which will be very acceptable to naturalists. It is with these that we are chiefly concerned, and the reader who happens to be a sportsman as well as a naturalist will thoroughly enjoy the perusal of the author's adventures so graphically described by him. It is one of the best books on sport and travel in South Africa that has appeared for a long time.

Angling Literature in England, and Descriptions of Fishing by the Ancients: with a Notice of some books on other piscatorial subjects. By Osmund Lambert. 12mo, pp. 87. Sampson, Low & Co. 1881.

Those who are already familiar with the Catalogues of Books relating to Fishing by Sir Henry Ellis, Pickering, Russell Smith, and Mr. Westwood, will doubtless experience some disappointment if they expect to find in the present publication an attempt to improve upon its predecessors. The title is too comprehensive, and raises expectations not destined to be realized. It does not contain, as might be supposed, a complete list of English books on Angling, with bibliographical notes, nor are the notices of classical allusions to the subject anything like exhaustive. Apparently the author seeks merely to direct attention to some of the most remarkable English books on fishing, with here and there a quotation to illustrate the style of the writer noticed; and the same may be said as regards the Greek and Latin authors who have in any marked degree alluded to fishing with an angle.

In ransacking this particular field of literature, Mr. Lambert has evidently bestowed considerable time and labour upon his undertaking, and the result is a delightful little book of less than a hundred pages, which, in the hands of a travelling angler, would most pleasantly beguile the tedium of a long railway journey. Printed on hand-made paper, and daintily bound in vellum, it is just the sort of book to arrest the attention of those who are not content with the mere exercise of their favourite branch of sport, but are glad to make themselves acquainted with all that is written about it. To readers of this class, Mr. Lambert's remarks on the best editions of favourite authors will doubtless be very acceptable.

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NOTES ON IRISH RED DEER.

By RICHARD J. USSHER.

DR. CHARLES SMITH, in his 'Ancient and Present State of the County and City of Waterford,' published in 1774, remarks (p. 343):—"In the mountains of Knockmealdown we have some remains of the Red-deer, but so few that it is to be feared the species will in a few years be extinct, especially if a little more care be not taken of them." This lofty range, which culminates at a height of 2609 feet, occupies a large area between the counties of Waterford and Tipperary, and its great unenclosed tracts of moor, interspersed formerly with oak woods, were the natural home of the wild native Deer, though they would have been quite unsuitable for the preservation of an introduced breed in those lawless times, when, moreover, these mountains were divided between different estates whose owners were not in harmony.

In that same year a disputed question of boundary on these very mountains gave rise to a suit between the Duke of Devonshire and Lord Cahir, and the evidence of some of the witnesses in this suit, examined in 1775, is interesting as confirming the alleged existence of Red-deer on these mountains at that date. From the papers in this suit, preserved at Lismore Castle, Mr. Francis E. Currey, for many years the agent of the Duke of Devonshire in this part of Ireland. has kindly furnished me with the following extracts:—

"John Power, of Kilbeg, aged eighty, says that in the time of Richard late Earl of Burlington [who died in 1753] the right of Thomas Lord Cahir

was not admitted to sport south of Laghtalassinig, the present Gap at the boundary between the counties of Waterford and Tipperary; that about forty years ago [1735], one Ellis, huntsman to Lord Cahir, was hunting a hind on the said mountains and killed the same at a place called Monygorm, within two miles of Lismore; and saith the drivers and gamekeepers stopped the hounds and took away the deer.

"Darby Cunningham, of Ballynatray, aged seventy, saith that the right of Thomas Lord Cahir to sport south of Lachtalassinig was not admitted, but was opposed by the servants of Lord Burlington, and he was present thereat; but that the gentlemen who were out with Lord Cahir hunted and killed the said deer in Lord Burlington's estate in spite of Lord Burlington's servants.

"The same witness, in reply to cross-interrogatories, says that Thomas Lord Cahir did sometimes with his huntsmen and servants come to hunt deer on the said disputed mountains, but were always prevented from so doing by the servants of the Earl of Burlington, except that when Lord Cahir or his people 'roused a stag' on *their* side of the bounds, they then had liberty to hunt him wherever he run.

"Darby Ryan, of Lismore, aged sixty, saith that the right of Lord Cahir to sport on the said disputed mountains was disputed and opposed by the servants and agents of Lord Burlington, and the said deponent was present when such right was disputed and opposed; and saith during deponent's time Lord Cahir's people were not admitted to sport on the said disputed mountains, unless they proved that they found the deer on Lord Cahir's estate."

"The disputed mountains," says Mr. Currey, "were part of the Knockmealdown range, extending from the Gap to the top of Knockmealdown, including the Sugar-loaf Mountain, and extending south somewhat farther than the present Police Barrack. Mention is made in the depositions of the witnesses of the existence in the time of Lord Burlington of oak woods and coppices on parts of the disputed ground, and of some of them being cut down."

That Red-deer were formerly abundant in this part of the country appears from numerous bones and portions of antlers of the species which I found last summer (1881) in the kitchen-midden of a rath near Whitechurch, associated with bones of domestic animals, charcoal, knives and other objects of iron, as well as pins and whorls made of the deer's antlers. Portions of antlers occurred, even at the surface, with moss adhering to them. There is a tradition that this rath was a robber's strong-

hold. It had been evidently inhabited for a considerable length of time, for the kitchen-midden, which filled a cave descending at a steep angle, was excavated to a depth of more than thirty feet, and the remains of Red-deer occurred throughout it.

I have also found the antlers and bones of this species in several other kitchen-middens and caves in this neighbourhood, associated with charcoal, hand-made pottery, objects of iron and bones of ox, goat, pig, and horse. I have obtained them, moreover, in the kitchen-middens of the "crannog," or lake-dwelling, in the peat deposit on Ardmore beach, which, from advancing denudation, is now covered by the sea at every tide.

Numbers of bones and entire pairs of antlers, some of which are in my possession, have been found in the muds and sands of the estuary above Dungarvan Bridge, where the boatmen frequently find them only partially embedded in the sand, and partially exposed to the tidal waters, so that small sea-shells attach themselves to the antlers. I could mention other localities in this valley where similar remains have been found in deposits of mud and peat. I have been shown a fine antler, with the "throstle's nest," which was taken up by a net out of the Blackwater, near Dromana.

In many parts of Ireland, moreover, and here among the rest, large patches of blackened soil may be seen turned up by the plough or spade. These were ancient cooking-places, and the charcoal that accumulated there has imparted its colour to the soil. Such spots are termed in Irish the "roasting of the deer." The venison was no doubt baked in pits lined with heated stones, as the cracked and burned slabs of sandstone testify, in the same manner as is in use among the natives of Australia and other countries.

A tradition preserved among the peasantry is related by a very old man named Michael Quarry, still living at Kilnafrehan (as was stated by the late Mr. W. Williams, of Dungarvan), to the effect that in the time of Cromwell a lady who had large estates in the parish of Kilgobinet used annually to visit and be entertained by all her tenantry, who were obliged to provide a Red-deer for the feast. At Ballyknock she and her eight sons were entertained by Thomas Towhill, who, either for want of means or the inclination to procure venison, had a black sheep slaughtered.

The localities above mentioned are all in the vicinity of the Colligan River, which rises in the Comeragh Mountains and flows into Dungarvan Harbour by Shandon. The Red-deer's antlers I have got from the river-bed near the latter place, in a comparatively recent state, seem to prove that Red-deer lived on the Comeraghs at no distant period.

In Erris, the last haunt of the Red-deer in the Co. Mayo, a few existed so late as 1847, when the last survivors of this noble race were slaughtered for food by the famine-stricken peasantry.

Happily the Red-deer is not quite extinct in Ireland, a few being still to be found in Kerry, where they are strictly preserved by Lord Kenmare and Mr. Herbert of Muckross, whose estates adjoin.

ORNITHOLOGICAL NOTES FROM NORTH LINCOLNSHIRE DURING THE AUTUMN OF 1881.

By John Cordeaux.

On the 25th July a flock of eleven Canada Geese, probably "escapes" from some private waters, was seen flying up and down the dock outfall at Grimsby; subsequently they passed over the end of the town, only just clearing the chimney tops. Whimbrel were first heard on the evening of July 18th (close and threatening thunder), passing across the parish from east to west. On the 25th the first Snipe appeared, and on the 30th the Green Sandpiper returned to our beck.

Young Wheatears were very numerous during the last week in August. On September 4th thousands were seen along the coast, continuing tolerably plentiful to the 17th. On the night also of September 3rd large numbers of Wheatears, Redstarts, and other small birds were fluttering round the Heligoland Lighthouse from 3 a.m. till daylight. Out of forty-nine Wheatears captured there were only three old ones, and amongst forty-seven Redstarts eleven old ones. On the 4th also large numbers of Redstarts occurred on the sand-hills near the mouth of the Humber; these were almost entirely birds of the year, only four old ones being observed: like the Wheatears they were slowly

making their way to the south, the migration, as is the rule in these cases, extending only a short distance inland.

I saw the first Corn Crake on September 1st, wind N., and blowing half-a-gale; and on the 3rd a pair of Golden Plovers, old birds, both of which I shot. Mr. W. Eagle Clarke, when at Spurn, on September 6th, at 5.15 p.m., wind changing from N. to S., saw an immense flock of Golden Plovers, extending at least three or four miles, passing over Spurn from the Lincolnshire coast northwards. In 1880 it was on August 22nd, in the same locality, that my friend Major Seddon saw thousands of Golden Plover passing north along the sea-shore in detached flocks, flying in lines and arrow-heads. This large migration of Golden Plover to the northwards, in two consecutive seasons, is remarkable, as it is difficult to surmise where they started from.

During the first week in September the Meadow Pipits were migrating southward in large numbers, and continued to arrive and depart at intervals all through the month. On the 13th they were seen passing all day along the line of sand-dunes of Spurn towards the south.

There were young Knot on the Humber foreshore as early as the first week in August, and at the same period three Grey Plover were seen, old black-breasted birds. The young of the year were very numerous on the flats at the end of the month and early in September. On the 12th September seven old birds, four males and two females (the other lost), were shot on the muds at Kilnsea; all were in beautiful summer plumage.

On September 8th, in the evening, just at dusk, two Woodcocks, coming in from the sea, topped the embankment and pitched into some standing barley, where, however, I did not find them when looked for on the following morning, having most probably passed inland. The Woodcock was first seen at Spurn on the 4th September, and from that date to the end of October arrived in a very desultory fashion, by twos and threes, and not in the large flights which are characteristic of their ordinary migration. Very few were seen at Heligoland, and not one before November 30th. In the autumn migration Woodcocks strike the whole of our east coast between North Ronaldshay in Orkney to the South Foreland, the greater number always coming in on the coasts of Norfolk, Lincolnshire, and Yorkshire, south of Flamborough. This bird is much less frequent in Shetland than

the Orkneys, and only one instance is recorded of its occurrence in the Faroes. The northern range of its migratory flight will thus be about lat. 61° N. Woodcocks come directly from the east, going westward. Grey Plover follow much the same line, are rare wanderers to Shetland, and, so far as I am aware, have never been recorded from Faroe.* In the spring migration the northern limit on the English coast of the Common Godwit, the Knot, and Grey Plover does not appear to extend beyond latitude 53° 42′ N., the Humber, from which point they strike directly over the North Sea.

A Turtle Dove was seen on September 15th on the rifle-butts in this parish close to the Humber embankment. Both the Curlew Sandpiper and Little Stint occurred numerously at Spurn and the Humber mud-flats in September. Two of the former, in summer plumage, were seen at Spurn on July 31st. In September they might be found in flocks of from forty to fifty, all apparently young birds. The Little Stints prefer the muddy foreshores of the river to the sandy flats of the coast; the Curlew Sandpipers might be found indiscriminately in both localities, often feeding in company with Dunlins. As late as the 7th October I saw a flock of about a dozen Little Stints on the muds opposite this parish. On the wing they are readily distinguishable from the Dunlin by their size as well as the silvery white of the under parts, and have altogether a much whiter appearance. Greenshanks also were common during the autumn, and as many as a dozen seen at the same time. On the 16th I obtained a Barn Owl, which was captured at sea on board one of the fishing-smacks: it was a bird of the year, and not of that fulvous variety which occasionally occurs in districts contiguous to the east coast.

On the morning of September 21st, when returning from Spurn to Grimsby, we passed a flock of about sixty Scoters; amongst them was one altogether of a smoke-grey or dirty white, and when on the wing a most conspicuous object amidst a crowd of dark-plumaged companions. On the same day, when shooting through some standing beans, I saw a small flock of Redpolls, and amongst them one which was very light-coloured, probably *L. linaria*. There was a very considerable immigration of these latter at Spurn on the night of October 24th, and a beautiful old

* See 'Zoologist,' 1872, p. 3245.—Ed.

male, obtained by Mr. Clarke and myself, was caught at early morning of the 25th in the boat-house, and fourteen or fifteen more were seen by Mr. Winson in his small garden contiguous. We found them numerous in the locality of Spurn, Easington, and Kilnsea from the 25th to the 27th, in small parties of twenty or thirty, but generally three or four together, on plants of sea-starwort, *Aster tripolium*. Some few of these were beautiful old birds—very mealy, and, besides the blood-red patch on the forehead, had the breast and rump washed with delicate crimson-rose. Out of examples preserved from various small flocks during the last week in October only one was a female, the remainder being males, both mature and immature. The stomachs of several examined were filled with the husked seeds of *Daucus carota* and *Scirpus maritimus*. There was a very marked difference in the length and depth of the beak, and this in examples shot from the same flock, indicating probably that the immigration was made up of birds coming from widely separated districts in Scandinavia. At the same time, with the Redpolls, many Siskins appeared in flocks up to twenty, but more generally two or three together, and frequenting much the same localities as the Redpolls,—on the sides of rough country lanes and the river embankments,—clinging to the tops of thistles and various umbelliferous plants, on the seeds of which they were feeding. Mealy Redpolls have crossed Heligoland in large numbers during the autumn and up to December 20th, the greater part passing during the last fortnight of October. I have occasionally obtained Redpolls in this district which only differ from our ordinary English bird in their slightly larger size and in having the feathers on the upper surface fringed with grey. I have been considerably puzzled as to whether they were *L. linaria* or *rufescens*, and it has only recently occurred to me that they may be examples of the European Redpoll figured and described by Mr. Dresser, in his 'Birds of the Western Palæarctic Region,' as the *Linota exilipes* of Coues—Coues's Redpoll. That flights of Redpolls which are not referable to *L. linaria* cross the North Sea, I have satisfactory evidence; and as our own Redpoll, *L. rufescens*, is confined to the British Isles, it is more than probable that in the course of migration *L. exilipes* occasionally visits us.

The Brambling was first seen on October 3rd, a solitary mature male; and on the 26th Mr. Clarke and I saw a flock

of about two hundred, apparently all males, in a stubble-field near the sea-coast. The stomachs of two examined by us were filled with the husked seeds of the common charlock.

A most noticeable feature of the autumn migration was the number of large birds of prey seen in districts along the east coast. Between the last week in September and the end of October I had notice of eight Ospreys and innumerable Buzzards, the Common and Honey Buzzard the most frequent, and the Rough-legged in a very decided minority. The occasions on which I saw myself large birds of prey during the past autumn were far too numerous to mention; the last occasions were on December 19th, when I saw a light-coloured Buzzard sitting on a barley-rick within a short distance of our railway station; and another flew over the house on the morning of January 4th. On September 22nd, wind E., storm No. 9, an immense flight of Common Buzzards passed across Heligoland, thousands passing on, and as many remaining to rest on the sea-cliffs. On the 23rd and 24th there were still a great many passing. What was the impelling cause to induce this immense number of Common Buzzards, so early in the season, to congregate simultaneously from all parts of Scandinavia and North-Eastern Europe, and migrate in one vast band to the south? And how was the signal for departure communicated from one to the other over vast areas of forest and mountain?

On October 26th, at Heligoland, from 9 p.m. to midnight, a great many Snow Buntings passed overhead; on the 28th and and 29th, rain and hail both days, very great numbers; 30th, a great many; 31st, flights of thousands high overhead; winds easterly, varying to N.W. and S.W. The proportion of old to young birds was one in a hundred. Again, on the 8th and 9th November, thousands and thousands of Snow Buntings and Shore Larks (*Otocorys*), night and day. Here I saw no Snow Buntings before November 14th, although they may have arrived a day or two previously. From that date to the middle of December they frequented the stubbles in enormous flocks, thousands upon thousands, nearly all young birds, the proportion of old ones being very small. The great attraction which kept them in the neighbourhood was the large quantity of oats which were dashed out in harvest time (from ten to thirty bushels per acre, and in some cases much more) by the high wind on

August 26th, from S.W. to W. Immense flights of Snow Buntings passed the Teesmouth from November 23rd to December 17th, at intervals, and notwithstanding the abnormal mildness of the season they were the most conspicuous species in the returns from our north-eastern stations. Early in November immense flocks of Greenfinches, many thousands together, probably the accumulated immigration of days and weeks, with flocks of Tree Sparrows, and some Linnets and Twites, visited these same oat-stubbles, where the smaller grain-eating migrants found an almost inexhaustible supply of food ready for their use. The Greenfinches were, with very few exceptions, young of the year and old females.

Like the Woodcock, the Short-eared Owls came in very irregularly, two or three at a time, through September and October. On November 9th I saw quite a young bird perched on a footbridge across one of the marsh-drains, and got very close before it was sufficiently aroused to flap lazily along the drain-bank, where it soon plumped down amongst the rough grass and reeds. This bird had a good deal of down still adhering to the tips of the feathers, and was certainly much too young to have come any distance.

There was a very general arrival of Hooded Crows along the east coast on October 18th, soon after nightfall probably, but between sunset and dawn. Both on the 17th and 18th they crossed Heligoland in immense numbers; and Mr. Gätke remarked that their migration "differed very markedly from their usual habit in passing overhead [E. to W.] at least twice as high as usual; further by continuing to pass on till later in the afternoon, which accounts for your arrival during night or early morn. As a general rule, *C. cornix* coming here later than 2 p.m. do not proceed on their migration, but remain here during the night, when they are so stupid that a year or two ago a man killed forty-five with a lantern and stick, almost the whole congregation resting on the plateau of the northern cliff." Heligolanders eat them, so do the fishermen and labourers in North Lincolnshire whenever they have a chance; a fresh "hoodie" put up as a scarecrow is tolerably sure to disappear. There was a very considerable flight over Heligoland on the 8th and 9th of November, and again on the 10th and 11th of December.

Mr. Winson, captain of the Spurn life-boat, picked up a Knot on the 7th November, killed by flying against the single telegraph-

wire; it was in full summer plumage, the back nearly black, and only a little buff on the margins of the feathers, the moult perhaps being retarded by disease. This telegraph-wire along the coast is the death of many immigrants, and on September 4th Mr. Clarke picked up, under the wire near Kilnsea, a fine specimen of the Great Snipe quite warm.

Geese passed over last autumn, as usual, but travelling from S.E. to N.W., which country people and marshmen here aver indicates a mild and open season—a prediction since verified in an unusual degree.

ORNITHOLOGICAL NOTES FROM REDCAR.

By T. H. Nelson.

The annual southward migration of feathered visitors from northern climes commenced last autumn on the north-east coast of Yorkshire about the usual time, although in the case of some species it occurred from a fortnight to a month earlier. The route followed by most of the winter migrants which pass Redcar is from E. and S.E. to N. and N.W., a N.E. wind being most favourable for observation, as bringing the flocks in-shore for shelter. As the prevailing winds during the latter part of summer and the first half of autumn were from E. to N., perhaps a greater number of migrants came under notice than would have been the case if the wind had been off-shore.

A few Godwits and Whimbrels are generally seen early in July, and last year was no exception to the rule, the first bird being observed on the 4th of that month. Ducks began their migration very early; soon after the middle of August a great rush took place, caused, no doubt, by the severe weather which we experienced towards the end of summer. Oystercatchers were more abundant than I have known them to be for some years, as also were Knots and Grey Plovers; but Godwits were very scarce. The majority of these waders only remain with us for a few days *en passant*, and by the end of October very few are to be seen. The Tees-mouth is being rapidly "played out" as a resort for shore-birds; and no wonder, considering the ceaseless persecution to which they are subjected; whilst the feeding-grounds are year

by year curtailed and encroached upon by the never-ending "river improvement" of the Conservancy Commissioners.

I saw the first Wild Geese on September 23rd; a "grey goose" was shot on Cowpen Marsh on October 4th. Hooded Crows were a day or two before the usual time, October 3rd seeing the first flight.

A fuller account of the annual migration at Redcar will be found in the following notes, taken from my journal, between the beginning of July and the end of October.

About June 30th a Common Skua, *L. catarractes*, was seen by one of the fishermen while out at sea. On July 1st the same man saw what, from his description of it, I have no doubt was a Sand Grouse; it was on Coatham Sands, and allowed him to approach within ten yards. From the 4th to the 7th, on each day, a few Godwits and Whimbrels passed—the advance guards of the large flocks which we see towards the end of August. On the 12th, at 8.30 p.m., I saw a large flock of Skuas (I think Richardson's), flying W., high overhead. At 7.30 p.m. on the 18th a flock of Whimbrels passed. On the 25th, several flocks of Curlews going W.

On August 1st two friends of mine, shooting on Cowpen and Salthouse Marshes, bagged nine Shovellers, all young birds bred on the place. Nine Herons passed from eastward on the 3rd. On the 6th my friend Mr. E. B. Emerson shot a Wood Sandpiper —an adult bird, but the sex indistinguishable,—on Coatham Marsh. According to the authors of the 'Handbook to the Yorkshire Vertebrate Fauna,' this will be the seventh recorded occurrence of this species in this county. On the 9th, a strong N. gale blowing, the first migrant Oystercatchers seen, a flock of about a dozen passing from the east.

On the 13th August I shot a splendid Red-throated Diver, in full summer plumage; it came from E. and flew over the boat, only to receive its death-warrant. This is an early date on which to meet with this species on our part of the coast, the usual time of its appearance being the latter end of September, although both *C. glacialis* and *C. septentrionalis* came southward at least a fortnight or three weeks earlier than usual. On the 15th I saw an immature Richardson's Skua, dark plumaged, out at sea—the first I had seen of the autumn contingent. I saw the first Sanderling of the season on the 16th, at the Tees-mouth, and

two or three Turnstones at the same place—all young birds. A few small flocks of ducks passed. On the 17th, between 6 a.m. and noon, Ducks, Curlews, and Godwits passed over in immense flocks; a flock of 150 Scoters was also seen about five miles out at sea, flying landwards.

On August 18th about 400 Oystercatchers, in a flock, passed, the weather on this and the previous day being calm to a slight breeze, but on the 24th a storm threatened from N., and another "rush" of ducks took place; between 6 and 12 a.m. they passed in immense flocks, from 100 to 500 birds in each. I have no doubt but that this early departure of these birds from their northern homes was caused by the severe weather we had towards the end of August; probably it was more severe in the north. On the 17th the first migrant Dunlins passed, and on the 18th I saw the first Knots of the season; four passed over East Scar, coming from eastward.

On August 22nd a red-plumaged Knot and a Bar-tailed Godwit, in faded red plumage, were shot at the Tees-mouth. Five Richardson's Skuas were seen and two shot, one an adult white-breasted bird, the other immature, dark plumaged. Several Gannets and Richardson's Skuas were seen at sea. On the 23rd I saw three Lesser Terns at the Tees-mouth. These pretty little Terns are now very scarce with us, seldom more than one small flock being seen in the course of each year. On the 25th Common Terns going south; I saw about twenty large flocks heading against a fresh S.E. wind, most probably on their departure to warmer climes. On the 26th a few Dunlins and Sanderlings passed from eastward. A Woodcock was reported to have flown in from the sea at 4 p.m.; wind fresh from westward. On the 27th, a strong N. gale blowing, saw a Shieldrake pass East Scar.

On September 1st, N. gale, several flocks of Oystercatchers, Knots, Ducks, and a few Whimbrels passed; a flight of immature Herring and Lesser Black-backed Gulls also passed. On the 2nd I saw two adult Gannets washed up on the shore; the long-continued severe weather possibly had been the cause of their death. On the 3rd two Ruffs, immature birds, were shot from a flock of seven seen, on Cowpen Marsh, by Mr. W. Chilton, also a Spotted Crake and a Blue-winged Teal, *Q. discors*; the last named Mr. Chilton kindly presented to me, and I enclose a coloured

sketch, with dimensions. Mussell, the taxidermist, who preserved it, declared it to be a young bird.*

On September 6th an immature Reeve was shot at the Tees-mouth; it was in company with a flock of seven Knots. On the 7th, weather fine and calm, I saw out at sea a Great Northern and a Red-throated Diver flying south. On the 6th, 7th and 8th Knots were very plentiful at the Tees-mouth, but Godwits still scarce. On the 8th, calm and dull, saw a Great Northern Diver going south. On the 9th an adult Curlew Sandpiper was shot at the Tees-mouth, and I saw it the day after. It was in very good plumage, and is the only mature example of the species which I have known here. On the 10th, a N.E. breeze blowing and freshening through the day, an immature Curlew Sandpiper was shot between Redcar and Marske; four were killed at the Tees-mouth, and I saw four at the same place on the 13th. Three Great Northern Divers, six Richardson's Skuas, and a Hawk were seen going south. A flock of Grey Plovers came from the east.

On September 11th, a strong wind blowing from N.E., several flocks of Godwits, Whimbrels, Golden Plovers, and Knots passed. On the 12th, wind still strong from N.E., a migrant Heron sailed past about 9 a.m.; Dunlins were passing all the morning; a few Curlews, Godwits, and Grey Plovers also passed. Three immature Curlew Sandpipers and a female Kestrel (migrant) were shot at the Tees-mouth. Large numbers of Grey Plovers were at the Tees-mouth on the 13th; they had been coming up for the past few days. I saw two adult Gannets washed up by the tide. On the 14th, very light E. wind, I saw three Sandwich Terns, a Great Northern and a Red-throated Diver flying south. On the 15th a great many Skuas were seen by the fishermen on the fishing-grounds, five to ten miles out; they were chiefly *L. parasiticus*, but there were several of *L. pomatorhinus* and *L. longicaudus* seen at the same time. Gannets were plentiful in the offing, and several Red-throated Divers were observed. Nine Red-throated and eight Great Northern Divers passed Redcar, going south. A Spotted Redshank, adult, was shot at the Tees-mouth; a male Short-eared Owl was killed in the vicinity of

* This is not the first time this species has been met with in the British Isles. See 'Zoologist,' 1852, p. 3472; 'Naturalist,' vol. viii., p. 168; and Gray's 'Birds of the West of Scotland,' p. 373.—Ed.

Redcar; and a Great Snipe, a young bird, was shot in a clover-field near Stokesley.

On the 17th September a Short-eared Owl was seen by one of the fishermen at sea, and a Kestrel was seen at the Tees Breakwater. On the 19th a Short-eared Owl passed one of the fishing-cobles at sea, and almost alighted on the mast. I saw a Kestrel at the Tees-mouth on the 20th. On the 21st Dunlins were plentiful at Tees, evidently new arrivals, for they were in very poor condition and easily approached. An easterly gale, with heavy rain, on the 22nd, brought a flight of migrants. Between 8 a.m. and 3 p.m. several flocks of ducks passed, also a few Oyster-catchers and Godwits, and Knots in large numbers. Herring and Lesser Black-backed Gulls, immature birds chiefly, passed during most of the day. A few small parties of Blackbirds and Larks crossed from seaward. Three Sandwich Terns flew south in the morning, and a large flock in the afternoon. Two Short-eared Owls came in from seaward, at 5.30 p.m., and dropped on the sand-hills; and numbers of Redstarts were observed in the gardens, about the town, and on the Breakwater at the Tees-mouth: one flew into a fisherman's cottage and was captured alive. On the 23rd, wind strong from S.E., with drizzling rain, I saw ten Geese pass overhead, going N.W., and one at the Tees, going S.W.; fifteen others were seen at the Tees on the same day, and three Short-eared Owls were seen to come in from seaward. Redstarts, Chiffchaffs, Black-headed Buntings and Lesser Whitethroats were fairly abundant in the gardens behind the sand-hills.

On September 24th I saw twenty Geese at the Tees, flying S.W.; they were apparently very tired, but kept at a good height, well out of shot. On the 26th, wind strong from W., several flocks of Larks and one flock of Peewits crossed; and I saw eight Shieldrakes pass from E., also a hawk and a Short-eared Owl. On the 28th seven Geese came from eastward and flew behind the town on to the neighbouring marshes. On the 29th a good many Richardson's, Pomatorhine, and a few Buffon's Skuas were seen on the fishing-grounds; four Pomatorhines flew past Salt Scar to the west; one bird was of the black mature variety. On the 30th I saw a Short-eared Owl sitting on Salt Scar, evidently tired with its long journey; on being disturbed it flew slowly away westward.

On the 1st October about twenty Richardson's Skuas were flying about, chasing the Terns and Gulls, close to shore. The morning was thick and foggy, and they several times came half-way up the sands in pursuit of their prey. I afterwards saw five or six out at sea; all were immature birds, some dark and others of the brown variety. On the 2nd a Long-eared Owl was captured alive behind the town. This species is much scarcer with us than its Short-eared relative, only one or two examples occurring in the course of the season. On the 3rd, wind light from E., the first flight of Grey Crows was seen, about a dozen coming in from eastward in the early morning. Two Short-eared Owls crossed over; a Kestrel was seen at the Breakwater. Gannets and Skuas were still plentiful on the fishing-grounds; the Skuas were chiefly of Richardson's species, but a few Pomatorhine and one or two Buffon's were seen.

A Short-eared Owl was shot on the sand-hills on the 4th October, and another was shot the next day; it was mobbed by Starlings, and flew close by the shooter on the sand-hills. A Woodcock, the first of the season, was seen and shot on the sand-hills. A small flight of Golden-crested Wrens appeared in the early morning, and took refuge in the thick hedges bordering the fishermen's gardens. About a dozen Hooded Crows passed to the W., and an immature Buffon's Skua was shot at the Tees-mouth; this bird is now in the possession of my friend Mr. J. B. Wood, of Middleton, Manchester. On the 6th, a strong N.E. wind with showers, a large flight of Hooded Crows came over; one old fisherman declared he had never seen so many. A Richardson's Skua, a dark bird, in the second year's plumage, was shot at the Tees-mouth. On the 7th twenty Hooded Crows passed; two Goosanders crossed East Scar from eastward. I saw a Sandwich Tern (very late!) at the Tees-mouth, and two Robins (migrants) on the Breakwater.

Up to the 14th October a flock of some twenty or thirty Common Terns frequented the shore to the east of Redcar Pier. On this day the memorable storm from the N.W. took place; it blew a perfect hurricane here, but not from the right direction, according to a wildfowler's point of view. If the gale had been from N.E. I have no doubt that the Pomatorhine Skuas would have appeared again in great force, as they did exactly two years ago (Oct. 14, 1879); as it was a good many came down wind from

northward and passed over the east of the town inland: they flew high and at a tremendous pace, so that in all probability they escaped destruction—at all events, I did not hear of any having been shot here. Several "Petrels of the Storm" were seen, and three or four captured; I bought one from a fisherman, and kept it alive for some time; it became quite tame, and nestled under my coat for shelter and to avoid the glare of the light. What interesting little creatures these are, the least of the web-footed tribe! I was particularly struck with the elegant and graceful manner in which my little captive glided across the room on uplifted pinions, seemingly "as light as air." During the height of the gale a continuous flight of ducks passed in small flocks.

On the 15th October, the wind still blowing hard from the N., I was at the Tees-mouth with Mr. Emerson; in returning home he shot a pair of Grey Phalaropes, right and left; they were mature birds, in almost full plumage, only two or three grey feathers showing on the back; the red on the necks faded, but otherwise they were in good feather. On the same day we saw another Phalarope on the sands east of Redcar. On the 19th several Fieldfares were heard "chuckling" as the fishermen were going out to sea, and a Woodcock was shot in a field behind the sand-hills. On the 20th a Great Grey Shrike was shot about three miles from Redcar, and the last Tern was seen by Mr. T. B. Wood near the Tees-mouth. On the 22nd, stormy, strong E.S.E. gale, twelve Goosanders (or "Sawbills," as they are termed here) flew over East Scar, nine going west, the others flying east. Two Woodcocks and a Short-eared Owl were seen. Great Black-backed Gulls were unusually plentiful during the previous few days, coming from eastward; forty or fifty passed on the 23rd.

On October 24th, the wind having been easterly for several days, a flight of small birds appeared. While I was at breakfast five Lesser Redpolls alighted on the ground in front of the window, facing the sea. I saw another small flock at the Breakwater, and several Gold-crests, Thrushes, Blackbirds, Robins, Yellow-hammers, Hooded Crows, a Ring Ouzel (a young bird, which was shot), and a small red-tailed bird, probably a Redstart. A Short-eared Owl was seen, and I flushed a Woodcock among the bents. An immature Glaucous Gull was shot at the Breakwater, and was preserved for my collection.

On October 25th, wind still easterly, a large flight of Hooded Crows came over; about two hundred were seen passing Redcar from 8 a.m. to noon, and a flock of about sixty was seen at the Breakwater at 8 a.m. An Owl—which, from the description given me, could have been nothing but a Snowy Owl—came from seaward, passed a knot of fishermen standing near Redcar Pier, and flew over the town. Two Woodcocks were seen. I saw two Snow Buntings, the first of the season, at the Breakwater; two Redwings were also seen at the same place. A Hoopoe was reported to have been seen near Redcar, in the same field where one was shot last year. Of course half the gunners in the neighbourhood were on the look out for it, but I believe it managed to escape with its life.

On October 26th, from 6 a.m. to noon, a large flight of Hooded Crows passed. A Short-eared Owl was shot and a Jack Snipe *caught asleep* on Coatham Sands early in the morning; wind E.N.E. A few Hooded Crows passed each morning from the 27th to the 31st. On the 28th an adult Gannet was washed ashore; many Guillemots at sea flying N.W.; I saw three Velvet Scoters in the Tees, in company with a large flock of Common Scoters. On the 29th, stormy, N.E. gale, hail showers, two Woodcocks flew in among the boats. On the 30th an adult Gannet was picked up dead on the beach. On the 31st Guillemots at sea flying east. Six Great Northern Divers flying east. An immature Turnstone was shot east of Redcar by my friend Mr. Wood. This is an exceptionally late date on which to find this species with us.

On November 1st I saw a large flock of about fifty Snow Buntings, evidently fresh arrivals, near the Tees-mouth. On the 2nd, wind light S.E., a continuous flight of Peewits. On the 4th, between 9 a.m. and 3 p.m., an immense flight of Peewits, in large flocks of from fifty to two hundred; many of them settled in the fields behind the sand-hills, in company with Golden Plover. At 7 a.m. an immense flight of Starlings was observed at the Breakwater; the numbers were roughly estimated at a million, darkening the air and making a noise like thunder; they came from eastward and flew west. On the 7th a few Hooded Crows and Snow Buntings came from seaward. On the 8th I saw a Great Northern and three Red-throated Divers at sea, going east.

NOTES AND OBSERVATIONS ON BRITISH STALK-EYED CRUSTACEA.

By John T. Carrington, F.L.S., and Edward Lovett.

(Continued from p. 15.)

Polybius Henslowii, Leach.

This somewhat peculiar species is the only one of its genus hitherto known to inhabit the British seas.

The carapace is nearly circular and very flat, the regions being, however, well marked. The anterior portion is rather regularly serrated, and there are three angular teeth between the orbits. The colour of the carapace is dark salmon colour, and displays an iridescence which is not lost at death. The antennæ are small, with the basal joint rounded; the eyes are fixed on short peduncles, which they exceed in size. The anterior pair of legs are regular in size, the wrist sharply toothed, and the forceps but slightly serrated; the second, third and fourth pairs of legs are slightly fringed with setæ at the margins, whilst the development of the terminal joint of these appendages into an elongated blade,—thus differing from all the other species of the *Brachyura*,—will at once settle any doubts as to its identity. The posterior pair have the last two joints developed for swimming purposes, the terminal joint in this leg becoming decidedly rounded in shape, and not pointed, as is the case with the other limbs mentioned. One can thus see at a glance the origin of the power which enables the animal to swim so freely in deep water in pursuit of its prey. The abdominal somites are five in number in the male, and seven in the female.

Polybius Henslowii appears to be undoubtedly a southern species. Prof. M. Edwards gives only one locality for it, namely, the Channel, but he adds that it appears to keep a considerable distance from the shore. Bell speaks of a specimen in the Banksian collection of the Linnean Society, which was obtained from the coast of Spain; he also records its occurrence on the coasts of Dorsetshire and Devonshire, as well as from Cornwall and Worthing. We have obtained it from herring-nets at Bournemouth, through the kindness of Mr. E. B. Kemp-Welch; also from the deep part of the channel off the Sussex coast by

dredging: thus bearing out the statement made by Mr. Couch, and recorded by Prof. Bell, as to its swimming and deep-sea habits. A number were obtained from Jersey in the autumn of 1880 by a correspondent, through the bursting of a sluice or drain near the shore, the large quantity of fresh water, with its impurities, evidently overwhelming and killing those that were probably seeking shelter in the sand in the neighbourhood. An enormous number of this supposed rare crab were washed ashore at Shoreham after the great storm of January 24th, 1881; and the fishermen of St. Ives, Cornwall, to whom it is known as the "Nipper," state that large quantities, described as "tons in weight," were washed ashore there in 1878 or 1879. On the Devonshire coast it is often taken in the herring and pilchard nets.

Though considerable numbers have passed through our hands, we have not obtained a specimen with ova, and therefore think it probable that the females retire to deep water during the spawning season.

Genus *Portunus*, Fabr.

This genus embraces more species than any other of the *Brachyura*, all of which species are popularly known as swimming crabs, from the blade-like development of the last joint of the fifth pair of legs, somewhat similar to that already referred to in *Polybius Henslowii*. The carapace of this genus is broader than long, or rather it is true crab shape. It is denticulated on the anterior margins; that portion between the orbits varying considerably in the different species, as also does the colour and many other details to which we shall refer specifically. The antennæ are somewhat longer than those of the preceding genus, and the eyes are fixed on short peduncles. The anterior pair of legs are generally nearly equal, ridged longitudinally, and more or less knotted and notched; the wrist is armed with spines, and the forceps are slightly serrated. The abdominal segments resemble those of *Polybius Henslowii*, in being five-jointed in the male, and seven-jointed in the female. The general habits of the genus are remarkable; some species existing in enormous numbers in limited areas, as if attracted by some particular form of food, which they possibly do good service as scavengers in removing; while others swim about on isolated foraging expeditions, even attacking fish in open water.

Portunus puber, Leach.

This is by far the largest, most handsome, and, as an article of food, the most useful species of this genus. Its chief distinctive characters, besides its size, are its colour and covering of densely set hairs, its markings, and the anterior denticulation of its carapace. As regards its colour, this appears to vary slightly in different localities, but down among the rock-pools of the luxuriant Jersey shores it may perhaps be seen in its best conditions.

The hairy covering gives it a beautiful warm reddish-brown tint, which throws up in rich contrast the delicate cream-coloured markings on the smooth portions of the limbs, relieved here and there by tints of bright, yet soft, blue. Leach's figure, in his 'Malacostraca Britannia,' is not at all exaggerated. Its markings also are more decided than those of the other species. As regards the remaining distinctive feature, that portion of the margin of the carapace between the orbits is divided into two semicircular, very finely serrated portions, not resembling in any degree that part of any other of the *Brachyura*.

The ova of *Portunus puber* are remarkably minute, and are of a dull, dirty black appearance when mature. They exist in countless numbers under the broad abdominal segments of the female, during the early summer months, and no doubt constitute the food, when hatched, of many inhabitants of the sea.

This crab is much eaten as an article of luxury, and may be seen in large heaps on the stalls in the markets at St. Heliers, Jersey, and St. Peter's, Guernsey, where they are tied up alive in small bundles. They are known there by the name of "Crabbe gregaise"; and on the south coast of England they are called "Fiddlers," or "Velvet Fiddlers," also "Lady Crabs"; in France, "Crabbe enragée."

This species attains its greatest size on our southern shores, where it is also most common. It is extremely abundant about the Channel Islands, as also on the Dorset, Devon, and Cornish coasts. It is stated to be common on the Irish shores, Galway, Belfast, and Dublin being given as localities. Besides these it has been recorded from Moray Firth and the Hebrides, so that its distribution is evidently of great extent.

Portunus depurator, Leach.

This species possesses several specific characteristics by which it may at once be determined. Its carapace is much smaller than that of *P. puber*, and, instead of being velvety and dark in colour, is rough, granulated, and of a pale brick-red brown. The denticulations on the anterior portion are very defined, and the space between the orbits is occupied by three sharp teeth, having a smaller one on either side.

The anterior pair of legs have the forceps much more grooved and carinated than those of the former species, the spines on the wrist being also much more formidable; the remaining legs retain the generic character, and differ but little in colour from that of the carapace.

This species is with ova during the summer months. The eggs are carried in a large mass beneath the abdominal segments of the female, and are of a dirty brown colour and very small.

Portunus depurator appears to be an abundant species, and is recorded by Bell as having been obtained at Embleton Bay, in deep water, attached to the nets of the fishermen; from Strangford Lough and on the Connaught coast, by Mr. Thompson; also from Studland Bay and Hastings. We have obtained it in numbers from the estuary of the Thames; Devon, Dorset, and Sussex coasts. It is also reported from St. Andrews (occasional); Galway, Belfast, and Dublin; Cheshire coast (common); Milford Haven; coasts of Yorkshire and Durham; Moray Firth; Hebrides; and both coasts of Cornwall; in the latter county it is called the "Harbour" or "Mary Crab."

It is curious that those we obtained from Weymouth were generally infested with a growth of *Membranipora pilosa*, whilst others that were obtained from the neighbourhood of estuaries were invariably clean, and without parasitic growth.

Portunus marmoreus, Leach.

In this species the carapace is more minutely granulate than that of *P. depurator*. The denticulations on the anterior margin are by no means so defined as the following species, and the space between the orbits is occupied by three teeth, which are nearly as acute, but not so much projected. From its near ally, *P. holsatus*, it differs in its generally smaller size; also in its more

uniform colour. The swimming blade in *P. marmoreus* is much more elongated and pointed than either *P. depurator* or *P. holsatus*.

The colour of the carapace is uniformly of a pale or yellowish brown, marbled nearly over the whole surface with a tracing of darker brown. A small patch, which is devoid of markings, appears on either side immediately below the last spine of the denticulation of the lateral anterior margin.

This species is so closely allied to *Portunus holsatus* that Bell remarks he is almost imperatively forced to consider them as varieties of one species. Our experience, after carefully examining living specimens, is that the points of difference between this and *P. holsatus* are such as to establish its identity as a species.

After long and careful collecting expeditions, extending over many months, in the Channel Islands and the whole south coast of England, Mr. Carrington's assistant, Mr. E. Matthews, only met with this species in single examples near Guernsey and the Scilly Islands, but near Falmouth he found about a dozen examples. At the latter place it was so extremely local in its habitat that it was only obtained by repeated dredging; in fact, the dredge passed quite one hundred times over the one small bank covered with *Zostera* where the specimens occurred; and although the immediate neighbourhood was even more carefully worked, none were obtained elsewhere. Professor Bell notes that he obtained nearly four hundred, of which three-fourths were females, at Sandgate, in May, 1844, in two casts of the dredge. It is difficult to doubt so close an observer as Bell, but knowing that *P. holsatus* occurs on that coast in great profusion, we venture to think that a mistake in the species recorded must have occurred. *P. marmoreus* has been recorded after storms at St. Andrews; also from Moray Frith and Roundstone, Connemara, Galway.

Portunus holsatus, Fabr.

This species, which, as we have already stated, seems to have caused a considerable amount of difficulty in consequence of its strong resemblance to *P. marmoreus*, is, nevertheless, decidedly distinct; this can be observed when several of each species are seen together.

The general appearance of the carapace is, that it is more rounded and much smoother than that of the former species, whilst the teeth occupying the space between the orbits are

sharply pointed. The forceps are armed with two serrated ridges, and the spine on the wrist is of a different shape from that of *P. marmoreus*, not being so acute. The swimming blades are also much more rounded in form than those of the last species.

Professor Bell says that—"The appearance of this crab is extremely rare on our coasts"; though he cites several instances of its by no means isolated occurrence. It is, however, no doubt local, but existing in enormous quantities where the surrounding circumstances are favourable to its development; for instance, in August, 1880, we obtained a large and fine series from a sand-bank near the Nore light-ship, in the estuary of the Thames, by means of a trawl, although none were to be found on adjacent spots possessing apparently equal advantages. *Portunus holsatus* has also been recorded from the Firth of Forth, Cornwall, and the Bays of Belfast and Dublin; St. Andrews (not uncommon); Shetland (frequent); Berwick (specimens small); Hebrides; Sunderland coast, "plentiful in rock-pools."

Portunus corrugatus, Leach.

This remarkably well-defined species may be at once determined by the corrugated formation of the carapace, from which it derives its name. This appearance is caused by very finely serrated ridges, which cover the carapace transversely, and is also developed upon the limbs of the animal. The anterior portion of the carapace is armed with five teeth on each side of the orbits, and the space between the orbits is occupied by three blunted prominences scarcely attaining to the dignity of teeth. The carapace is narrowed abruptly towards the posterior margin.

The anterior pair of legs are frequently unequal in size, but more uniform in shape than those of the other members of the genus. The spine on the wrist is long and sharp, and the chelæ evenly serrated. The swimming blade of the posterior legs in this species is small and narrowed towards the apex; the terminal joints of the other legs are acutely pointed.

The colour is of a rich reddish brown, often marked with patches of darker red or brown. According to Bell, *Portunus corrugatus* "must be considered as one of the rarer species of the genus," and his records of its capture certainly tend to prove that it was by no means commonly known at that period. The localities named by him are the Island of Skye, Plymouth Sound,

Cornish coast, Berwick Bay, and Dublin coast. We have obtained it from Mevagissey, where its colouring was of the normal tint, a dark brown; from off the Sussex coast, where specimens were almost invariably of a paler or duller appearance; and also from the crab-pots off La Rocque, Jersey, where were obtained specimens exhibiting the richest and brightest tints, often presenting some interesting and beautiful varieties. Thus may be seen, to a certain extent, the effect of a more or less genial locality on the colouring and development of certain animals. This species has also been recorded from Galway, Belfast, and Dublin: South Devon (rare); and Cornwall (scarce).

Portunus pusillus, Leach.

This is one of the smallest species of the genus, the carapace rarely attaining to an inch in breadth.

The upper part of the carapace is raised, the anterior margin toothed, the space between the orbits being armed with a pyramid of three teeth, the centre one projecting. The first pair of legs are armed with stout forceps, and the wrist with sharp teeth, like others of the genus. The remaining legs are slender, with several transverse bars of dark colour, and the swimming blades are oval in form.

The colour of this species varies considerably from very pale yellow, or even white, to various shades, through red to brown. In some examples the colour is quite uniform, others are minutely speckled on the whole of the carapace with darker colour, while some specimens have patches and stripes of Venetian red tint occupying the surface of the cephalo-thoracic region.

This crab is recorded from St. Andrews (occasionally in deep water); Shetland (frequent); Hebrides; Dublin, Belfast, and Galway: Milford Haven (dredged; with ova April, 1881); Cornwall (common); Devon (dredged off Otterton Head in twenty fathoms). A fine series was obtained by us from off the Sussex coast in deep sea, which were brightest in colour and most variable. Larger and darker specimens were dredged from about thirty fathoms off Brixham and the Devon coast generally.

Portunus longipes, Risso.

This is decidedly the most remarkable species of this genus, being, as Bell remarks, a truly Mediterranean form. Its general

shape is rectangular at its posterior margins, and slightly curved on its anterior margin which is armed with curved teeth, the outer ones being long. The part between the orbits is occupied by four slight lobes.

The anterior pair of legs are armed with unequal forceps, the chelæ being hooked. The wrist has a stout and somewhat curved spine. The remaining legs are attenuated—hence its specific name. This species differs from all others in the genus in the great length of the external antennæ.

The colour of the carapace is reddish brown; one in Mr. Carrington's collection being of a very pale tint, with regular distinct blotches of Venetian red on the surface of the cephalothoracic region.

Bell has recorded its occurrence on the Cornish coast, Plymouth, and Swansea. We obtained it from Jersey in November, 1880, and also from the English Channel, off the Sussex coast in March, 1881. It has further been recorded from Falmouth and Penzance. It is evidently a deep-water species, and is undoubtedly the rarest British example of this genus.

Portunus carcinoides, Kinahan.

On the 12th December, 1856, before a meeting of the Dublin Natural History Society, the late Dr. J. R. Kinahan read a paper upon certain decapodous Crustacea occurring at Valentia Island, Co. Kerry, which is printed in the 'Natural History Review, vol. iv. (1857). In a foot-note, on p. 66, he describes and names *Portunus carcinoides* as follows:—"Along with the above species (*P. arcuatus*), three specimens of a *Portunus* occurred, which, though neighbouring to *P. corrugatus*, seem to belong to some other species. I have, therefore, ventured to describe it provisionally, under the name of *P. carcinoides* (from its resemblance to *Carcinus mœnas*), as follows:—Carapace smooth, without raised ridges, regions marked out by rounded prominences only, sparsely hirsute. Front *three-lobed*, middle lobe largest, *edges of lobes entire*. Antero-lateral margin of carapace five-toothed. First pair of legs equal, surface nearly smooth, hirsute; two flattened, triangular teeth at anterior superior angles of wrist; hand with two well-marked carinæ on the upper sides, *the inner terminating in a very minute, obtuse tubercle*. Upper edges of second, third, and fourth pair of legs very sparsely hirsute;

fourth joint broadly keeled above; fifth and sixth acutely keeled; sixth joint slender, styliform; terminal joint of posterior pair of legs narrowly lanceolate, with a raised central line, hairy on the edges. The specimens obtained were all young. I have therefore preferred inserting the species in a note; but it is probable it has been passed over as either *P. arcuatus* or *P. corrugatus*. It might also be easily mistaken for the young of *C. mænas*. It occurred in the rock-pools and also under stones on Ringlass Point."

In the same volume, on plate ix., fig. 3, is represented a life-sized immature specimen of *Portunus carcinoides*. Fig. 3*a* on the same plate is a drawing of the carapace twice enlarged. On page 161, Dr. Kinahan again says—"*P. carcinoides* is a good species; it comes very close, however, to Otto's *P. infractus*, which is included by Bell among the synonyms of *P. longipes*, Risso, from which the trilobed front and length of legs would separate my specimen."

We have not had an opportunity of examining Dr. Kinahan's type, and are therefore unable to express an opinion on *Portunus carcinoides*.

Portunus arcuatus, Leach.

The species may be readily distinguished from the rest of the *Portunidæ*. The carapace is serrated as usual on the lateral anterior margins; the space between the orbits is not armed with teeth, but the outer edge is quite smooth and slightly arched. Its colour is of a sombre brown, but specimens occur of a reddish brown and also of a dark greenish tint.

The anterior pair of legs are armed with very stout and compactly shaped forceps, evidently possessing considerable power. The remaining pairs of legs do not present any striking feature; the last pair, however, have the swimming blades but slightly developed.

This species is not nearly so common as most of the representatives of the genus, and has been recorded from Galway (very common); Belfast; Milford Haven; and coast of Devon. Bell has also recorded its capture at Poole Harbour and the Bays of Swanage and Studland; Bognor; Hastings; and the Welsh coast. We have obtained it from the Channel Islands; Falmouth (frequent); from the Thames estuary, on sandbanks near the Nore lightship; and also from the Sussex coast. Several of the

specimens from the Thames estuary bear examples of acorn barnacles attached to the carapace, and even on the wrist and arm of the anterior limb. This is quite an unusual occurrence in such active species of crabs as constitute the genus *Portunus*.

Portunus tuberculatus, Roux.

In the British Association Report, 1861 (1862), the Rev. Alfred Merle Norman described as new to the British fauna, *P. pustulatus* (Norman, n. sp.). The specimens were taken from the deep sea, off the Shetland Isles, in 1861.

In a further report on the marine fauna of those isles (Brit. Assoc. Rept., 1868, p. 263), Mr. Norman corrects his nomenclature, and assigns the name *Portunus tuberculatus* (Roux. Crust. de la Mediterranée, pl. xxxii., figs. 1—5). He further says—"This fine addition to the British fauna was first procured by me in 1861, and has been taken every year since. It is the most abundant of the genus in the Shetland seas, living in 80 to 120 fathoms.

Portunus tuberculatus is distinguished by its tubercular pustulose carapace, by the acuteness of the latero-anterior teeth, and the great size of the posterior tooth, which is double the size of the preceding ones; and by the last legs having the swimming blades furnished with a raised median line."

We are not aware that this species has been found in any other locality than that mentioned by Mr. Norman.

(To be continued.)

OCCASIONAL NOTES.

Change of Colour in the Irish Hare.—I have for several years watched the Irish Hares at Ravensdale Park [on the borders of Armagh and Louth], and on the adjoining heath-covered hills, and I find that there is a very decided change of colour from the summer to the winter garb every year, and that the white prevails more in hard than in mild winters. This fact strengthens the doctrine which identifies the Irish Hare with the Scotch Blue Hare, the *Lepus variabilis* of Bell's 'British Quadrupeds.' It is observable that the change is slow in its progress, not reaching its maximum until January, sometimes rather late in that month, and that it never affects the whole of the back. The operating cause—namely, temperature—

being much less active in Ireland than in the Scotch Highlands, it would be interesting to learn what has been the experience of others on this point; *e.g.*, whether the Scotch Hares turn white more completely and earlier in the north than in the south, on the high hills than on the plains. It does not seem probable that the British Islands should possess three species of Hare, one of them peculiar to one of the Islands.—CLERMONT.

MARTEN IN CUMBERLAND.—Early in November last I received from Mr. Benson, M.F.H., a fine Marten for preservation, which had just been killed by his hounds. On November 22nd he wrote me:—"The Mart I sent you was killed on the 10th, when out fox-hunting on Carlinot, one of the high fells between Loweswater and Ennerdale. The hounds took a drag to a hole in a rock; the huntsman put in a long stick; as soon as he touched the Mart it ran out and jumped into the mouth of a hound standing near. They are getting scarce; I think I have not killed more than six during the last seventeen years I have had hounds." Another Mart was killed and eaten by the hounds a fortnight afterwards, and since then a third has been seen at the same place. One was seen at the head of Borrowdale in the middle of January last; so you will see there is a fair stock left.—GEORGE MAWSON (Cockermouth).

[We are glad to hear from another correspondent that the Marten is to be found also in other parts of the same county, where we trust it may long hold its own.—ED.]

WILD ANIMALS PAID FOR BY CHURCHWARDENS OF CROSTHWAITE, CUMBERLAND.—The following short list of expenses incurred by Churchwardens about the middle of last century, for wild animals in Cumberland may be worth inserting in your journal:—1750: To Thos. Birkett for an old Fox, 3s. 4d.; to Jas. Bowe's man for one old Eagle, 1s.; to Jas. Bowe for two young Eagles, 1s. 1752: to Wm. Ware for one old Eagle, 2s.; to Jas. Gateskel for two young Eagles, 2s. 1753: to St. John's people for twenty-one young Ravens, 3s. 6d. 1762: for two Eagles and one Fox, 4s. 4d. 1763: for Foxes and Eagles, £1 6s. 6d. 1765: for Foxes, Eagles, and Ravens, £1 4s. 8d. This is the last entry where the Eagle is named; but the late Mr. Jonathan Otley, who lived to be above ninety, and has been dead twenty-five years, used to say that they nested in Cumberland up to 1791. The Foxes named were of what we used to call the "greyhound breed;" they had much longer legs than the present race, and with no black upon them; the face was also much longer—in fact, it was larger in every way than the black-footed Irish one. It is now quite extinct in this district, and has been for many years past. I knew the animal well. The Raven, I am glad to say, is still to be seen in the county.—W. KINSEY DOVER (Myrtle Grove, Keswick).

Dipper breeding in Middlesex.—Having heard a report some time since—which much surprised me—that a Dipper's nest had been taken at Pinner, near Harrow, I made enquiries into the subject, which resulted in my receiving a kind note from Mr. Lionel Fisher, of Harrow, who states the matter thus:—"In the beginning of May, 1876, I got from the bird-catcher here three eggs of the Dipper, which were taken from Pinner brook. The nest was afterwards shown me; it was in shape like a very large Wren's nest, made chiefly of moss, and built in a cavity in a large block of stone and earth standing in the middle of the brook. There was another nest taken from the same place the next year (1877), but I cannot trace the eggs."—R. H. Mitford (Weston Lodge, Hampstead).

[Instances of the Dipper nesting in the Eastern and South-Eastern Counties of England occur so rarely that we can only call to mind one besides that above mentioned. This was in Hampshire, in 1874, when the circumstance was recorded by Col. H. S. Aslett in 'The Field' of 4th July, 1874. In the adjoining county of Dorset the Dipper breeds occasionally, and farther west in Devon and Cornwall it breeds regularly. Doubtless the explanation of this is, that in the west and north we have mountain-streams with pebbly bottoms and rocky sides well suited to its habits, while in the east and south-east the deeper and thicker waters with muddy banks afford it neither good feeding-ground nor convenient nesting-places. Its occurrence in Middlesex during the breeding-season is a most unexpected event; although as an occasional and passing visitant at other seasons it has occurred two or three times in this county.—Ed.]

Rusty Grackle and Pallas's Grey Shrike in Wales.—At a meeting of the Zoological Society held on the 13th of December last, I exhibited a specimen of the Rusty Grackle, *Scolecophagus ferrugineus*, which was shot on the 4th of October last by a workman engaged as a wheelwright. It was killed within a mile of Cardiff, on the grassy flats between the sea and the mountains which are known there as "moors," and was brought, a few hours afterwards, to Mr. Robert Drane, by the man who shot it, and who was in the habit of bringing to that gentleman any rare bird that he happened to meet with. It was shot on the wing, and the plumage was in such a perfect condition that the idea of its having escaped from a cage seems untenable. Mr. Drane has known the man some time as an intelligent, though uninformed, workman, fond of birds, and believes perfectly in his *bona fides*. This species has never before been recorded as British. It appears to breed in the arctic regions of the American continent up to the limit of forest-growth from Labrador to Alaska. The example obtained at Cardiff appears to be an adult male in autumn plumage. I also exhibited a specimen of Pallas's Great Grey Shrike, *Lanius major*, which was shot in April of last year by a

gamekeeper, twenty miles west of Cardiff, and sent in the flesh to a bird-preserver in that town, who showed it to Mr. Drane before skinning it, and in whose possession it now is. This species breeds from North Scandinavia eastwards throughout Siberia, but has not been recorded before from the British Islands.—Henry Seebohm (6, Tenterden Street, W.).

The Etymology of "Wigeon."—Since no dictionary whatever ventures on an authoritative derivation of this word, or even offers a reason for its being spelt either with or without a *d*, it seems worth while to record what I believe to be its true origin. Etymologists are agreed that "Pigeon" comes, through the French, from the Latin word *pipio*. In exactly the same way "Wigeon" comes from *vipio*. The only recognised classical author who uses this word *vipio* is Pliny; he says (Hist. Nat. x. 69), "In the Balearic Isles, the Buzzard, a kind of hawk, is held as a delicacy for the table; so, too, are *vipiones*, as they call some small Crane." This identification of the bird need not trouble us, for *pipio*, whence "Pigeon" is undoubtedly derived, merely means "a young chirping bird, a squab"—not any particular species originally, and the old French names, "Vingeon" and "Vigeon," as well as the modern French "Gingeon," seem applicable to more than one kind of wild duck. Professor Skeat has shown, in answer to my note on the subject in a recent number of 'Notes and Queries,' that the spelling "Wigion" occurred as early as 1570, and that the insertion of the *d* in the word has no more etymological significance than has the same in *judge*, from the French *juge*. Hence there can be no doubt if we spell "Pigeon" without a *d*, we must spell "Wigeon" by the same analogy, and "Widgeon" must henceforth be regarded as a violation of established laws. More than two centuries ago Ménage put forth the present derivation, though it has escaped recognition. I found the suggestion in Salerne's interesting French version of Ray's 'Synopsis Avium,' published in Paris in 1767 (p. 424); he, however, prefers to derive the name from the impossible source of the note made by the bird during flight.—Henry T. Wharton (39, St. George's Road, Kilburn).

[Rolland, in his 'Faune Populaire de la France' (vol. ii., p. 397), states, on the authority of Millet, 'Faune de Maine et Loire,' that in Anjou the male of this species is called *Digeon*, the female *Digeonne*.—Ed.]

The Breeding Haunts of the Gannet in Ireland.—When at Glengarriff, in 1878, I was told that Gannets bred on the Bull Rock, at the entrance of Bantry Bay; but, although anxious to do so, I was unable to make an expedition to that island. Through the kindness of my friend Mr. S. N. Hutchins, of Ardnagashel House, Bantry, I am enabled to send you an account of a visit paid to the island some years ago. Mr. Hutchins says:—"I only paid one visit to the Bull, Cow, and Calf Rocks, in June, 1868, when I landed on the three Rocks on the same day. I found

Gannets' nests on the Bull only. There were full-grown birds in adult plumage—that is, white with black-tipped wings; others younger, black with white spots; and others in various stages, down to very young birds in the nest covered with white down. I found only a few addled eggs, very dirty, but when washed of a dull white. The Gannets were in great numbers, certainly many hundreds, and as they were flying about the rock on all sides I could not attempt to count them. I could have captured any number, and did bring on shore two young ones in the black and white speckled plumage. I have heard that they breed on the Skelligs (as mentioned by Mr. Harting, in his 'Handbook of British Birds,' Introduction, p. xxii), but not on the Cow or Calf. They could not nest on the Calf, as the sea frequently washes over it in heavy weather, and I found no trace of them on the Cow, though it would be a safe breeding-place. The Bull is much higher than either. I found no other birds nesting at that time, though I hear it is a favourite breeding-place for other kinds. The smell was not pleasant, for when a bird was alarmed, or about to fly off the rock, it disgorged the contents of its stomach—generally a Pilchard of 'an ancient and fish-like smell.' * * * The Skelligs are about twenty miles N.N.W. from the Bull. Cornish Choughs and Rock Pigeons are common on that coast." The Gannets still continue to resort to the Bull for breeding. I have seen an egg taken off that rock in 1880. Choughs breed and are rather common at Three Castle Head, Dunmanus Bay (the next bay to the south of Bantry Bay), and I have also seen them at Mizen Head. The sufferings of the poor light-house men on the Calf Rock have lately attracted much interest. It is gratifying to know that they are safe and sound at last, owing to the heroic bravery of O'Shea, the Dursey islander.—Wm. W. Flemyng (Portlaw, Co. Waterford).

On the Occurrence of Sabine's Gull, for the first time, in Norfolk.—The gunners and dealers in Yarmouth were much exercised last October (1881) by the appearance, on Breydon and its vicinity, of two small gulls with slightly forked tails, which, when shot, answered to no species with which they were acquainted. Others were said to have been seen, but if, as I was informed, some Little Gulls, *Larus minutus*, appeared at the same time, a doubt arises as to the identification of species, beyond the two killed. One of these specimens, killed on the 21st or 22nd of October, which I was fortunate enough to secure for my collection, was sent to me in the flesh, and, being in immature plumage—as was also the other bird obtained on the 17th of the same month—I should have had some difficulty in identifying it but for the forked tail. In its adult state Sabine's Gull was, of course, well known to me, and on turning to the coloured representations of the young in Gould's 'Birds of Great Britain' and in Dresser's 'Birds of Europe,' I found my specimen most accurately

delineated, the peculiar markings on the back and wing-coverts being unmistakable. I have, fortunately, had the chance of comparing my specimen (which proved to be a female, and which closely resembles the young bird figured by Gould) with the other Yarmouth specimen, and though the sex was not noted when it was stuffed, and the measurements cannot be accurately taken now, I think—from its being slightly larger than mine, and the tints of the plumage generally brighter—it is, in all probability, a male. It differs chiefly from my own in the following points:—The bill, though the same length, looks stouter, being less tapering in form. The feathers on the crown of the head and nape are darker in tint and more distinctly freckled. The white line over the eye and extending back forms a marked feature, though scarcely traceable in mine, and the forehead and feathers extending to the nostrils are of a purer white. The grey tints of the neck, passing forwards and downwards in front of the pinions, when close (as shown in Gould's plate) cover a more extended space, are darker and more distinctly barred, but in both the throat, breast, and under parts generally are of a spotless white. The feathers on the back and wing-coverts have the terminal margins much brighter, and the mottled appearance is therefore more striking. The outer webs of the primaries are a more pronounced black, and the sixth primary has an oblong white patch on the outer web, besides the white tip—the white of the inner web passing round the tip of the feather, where it joins on to a black spot having this oblong white patch just above it. This peculiarity is not traceable in my own specimen. The tail-feathers have the black on the anterior portions, like the primaries, of a richer hue, and the white marginal lines are much more vivid. The description given by Mr. Harting ('Birds of Middlesex,' p. 252) of the Middlesex specimen agrees very closely with my own, and though the sex was not ascertained it was probably, I should say, a female. Like mine, also, it had no "white spot of an oval shape" on the outer web of the sixth primary, which, as before stated, is so noticeable in the other Yarmouth bird, whether a male or not. It would seem, however, that the young of this species differ not a little, *inter se*, independent of any sexual differences, as the first Irish specimen (Belfast Bay, Sept. 1822), recorded and described by Thompson, exhibited the following peculiarities, not observable in either, or in one only, of the Norfolk birds, nor in that killed in Middlesex. The sex is not given:—(1) A narrow line of "*greyish black*, closely encircling the front and lower part of the eye." "Space immediately above the eye," white, as in one, only, of the Yarmouth birds. (2) Back, wing-coverts, &c., "blackish grey, tinged with *yellowish brown*." On the outer web of the sixth primary, "a white spot of an oval shape appears," as in the supposed Yarmouth male. (3) "Under part of throat and under part of the breast *pale ash-colour*." In both Norfolk birds the under part of the throat and passing

downwards to the vent, *between* the grey patches that front the carpal joint, on either side, is a pure unbroken white. The measurements of the two Norfolk birds are as follows, those of the female taken in the flesh, of the other when stuffed :—

	Female.	*Supposed male.*
Length from tip of bill to end of longest tail-feather	13½ in.	14 in.
Wing from carpal joint to end of longest primary (1st)	9¾ ,,	10¼ ,,
Tarsus	1¼ ,,	1⅜ ,,
Middle toe and claw	1¼ ,,	1¼ ,,

The hind toe and claw are exceedingly small, and Thompson points out that it is "placed so high that the point of the nail does not reach within 1½ line of the ground." Tail-feathers twelve. The irides and bill in my bird were dark brown, the legs and feet a soiled flesh-colour.—Henry Stevenson (Norwich).

The "Churring" of the Nuthatch.—Many years ago, when a boy, I was walking with a local authority on bird matters and called his attention to the curious "chur-r-r-ing" of a Nuthatch. He at once insisted that the noise was made by the Lesser Spotted Woodpecker; in vain I asserted that the latter bird was never seen in the neighbourhood, and he was only convinced by my fetching a gun and shooting the bird (a Nuthatch). I was so familiar with the noise, and had so often watched the bird in the act of making it, that I was surprised to find that everyone else was not acquainted with the fact. In more recent times I have watched Nuthatches "churring" in the New Forest and in Kensington Gardens. Immediately after the latter case a letter appeared in 'The Field,' in which, if I remember rightly, the writer stated that he had heard the Lesser Spotted Woodpecker in Kensington Gardens. I cannot help thinking that the noise is often attributed to Woodpeckers, especially as I do not find any notice of the habit in ornithological works when dealing with the Nuthatch, though in connection with Woodpeckers the habit is often dwelt upon at considerable length. No doubt, however, some of your readers will corroborate my observations.—J. Young (64, Hereford Road, Bayswater).

Baillon's Crake in Co. Waterford.—Through the kindness of Dr. Burkitt, of Waterford, whose name is well known to ornithologists as once the possessor of the single Irish specimen of the Great Auk, I am enabled to record Baillon's Crake, *Porzana Bailloni*, from a second Irish locality, which is well authenticated by a label on the stand stating that the bird was "taken alive, on Tramore Strand, County Waterford, April 6th, 1858." This interesting Rail has been, for many years, in Dr. Burkitt's excellent series of South Irish birds, labelled as "*Crex pusilla*," aud having heard of the circumstance through several friends I requested permission to examine it, when I found the bird to be, as I expected, Baillon's Crake. I have also been allowed by Mrs. Moss to examine carefully the specimen

so beautifully prepared by her late husband, and found this specimen, already recorded by Thompson, to be also certainly Baillon's Crake. It is singular that the Little Crake has not yet occurred in Ireland, and another bird which I am looking for, is the Pink-footed Goose, both of which might be expected to occur.—A. G. More (Curator of the Natural History Museum, Leinster House, Dublin).

Rare Birds in Sussex.—I am sorry to record the capture of two Peregrine Falcons in the neighbourhood of Hastings, neither, however, of very recent date. The first, a male in fine plumage, was obtained in November, 1879, on the East Hill at Hastings, above the cliffs between the Old Town and Ecclesbourne Glen. The bird was shot by a labourer, and was sold by him for a couple of shillings to Mr. Sorrell, a naturalist, of Old Humphrey's Avenue, in whose collection it now is. The second specimen, also a male, was shot at Broomham Park, Guestling, and is now in possession of Sir Anchitel Ashburnham, on whose property it was killed. Mr. Bristowe, naturalist, of St. Leonards-on-Sea, had a Grey Phalarope, *Phalaropus lobatus*, brought to him for preservation, which was shot in the Pevensey marshes about the 6th December last. Messrs. Pratt & Son, of Brighton, inform me that they had a specimen of the Little Gull, *Larus minutus*, in immature plumage, brought to them on November 28th, just killed at Lancing, and another, in similar plumage, two days after, killed near the same place.—Thomas Parkin (Halton, Hastings).

Chiffchaff in Oxfordshire in Winter.—It seems worthy of record that the Chiffchaff has remained here during the whole of this winter. I heard its note several times in December, more especially towards the end of the month. Since then I have heard it frequently up to the present date (January 24th). On the morning of the 15th January I had a good view of the bird. I cannot help thinking that this species has a better claim to be considered a resident in Britain than is generally supposed.—F. C. Aplin (Bodicote, Oxon).

Fork-tailed Petrel in Co. Antrim.—On 22nd November last, after a very severe westerly gale on the night of the 21st, a Fork-tailed Petrel was caught alive near Dunmurry, Co. Antrim (inland). After the same gale a Fork-tailed Petrel was got at Lurgan, Co. Armagh; one at Ballymoney, Co. Antrim; and one at Killinchy, Co. Down; the two former far inland. In addition to these, one Storm Petrel and three of the Fork-tailed species were obtained on Lough Neagh, near Toome Bridge, Co. Antrim, regarding which Colonel Bruce wrote me, in reply to enquiries, as follows:—"So far as my information goes, the Storm Petrel was never seen in this locality before. Two of the three birds were first seen together and were afterwards shot separately; the third was also killed. They were flying when shot, but were first seen sitting on the water. They appeared very tame. The bird I

now send you (it was also a Fork-tailed), was found dead on the shore (*i. e.*, of Lough Neagh), near some nets, against which it had probably killed itself." I saw all the birds above mentioned.—R. Lloyd Patterson (Hollywood, Co. Down).

Fork-tailed Petrel near Ringwood.—Seeing several notices of the occurrence of this species during November and December in various parts of the British Islands, I am induced to record its occurrence in this neighbourhood. During December three specimens at least of this Petrel were met with near Ringwood, one of which I had the pleasure of examining. This specimen weighed scarcely an ounce, and measured exactly eighteen inches across its expanded wings. The stomach contained only a small quantity of oily matter, although the bird was in very fair condition. It was picked up dead, doubtless driven inland by stress of weather. Another specimen of this bird was picked up, and partly devoured by a cat. A friend writing me in December last, from Co. Westmeath, says:—"My son watched a Storm Petrel on our lake, blown in by a storm the previous night, *sixty* miles from the sea; it disappeared next day."—G. B. Corbin (Ringwood, Hants).

Storm Petrel Inland.—A Storm Petrel, which had evidently been dead some days, was found on a hedge not far from here, on October 23rd. It was lying on its back on the top of the hedge. I suppose it must have been driven inland by a gale and blown against some tree which killed it. I believe the occurrence of this bird so far inland is not very usual; at any rate, so far as I know this is the first which has been met with in this neighbourhood.—John A. Willmore (Queenwood College, near Stockbridge, Hants).

Great Grey Shrike at Durham.—A specimen of this Shrike was shot here on the 12th January last by Mr. G. H Procter. It was a male with but slight indications of immaturity. The feathers on the breast were tinged with pink. I also received, for preservation, an immature male of this species on the 8th of November last, which was shot in Worcestershire, and which is now in the collection of Mr. J. Sutton, of Western Hill. —J. Cullingford (University Museum, Durham).

Tengmalm's Owl in Norfolk.—An adult male of this rare species occurred on the night of October 30th, 1881, having been caught and killed by the keeper of the Cromer lighthouse, who found it fluttering against the lantern. Mr. J. H. Gurney, jun., was fortunate enough to secure it in the flesh, and thus ascertained the sex. It measured nine inches and a quarter in length, and weighed three ounces and a half. This is the third specimen of this bird obtained in this county.—Henry Stevenson (Norwich).

Birds and Telegraph-wires.—In connection with this subject, an incident I think worth noting was given me the other day, by Capt. A. P. Moore, of Weybread, Suffolk. Several years ago, when walking one stormy winter's day on a farm in Buckinghamshire, skirting the main line of the London and North Western Railway, he came on a flock of Larks feeding in a turnip-field next the rails. The birds all rose at his approach, and the whole flock flew directly into the wires, which are very numerous there. Captain Moore picked up thirty-six dead Larks, a Thrush, and a Blackbird which had risen with the flock, and there were several cripples which escaped him. The birds were all much mutilated; the heads of several were cut off, and many had lost a wing or a leg. The platelayers on this line said they very frequently found dead partridges under the wires on going to their work in the morning.—C. Candler (Harleston, Norfolk).

Crossbills in Co. Kildare.—On the 28th of December last I met with a flock of seven or eight Crossbills, *Loxia curvirostra*, near Rathangan, Co. Kildare, and shot one, a male, in grayish brown plumage. The top of the head showed a tinge of red, and to a less extent the breast and throat also. When I first observed the birds they were flitting busily about some Scotch firs, and afterwards settled on some larch trees. They were very tame, and allowed me to walk round them quite close and pick out a specimen.—Percy E. Freke (Rosemount, Dundrum).

Osprey and Honey Buzzard in Lincolnshire.—I received, for preservation, a specimen of each of these birds from Lincolnshire, last October. The Osprey, apparently a bird of the year, was shot in North Lincolnshire; and the Honey Buzzard, a fine dark-plumaged specimen, was shot in the South. Both were males.—J. Cullingford (University Museum, Durham).

Honey Buzzards in Buckinghamshire.—I hear that two Honey Buzzards were killed in Shabbington Woods, near Brill, by the late Mr. Henley's head gamekeeper, on or about the 23rd September last. One, a very dark bird, was preserved by Mr. Darby, of Oxford. Some wasps were taken from the throat, and the stomach contained a few of the larvæ.—F. C. Aplin (Bodicote, Oxon).

Migration of Birds at Harwich.—On the 3rd and 5th October Hooded Crows were seen coming off the sea, and on the latter date three Fieldfares and seven Redwings were seen. On the 17th thousands of Larks were seen crossing the sea; they continued coming all day. On the 20th large numbers of Hooded Crows, Rooks, Starlings, and Wagtails, were seen coming over the sea, many of the latter resting on the fishing-boats whilst at sea. A great many Golden-crested Wrens arrived, and might be seen in almost every hedgerow.—F. Kerry (Harwich).

Falconry in Wales.—In 'The Zoologist' for October last (p. 405) Mr. E. C. Phillips refers to "old Morgan the falconer, a small farmer living at Nantyrodin, near Llanwrtyd Wells," whom he designates as "one of the last of his race." Allow me to point out that this is a mistake. Old Morgan, or, to call him by his right name, Morgan Williams, is not a link with the old race of Welsh falconers, but was a pupil of J. C. Belany, who published 'A Treatise on Falconry' in 1841, and he knew nothing of falconry until that writer instructed him. I met him at Garth some time ago, and ascertained the fact now stated.—F. H. Salvin (Whitmoor House, near Guildford).

Varieties of the Red Grouse and Partridge.—A curiously marked specimen of the Red Grouse was obtained in January, at Ballina, Co. Mayo; the ground colour of the plumage was a grey stone-colour. A Partridge received from Holyhead presents a somewhat similar appearance; the chesnut colour of the forehead, throat, and sides of head is faded to a cream-colour; the horse-shoe mark on the belly is a pale brown, and the whole plumage is a very pale grey; all the parts which are usually a yellowish brown of various shades are toned down to a pale yellowish or cream-colour. Both birds were in a plump healthy condition.—A. Williams (Dublin).

Waxwing near Birmingham.—A specimen of this uncertain migrant was killed by a lad with a catapult on January 30th, at Rednall, a few miles from here, and was taken to F. Coburn, one of our local stuffers, who kindly sent it to me. Upon dissection, it proved to be a young female, and had evidently been feeding upon haws, as I found several stones in the intestines. As far as I can learn, it is many years since a specimen was procured in this district. I have one in my collection which was killed in Aston Park about 1845. Should any of your readers know of others, I should be glad of the information.—R. W. Chase (Edgbaston).

Little Gull and Black Tern in Lincolnshire.—During last autumn I had three Little Gulls and the same number of Black Terns, all young birds, from Lincolnshire. Two of the Terns are in the collection of Mr. F. Raine, of this city.—J. Cullingford (University Museum, Durham).

Landrail in Dorsetshire in Winter.—This bird being a summer visitor to the British Islands, it may be worth recording that one was obtained near Bridport in the middle of January last; and another was shot by myself in white turnips at Bradford Abbas, near Sherborne, on the 1st February.—Darell Stephens (Bridport).

Peregrine in Northamptonshire.—A Peregrine Falcon was taken alive, early in October last, at Byfield Reservoir, having come in contact with the telegraph-wires while in pursuit of one of the Ducks which frequent the water.—F. C. Aplin (Bodicote, Oxon).

Shore Lark near London.—I have a young male Shore Lark, *Alauda alpestris*, which was caught with some Sky Larks at the end of October last, near Stamford Hill, Clapton. It is still alive, in perfect health, and coming nicely into song.—L. W. Hadler (London Fields, Hackney).

Snake Poison as a Pepsine.—Much has been said and written during the past three months concerning the so-called peptic properties of serpent virus, founded on the observations of Drs. de Lacerda and Ladislao Netto, of Brazil, who discovered that the secretion obtained from the poison-sacs of certain *Crotalidæ* acted readily as a solvent to hard-boiled egg and other forms of albumen. This is, undoubtedly, a very curious and interesting fact, and one which opens a wide field for speculative investigation. But has not the term "peptic" been applied a little hastily? The action of the gastric juice, to which the virus is compared in this respect, consists of something more than merely dissolving albumen. The free hydrochloric acid which it contains would effect this by itself under certain conditions; but it requires the chemical process of the true pepsine, in addition, to render nitrogenous food capable of being assimilated, *viz.*, the conversion of albumen into peptone and albumenose, its change from the colloid form, which is incapable of dialysis, to the crystalloid, which may be absorbed through the coats of the vessels. To this alone, and not to the simple solution of azotised matter, can the expression, "peptic action" be accurately applied (πεπτω, to digest); and no such property has yet been demonstrated to exist in snake-poison. Possibly this solvent or disintegrating power may serve to account, in some measure, for the intense *local* severity of a venonous snake-bite. Anyone who has had the opportunity of watching the tiny punctures which have been allowed to take their course without being submitted to cauterization, must have observed how disproportionately wide-spread and destructive is the surrounding inflammation, and what intractable ulcers it forms. Phlegmonous erysipelas, sloughing of the areolar tissue, unhealthy abscesses, and gangrene of the neighbouring parts are very liable to follow, and often kill the patient who has recovered from the primary effects of the bite; though, no doubt, the supervention of these is due as much to the general lowering of the vital powers, consequent on the shock to the system, as to the local presence of morbific matter.—Arthur Stradling (Teignmouth).

Floating Crab at Penzance.—I have had the good fortune to secure seven specimens (six males and one female) of the rare Floating Crab, *Planes Linnæana*, at one haul. They were taken out of soil and sea-weed growing on a derelict cask of paraffin picked up at sea, about six miles from this place. They vary a little in size, but are all about five-eighths of an

inch in length, and as nearly as possible the same in breadth at the broadest part of the carapace. They look longer than they are broad, but this is an optical delusion due to the narrowing part of the after part of the carapace. Two of the males and the female when alive were of a uniform rich red-brown over the back. In one about half of the front part of the back was of a pearly white, the rest of the carapace being of the same rich red-brown. This one had on either side of the surface of the carapace and on some of its legs parasitical barnacles, each of less than one-twenty-fifth of an inch in length. One of the crabs were of the same rich red-brown, with a bright pearl-white spot behind each eye; and one had the anterior half of the carapace pearl-white and the posterior part mottled grey. The crabs were all alive when I received them, and, for their size, I never met with any having such great muscular power. I report thus in detail, because I believe the occurrence of this crab has not been before recorded in 'The Zoologist.'—Thomas Cornish (Penzance).

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

Linnean Society of London.

February 2, 1882.—Charles B. Clarke, M.A., Vice-President, in the chair.

The Rev. B. Scortechini, of Queensland, and Mr. John Marshall, of Taunton, were balloted for and elected Fellows of the Society.

An extract of a letter from Mr. Thomas Edward, of Banff, was read, and a specimen shown of a supposed rare marine annelid obtained by a fisherman in deep water. It was identified by Dr. Murie as belonging to the Nemertean worms, viz., *Cerebratulus angulatus*, a marine form found chiefly in the northern parts of the British coasts, but nevertheless seldom seen alive by naturalists.

Mr. E. M. Holmes exhibited a bottle containing examples of a new blistering insect from Madagascar, belonging to the genus *Epicauta* and allied to *E. ruficollis*. It had been brought to this country by Dr. G. W. Parker, physician to the Queen of Madagascar.

A communication was read from Major-General Benson, particularly referring to Dr. Cobbold's use of the name *Fasciola Jacksoni* for certain Flukes obtained from the Elephant. These had been described by Major-Gen. Benson, in 1867, in the 'Rangoon Times,' where an account of the epizootic outbreak was first given. Dr. Cobbold thereupon explained that the initials of the author having alone been appended to the article in question, it consequently received less attention than it would otherwise have had, for to Major-Gen. Benson unquestionably belonged the credit of

having first directed attention to the Elephant mortality from the presence of the said species of Fluke. The worm itself, however, was first discovered by Jackson, twenty years before the Rangoon letter appeared—namely, in 1847.

A paper by Mr. Otto Tepper, "On Animal Intelligence," was read. The author narrated instances coming under his own observation of cats regularly unfastening the latch of a door to obtain entrance. In the case of ants he has watched and studied their power of communicating with each other. Upon these and such like kindred instances the author adduces the possession of reasoning to what is more usually denoted instinct.—J. Murie.

Zoological Society of London.

February 7, 1882.—Prof. W. H. Flower, F.R.S., President, in the chair.

Mr. Henry Seebohm exhibited and made remarks on a series of Goldfinches (obtained at Krasnoyarsk, in Central Asia), which presented every form of transition between *Carduelis major* and *C. caniceps*.

The Secretary exhibited, on behalf of Mr. Peter Inchbald, two curious hybrid Ducks, obtained on some ornamental water near Darlington.

Mr. St. George Mivart read a paper on the classification and distribution of the *Æluroidea*. He regarded this suborder as best divisible into three families—(1) *Felidæ*, (2) *Viverridæ*, (3) *Hyænidæ*. The *Felidæ* he proposed to subdivide into but two genera, *Felis* and *Cynælurus;* the *Viverridæ* into the five subfamilies, (1) *Viverrinæ*, (2) *Galidictinæ*, (3) *Euplerinæ*, (4) *Cryptoproctinæ*, and (5) *Herpestinæ*. The *Hyænidæ* were referred to two subfamilies, *Protelinæ* and *Hyoninæ*. The author regarded *Cryptoprocta* as a true Viverrine animal, attaching but very little importance to dental characters save as discriminating species and genera. The *Galidictinæ* were arranged to include the genera *Galidictis*, *Galidia*, and *Hemigalidia;* the last-named genus having been instituted for the species previously known as *Galidia olivacea* and *G. concolor*.

Mr. W. A. Forbes read a paper on some points in the anatomy of the Indian Darter, *Plotus melanogaster*, and gave a description of the mechanism of the neck in this genus in connexion with the habits of the birds.

A communication was read from Prof. P. Martin Duncan, containing descriptions of some recent Corals collected by Mr. J. Y. Johnson at a few fathoms depth in the sea off Funchal, Madeira.

Mr. Stuart O. Ridley read a paper on the arrangement of the *Coralliidæ*, and gave a review of the genera and species of this family, which contains the Red Corals. The description of a new species obtained in the Mauritius was given, as well as an interesting—but probably not new—form, said to come from Japan.—P. L. Sclater, *Secretary*.

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ON THE BREEDING HABITS OF THE LONG-TAILED FIELD MOUSE.

BY RICHARD M. BARRINGTON.

ABOUT the 1st of October, 1880, I noticed two Long-tailed Field Mice, *Mus sylvaticus*, sunning themselves outside a hole in one of my clover-fields. They are not uncommon here (Fassaroe, Bray). The two I observed were young ones, about twelve days old, their eyes being barely open. I caught them readily, and, probing the hole, discovered the nest about three feet from the entrance, with three other young ones in it, doubtless the offspring of the same parents. I carried the five home, and placed them in a box with wool and fine grass. Next morning they were almost dead, but recovered sufficiently in my trowsers pocket to take drops of warm milk from the end of a straw. Keeping them on the mantelpiece over the fire, and putting in my pocket occasionally before feeding, I managed to rear them and compensate for the loss of the warmth of their parent. In a few days they sucked warm milk from soaked bread, and gradually came to eat the bread itself.

They were kept in a small box with two partitions, and the box was placed in a large cage on the mantelpiece. The following memoranda are taken from my notes:—Oct. 24th, grass nest made by mice for first time, being thirty-six days ago. Nov. 1st, one mouse killed by accident in revolving wheel at end of small box. Nov. 15th, grass nest changed from one partition of small box into the other partition. Dec. 11th, nest moved

outside small box altogether into a corner of the cage. (Subsequently moved inside again.) In December and January, great gnawings at woodwork of cage, and evident anxiety to get out. Jan. 28th, another mouse killed by accident, leaving only three, one male and two females. February was a comparatively quiet month, mice becoming reconciled to cage.

Three young ones were born on the 7th or 8th of March, the mother being about five months and a half old.

Calling the females A and B, the following table shows their productive powers:—

				Interval since last litter.
March	7th or 8th.	A	3 young ones.	
„	19th.	B	5 „	
„	31st.	A	3 „	24 days.
April	18th.	B	5 „	29 „
„	24th.	A	3 „	24 „
May	11th.	B	5 „	23 „
„	17th.	A	4 „	23 „
June	12th.	A (?)	4 „	26 „
July	9th.	A (?)	4 „	27 „

Judging from this table, the period of gestation seems to be about three weeks. I have added a mark of doubt to A in the last two instances, because being absent from home in Iceland during June and part of July, I am unable to say whether A or B was the mother of the mice born on June 12th and July 9th, but that A was the mother I have little doubt.

On my return from Iceland I found it impossible to recognise my pets; some were dead, others had escaped, and many of the young were now as large as their parents. I cannot therefore give any accurate notes subsequently, but the above table shows what two female Long-tailed Field Mice are capable of in less than five months; and had not one of the females (I have supposed B) escaped early in June the number of young would have been still larger. During April we had twelve to twenty mice, young and old, in the nest; they all slept together, and it was certainly a curious sight to see father, mothers, and children of all ages and sizes in the nest, the young of different ages suckling the same mother at the same time, and the mothers appearing to suckle each other's young indiscriminately. They also seemed to have no cessation of suckling; but on this point I will not

speak confidently. So fast did the young attach themselves that the females could scarcely move without pulling two or three after them.

The young were reared in the small box, but the mothers had a care over their movements outside, and carried them back to the nest until they reached the age of three weeks. They were not caught at the back of the neck, as is usual with dogs and cats when carrying their young, but generally by the side of the belly, midway between the fore and hind legs; the mother then raised the young one completely off the ground, and with head erect conveyed it to the nest. Sometimes the parental authority was attempted to be exercised on an "old" young one, and a species of dragging was then resorted to. The entrance to the breeding-box was narrow, and it was not possible to carry the young through it. This the mothers soon learned, and they overcame the difficulty by dropping the young one at the entrance and then, going in themselves, they turned round and dragged it in head foremost.

It has been said that *Mus sylvaticus* is easily tamed, but my pets were always timid and easily frightened. As to food, a sod of grass was put in every morning, and in this they delighted to root until the whole of it was scratched about the cage. The blades of grass were seldom eaten, the roots being much preferred, but the leaves of clover, and especially dandelion, were greatly relished, and for an unexpanded flower of dandelion nearly everything else would be deserted: the fortunate possessor of this delicacy would carry it off to a corner to be free from interruption. A tiny saucer of milk was always in the cage, and they drank it eagerly. Oats, wheat, barley, chesnuts, beech-nuts, walnuts, arbutus berries, gooseberries, apples, grapes, and, in fact, every variety of fruit was eaten. Almonds were not much liked. Every corner of the cage was a storehouse; a grain of wheat or other food would be covered up with the nose, after the manner of a dog burying a bone, and sometimes the hind legs would be used in scraping the floor of the cage backward to assist in heaping materials to hide it. The Field Mouse hides many things in the one place; I do not know that dogs have ever been known to do this.

EFFECTS OF REVERSION TO THE WILD STATE IN OUR DOMESTIC ANIMALS.*

By Hon. J. D. Caton.

A uniformity of form, colour, and habit in individuals among the various species of wild animals, is almost universally observed, and the loss of this uniformity under the influence of domestication, if less universal, is very general. How long it took to produce these changes in the Horse and the Ox, the Sheep and the Goat, we cannot know, for these were subdued to domestication before events were recorded which might tell us of the struggle. That some animals were more readily influenced by domestication than others, we know. How readily the wild Turkey changes in form, colour, and habits under the influence of domestication I have demonstrated by my own careful experiments, an account of which I gave in the 'American Naturalist' for June, 1877. That the domesticated Reindeer of Lapland have become particoloured, while their wild brethren of the mountains all about them retain a uniform colour, I have shown in 'The Antelope and Deer of America' (p. 330), and in 'A Summer in Norway' (p. 223). The Deer in the parks of England and Ireland have become unstable in colour, although they have been subjected to the influence of domestication for a much shorter period than have the Reindeer of Lapland. These are the most striking instances among the Quadrupeds, which occur to me, to enable us to compare the wild with the domesticated animals, although the Wild Horse and the Wild Ass are still met with in Asia, and the Wild Ox still existed in Scotland till within very recent times at least, but it may be well doubted whether the wild cattle of Scotland are the progenitors of our Domestic Ox. The domesticated Buffalo, as seen in Southern Europe and Asia, and in Northern Africa, has degenerated less both in colour and form than most other quadrupeds under domestication, and his wild habit still possesses him to a certain extent.

The Wild Boar submits to domestication with remarkable docility, and human care changes its form, colour, and habit in a very short time and in a remarkable degree. Human care,

* From the 'American Naturalist,' Dec. 1881.

by judicious selection, may fix varieties of all these domesticated animals with persistent characteristics, but immediately his supervising care is withdrawn all these peculiarities disappear.

Of the birds, perhaps the Peacock resists the influence of domestication with the most persistence, though the Guinea-fowl undergoes no perceptible change from generation to generation, with rare exceptions.

While all have had opportunity to observe the changes which have been wrought in our domesticated animals by human care and supervision, opportunities have not been so general for observing the effects upon our domesticated animals when allowed to return to the wild state. My observations lead me to the conclusion that the tendency is not only to return to the wild habit, but to the original form and colouring of the remote wild ancestor. That there is some law governing this reversion we may well believe, though we may not be able to fully understand it yet.

My own observations tend to show not only a tendency, at least in some species, to revert to the original form and colour of the wild ancestor, but they also suggest the possibility that this tendency is the strongest in those cases where the domesticated animal has most recently been reclaimed from the wild state, or in those cases where the change produced by domestication was the most rapid.

I have had the best opportunities for studying this subject in the Hawaiian Islands. With the exception of the Goose and the Duck, nearly all the animals which have been introduced into those islands since their discovery, as well as those which were then held in domestication,* have reverted to the wild state. Among these I may mention the Ox, the Horse, the Goat, the Sheep, the Hog, the Dog, the Cat, the Turkey, the Peacock, and the Barn-yard Fowl. Where I had not the opportunity of studying these personally, I spared no pains to gather the facts from the most reliable sources.

The greatest physical degeneracy was observed in the Wild Horse and the Wild Sheep. The Ox was introduced by Vancouver, less than a century since, upon the island of Kauai, from California, whence it was introduced upon the other islands. At

* They had the Hog and Common Fowl when discovered by Cook.

most it has been subject to the new influences scarcely three quarters of a century. During that time no appreciable change has taken place in the colouring of the Ox, nor much in his form, but his habit is wild and wary, fleeing from man in alarm; and he has acquired great fleetness over the lava beds in the mountainous regions which he selects for his home. While he is terrified at the approach of man, when wounded or hard pressed he becomes bold and aggressive, and is a dangerous enemy. In some parts of the islands they have become so numerous that the scarcity of sustenance has forced them down into the lower regions, where it is feared that they may destroy the forests, upon which it is supposed much of the rainfall depends. Indeed, on the island of Ouahu a large district of country was pointed out to me which was said to have been once a forest, and was now entirely destitute of arboreous vegetation. This change was attributed to the wild cattle. They are hunted for their hides alone.

I saw none of the Wild Horses or Wild Sheep, neither of which are numerous. I was told that the former are much more degenerated in size, form, and vigour than those on our western plains, which may be attributed to the want of an abundance of food adapted to their requirements in the elevated regions which they affect, but in habit they are as wild as the cattle. The Wild Sheep, which are very limited in number, and I met with few who had seen them, were small, gaunt, and long-legged, with a scant and coarse pelage.

The Wild Goats are very numerous, especially in the mountainous regions of the eastern islands. During the afternoon which I spent viewing the wonderful sights from the rim of the great extinct crater, Haleakala, I saw two bands of Wild Goats within the crater. I sat ten thousand feet above the sea. The chasm before me was seven miles across and two thousand feet deep. Its vertical walls in a few places had been partially broken down, so that bunches of grass had taken root on the shelves or steps formed in the disintegrated lava, and the Goats were clambering about, leaping from shelf to shelf, seeking food. Towards evening they descended to the floor of the crater and disappeared in its eastern arm. With the naked eye they could not be identified, although one band was directly beneath me, but a good field-glass revealed them very plainly. A large majority

were snow-white, some were parti-coloured, and one appeared to be black. Their natural capacity for climbing has no doubt been improved by their reversion to the wild state. They are very wild and cautious, and difficult of approach by the hunter. They, too, are hunted for their skins.

The most marked and rapid change is produced in the Hog by his emancipation from the restraints of domestication and the care of man. In a single generation he changes in form, colour, and habit from the staid and quiet porker to the fleet and fierce Wild Boar. The latter is the character as described to me by all who had been interested to make observations on the subject, of the numerous Wild Hogs now roaming in those islands. Colonel Charles Judd assured me that, many years before, a lot of Hogs escaped from his ranch on the easterly side of Ouahu, and went into the mountain which bordered the ranch. Among them was an imported Boar. Before he could find them they had become so wild that he could not reclaim them from their mountain fastnesses. He got sight of this Boar many times during several succeeding years. He was so marked that he could readily identify him. The change in form and habit were almost immediate. He soon became wild and almost as fleet as a deer. His body became thin, his back arched, and his legs *appeared* to be much longer than when he escaped. Much slower was the change of colour, but this finally occurred to a very appreciable extent, so that in a few years he had distinctly assumed the dark sandy shade of the Wild Boar. He wisely forbore to shoot him that he might study the developments which he saw going on. In the third or fourth generation the pigs showed very distinctly the sandy shade and stripes observed on the side of the young of the Wild Boar. From these and similar observations, I should infer that it would not take very many generations, with proper care, to completely domesticate the Wild Boar.

I heard of but two places where the Pea-fowl had gone wild. The first was at the plantation of Colonel Judd, before mentioned, and the other was the plantation of Captain M'Kee, on the island of Maui, whence the birds had escaped, and gone into the mountains above. No change was observed, except that they had become wild, but not excessively so, and I did not learn that they had been much hunted in either case.

At what time the Domestic Turkey was first taken to the islands I did not learn, but probably not very long after their discovery, or certainly soon after the arrival of the first missionary, which occurred in 1820. We may safely assume that soon after some of them wandered away and reverted to the wild state, and now they are found, more or less abundant, in the forest regions of most of the islands. They have not yet become as wary and difficult of approach as are the Wild Turkeys here. The natives trap them with some success. At Haiku I found two hens in confinement, which Mr. Dickey had purchased from a native who had caught them. I studied them with great interest. They were in a large poultry-house, the front of which was closed with slats. On approaching them they showed about as much alarm as our Wild Turkey would, similarly situated. A very decided tendency was shown to revert to the colour of our Wild Turkey. The legs had already assumed a lightish colour with a pink shade, though not so brilliant as in the wild ancestor, but quite unlike the black leg of the black tame Turkey. The colour of the plumage had also undergone a marked change. The ends of the tail-feathers and of the tail-coverts had assumed a tawny or russet shade, hardly so pronounced as in our Wild Turkey, but a great departure from all tame Turkeys. My observations in domesticating the Wild Turkey show that they first degenerate in their colouring in these two points. The white bars on the wing-feathers were there, but they are not always absent on the domesticated Turkey. In form, too, a change was manifest; the legs were longer and the body was longer and more erect than in the tame bird. Altogether the tendency to revert to the form, colouring, and habit of their wild ancestors was very marked. I say their wild ancestors, for I think I showed satisfactorily, in a paper published in the 'American Naturalist' for June, 1877, that the domestic Turkey of this country is descended from our Wild Turkey.

I heard of the Barn-yard Fowl which had gone wild in several parts of the island, but I did not see any of them. I obtained the most satisfactory account from Mr. Emerson, a son of one of the early missionaries who was located at the north-west end of the island of Ouaha, where the son still resides. The domestic birds escaped from his father's place at least fifty years ago, and

occupy an extensive elevated or mountainous wooded country. They still nest on the ground, and are quite numerous, in spite of the depredations of the Wild Cats. Although he has often seen them, they are the most wild and wary of any animal he had ever attempted to approach, and he was very rarely able to shoot one. At the approach of day the whole forest would be vocal with the crowing of the cock, and, although secreted right among them, when daylight came not one could be seen, and all was as still as if nothing had ever disturbed the quiet of the wilderness. How they managed to disappear so quietly in the grey of the morning he could not explain, for he never heard them fly from their perches in the trees. They had diminished appreciably in size, and had assumed a uniform buff-colour. Now I confess that I do not know the colour of the wild bird from which our Barn-yard Fowl, or that which was common in the States sixty years ago, is descended, but if, as I have ventured to suggest, there is a tendency, when domesticated animals revert to the wild state, to return, not only to the wild habit, but to take on other peculiarities of their wild ancestors, from which they had departed under the influence of domestication, then we may infer that the original wild stock was of a buff colour.

I do not know that this subject has been deemed worthy of observation by naturalists,—at least I have not been so fortunate as to meet with any discussion of it,—but I hope an amateur may be allowed to so far depart from precedent as to make observations in out-of-the-way directions. It may be that my inclinations have too much of a practical tendency for strictly scientific studies. I study the bones but little, for practical utilitarian features interest me more.

ORNITHOLOGICAL NOTES FROM MAYO AND SLIGO.

By Robert Warren.

If the last few winters commencing with that of 1878-9 have been remarkable for their unusual severity, the present one will be long remembered for the long continuance of stormy weather throughout the season, beginning with the fearful gale of the 14th of October—a gale that caused more destruction amongst the trees of the wooded parts of the country than had been known for

fifty years past: the wind when at its strongest blew from the N.N.W., afterwards veering round to W.S.W., scattering hay- and corn-stacks in all directions, uprooting large trees, stripping others of all their branches, leaving only the naked boles standing, and breaking short-off some eight or ten feet from the ground fir-trees of fifteen and sixteen inches in diameter.

After this gale subsided, we had a continuance of high winds all through the month and up to the 26th of November, when another terrific gale from the S.W. set in, and, as it held longer when at its height than the October gale, the damage it caused throughout the country was far more serious; for the farmers' and cottiers' houses were stripped of thatch and slates in all directions, many completely unroofed, and in some instances the walls were levelled to the ground by the fury of the storm. Along the coast the destruction of fishing-boats was greater than ever before known, for, although drawn up ashore, many were blown into the sea and lost; in other cases they were so knocked about by the wind as to be totally wrecked in the fields into which they had been blown by the gale. During the gale of the 14th of October the mercury in a Fitzroy barometer fell from 30·1° to 29·1°, and on the night of the 26th of November from 29·3° to 28·3°. Although these high winds blew from an easterly direction the first week of October, and for the last two weeks of that month also,—so very favourable for the flight of our winter visitors,—yet birds of all species, including game and wildfowl, were never so scarce in this locality; and I have had a similar account from those great wildfowl haunts of the Lower Shannon and Tralee Bay, which state of things goes far to prove that the effects of the three hard winters in succession had so thinned out both our residents and winter visitors that a period of some years must elapse before we can expect to see them reappear in their usual numbers.

The stormy weather sent very few rare visitors to this locality; the only species worthy of notice being a fine adult Black-tailed Godwit, shot by a young friend near Roserk Abbey on the 3rd of September; and a very beautiful specimen of the Grey Phalarope in that pretty transition stage of plumage between the young and adult: this bird was shot by Mr. Little close to his residence, on the tidal part of the Moy, on the 15th of October. On Oct. 24th I observed a little flock of five Redwings

about the hedges, feeding on haws; and their number afterwards increased to about twenty birds, which was the greatest number I saw together at any one time this season. No Fieldfares have appeared in this district as yet this season, nor have I heard of any being seen elsewhere either in Mayo or Sligo.

A pair of Missel Thrushes appeared in the town here on the 6th of November, the first of the species seen since last winter; and on the 10th of that month I saw in one of our hedges either a Willow Wren or Chiffchaff, but, though it allowed me to get very near, owing to the want of light I was unable to make out the colour of its legs; yet still I am almost certain it was the last-named bird—its mode of flight, restless flitting about the branches, peculiar movement of the wings, &c., all go far to prove that the bird was a Chiffchaff; and also at this time of the year it is more likely that the hardy Chiffchaff would be met with than the more delicate and tender Willow Wren.

A few days after meeting with the Redwings, I thought I saw some Thrushes along with them, but until December 11th I was uncertain of the fact, when I saw three fly out of a hedge—the first seen since last winter, when both these birds and Missel Thrushes were completely exterminated in the district by the effects of the long-continued frost.

I was glad to observe a pair of Golden-crested Wrens frequenting the plantations during the autumn and winter, and hope that, owing to the mildness of the weather, they will manage to keep alive until the breeding season. The three species of Tits appear to have held out pretty well. I think they are to be seen in about the same numbers as last year; but I only saw one family of Long-tailed Tits this winter. Starlings have been fearfully thinned by the past hard winters, and only little parties of from half-a-dozen to a dozen are now to be seen directing their evening flight to the roosting-places, instead of the thousands that were to be seen previous to the destructive winter of 1878-9.

On the 22nd January I was down near Bartragh in my punt, but found the few Widgeon there very wild, and almost unapproachable. I succeeded, however, in obtaining a long shot at a dozen, and picked up seven birds, and when returning I came across a pair of Long-tailed Ducks: they were very tame, allowing the punt to come within about twenty yards before rising from the water, when I knocked them down with a charge of

No. 2 from my cripple stopper. They were nice specimens, a female and a young male.

Early in September I witnessed a most interesting flight of a Peregrine Falcon at a Greenshank. I only came in for the end of the flight, when I saw the Greenshank take to the water three times, and dive to escape the stoop of the Falcon. When the Falcon soared upwards after each stoop, the Greenshank rose from the water, screaming most piteously and flying to the shore, which it at length reached, and hid amongst the stones and sea-weed (the Falcon waiting a short distance off), until I came down and saved its life.

THE BIRDS OF BRECONSHIRE.

By E. Cambridge Phillips,
Member of the Woolhope Naturalists' Field Club.

(Continued from p. 50.)

Sky Lark, *Alauda arvensis*.—Common. Occasionally a small flock is observed passing over, but one never sees anything like the large flocks that occur constantly on the Wiltshire and other Downs. I think we are too high and wet for them, and it must not be forgotten that, comparatively speaking, there is very little land under tillage here.

Wood Lark, *Alauda arborea*.—Very uncommon. I have only seen it twice since I have resided here.

Waxwing, *Ampelis garrulus*.—I can only record one instance of the occurrence of this bird, and that was killed near Llanwrtyd.

Tree Creeper, *Certhia familiaris*. — Generally scattered throughout the county. I often see it actively creeping up some fine old elms in my garden at Brecon.

Nuthatch, *Sitta cæsia*.—This bird has been very slowly increasing for the last few years. It was formerly rare here; so much so, indeed, that I have only observed it during the last four or five years, and then occasionally. I have seen it twice in my garden, when I was attracted by its piping note. Miss Lloyd, of Llandefailog, near Brecon, who so kindly gave me the particulars of the nesting of the Hen Harrier at Nantgwilt, tells me that the Nuthatch breeds at Llandefailog, but that the old birds only reared one young one last year, and she thinks the district too cold for them.

Common Bunting, *Emberiza miliaria.* — Fairly plentiful throughout the county.

Reed Bunting, *Emberiza schœniclus.*—Common, especially in the neighbourhood of Llangorse Lake, and on the banks of the canal.

Yellow Bunting, *Emberiza citrinella.*—Very common. The late Mr. Marsh, Rector of Sutton Benger, near Chippenham,—whose lectures on British Birds are always remembered with pleasure by those that had the privilege, as I often had, of hearing them,—used to say that the Yellow Bunting, if properly roasted between two vine leaves, was equal to, and not easily to be distinguished from, the celebrated Ortolan, *E. hortulana,* so eagerly sought after by gourmets on the Continent.

Chaffinch, *Fringilla cœlebs.* — May with truth be said to be the commonest bird we have, and the boldest. A curious variety of a uniform delicate fawn-colour, which I have had the pleasure of inspecting, was killed at Velinnewydd by Mr. Williams-Vaughan, jun., of that place.

Brambling, *Fringilla montifringilla.*—Rare. I only know with certainty of a single instance of its occurrence, and that was at Cynghordy, near Llanwrtyd, on the borders of the county.

Goldfinch, *Fringilla carduelis.* — Very general all over the county. We are fortunately not much troubled with professional birdcatchers, with their call-birds and nets, but only by a few amateurs, so that I think this may in some way account for their numbers. I often see them both in large and small flocks, and a pair or so nest in my garden in Brecon nearly every year.

Siskin, *Fringilla spinus.*—This bird I see occasionally during the winter, and generally moving in small flocks.

Linnet, *Linota cannabina.*—Common enough, but I think not so much so, or in such large flocks, as in England.

Twite, *Linota flavirostris.*—Fairly distributed in the winter throughout the county.

Mealy Redpoll, *Linota linaria.*—I am not able to say with certainty that we have this bird with us. I have not observed it; still it is so very liable to be confounded with the Common Linnet that it is very probable it occurs occasionally.

Lesser Redpoll, *Linota rufescens.*—Not common, but still occurring in fair numbers. A station-master on one of our principal Welsh lines tells me that he catches both the Redpolls,

especially the Lesser Redpoll, in his traps when taking Goldfinches, and that he can sell the latter, but not the former. I imagine, however, that the Linnet is mistaken by him for the Mealy Redpoll. The Lesser Redpoll makes a lively little pet, but its rich markings soon vanish in confinement.

Tree Sparrow, *Passer montanus*.—Resident with us, but in no great numbers.

House Sparrow, *Passer domesticus*. — Very common, very noisy, and very impudent, as everywhere else. I think also increasing during the past few years.

Greenfinch, *Coccothraustes chloris*.—Common throughout the county.

Hawfinch, *Coccothraustes vulgaris*.—Very rare indeed; in fact I may almost say unknown here. I have never seen one. Mr. Roche, of Tregunter, our late high sheriff, tells me that some twenty years ago a large flock of these birds established themselves in the large trees near his house, and that they stayed there nearly the whole winter, which, if I recollect right, was a severe one. He well remembers catching numbers of them in traps and keeping them in cages, but he has not observed any since that time.

Bullfinch, *Pyrrhula vulgaris*.—Very common. I sometimes see it in the garden, but not often, for it is, I think, a wood-loving bird.

Crossbill, *Loxia curvirostra*.—Very rare here now. In the winter of, I believe, 1866, they were very abundant all over the county. Some tall larch trees in my garden at Vennyvach were literally covered with them one morning. Not knowing their note I killed several, but after that I did not disturb them. One of the birds killed was a cock in splendid plumage of a bright red; another a cock of a bright yellow; whilst the rest were hens of a dull olive-green. They stayed with us for some time, but all left about January, except one hen that stayed about the place until April, when I missed her; she frequented one larch tree in particular, and was so tame that she would take no notice of any one's approach. I have often watched her within a few feet, and her mode of feeding on the seeds of the fir-cone, and indeed her actions generally, invariably reminded me of those of a parrot. I felt quite sorry when she left us to return no more. I think if she had had a mate she would have nested here. In the same

year they were equally plentiful in the adjoining county of Caermarthen.

Green Woodpecker, *Picus viridis.*—Plentiful throughout the county. On the Crug, a hill near Brecon, it is common, and may often be seen on the short turf there feeding, and, if disturbed, flying with its undulating flight to the nearest tree, uttering at intervals its loud and somewhat weird cry.

Greater Spotted Woodpecker, *Picus major.*—Rare with us. I have seen it once, and once only, on one of the large elms in my garden. I also saw a very beautiful hen bird killed by Mr. Williams-Vaughan, jun., at the Skreen-on-the-Wye, his Radnorshire residence, and close to the borders of Breconshire. The cock bird flew about in loneliness for some time, and was afterwards killed, and the pair are now in that gentleman's collection. There are also several stuffed specimens in the town that have been killed at or near Brecon.

Lesser Spotted Woodpecker, *Picus minor.*—Much commoner than *Picus major*, but still far from plentiful. Occasionally one pays me a visit, and I have seen it in Vennyvach Wood, and other parts of the county. Its variegated plumage of black and white makes it so attractive that one cannot fail to notice it.

Wryneck, *Jynx torquilla.*—Not common with us, but its nest has been taken by some young friends of mine. I imagine it occurs very sparingly throughout the county, although, as a summer migrant, its numbers are of course liable to variation.

Hoopoe, *Upupa epops.*—This beautiful bird occurs only as an accidental visitor with us. I can, however, out of many reports, give two with certainty, *viz.*, one killed at Cathedine, near Llangorse, by my friend the late Mr. David Brown, and now in the possession of Mr. David Thomas of this town, and another killed some years since at Frwdgrech, near Brecon. The former had a beautiful crest, but the latter, when I saw it, was either very badly stuffed or was in bad plumage when killed.

Cuckoo, *Cuculus canorus.*—Very common. Last year one frequented my garden, where, as the gardener expressed it, it "sang lovely."

Kingfisher, *Alcedo ispida.*—Fairly numerous on the Usk and Wye and on the Brecon Canal, but certainly decreasing during the last two or three years. It is only occasionally seen on the mountain streams, and I think that it prefers slow-running water.

It is very susceptible of cold. Looking one frosty day over the Honddu Bridge, near the Castle, in this town, I saw close by the houses a Kingfisher perched, like a dull emerald ball, on a willow by the slack water that turns the mill. Repeated stones failed to move him, but at last he seemed to wake up, and, showing all his beautiful colours of blue and orange, he flew a few yards farther on, when he pitched again, and positively refused to move, he seemed so perished with the cold; and so we left him master of the situation. May not the coldness of this climate account for their not increasing faster here, for I think they are seldom if ever molested?

The Swallow, *Hirundo rustica;* Martin, *H. urbica;* Sand Martin, *H. riparia;* and Swift, *Cypselus apus*, are very common here; in fact, I see no difference between their numbers here and in England. The Sand Martins occur in numbers on the banks of the Usk. My boys tell me that if you take a young Sand Martin from its hole, and place it at the mouth of another hole, it will not move; but place it at the mouth of the hole in which it has been hatched, and it will scuttle out of sight directly.

Nightjar, *Caprimulgus europæus.*—Common on all our heathy hills. Many a time have I had it brought to me as a great rarity, and as often have I totally failed in impressing on my visitor that, if he only watched "between the lights," he might see them almost any summer evening. How well I recollect my first introduction to this bird. Many years since, alas! in an old country seat in Wiltshire, where I have spent many happy days, I took my gun one summer evening, and, followed by old "Sahib," the retriever, I started to get a rabbit. Passing through the small park and down by the "Ladies' Well," I came to a field almost surrounded by woods. It was twilight, and all was still, save the tinkling of the distant sheep-bells on the Cherhill Down, and the faint ringing of the many chimes borne from the hills of the "White Horse." No rabbits were out, so "Sahib" and I watched and waited, until at last an old doe cautiously appeared and began distrustfully to feed; then a little hedgehog came out, working about with his nose in the grass in a wonderful way. All at once the old rabbit stopped feeding, the hedgehog seemed inclined to roll himself up, and old "Sahib" pricked his ears, as, with a splendid swift-like rush, gliding noiselessly through the air, a bird

came circling by; a minute more and I heard its curious jarring cry, and forgot everything else in watching with a delight that comes back to me, even now, the beautiful and fairy-like flight of the Nightjar.

Wood Pigeon, *Columba palumbus.*—Very plentiful, but the large flocks one constantly meets with in the winter must be visitors from other counties, probably Herefordshire, where it breeds in great numbers. I think this bird is certainly on the increase here during the last few years, both as regards residents as well as visitors.

Stock Dove, *Columba œnas.*—Certainly rare with us; I have never killed but one, and that was when waiting to shoot Wood Pigeons as they came in to roost in a wood on the confines of the county. I recognised it by its smaller size, and, on killing it, found it to be a veritable *Columba œnas.* The keeper with me said there was a pair of them, but that they were very uncommon; it is, however, common in the adjoining county of Hereford.

Rock Dove, *Columba livia.*—In many places fairly plentiful. Mr. Crawshay has killed two in a stone-quarry near Cyfarthfa, just over, if not actually in, the county, and in the curious Aberedw Rocks, on the Wye, they breed in tolerable numbers. These rocks crop up in various turretted shapes on the Breconshire and Radnorshire sides of the river, more especially on the latter, and the Rock Doves constantly cross to and fro with arrow-like flight; they feed in the daytime on the various corn and stubble fields near, but are, of all the *Columbidæ*, the most difficult of approach and the most difficult to shoot. Indeed, the quantity of shot this bird will carry away almost surpasses belief.

Turtle Dove, *Turtur auritus.*—A summer visitant, but in spare numbers. The only place in the county where I usually notice it with any certainty is on the large flat tract of land between Three Cocks and Boughrood part of the Dderw Farm, the property of Lord Tredegar.

Pheasant, *Phasianus colchicus.* — I cannot say when the Pheasant was introduced into Wales, but probably it soon spread from the large woods of Herefordshire until it established itself in the Great Forest of Brecon. It seems to do very well here, bearing severe cold with impunity. The largest Pheasant I have ever seen was a cock of the old-fashioned *colchicus* type, killed in 1879 in Lord Hereford's preserves at Tregoyd, by my friend the

Rev. John Bowen, the Vicar of Talgarth; it weighed 3 lbs. 10 ozs., and measured 2 ft. $10\frac{1}{2}$ ins. from tip of beak to tail; it was a very old bird. The Chinese *torquatus*, with the white ring round the neck, is of comparatively recent introduction here, and is invariably smaller. Many white and pied birds have been killed in different parts of the county, at Clyro, and elsewhere. A beautiful pied hen, an old bird, was killed near here during the past season. Indeed, of all the game birds, there is none that seems so peculiarly liable to sport white feathers, either in a greater or less degree, than the Pheasant. I fancy that the reason is partly that no fresh blood is introduced. On the other hand, my father had in an aviary at Chippenham, Wilts, a pure white cock Pheasant and two pure white hens, as well as a parti-coloured hen, all of good size and strength.

Black Grouse, *Tetrao tetrix*.—Has always existed in this county, and I am glad to say, in spite of repeated thinnings, has—thanks to a few spirited landowners—considerably increased during the past ten years. Last season (1881) several brace were killed in one day on the Marquis of Camden's property, near Trecastle. Mr. Dillwyn Llewellyn also has a few; and on Lord Tredegar's, Sir Joseph Bailey's, and Mr. Williams-Vaughan's hills there is a fair stock of breeding birds. What a pity that they cannot have one year's jubilee awarded them in this county, for its wet-bottomed woods of alder and birch bordering our heathy hills are in every respect exactly suited to their habits; and their beauty as game birds must be appreciated by every true sportsman.

Red Grouse, *Tetrao scoticus*.—Still fairly plentiful on our heather-covered hills, and, for the reasons mentioned in the last paragraph, greatly increasing of late years. On the Eppynt Hills, Mr. Dillwyn Llewellyn and another gun killed, to the best of my recollection, fifteen brace on the first day of the past season (1881); but his hill is a very extensive one, and he is too good a naturalist and sportsman to kill them down too closely. The same remark applies to Sir Joseph Bailey, Mr. Williams-Vaughan, and Mr. Butler, who have a fair stock. On the hills between Devynnock and Penwyllt the Grouse have greatly increased, and where a few years ago one could only see four or five birds, one may now see several flocks. On one of these hills, in 1880, I and another gun killed five brace in September after the usual Grouse-shooting had

taken place; and I am told this year they are more plentiful still, such are the excellent effects of a little preservation. I omitted to add that Grouse are plentiful on Lord Tredegar's excellently-preserved manor near the 'Storey Arms.'

Grey Partridge, *Perdix cinerea*.—Still common, I am happy to say, although materially decreased in numbers during the past few years; wet seasons have played sad havoc with them, and they have also, I think, been shot down much too closely in various localities. This should not be, as a better Partridge country than that round Brecon it is almost impossible to conceive.

Red-Legged Partridge, *Perdix rufa*. — Almost unknown. About six or seven years ago a young bird was killed at Scethrog, near Brecon, by Mr. Williams, of Manest, in a turnip-field. About six months afterwards, a gentleman living in Ashbrook Place, Brecon, on going into his garden, saw something running along the ground, and, it being late in the evening, he succeeded in catching it, and sent for a well known sportsman to look at it; he at once pronounced it to be a Red-legged Partridge, in excellent plumage, and no doubt a bird bred in the county; it lived for four or five days, but its extreme wildness caused its death. He afterwards related the circumstance to me. Mr. Williams thinks that Mr. Alfred Crawshay, of Talybont, turned out a couple of Red-legged Partridges about a year previously, and that they must have hatched a small brood. In the autumn following, he believes, there were four or five young ones, and surmises that the bird he shot and also the one caught in Brecon were two of them; the remainder were not seen afterwards. Mr. Williams is an indefatigable sportsman, and has shot over the greater part of the county for the last thirty years; and these are the only two he has ever seen or heard of as being killed; it justifies my including it, however, in my list of the birds of our county.

Quail, *Coturnix vulgaris*.—An occasional visitor. A friend of mine, shooting near Brecon some years since, flushed a small bevy when Partridge-shooting, but thought at first they were "squeakers"; he, however, followed them up, and killed three of them. At another time I saw a single bird on the hill near Devynnock, and another was killed not far from Llanwrtyd, at Cynghordy, by that excellent sportsman, the late Mr. Henry Gwynne-Vaughan. Mr. Williams-Vaughan, jun., also saw three

or four near Trebarried a few years since, but, after flushing them once, failed to rise them a second time; and Sir J. Bailey also has kindly sent me word that once he shot two brace of Quail at or near Glenusk Park. Mr. Williams tells me that they were more plentiful here during the Franco-Prussian War than in any other season, and suggests that the constant firing which occurred at that time in France drove them over; he then killed several brace. Last year, I am informed, a brace of Quail nested near Bolgoed, Brecon, but did not hatch, in consequence, I imagine, of their being disturbed. I believe my friend Major Morgan, of Bolgoed, has one of the eggs. From the above, it will be seen that they are still somewhat uncommon with us.

(To be continued.)

SNAKES VENOMOUS AND NON-VENOMOUS.

By Arthur Stradling, C.M.Z.S.

"How can one tell a snake which is poisonous from one which is harmless?" is a question often asked by people who, on being censured for killing an innocuous reptile, aver that through a lack of knowing one kind from the other they have destroyed it, lest it *might have* proved dangerous.

It is to be feared that no general rule can be laid down whereby a snake's nature may be ascertained from its external characteristics, except, of course, those which lead to the recognition of the *individual species*, which would imply a considerable amount of familiarity with them. This is to be deplored, since there is no creature more absolutely inoffensive than a non-poisonous snake; even the huge constrictors very rarely meddle with human affairs, or molest man and his belongings; while the smaller genera do positive and appreciable service to him. Our common English Ringed Snake is a great devourer of slugs, which it will eat at all times in preference to frogs; and—in captivity, at any rate—will take earthworms, caterpillars, and snails. In this country, where we have practically but two Ophidians, there is no need of any universal principles of distinction, since the difference between the two reptiles is so broad; the strongly-marked black and yellow collar should alone be enough to distinguish the harmless Ringed Snake

at a glance from the Viper, which possesses the further characteristic of well defined lozenge-shaped markings which run down the whole length of the back. Perhaps the popular idea that the Viper is characterised by a V on its head may actually have much to do with the indiscriminate slaughter of both. It does not require a very vivid imagination to trace a V-shaped mark among the lines and plates on any snake's head; and the bright yellow and black blotches, to which allusion has just been made as forming a kind of collar at the back of the head in *Tropidonotus natrix*, joining at an acute angle, constitute a much closer resemblance to the letter than the irregular star-shaped patch on the "forehead" of the Viper. There is a third snake occasionally found in Great Britain—*Coronella lævis*, but this might excusably be mistaken for the Adder. It is found more frequently in the New Forest than anywhere else; and, though certainly uncommon, is possibly not so rare as it is supposed to be. A gentleman in that neighbourhood, who offers a reward for every Viper killed, sent me several "doubtful cases" last summer, which proved to be *Coronellæ*. The harmless Slow-worm, *Anguis fragilis*, holds an intermediate place between the Ophidians and the typical Saurians.

The words "snake" and "serpent" I use indiscriminately, since their import is the same. It would be very convenient, however, if by common acceptation the venomous species might be ranged under one term and non-venomous under the other. In some parts of the world this is so, "serpent" being usually understood as designating the noxious species; in others, the term is limited to Pythons, Anacondas, and allied families; here, both have the same signification, though I remember an article in one of the magazines some years ago, which bore the heading, "Serpents and Venomous Snakes."

The wide-spread notion that all venomous snakes have flat heads—and, conversely, that all flat-headed ones are venomous—is undoubtedly a most erroneous one. Take all the Boas and Pythons, for instance: all with flattened, pointed, and (with the single exception of one Tree-boa, *Epicrates cenchris*) triangular heads. That of the Anaconda, too, is flat, but more rounded in outline; so is the Dalmatian *Elaphis*, the largest European Snake; so are certain species of *Zamensis*, *Dromicus*, *Dipsas*, and numerous other *Colubrinæ*. On the other hand, many Vipers and most of the *Elapidæ* have rounded, convex, or even bulbous heads,

the beautiful Coral Snake or Chequered Elaps (*E. lemniscatus*) being a striking example. Nor would a diametrically opposite test hold good, as occasionally happens where popular theories are in question. The majority of the Colubers are round-headed, while all the *Crotalidæ* are exceedingly flat and angular; some Vipers, as the River-jack (*Vipera rhinoceros*), the Nose-horned Viper (*V. nasicornis*), and a species of *Causus* are flattened and three-cornered as well, but slope with a curious sort of pyramidal declension from the median line to the margin. There are flat-headed snakes and round-headed snakes of both kinds, but between the extremes we find every possible gradation; besides, as we shall see presently, some are much flatter at times than they usually are.

Brilliancy of colour is accepted by many people as an indication of the baneful character of the reptile, but this is equally fallacious; indeed, though no approach to a rule can be laid down, I think it is quite the other way in the greater number of cases. Many deadly or dangerous serpents are certainly of very brilliant hue; the two African Vipers, above quoted, the Curucucu or Bushmaster (*Lachesis mutus*), the Death-adder (*Pseudechis porphyriacus*) of Australia, and Blue Viper (*Bungarus lineatus*)—so-called—of India, the Coral Snake, and most of the others belonging to the *Elapidæ*, may be cited as examples. But there is nothing very gorgeous about the Cobra-di-capello, or Hamadryad, or Carpet-viper; while the large group of Rattlesnakes, the Water-viper, Copper-head, Fer-de-lance, Jararaca, Vibora-de-la-cruz, and other *Crotalidæ*, have not a bright tint amongst them. The Viper of the British Islands varies from dull brown to black. Then look at the vast number of innocuous species which present almost every colour of the rainbow in all degrees of intensity. What can rival the vivid green of *Philodryas viridissimus*, the blood-red upper surface of *Scytale coronatum*, or the vermilion, yellow, white, and black of *Oxyrhopus formosus*, *trigeminus*, *doliatus*, and *petolarius*? or the variegated pattern of *Pelophilus madagascarensis*, or even the Common Boa, which Laurenti named *Constrictor formosissimus*? Hundreds of other specimens might be instanced. Some—such as D'Orbigny's *Heterodon*—are dark on the back, but beautifully marked underneath; others again, though uniformly dark in tint, glow with a most brilliant metallic lustre, as the plumbeous and pointed

Tree-snakes. The South-American Rat-snake (*Spilotes variabilis*) presents a shining black, barred with brightest yellow, and the East-Indian *Coryphodon blumenbachii* glistens like silver.

It is difficult to see how or why an idea should have originated that all those having short or blunt tails belong to the dangerous class. No basis whatever exists for such a dictum; unless it be that in many tropical countries a great horror prevails of certain creatures which are reputed to be fearfully venomous, and which certainly have such very blunt tails that they are often known as Two-headed Snakes, being accredited with a head at either extremity, and the power of going ahead and astern with equal facility when burrowing in the earth or mud in which they are found. These really are not snakes at all, but *Amphisbænæ*, and perfectly incapable of doing any mischief. A thick upper jaw looks bad, but is not to be trusted as a universal indication of danger.

All snakes which wear any peculiar external appendages may certainly be looked upon with well-grounded suspicion, but these are comparatively so few in number that such appendages can be regarded in this light as little more than distinguishing marks of certain species. I am not aware that there are any harmless horned snakes, though there are some which have something or other analogous to such an ornament—for instance, the *Dryiophidæ*, with their elongated, pointed snouts, and the Heterodons, in which the rostral shield is thickened into a prominent, recurved trihedral pyramid. A horny or bony appendage to the tail should also put us on our guard, whether it assumes the form of the rattle belonging to the many different genera of Rattlesnakes, or the claw-like termination of the Curucucu, or the Lance-headed Snakes. Of less diagnostic value is the possession of an expansile hood—though, naturally, in all these cases we should be guided according to the country in which we happen to be at the time, and the reptiles we may expect to meet there. The Indian and Egyptian Cobras, and the Hamadryad are *the* hooded snakes of common notoriety, but there are other less celebrated ones in which the dilatation is not so well-marked; nor is this characteristic confined to poisonous ones. The Caninana (*Spilotes pœcilostoma*) of Brazil hisses, rears its head, and spreads a very respectable hood when angry. The word "hood," however, hardly conveys a correct impression of the appearance to anyone who has never witnessed the action; "fins"

might do so more appropriately. The phenomenon is really due to the anterio-posterior flattening of the neck—if we may speak of a snake's neck, for in anatomical law it has none; this flattening is brought about by the extension of the ribs: these being extremely mobile in their articulation with the vertebræ, and not fastened down to any breast-bone underneath, admit of being drawn out at right angles to the spine, stretching the skin and subjacent soft tissues to a corresponding extent. But this power is actually limited in the specially-noted "hooded" snakes in comparison to what it is in many others which flatten their whole bodies, throughout the entire length to which the sides are supported by ribs, in the same way! All snakes, indeed, possess this faculty in some degree; but striking examples of it are afforded by the Puff-adder (*Vipera arietans*), *Liophis merremi*, and, perhaps above all, by the Leaf-marked Snake (*Xenodon rhabdocephalus*). This last not only flattens its diamond-patterned body until it becomes a mere ribbon, with the back-bone visibly jutting up in the middle line, and possibly a recently-swallowed frog sticking out like a tumour, but positively expands its normally convex head in like manner; so that the whole animal looks as if a cart-wheel had passed over it longitudinally. This hideous habit combined with its decidedly truculent aspect have given it a bad reputation, and, in some places, the name of "Spreading Viper," though it is quite harmless.

In the absence, then, of any outward and visible sign to lead us to infer with certainty the presence or absence of the death-dealing teeth, there is only one way of making sure on the point; and that is, to open the snake's mouth and see if they are there. Nor need anyone be alarmed at the idea of doing this; it is by no means difficult or dangerous. If a serpent be held firmly behind the head—whether gripped in the hand, or pressed forcibly on the ground with the foot, or held by a loop of string or tape rove through an eye in the end of a stick (which is the very best and safest way of catching them)—it will open its jaws of its own accord and keep them widely distended in its efforts to bite, and a deliberate inspection of the interior of the mouth may thus be obtained. Perhaps an exception to this should be made in favour of our common Ringed Snake, which, as far as I have seen and heard, can never be induced to bite. Serpents allied to the Viper and Rattlesnake have movable fangs, which will be seen to

become erect, webbed to the gums by a fold of mucous membrane, or they may be brought down by drawing a pencil along the teeth from behind forwards; the *Elapidæ* have fixed fangs, permanently erect. *All* snakes have ordinary teeth, of course—very long and sharp ones, too, sometimes.

Is *this* test absolutely infallible after all? One would feel inclined to say that ocular demonstration must bring conviction; nevertheless, our eyes deceive us at times when peculiar combinations of appearances favour the cheat, and we must allow that even in this there are certain circumstances under which the apparent visibility of fangs may be misleading. It is well known that some innocuous snakes have a long, fang-like tooth, standing apart from the rest, though destitute of any vestige of a poison-sac or duct. Such a thing might by itself easily give rise to mistakes. But Miss Hopley has recently pointed out the remarkable fact that these teeth are erectile, like viperine fangs, in a species which has already been mentioned, *Xenodon rhabdocephalus*. Under the circumstances, a correct diagnosis could only be arrived at (supposing the specimen to be unknown) by an accurate knowledge of the proper position of true fangs; or—still more certainly, but less to be recommended—by the crucial experiment of allowing the reptile to bite.

OCCASIONAL NOTES.

Wild Cat in Assynt.—I have had presented to me from Scotland an unusually fine specimen of the genuine Wild Cat. It is an old male, with the teeth blunted from age, and one of the canines broken short off. The following is the account given of it by my brother-in-law, the Rev. Geoffrey Hill, who sent it to me:—"In the first week of May, 1879, I was passing through the parish of Assynt, in Sutherlandshire, when I met one of the game-keepers on the Duke of Sutherland's estate. I asked him whether he had trapped any cats during the winter. He said he had caught but one, and that he had the skin of it in his house. I bought it of him, and he promised to let me have the next cat that he killed. I had not been in Edinburgh more than a day or two when I received a letter from him telling me that the very morning after he saw me he had succeeded in trapping the finest cat he had ever caught: this he sent me. During my

conversation with him he told me that cats were some years ago much more numerous than at present—that, in fact, they were now becoming scarce; and this is natural, for he sets traps for them assiduously every winter, and besides this there are now four gamekeepers for the same tract of country for which some few years ago there was only one. He himself, he told me, trapped eighteen cats during his first winter—that is, fifteen years before; and the innkeeper of the place, who was the gamekeeper before the present one, told me that he had trapped sixteen cats in a fortnight, but that was, he said, some thirty years ago. The innkeeper also told me that he was the first gamekeeper appointed to that part of Sutherlandshire. Before his time no persistent efforts were made to exterminate cats, but there was a class of men called 'fox-hunters,'—or 'hunt-foxers,' as I once heard them termed by a man who spoke little more than his native Gaelic,—corresponding to the English vermin-catchers, who were employed by the farmers to keep down the number of cats when they became troublesome. I was told by this innkeeper that the male Wild Cats paired with the female domestic cats, and that he had had in his house kittens which were a cross between the wild and the domestic breed." The keeper, my brother adds, had great difficulty in killing this cat while in the trap, and it seriously injured the dog which he had with him.—Arthur P. Morres (Britford Vicarage, Salisbury).

Marten Cat in Norfolk.—I should like to mention the capture of one of these animals, which I believe has not hitherto been recorded. It was trapped by a former keeper of ours, on Kelling Heath, in 1864. The specimen is an old female, and is I believe the last but one that was killed in Norfolk. It was stuffed by Travis, of Saffron Walden. Length about eighteen inches and a-half, tail about ten inches and bushy, throat yellowish white, ears large and erect. I saw a Badger, in the flesh, which was caught in a rabbit-trap on Winterton Warren, between 1869 and 1874, but cannot remember the exact year. Otters are still fairly numerous in the Broad district. A pair which nested in the boat-house on the island in Somerton Broad had two young ones of a distinctly different shade of colour, one much darker than the other. Is this a general sexual distinction in the garb of the young of this quadruped?—M. C. H. Bird (The Vicarage, Canvey Island, South Benfleet.)

[The last Marten taken in Norfolk, we presume, was that recorded by Mr. F. Norgate (Zool. 1879, p. 171) as having been killed in the parish of Havingham, in the summer of 1878.—Ed.]

The Badger in Oxfordshire.—Notwithstanding great persecution, the Badger is still not very uncommon in North Oxfordshire and the adjoining parts of the counties of Northampton and Warwick. A taxidermist in this town has, during the past year, preserved no less than ten specimens,

and, I am sorry to say, I have heard of several others having been killed during the same period. They breed regularly on the small remaining portion of Todmorton Heath, about six miles from Banbury. I am informed that one of the largest of those procured weighed forty pounds; this was late in autumn, when they would of course be very fat.—Oliver V. Aplin (Banbury, Oxon).

The Whiskered Bat (*Vespertilio mystacinus*, Leisler), in Yorkshire.—I have had the pleasure of adding this species to the Yorkshire list of mammals, three specimens, from three different localities, having passed through my hands within the last nine months. The first, from Great Mytton in Ribblesdale, is recorded in the 'Handbook of the Vertebrate Fauna of Yorkshire.' A second was shot near Harrogate, in August, 1881, by Mr. John Grange; and I have just received a third in the flesh from Mr. James Ingleby, of Eavestone, near Ripon, who found it in a cavern near that place, which is a favourite haunt of bats. He tells me that it was the only one he found in the cave on his last visit, and that it is quite new to his neighbourhood, he not having seen one of the species before. Of other bats, the Noctule, the Pipistrelle, and the Long-eared Bat are all of more or less common occurrence, and generally distributed throughout the county, and the wonder to me in the case of the Noctule is, considering its wide diffusion over Yorkshire, even as far north as Whitby and Northallerton, that it should not be known to inhabit the counties of Durham and Northumberland. None of my correspondents have as yet been able to ascertain that Daubenton's Bat (which, judging from Bell's 'British Quadrupeds,' is extremely likely to be found) occurs in the county of York. I have indeed had it reported, but no specimens have been forthcoming.—Wm. Denison Roebuck (Sunny Bank, Leeds)

Bottle-nosed Dolphin in the Colne.—On March 12th two Dolphins were observed in this river, near Wyvenhoe Wood, and, after several attempts, one, a female, was shot. On examination she proved to be of the Bottle-nosed species, *Delphinus tursio*. She was seven feet six inches in length to the bifurcation of the tail. Examinations of captured Porpoises would probably show that this species is not nearly so rare as is generally supposed.—Henry Laver (Colchester).

Albino Grouse in Mayo.—From my friend Mr. J. H. Scott, of Ballina, I have received (as a loan for our museum), a very singular variety of Grouse. It is a female bird, shot early last December, on a moor called Lugnalettin, near Ballycastle, on the borders of Erris, and was killed by Mr. A. Malley, when shooting on the moor which belongs to Mr. Scott. The bird is very pale in the general markings, and the quills are much paler than usual.

Not having ever seen or heard of such a variety, I sent the skin to Professor Newton, of Cambridge, who identified it as an uncommon variety of the Grouse, which he has seen from several localities in Scotland; but hitherto this form has not been recognised in Ireland. It is, as I learn from Professor Newton, the variety entered as "*persicus*," in Gray's 'Hand-list,' having been first described by Mr. G. R. Gray, under this strange name, through some misapprehension of its patria. Our museum is fortunate in holding possession, though only on loan, of so rare and interesting a specimen. Would that all Irish naturalists would follow the liberal example of Mr. Scott, and we should soon have before the public all the rarities as they occur.—A. G. More (Curator of the Dublin Natural History Museum.)

Great Grey Shrike in Devon.—Early in March an immature specimen of the Great Grey Shrike was brought to me in the flesh. It was shot at Morchard Bishop, in North Devon, about thirteen miles N.W. of Exeter. The only other instances of the occurrence of this Shrike in this county that are known to me are as follows:—One at Topsham, 1839 (F. W. L. Ross); one at Exeter, 1845 (Dr. W. R. Scott); one at Torquay, July, 1865 (R. Cumming); one near Honiton, January, 1871; and one between Lydford and Bridestowe, November 15th, 1876 (J. Gatcombe).—W. S. M. D'Urban (Albert Memorial Museum, Exeter).

Great Grey Shrike in Breconshire.—I am indebted to Mr. Roche, of Tregunter, our present high sheriff, for the particulars regarding the occurrence of this rare visitor; it was seen both by himself and his brother at Tredustan, near Tregunter, in November last, and was at once recognised, Mr. Roche having often seen the Great Grey Shrike on the Continent.—E. Cambridge Phillips (Brecon, S. Wales).

Great Grey Shrike near Barnsley.—On January 7th I saw, in the hands of a bird-stuffer of this town, a fine specimen of the Great Gray Shrike (*Lanius excubitor*), which had been shot the day before "while chasing insects." It is a rare winter visitor to this neighbourhood. In Mr. T. Lister's paper on the 'Birds of the Barnsley and South Yorkshire District,' six occurrences only of this bird are noted near here since 1831, none of which are of recent date. The Snow Bunting has been observed here this winter, though in less numbers than last year; only three specimens have, I believe, been reported, one of which was in winter plumage.—Wm. E. Brady (1, Queen Street, Barnsley).

Notes on Birds in Nottinghamshire.—During the past autumn and winter very few birds of the rarer kinds have come under my notice. I may mention the following:—An Osprey was killed in October last at Clawson; a Peregrine stayed about the woods here for a week, and I could have shot

it had I been so disposed: I saw another—perhaps the same bird—on the 26th February. Two or three Rough-legged Buzzards were seen during the autumn, and a Buffon's Skua was shot near Ollerton in November; a Long-tailed Duck was also obtained during that month on the Trent near Nottingham, and a Gadwall was sent to a Nottingham birdstuffer from Lincolnshire. I purchased of Stanley, a naturalist at Nottingham, a beautiful specimen of the Bee-eater, which was shot in July, 1879, in a pea-field at Ingoldsby, near Bowes, in Lincolnshire: though three years back, so rare a bird is worth recording. This has been one of the best partridge seasons and the worst wildfowl winters I have ever known.—J. Whitaker (Rainworth Lodge, near Mansfield).

Variety of the Common Snipe.—Some time ago Mr. Vingoe forwarded me a Snipe from Penzance, which he claims to be a distinct species. He tells me he has obtained more than thirty examples in his neighbourhood, that sportsmen of the locality are now well acquainted with it, and many have been sent him for preservation. The peculiarity of this Snipe consists in its tail, which is much longer than that of the Common Snipe, and is square instead of rounded; it is also a somewhat smaller bird. The length of tail in the Common Snipe is two inches and two-eighths; in Vingoe's Snipe the tail is two inches and five-eighths, the two outer tail-feathers being longer than the next adjoining. Some time ago a Snipe answering this description was termed *Scolopax Brehmi*, and after a time was considered to be merely a Common Snipe with the central feathers not fully grown in the tail. This explanation, however, will hardly do for the Penzance birds, as it would require their tails to develope into full an inch more than the average length of tail in the Common Snipe. I do not myself regard this variation in the tail-feathers as of specific value, and probably many long-tailed Snipes have been shot and pocketed elsewhere without notice; only, if they are as plentiful in other localities as they appear to be about Penzance, they must constitute a numerous race.—Murray A. Mathew (Stonehall, Wolf's Castle, Pembrokeshire).

The "Churring" of the Nuthatch.—The idea of the noise called by Mr. J. Young "churring" (p. 113) being caused by the Nuthatch is quite new to me. Nuthatches are numerous here, and the Small Spotted Woodpecker not infrequent. I have on several occasions (after watching with great care) seen the latter in the act of causing this noise, during which the head vibrated with great rapidity, and (as I believed then, though I am told by others that it is not so) apparently causing the noise by the rapid beating of its beak against the hard dead spur of a broken limb of the tree. Before I traced the noise unmistakably to the Woodpecker, I could easily have persuaded myself that it was caused by any bird on which my eye happened to light, in the immediate neighbourhood whence the noise

appeared to come. The sound is undoubtedly ventriloquial (therefore probably not caused by vibration of the beak upon the tree), and it appears to come from any spot to which the eye or attention is called by other circumstances. On one occasion a friend of mine was watching with me, while the noise was going on with great force and distinctness, apparently somewhere in a tree close to us, at one moment in one spot, and then in another; just then a Tree-creeper caught our eyes, and at once we both exclaimed, "That is the bird!" and it was not until the Creeper had gone quite away, while the noise still continued, that we felt we were mistaken. I would ask whether Mr. Young may not have thus groundlessly credited the Nuthatch with this noise.—O. P. CAMBRIDGE (Bloxworth).

ABNORMALLY COLOURED BIRDS IN NOTTINGHAMSHIRE.—I have noticed the following varieties in this neighbourhood:—A cream-coloured Yellow-hammer, with the markings of a sandy red colour, also a light yellow-coloured bird of the same species; the former is in my possession, but not the latter. There are also in this neighbourhood a white Rook and a white Wood Pigeon; this bird, which has been about for two years, is marked on the back and wings with a sandy colour. I saw in the summer a white Swallow and a pied Hedgesparrow. A white Tufted Duck was seen twice on a pond here, and there have been several pied Sparrows about. I think it is worthy of note that so many abnormally coloured birds should have been observed in so short a time as six months within a mile of this house. During the last few months I have also been fortunate in obtaining specimens of birds in abnormal plumage, and I think the following are worth mentioning:—Albinos of the Blackbird, Wood Wren, Hedgesparrow, Swallow and Wagtail, pied Whinchat, cream-coloured Yellow Wagtail, one pied and two smoke-coloured Chaffinches, a cream-coloured and a white Thrush, one sandy-coloured and two cream-coloured Larks, two pied Corn Buntings, an albino Flycatcher, an albino Jay (shot by myself near here), a light brown Blackbird, a Yellowhammer with white bars on wing, a sandy-coloured Waterhen, two pied Swifts, one pied Swallow, one albino and several pied Sparrows, and a sandy-coloured Starling.—J. WHITAKER (Rainworth Lodge, near Mansfield).

DIPPER NESTING IN NORTH OXFORDSHIRE.—An innkeeper in this town has in his possession a Dipper's nest, together with the old birds and two eggs. The nest was taken on the banks of the Cherwell, near Claydon, in the north of this county, in the month of May, six years ago. He says that the male bird was shot by a man who, not contented with that, afterwards watched the hen to the nest and caught her alive. When brought to him the nest was surrounded and partly covered with growing vegetation—reeds, moss and grass—some of which seemed as though planted on the sides and dome. It contained four eggs, and was built close to the water (the lower

part indeed touching it), in the stump of one of the small old thorn bushes which grow commonly along our streams. The occurrence seems the more strange because (as you pointed out in 'The Zoologist' for last month with regard to the eastern and southern streams generally) our streams are *generally* sluggish, and have rather low earthy or muddy banks, never approaching a *rocky* bank. The nest was preserved in the stump as it was found, and this is the only instance I know of the Dipper breeding in North Oxfordshire.—Oliver V. Aplin (Banbury, Oxon).

A Melanism of the Redwing.—On the 1st January, 1881, a curious variety of the Redwing was caught by a man netting birds at Beeston, near Nottingham. The plumage is as follows:—Head and back dark chocolate-colour; tail dark hazel, with a slight tinge of grey-blue near the ends of the two outer feathers; wings light brown on the outer sides of the flight feathers, and blackish brown on the inside, the first being of a slaty-blue, the last four the same colour, and also some of the feathers on the shoulder, the outside ones of which have black edges to them; the breast dark chocolate, with black and yellow markings. This bird I have shown to Prof. Newton, Messrs. Dresser, Borrer, and Sharpe, also to Mr. Tindall, of Knapton Hall, Yorkshire (who thinks it is the young of the Blue Thrush). Messrs. Dresser and Sharpe consider it to be melanism of the Redwing. —J. Whitaker (Rainworth Lodge, Mansfield).

Uncommon Birds in the Orwell.—On the 6th September last a Cormorant was seen in the water near Pin Mill, but although fired at and badly wounded managed to escape. On the 7th October three Eider Ducks were seen near Levington Creek, two of which were shot, and the third obtained near Harwich on the following day. All three were in immature plumage. An indifferent specimen of the female Long-tailed Duck was shot in the Bathing-place Creek, quite close to Ipswich, on the 25th October, and on the 24th November, during a gale from the south-east, another Long-tailed Duck was shot in the same creek. This was also a female, but a much better specimen than the one first obtained.—J. H. H. Knights (Ipswich).

Little Crake in Ireland.—Mr. A. G. More states (p. 114), that no occurrence is known of the Little Crake in Ireland. I may mention that there is a specimen of this bird in the collection of Canon Tristram, which was killed at Balbriggan, and which I have had the pleasure of seeing many times, and about the correct identification of which there is no doubt. There is a record of it in 'The Zoologist' for 1854 (p. 4298.)—J. H. Gurney Jun. (Northrepps, Norwich).

Falconry in Wales.—In answer to the remarks of Mr. F. H. Salvin (p. 117), I beg to assure him that I knew Morgan Williams well. He has

been dead more than ten years, aged over seventy, and therefore must have been over forty years of age when he was a pupil of J. C. Belany. I always understood him to say that he flew hawks when quite a young man, and it was probably to acquire the higher branches of the craft that he became the pupil of J. C. Belany. I could give Mr. Salvin stronger proof if needed, but I think I have said enough to show that I have made no mistake, and I still must consider Morgan Williams as "one of the last of his race."—E. CAMBRIDGE PHILLIPS (Brecon, S. Wales).

NEWTS IN THE TADPOLE STAGE IN WINTER.—I should be glad to know if it is not an unusual circumstance for the Common Smooth Newt, *L. punctatus*, to pass the winter in the tadpole state. I found several of these tadpoles in a pond here at the latter end of February, in various stages of development; some having the limbs in a rudimentary state, others with those organs nearly perfect; they all retained their branchiæ in a more or less complete state. Out of several which I kept in a glass vessel there are a few with the branchiæ still remaining, but in most cases they very soon became absorbed, the growth and development of the limbs being proportionately rapid. I found during the previous winter a perfectly developed Newt of the same species, hybernating under a stone, close to this pond, the size of which was so extremely small that the above-mentioned tadpoles were at least three times as large. They must I think have been very late hatched individuals. This species seems to be liable to considerable variation as regards colour and markings, this being the most observable in the females; some of the difference may, however, be owing to the recent casting of the skin or the reverse.—G. T. ROPE (Blaxhall, Suffolk).

THE BLACK FISH (*Centrolophus pompilus*) IN THE COLNE.—In the March number of 'The Annals and Magazine of Natural History' (p. 204), Dr. Günther, in noticing the occurrence of this fish at the mouth of the Colne in November last (as recorded by Dr. Laver in 'The Zoologist' for February, p. 75), remarks that "the majority of British specimens of this fish have been obtained on the coast of Cornwall, and so far as he is aware this is the first instance known of the fish having wandered *so far eastwards*." It may be well therefore to note that in Day's 'Fishes of Great Britain and Ireland' (part ii., p. 113), instances are recorded of the occurrence of this fish at Lossiemouth, Elginshire; on the Northumberland coast; and at Redcar, on the Yorkshire coast. The occurrence of the last-named specimen was recorded at page 3504 of 'The Zoologist' for 1852.—J. E. HARTING.

Do Salmon spawn in the Sea?—Rondeletius and also Gesner, who wrote upon the Salmon upwards of three and a quarter centuries ago, were both upholders of the doctrine that Salmon spawned in the sea, which, were it believed in and acted upon, would be disastrous to our Salmon fisheries, as it might be advanced that these fishes could as well breed in the ocean as in rivers; consequently on their behalf no necessity arises for keeping our fresh waters pure, or having free passes in our streams in order to allow them to reach their spawning-beds. It was probably from such views sprang the notion of the parr being a distinct fish, and even now there are some who doubt whether all our last-springs are the young of *Salmo salar*. Willughby, in his 'History of Fishes,' published in 1686, lib. iv., adduces his reasons for disputing the correctness of Rondeletius's and Gesner's opinions; while Pontopiddan, in 1755, in his 'Natural History of Norway,' returns to Gesner's views, which are now again brought forward as novel. Pontopiddan observed that "the Salmon unquestionably breeds in the sea, though it is not entirely to be denied but that they may sometimes breed in rivers also, for they are found in the midst of Germany and the upper parts of the Rhine, about Basel; but we are well assured that the Salmon chiefly ejects its roe at the mouths of rivers, where they empty themselves into the sea, or a little beyond in the salt water, in this manner: they bend themselves crooked in order to eject the roe at an aperture under the belly, and in the meantime they stick their heads down in the sand that they may have the more strength. The male comes presently after to keep off other fish from devouring the roe, and he then bends his head towards the tail and ejects his sperm upon the roe" (pp. 131, 132). A correspondent of 'Land and Water,' May 28th, 1881, observed, "I also took a samlet last month which was assuming the smolt dress, the ripe milt from which exuded on my fingers—a circumstance common in the *autumn*, but which has never previously come under my observation in a spring smolt." Probably almost every healthy male parr, when assuming its smolt dress in the autumn, has either ejected its milt in the river, or it is still present at the time he is migrating into the sea. Salmon ova can be fertilised from the milt of a parr, as observed by Willughby and proved by Shaw, while, should a flood carry down these fishes to the sea, it does not seem a very unlikely occurrence that if captured their milt or roe might be still not ejected. Irrespective of this Buckland and others have observed that should this state of the rivers be such—due to pollutions or insufficiency of water—that *Salmonidæ* are unable to ascend they may drop or deposit their ova in the sea or at the mouths of rivers; but suppose it is thus deposited, "experiments have proved that the presence of salt-water is fatal to the development into life of the fertilising property of the milt, as also of the impregnated egg, if it come in contact with it."—Francis Day (Pittville, Cheltenham).

The Chirp of the Cricket.—The rate of the Cricket's chirp varies with the temperature, becoming faster as the latter rises. A writer in the 'Salem Gazette' (Mass.), has given the following rule for estimating the temperature of the air by the number of chirps made by Crickets per minute:—"Take seventy-two as the number of strokes per minute at 60° temperature, and for every four strokes more add 1°; for every four strokes less deduct the same." In a letter to the 'Popular Science Monthly,' Margarette W. Brook gives an account of observations she made, with a view to testing this rule, on twelve evenings, from September 30th to October 17th. Her column of temperature, as computed by the rate of vibration, shows a close agreement with that of temperatures recorded by the thermometer.

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

Zoological Society of London.

February 21, 1882.—Prof. W. H. Flower, 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, 1882, and called special attention to a young male Gayal, born in the Gardens, January 6th, being the produce of the fine pair received in exchange in October, 1880, from the Zoological Gardens, Calcutta; and to a young female Markhoor, *Capra megaceros*, from Afghanistan, presented by Lieut.-Colonel Oliver B. C. St. John.

Mr. F. Moore read a paper containing an account of the Lepidoptera collected by the Rev. J. H. Hocking, chiefly in the Kangra District N.W. Himalaya, with descriptions of new genera and species.

A communication was read from Mr. G. A. Boulenger, in which he gave the description of a Frog, *Phyllomedusa hypochondialis*, lately living in the Society's Gardens. This Frog has been obtained at Pernambuco, and was belived to be the first example of the species that had reached Europe alive. Attention was drawn to the peculiar coloration as being worthy of notice, it not having been described before.

Mr. Oldfield Thomas read a paper containing the descriptions of a small collection of Rodents which had been obtained by the late Mr. C. J. Andersson in Damara Land and in the neighbouring countries. The collection contained examples of a new species of Mouse, which was proposed to be named *Mus nigricauda*.

Mr. W. A. Forbes gave a description of the pterylosis of *Mesites*, and

made some remarks on the position of that genus, which he considered to be most nearly allied to *Rhinochetes* and *Eurypyga*, though all these three forms should be referred to different families.

Prof. St. George Mivart read a series of notes on the anatomy of the Canada Porcupine, *Erithizon dorsatus*.

March 7, 1882.—Prof. W. H. Flower, LL.D., F.R.S., President, in the chair.

The Secretary exhibited and made remarks on some living examples of *Helix hæmastoma* from Ceylon, which had been forwarded to the Society by Mr. J. Wood-Mason.

Mr. W. A. Forbes read a paper on certain points in the anatomy of the Great Anteater, *Myrmæcophaga jubata*, as observed in two adult female specimens that had lately died in the Society's Gardens. The arrangement of the ducts of the submaxillary glands and their relations to the stylo-hyoid muscle, the composition of the anterior cornu of the hyoid bone, the presence of clavicles, and the structure of the brain and of the female reproductive organs were amongst the chief features touched upon.

Capt. G. E. Shelley read an account of the birds collected by Mr. Joseph Thomson while engaged on an exploration of the River Rovuma, East Africa. The collection contained examples of forty-three species of birds, among them being two new species, proposed to be called *Merops Dresseri* and *Erythrocercus Thomsoni*.

A second paper by Capt. Shelley gives an account of a series of birds recently collected by Sir John Kirk in Eastern Africa. This collection was made chiefly in the neighbourhood of Mambois, on the eastern slopes of the mountain range which separates Ugogo from the Zanzibar province.

March 21, 1882.—Prof. W. H. Flower, 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, 1882, and called special attention to four Warty-faced Honey-eaters, *Xanthomyza phrygia*, and two Musk Ducks, *Biziura lobata*, purchased February 8th; also to a young Tapir, born in the Gardens February 12th, and thriving well; and to a female Mule-deer, *Cervus macrotis*, from the Western United States, presented by Dr. J. D. Caton, and received February 15th.

Mr. J. E. Harting exhibited and made remarks on a mummified bird of the genus *Sula*, and some eggs from the guano deposit of an island off the Pacific coast of South America.

Mr. Sclater made some remarks on "lipotypes," a new term which he considered convenient in order to designate types of life the absence of

which are characteristic of a particular district or region. Thus *Cervus* and *Ursus* were "lipotypes" of the Æthiopian Region.

Dr. A. Günther exhibited and made remarks on the skin of a pale variety of the Leopard from the Transvaal.

Dr. Günther also exhibited and remarked upon a specimen of a new Turtle (*Geomyda*) from Siam.

Mr. R. Bowdler Sharpe exhibited a specimen of a Goldfinch from Hungary, sent to him by Dr. J. von Madarasz, of the Museum of Buda-Pesth, which that gentleman had described as *Carduelis elegans-albigularis*. Mr. Sharpe observed that a white-throated variety of the Goldfinch was by no means unknown in England.

Dr. Hans Gadow read a paper on some points in the anatomy of *Pterocles*, with remarks on its systematic position. Detailed descriptions of the alimentary organs and of the muscles were given. The author took the opportunity of discussing the classificatory or systematic value of the cæca in birds. Then, after pointing out the difficulty of placing the Sand Grouse in the Avian system, he came to the conclusion that the *Pterocletes* (Sclater) should be considered as a group co-ordinate to the *Rasores*, *Columbæ*, and *Limicolæ*, between which they formed a connecting link.

Mr. W. A. Forbes read a note on a peculiarity of the trachea of the Twelve-wired Bird-of-Paradise, *Seleucides nigra*, as observed in a male specimen that had recently died in the Society's Gardens.

Mr. R. Bowdler Sharpe read a note on the *Strix Oustaleti* of Hartlaub, and pointed out that this bird was none other than the Grass Owl, *Strix candida*.

Capt. G. E. Shelley gave the descriptions of some new species of birds which had been obtained in the neighbourhood of Newcastle, Natal. These the author proposed to name *Anthus Butleri* (a very interesting Yellow-breasted Pipit), *Sphenœocus natalensis* (the Natal representative of *S. africanus*), and *S. intermedius* (an intermediate form from Kaffraria).

Messrs. Godman and Salvin read a paper in which was given the descriptions of some new species of Butterflies of the genus *Agrias*, from the Valley of the Amazons.

Mr. E. J. Miers read an account of a collection of Crustaceans which had been made by M. V. de Robillard at the Mauritius. The author called special attention to a fine Spider Crab dredged up from a depth of eighty fathoms, which he proposed to name *Naia Robillardi*.—P. L. Sclater, *Secretary*.

NOTICES OF NEW BOOKS.

Rough Notes on the Birds observed during twenty years shooting and collecting in the British Islands. By E. T. Booth. With plates from drawings by E. Neale, taken from specimens in the Author's possession. 4to, Part I. London: Porter, Tenterden Street; and Dulau & Co., Soho Square. 1881.

It may well be supposed, after so many years' personal observation of many of the rarer British birds in their natural haunts, that Mr. Booth must have a considerable store of information on what the late Mr. Timbs would have called "things not generally known."

The public are already indebted to him for the privilege of being able to inspect what is in its way one of the most instructive zoological museums in this country, namely, his own museum of British birds, every one of which has been procured by himself, and preserved and cased under his direction. A printed catalogue, which is placed at the disposal of visitors, gives the names of the species in the different cases, together with the locality where each was obtained; but something more than this seemed needed. One longed to know under what circumstances some of the rarer species were met with, in what sort of situation, and how obtained; for their shyness of habit or wariness by nature seemed to indicate that a great deal of trouble and skill must have been expended before they were eventually secured.

As many of them also were tracked to their nesting-haunts, and their eggs and young carefully observed and described in the collector's note-book, it was reasonable to infer that Mr. Booth could clear up sundry disputed points, or rectify, from personal observation, errors into which even authors of repute have been betrayed for want of the opportunities of observation which he has enjoyed.

Fortunately for naturalists there appears to be no difficulty in satisfying their curiosity, for Mr. Booth has kept daily records of his experiences, and a reference to his journal enables him to avoid all such mistakes as might occur from trusting solely to memory.

In the thin quarto now before us we have the first part of a work the merit of which lies in its being entirely original. We have been so long accustomed to refer to standard works of reference, which, though excellent of their kind, are after all but compilations, that it is refreshing to take up a book in which the writer tells us nothing but what he has himself observed, and in most cases noted down on the spot. He commences with the birds of prey, and, in a few pages of transcripts from his journals, gives us more real information about Eagles, Ospreys, and Kites, their haunts, food, changes of plumage, mode of nesting, and so forth, than is contained in any half-dozen books on British birds that might be selected.

About many of the rarer species, and more particularly Eagles, there is a vast amount of misconception prevalent amongst those who have never had the opportunity of observing them in a state of nature. The Golden Eagle, for example, is usually styled "a noble bird," "of majestic flight," disdaining the humbler quarry, or carrion that crows and buzzards delight in; and so forth. But Mr. Booth, from his own observation, has a very different story to tell. Writing of this bird, he says:—

"The Golden Eagle may, without fear of contradiction, I think, be termed essentially a lazy and indolent bird, unwilling or unable to capture for himself any prey that would require much exertion on his part. Hares or rabbits, when surprised in the open, most probably fall easy victims, while lambs or fawns are far too feeble to cause him any great amount of trouble. I cannot call to mind a single instance where I have observed him in pursuit of any winged game that was not partially crippled by shot, while I have noticed scores of times that he has contented himself by making an ignoble meal off some wretched crow or other vermin that was struggling in a trap.

"A keeper in the north related to me the following incident; and, as it helps to illustrate the character of the bird, it may not be out of place:—

"He was on his rounds visiting the traps, when his attention was attracted by an Eagle which was rising a short distance in the air and again dashing down. On carefully approaching the spot (a rough and strong gully, where he was able to obtain a view), he discovered a Wild Cat held by a clam, and the Eagle swooping down, as he imagined, attempting to seize the cat. Every time the bird approached with outstretched talons the cat sprang forward to the fullest extent of its chain, and the Eagle sheared off. Crawling still nearer, he was at last observed, and the bird reluctantly sailed

away to a range of hills above the spot where the encounter had taken place. Making sure that the Eagle would return speedily, he killed the cat and left it as a bait; then, resetting his trap, he threw the rabbit which had been his former bait on one side, and rapidly left the spot. Returning after a few hours, quite confident of finding the Eagle in the trap, he was greatly surprised to discover everything apparently untouched. It was only when he had removed the cat, whose skin he required, and looked out for the bait previously used, that he noticed the rabbit had disappeared from where he had flung it in the morning, and was nowhere to be found. Had he only thought for a moment, it ought to have been clear to him that the Eagle would never have attempted to interfere with the cat (a true Wild Cat is far too rough a customer to be tackled with impunity), and the hungry bird was simply endeavouring to reach the rabbit; even this proceeding the cat most forcibly resisted, and it was not till he returned and found everything quiet that he managed to search out the prey he was originally in quest of and then make off."

With regard to the nesting-haunts of this species, Mr. Booth says:—

"The situations chosen by the Golden Eagle for breeding purposes vary considerably. I have never seen their nests so open and exposed to the storm and wind as those of the Sea Eagle; they appear, in most instances, to seek a more sheltered and hidden position. At times the eyrie may be in the face of a precipitous range of rocks, utterly inaccessible, except to those well acquainted with the use of ropes; but more frequently it requires but little skill to scramble within a few feet of the spot, and, with the assistance of a single line from above, to reach the nest itself. Numbers of ledges showing more or less of the old and weather-beaten nests have been pointed out to me, where, without the slightest help, a very moderate climber might easily make his way to the spot. These localities, with the exception of those in the strictly preserved deer-forests, are now nearly all deserted. I have, however, during the last few years, frequently heard of Eagles taking up their quarters and nesting in districts where their presence formerly, except during an occasional flying visit, was entirely unknown.

"The most curious and striking nest of this species that I ever came across was placed just above a sloping bank that was a perfect bed of primrose-roots. A stunted holly-bush formed a background, and broke the dull appearance of the dark and sombre slab of rock that rose straight from the back of the ledge. The primroses were a mass of bloom, but the holly looked as dried and uncomfortable as if it were struggling for existence in the smoky atmosphere of some London garden.

"It is seldom, I believe, that the nests are now to be found on trees. The old and decaying remnants of the deserted structures may still be

seen, but the tenants have been long evicted. I am aware of but two eyries so placed, which are still used in the Northern Highlands; in both instances a large Scotch fir is the tree resorted to."

The same remarks will not apply to the Osprey, although it seems evident that in the choice of situation for the nest both species are governed very much by circumstances; while changes in the physical aspect of the localities affected by them, whether by the felling or planting timber, or by the various so-called improvements considered necessary by game-preservers, have brought about a consequent change of habit.

On the nesting of the Osprey, Mr. Booth remarks:—

"All the nests now occupied that I have visited during the last few years have been placed on trees, and, without a single exception, the birds had chosen Scotch firs. In two or three cases the nest was placed on the highest branches, which were twisted and growing downwards towards their extremities, giving almost the impression that the growth of the tree had been influenced by the weight of the nest. If the same spot was resorted to for many seasons in succession, such a result might possibly be brought about. In one instance, I believe, the tree has been made use of regularly, while another is only one of several different eyries to which the birds occasionally return, some years taking up their quarters at one spot, and the next changing to another. For the last twenty or thirty years they have never been known to choose an entirely new situation. Within a distance of twelve or fifteen miles nearly a dozen nests in various stages of repair may still be seen; but it is seldom, if ever, that more than a couple of pairs will be found breeding over the whole range. In one instance an immense spreading fir is resorted to (one of the largest and finest trees in the forest); here the nest is placed among the lower branches, at a height of about fifteen feet; it is seldom that I have seen them at a much greater elevation —twenty or twenty-five and (in two instances only) about thirty feet, the latter being the highest I have ever noticed."

These extracts will serve to show the interesting nature of the author's so-called "Rough Notes," as well as to illustrate his style. The species dealt with in this the first part of the work are the Golden Eagle (four plates), the White-tailed Eagle (one plate), the Osprey (one plate), and the Kite (two plates). We learn from the Preface that the work will probably be completed in eight or ten parts, with between sixty and seventy coloured plates brawn by Mr. Edward Neale from subjects in the author's collection.

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THIRD SERIES.

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ON THE HYBERNATION OF THE DORMOUSE.*

BY A. RABUS.

IN July, 1879, I received from London two dormice (*Muscardinus avellanarius*), the one a male of about a year old, the other a female of a few weeks. I at once commenced to observe them closely and carefully, and learnt with certainty many facts hitherto little known, and possessing much interest, especially with regard to the increase and decrease in the weight of these animals during their winter sleep. The two mice were sent over to Germany in one cage, and in consequence of this the male had badly bitten the tail of the female, so that about three weeks passed before it quite healed. In the meantime both mice grew well and quickly.

I keep them separately in a little wooden cage with wires, in which they make their nests of wool and tow, and continue to give them materials for this purpose, until they leave off dragging any more into their hole. Thus they have the nests made entirely to their liking. At the commencement of their winter sleep I strew a little insect-powder at the bottom of each nest to guard against insects or mites. The little cages, their separate sleeping places, stand together in one large bird-cage, into which the mice can go out at will to fetch their food and take exercise. At night they generally climb into the top of the cage, or sit and eat on their wooden boxes; but always draw back timidly if

* 'Beiträge zur Kenntnis über den Winterschlaf der Siebenschläfer'; von A. Rabus, "Der Zoologische Garten," 1881, pp. 321-325.

I speak to them. I feed them on hazel nuts and filberts, as well as soft-seeded fruits; and three hazel nuts or one filbert generally constitute their daily quantum of food. In addition to this they get a bit of apple or pear, or perhaps a cherry, according to the time of year. I found they did not care for apricots, strawberries, or grapes; a really good sweet pear seemed to be their favourite delicacy. Of smaller fruits they never ate any quantity.

In 1880 I attempted to make them open their nuts for themselves, thinking this would be more natural to them; until then I had always given them the nuts ready cracked, but this experiment was entirely unsuccessful. During the first night they gnawed round holes the size of peas in the nut-shells, and took out all the contents. The next time they gnawed at the nuts without touching the kernel; and in the nights following they made scarcely any attempt at even gnawing them, so that in a short time they became very weakly and thin, and would probably have died of starvation had I not given up my experiment, when they recovered in a few days. Although of different ages, they seemed never to have obtained their food in this state, and thus I was unable to accustom them to it. The experiment might perhaps have succeeded with the female, which was only a few weeks old, had I made the attempt immediately on receiving it; but I did not do so till a year later, and then without success. Both mice went to sleep on September 23rd, 1879, when the temperature was 0° Réaumur. The bodily heat of the female was less than that of the male. Amongst other hybernating animals the temperature during their hybernation is known to vary considerably, a fact which is very striking in the case of the Ground Squirrel, *Spermophilus citillus*, and which has been made an object of careful study and observation by Horwarth.*

The position of the mice during sleep is generally as follows: they curl themselves up, pressing the fore paws firmly against the cheeks, the tail turned forward towards the head, and lie in the nest with the back of the head uppermost. Occasionally I find them lying on their backs, the nose pointing upwards. With regard to their weight before and during hybernation, I made the

* 'Beiträge zur Lehre über den Winterschlaf. Abhandlungen der phys. med. Gesellschaft,' Würzburg, vii., xiii., und xiv. Bd.

following observations: at a temperature of +3° Réaumur a slight whistling sound might be heard from both of them.

MALE.

Weighed on Sept. 2, 1879, 39 gr.
„ Sept. 23, „ 43 gr.
Fell asleep on Sept. 23, 1879.
Weighed on Oct. 19, 1879, 39 gr.
„ Nov. 4, „ 38 gr.
„ Nov. 29, „ 35 gr.
„ Dec. 28, „ 33 gr.
„ Jan. 31, 1880, 34 gr.
A few days later he lay dead in the nest.

FEMALE.

Weighed on Sept. 2, 1879, 25 gr.
„ Sept. 23, „ 35 gr.
Fell asleep on Sept. 23, 1879.
Weighed on Oct. 19, 1879, 33 gr.
„ Nov. 4, „ 32 gr.
„ Nov. 29, „ 31 gr.; temperature — 7° R.
Weighed on Dec. 28 „ 29 gr.; temperature — 16° R.
Weighed on Jan. 31, 1880, 27 gr.; temperature — 10° R.
On February 7th I counted twenty respirations to the minute.

FEMALE.

Weighed on Feb. 29, 1880, 26 gr.
„ Mar. 27, „ 24 gr.
Awoke on April 15th, evacuated, ate, and came outside its nest in the morning, having thus slept uninterruptedly for 6 months 23 days.
Weighed on May 1, 1880, 24½ gr.
„ May 29, „ 27 gr.
„ July 3, „ 24½ gr.
„ July 31, „ 26 gr.
„ Sept. 5, „ 24 gr.
Fell asleep Sept. 21, „
Weighed on Oct. 2, „ 37 gr.
„ Oct. 31, „ 35 gr.
„ Nov. 27, „ 33 gr.
„ Dec. 23, „ 32 gr.
Was lively on Dec. 31st, but did not eat anything.

Weighed on Jan. 29, 1881, 30 gr.
„ Feb. 26, „ 29 gr.
„ Mar. 27, „ 26 gr.
Awoke on April 9th, evacuated, and ate, having slept for 6 months 19 days, with one single interruption on Dec. 31st.
Weighed on April 30, 1881, 25 gr.
„ July 2, „ 23 gr.
„ July 30, „ 27 gr.
„ Aug. 27, „ 29 gr.
Fell asleep Sept. 24, „
Weighed on Oct. 1, „ 37 gr.
„ Oct. 29, „ 34 gr.
„ Nov. 26, „ 33 gr.

A male Dormouse which I received from London on Sept. 2nd, 1881, weighed as follows:—On September 3rd, 21 gr.; on October 1st, 28 gr.; on October 29th, 31 gr.: on November 26th, 30 gr.; fell asleep on the 15th of October, but his sleep was not so unbroken as that of the female, for he awoke several times a month, took food (though in smaller quantities than usual), and evacuated.

The variations in the weight of the female during the summer months from May to September may have arisen from some slight organic disturbance. I found no increase in weight during hybernation, except in the case of the last-mentioned male from

the 1st of October to the 26th November, which, as described above, began its sleep on October 15th, and on November 26th showed an increase in weight of 3 gr. According to Horwarth other species of hybernating animals, such as the Ground Squirrels, increase in weight during hybernation. I observed that the greatest increase in weight took place in the month of September, as from 39 to 43, from 25 to 35, from 24 to 37, from 29 to 37, and from 21 to 28 gr. During the very regular hybernation of the female there was a total decrease in weight of 11 gr., not quite 2 gr. a month.

On examining, under a microscope, the excrement voided during the first days after awaking, which had lain almost seven months in the intestines, I was unable to distinguish any fatty particles from the nuts, whilst particles of fruit were present in abundance; possibly a proof that the fatty portion of the food had been entirely absorbed in the formation of fat in the body. In addition a kind of leathery substance was present in abundance, which I cannot as yet fully determine, but which in form has some resemblance to the well-known psorosperms in the muscles of the pig.

I will mention one more incident in my experience, as it presents an apparent contradiction to the characteristics of these little creatures.

In Brehm's 'Thierleben' it is expressly stated that "they never venture to defend themselves against their captors, never attempt to bite," &c. But on September 20th, 1881, when I was cleaning out the cage as usual, I suddenly observed the male to be outside the cage, on the window, and at once snatched at him. The mouse, making a violent piping sound, bit me on the finger so deeply that it was impossible to shake him off, and I had to place my hand in the cage, when he at last let go his hold. Since that time my confidence in the gentleness of the Dormouse has been somewhat shaken, although I am firmly persuaded that they never attempt to bite when stroked gently and carefully.

At present the two mice are separated, but at the end of their winter sleep I shall again place them together, in the hope of their breeding, although this seldom occurs in captivity. Should they breed I hope to make further observations concerning them.

ORNITHOLOGICAL NOTES FROM NATAL.

By Majors E. A. Butler and H. W. Feilden, and Capt. S. G. Reid.

Much has already been written on the Ornithology of Natal, but the old saying "every little helps" is especially applicable to the study of birds; and it would have been contrary to human and ornithological nature if we, who found ourselves condemned to a life of comparative idleness for months at Newcastle, owing to the unexpectedly peaceful results of the operations against the Boers, had not devoted our spare time to our favourite science.

The aggregate results of our labours we now present in the form of a catalogue, and we trust that they will serve to throw some further light on the geographical distribution of certain species, and in this respect form a supplement to Mr. T. Ayres' valuable contributions to the Ornithology of Natal, which appeared in 'The Ibis' in 1860 and following years.

Newcastle was our head-quarters from March to November, 1881, and most of our work was carried on from that miserable town, a most unfavourable position for collecting; but we made several journeys and expeditions to other parts of the colony, which afforded us many additional species. We were much struck by the uncertain and apparently erratic breeding of some of the Natal birds. Nests were found in winter as well as in spring and summer, and it was impossible to say at what time some of the species were going to breed. In Capt. G. E. Shelley's paper, "Three Months on the Coast of South Africa," in 'The Ibis' for January, 1875, he mentions having found several birds nesting at Durban in March and April, equivalent to September and October in northern latitudes. Would not these breed a second time in the summer months, November and December, and do the majority of species in Natal follow this law, or were these instances merely accidental?

Our notes on *Strix capensis*, *Cypselus melba*, *C. apus*, *Columba phœonota*, and *Scopus umbretta* refer to similar cases, and though we are unable to prove the existence of any systematic double-breeding, the facts remain and afford a most interesting question for future solution.

The nesting of *Falco biarmicus*, *Ardea goliath*, *Platalea tenuirostris*, *Geronticus hagedash*, &c., will doubtless prove of

considerable interest to all who are acquainted with the South-African avi-fauna.

Capt. G. E. Shelley has kindly named and classified our respective collections, and has described the two new species, *Anthus butleri* and *Sphenæacus natalensis*, in the 'Proceedings' of the Zoological Society for March, 1882. We have adopted throughout the nomenclature used by him, and by Mr. R. Bowdler Sharpe, in his new edition of Layard's 'Birds of South Africa.'

Unless otherwise stated all dates refer to the year 1881. The initial letters B, F, and R, after various paragraphs, denote that the observations were made by individuals, not by the three of us collectively.

Gyps kolbi (Daud.), South African Griffon Vulture.—This most useful bird is exceedingly numerous in the Newcastle district, as many as seventy or eighty being frequently seen together. Its numbers appear to diminish towards the coast-line, though it can nowhere be called anything but a common species. A dozen or more were feeding on a carcase at Maritzburg on December 12th, 1881. Its stronghold would appear to be in the more elevated kloofs of the Drakensberg, where it undoubtedly breeds in considerable numbers in the month of May. Butler observed hundreds of them, apparently nesting, in some steep "krantzes" not far from Newcastle in May, 1881, but, thinking it too early, did not try for eggs. It may possibly have been a roosting-place only. In this land of dead animals the presence of such a watchful army of scavengers is of incalculable advantage. What would happen if the "Aas-vogels" were to strike work is hard to imagine! As it is there are always too many carcases of horses and oxen to be seen lying about untouched, poisoning the atmosphere and the water supply in their decomposition. Fortunately the "Aas-vogel" is not (to our knowledge, at any rate) sought after for the table, and his repulsive appearance at close quarters is, moreover, much in his favour. Anything more horridly grotesque than one of these Vultures waddling along in a vain attempt to take flight after a good "gorge" cannot be imagined; but compare the same bird as seen a quarter of an hour before, circling in magnificent spirals far above his intended meal, and you have indeed a descent from the sublime to the ridiculous.

In discussing a carcase a good deal of noise proceeds from the greedy crew—a harsh, grating cry of anger apparently. They fight

occasionally, and the young birds have to sit round till their parents and ancestors are full. We observed a hungry, but patient circle of dark immature birds waiting their turn at a dead ox on the Ingagane River. On one occasion at Newcastle, at a time, too, when telegraphic communication was a matter of life and death, a large gathering of "Aas-vogels" frightened suddenly from a carcase directly underneath the telegraphic wires, got "mixed up" in their confusion, and caused the wires to become seriously entangled. This stopped the transmission of messages completely, but fortunately the mishap occurred close to head-quarters, and things were quickly righted. From some unknown cause, very few of these birds were seen round Newcastle in September, 1881. From the 1st to the 26th of that month they were almost entirely absent. Could they have been driven away by the severe snow-storm and cold weather at the end of August?

Otogyps auricularis (Daud.), Eared Vulture. — Occasionally seen in the north-west portion of Natal; shy and retiring.

Lophogyps occipitalis (Burch.), White-headed Vulture.—A pair seen at the Ingagane River, July 23rd, 1881 (R).

Neophron percnopterus (Linn.), Egyptian Vulture.—A pair of adult birds seen in April on a rocky bank of the Buffalo River, about four miles east of Newcastle (B). An adult bird seen at Colenso on the 20th November (R).

Serpentarius secretarius (Miller), Secretary Bird.—Common in the Newcastle district, becoming scarcer down country. There is a penalty of £10 for killing one of these extraordinary birds, on account of the good service they render in destroying snakes. Several pairs are always to be met with in the course of a ride over the "veldt" between Newcastle and Ladysmith. Near the latter place it breeds undoubtedly, and most probably does so wherever there are suitable trees throughout the district. In a nest taken at Ladysmith by an officer of "The Welsh" Regiment, one egg was white, the other distinctly btotched and coloured with red. Length of an adult specimen, shot (in ignorance of the penalty) at the Ingagane in June, 3 ft. 4 in., without the two long central tail-feathers, 4 ft. 3 in. with these; wing, 2 ft. $2\frac{1}{2}$ in.; tail, 2 ft. 2 in.; tarsus, 1 ft.; expansion of wings, 6 ft. 9 in. The soft parts of this specimen were as follows:—Iris hazel; bill pale bluish grey, base of the lower mandible gradually

changing to yellowish green, which is also the colour of the cere; bare skin round eye and at gape, rich orange; legs and toes, light flesh-colour; claws, neutral tint (R).

There is a considerable resemblance between these birds and the Cranes when seen at a distance on the ground, and even on the wing a Secretary-bird looks more like a Crane than a member of the *Falconidæ*; but once in motion, whether walking or running over the "veldt," the resemblance vanishes; it is hard to conceive anything more graceful than the Crane, while the Secretary-bird walks badly, and runs in the most ungainly fashion. Butler observed this species near Estcourt.

Polyboroides typicus, Smith, Banded Gymnogene.—Two specimens obtained in the kloofs of the Drakensberg, near Newcastle, one by Butler on the 21st July, the other by Feilden about the same time. The bird shot by Butler was a male developed for breeding, and there was a female with it at the time, which he failed to procure. There seems to be a good deal of the Harrier about this genus, as far as external appearance goes, but in flight it is more like a Buzzard.

Soft parts of specimen obtained as follows:—Male: legs, feet, orbital skin, and cere, lemon-yellow; bill, whitish at base and tipped black; iris blackish brown (B).

Circus pygargus (Linn.), Montagu's Harrier.—"A beautiful male Harrier passed within a few yards of me between Ladysmith and Colenso on the 20th November. I was in uniform at the time, and had no gun with me. I believe it to have been a Montagu's Harrier, and entered it as such in my note-book, but it is possible that it may have been *Circus macrurus*, the Pallid Harrier, a much commoner species in these parts. I know Montagu's Harrier well, but have never met with the other before" (R).

Circus ranivorus (Daud.), South African Marsh Harrier.—Exceedingly common everywhere, nesting in the "vleys," and in the long dry grass surrounding them, in September and October. When a nest was robbed of its eggs the old birds frequently laid again there, sooner than construct a fresh one. Butler contributes the following note of its nidification:—"Sept. 22nd, four fresh eggs. The nest was of moderate size, and built in high rushy grass by the side of a small tank, being composed of rushes, intermingled with a few sticks and well lined with fine dry grass.

It was raised about a foot above the level of the water, which was scarcely visible through the long dense rush, though several inches deep. Another nest, on the 25th September, similar to the last, without sticks, and built in long dry grass on high ground between two sheets of water, contained three incubated eggs. The old birds hovered round me, and squealed loudly when I approached the nest. Another nest, precisely similar, in long dry grass by a 'vley,' 1st October, contained four incubated eggs; female sat very close, rising off the nest almost at my feet. The pair of which I took the nest on the 22nd September built again immediately afterwards, about ten yards from where the first nest was taken, and on the 12th October I took three fresh eggs from the nest, and on the 16th it contained another fresh egg. On the 18th October I found two more nests, one building, the other containing three incubated eggs. Eggs pale bluish white, having a green membrane within."

Accipiter rufiventris, Smith, African Sparrowhawk.—A male obtained in the Drakensberg, near Newcastle, on August 27th. Soft parts as follows:—Legs, feet, and orbital skin lemon-yellow; cere greenish yellow; iris bright yellow; bill plumbeous, tip blackish; claws black. Sexual organs considerably developed. Other specimens were observed, but it was by no means common.

Buteo jakal (Daud.), Jackal Buzzard.—A very common bird in the upper portion of the colony, but very shy and difficult to obtain. Breeds in "krantzes," without any great choice of site, in July. Butler notes that in a fine adult male specimen, shot by him, the iris was grey-brown; legs, feet, cere, and gape, lemon-yellow; bill horny blue, tip blackish. The crop contained four or five striped field mice. He also took a nest in a bush growing out of a rock on the side of a precipitous cliff, about six feet below the summit, containing two fresh eggs, on July 30th; one was plain white, the other faintly marked towards the large end with light yellowish brown. The nest was an ordinary large stick-structure, well lined with tufts of grass and green leaves. The old birds were seen to stoop at a brace of Francolin, *F. levaillantii*, in long grass close by, capturing one of them.

Milvus ægyptiacus (Gm.), Yellow-billed Kite.—Two pairs of this Kite were seen near Rorke's Drift on October 3rd, 1881 (R).

Milvus korschun (Gm.), Black Kite.—Apparently a regular visitor in the summer months to the Newcastle district. It was

seen there by Butler in March, and by Reid in October and November. The latter shot a young male on October 28th. Iris light brown; bill black, yellowish at base and gape; cere yellow; legs and toes orange. The crop contained a small frog and a number of beetles.

Elanus cæruleus (Duf.), Black-shouldered Kite.—First observed on August 1st at Addendorf's Farm, about eight miles south of Newcastle; afterwards occasionally noted in the district. Common along the road to Colenso, and also seen down to the coast. Examples recorded at Richmond Road on December 10th, and at Durban on August 12th (R).

A pair apparently attempted to nest at Cochrane's Farm, close to Newcastle, in October, but the nest was disturbed and nothing came of it. Eggs were taken by an officer of "The Welsh" Regiment near Ladysmith. The men of this Regiment had a young bird in camp, very tame and friendly (R).

Falco biarmicus, Temm., South African Lanner.—Feilden kept one of these grand birds alive for some time at Bennett's Drift Camp, near Newcastle; it was a female, and had been winged by a shot. Butler found a nest containing young birds in down in a kloof in the Drakensberg, near Newcastle, on the 18th August. The nest was a good sized stick-structure, and built in a small green bush on the side of a precipitous cliff, within six feet of the summit, but in an inaccessible situation, on account of an overhanging ledge of rock which completely covered it from above. The chicks were but a few days old and covered with white down. He poked two out of the nest from below with a long pole, but there may have been more. The female bird was shot at the nest, but the male escaped, badly wounded unfortunately. The nest looked as if it was an eyry of long standing, and was probably used by the same pair of birds for years. Butler noticed a Lanner on several occasions amongst the hills in the vicinity of Newcastle, but it is not very common.

Falco ruficollis, Swains., African Rufous-necked Falcon.—A male shot by Reid near Rorke's Drift on October 4th, one of a pair frequenting a clump of mimosas on the Buffalo River; no nest to be found. The female escaped, and, when Capt. Watkins, R.E., visited the place in November, had taken to herself another mate.

Cerchneis rupicola (Daud.), South African Kestrel.—Abundant throughout the colony, nesting in holes and crevices in the cliffs,

or "krantzes." Two eggs taken on October 11th were simply laid in a depression in the sandy floor of a miniature cavern. Butler took four slightly incubated eggs on October 16th. They were laid in a depression on the bare rock on a ledge in the crevice of a cave: situation inaccessible, except with ropes, &c. The eggs are very like those of the common European Kestrel in colouring.

Cerchneis rupicoloides (Smith), Large African Kestrel.—Not observed nearer to Newcastle than Rorke's Drift, where Reid found a pair breeding, and took one egg from a nest on October 4th. He obtained the male bird. Iris white; bill bluish horn-colour, softening into yellowish white at the base; cere and legs Indian-yellow. Near Ladysmith it seems to be a common species. Eggs were taken by officers quartered there in October, and numbers of the birds were observed perching on the telegraph-wires near the junction of the Free State and Newcastle Roads by both Feilden and Reid in November and December.

(To be continued.)

ORNITHOLOGICAL NOTES FROM YORKSHIRE.

By William Eagle Clarke.

In 1880 the chief incident for January was an unlooked-for immigration of Fieldfares and Short-eared Owls. Fieldfares, which had been almost entirely absent during the autumn of 1879, appeared in considerable numbers at Spurn on Jan. 24th. The Owls immediately followed, and were somewhat numerous on the Holderness coast during the latter days of the month. A large party of Swans, most probably Hoopers, were observed passing Withernsea, in a southerly direction, on one of the early days of the year. During the severe weather of January and February, Brent—or as they are locally termed "Rock"—Geese were extremely abundant on the Humber estuary, coming up to the shore and retiring on every tide.

In my notes for 1879,* I alluded to the occurrence of a flock of Shore Larks at Easington on December 22nd. These birds were again seen on February 9th, and between that date and March 20th I had many opportunities of observing them. At

* 'The Zoologist,' 1880, p. 353.

first they frequented a bare flat of sand and pebbles at some distance above high-water mark on the sea-side, but very soon transferred their affections to a long and narrow bed of *débris*, composed chiefly of the withered blades of the marine plant *Zostera maritima*, which had been heaped up by the tide into a series of little hillocks and depressions, on the Humber foreshore. To this they were most constant, occupying themselves in searching for food over its undulating surface, or basking in the sunshine, in a crouching position, on one of its hillocks. At all times they evinced but little fear, as I watched them with the binocular from a distance of about twenty yards. On March 13th I counted twenty together, which was the largest number seen in one party. On this day the sun was very brilliant, and the old males of the assemblage were very conspicuous; the black of their breasts, crowns, and patch below the eye, the fine brimstone-yellow of their throats, the lateral horn-like tufts, and the warm vinous tints on their napes and shoulders, contrasted advantageously with the identical but more subdued colours of the immature birds and females of the group. The mature males, on a closer examination of specimens obtained, appeared to have more massive heads and to be generally of a stouter build than the others. The flight is jerky, and whilst on the wing they uttered a note which bore a somewhat close resemblance to that of the Meadow Pipit. The contents of all the stomachs examined consisted of one description of food, which at sight appeared to be the small coiled shells of a mollusk, but on examination with a lens they proved to be seeds of a marine plant, and perhaps those of *Zostera*. I saw these birds for the last time on March 20th, on which day they most probably departed, for they were not seen afterwards. I regret to say that no less than thirty-three specimens were obtained, and a carefully compiled list of these showed that the males predominated to the extent of five to one. The great majority were immature males, which, so far as I could perceive, were indistinguishable from the females.

At Easington, on March 20th, I saw a Rough-legged Buzzard flying leisurely along the coast-line, pursued by about a dozen Grey Crows. In a remote locality among our north-western fells, on March 26th, I was much gratified to observe a Common Buzzard sailing over the craggy haunts that once knew this bird so well, but from which it is now so utterly banished that I doubt

if the county can boast of possessing more than a single pair nesting annually.

On March 29th I visited a Raven's nest. This species has of late years become very scarce in the county, though we possess such an extended fell range in the north-west and suitable cliffs on our sea-board, both of which—and our larger woods, too—once harboured Ravens in some numbers; but now only two or three pairs are known to me as nesting, and I much fear that a very few years will suffice to see the Raven's name erased from the list of resident Yorkshire birds. The nest contained five eggs, and was placed in an angle of a cliff, some twenty feet from the top, and with a sheer drop of about two hundred feet below. The date was late for this species to be commencing incubation; but the pair had set their hearts upon a site on the other side of the fell, from which they were driven at the last moment by a pair of Peregrines, which appeared upon the scene and pitched upon the nest as suitable for their own purposes. The young were hatched on April 11th.

On April 14th I again visited the Ravens' locality, in response to a missive from my friend, informing me that the Peregrine was sitting, and the pair were playing "old gooseberry" with his Grouse, and must be destroyed, and I might have the eggs. I did all in my power to have the old bird spared, but it was of no avail; Grouse were almost the only birds at hand, and my friend could not afford the *quantum* requisite to feed so hungry a family. Accompanied by my friend and his keeper I set out for the nest, to which it was a stiff climb. On reaching the brow of the fell, the male commenced to utter a plaintive cry, evidently from a very considerable height, for although we could hear him most distinctly, yet we entirely failed to distinguish his form. When we had arrived immediately above the nest, the keeper gave a loud whistle, which caused the old bird to leave the nest with a deep downward dive, when she received the contents of both barrels, and was killed. She was a grand old bird, weighing thirty-three ounces, and measuring forty-four inches across the wings. The nest was placed on, or rather occupied, the top of a small column of rock, which was stuck, as it were, on to the smooth face of the cliff, whose slope had a considerable inward tendency, rendering it necessary to put one's head and shoulders uncomfortably far over the brink to obtain a glimpse of the nest,

which was composed of old heather-stems, with little or no lining, and appeared to be a somewhat ancient structure. In it were four eggs, which we obtained by means of a net attached to a long rod, brought with us for the purpose, the rocky nature of the place and the stiff slope to the brink rendering the use of a rope quite impossible. Angling for the eggs was not at all a pleasant task; the ground above sloped not only smartly to the cliff, but as smartly to the left, from which point alone it was possible to work, making it necessary to be held by ropes from behind and from the right. The dizzy depth beneath, and the distance it was necessary to place one's chest over the edge to use the net, must also be taken into consideration in appreciating the position. The eggs were extremely handsome, two of them being especially so, having a ground colour of a beautiful pale flesh tint (almost pure pink), richly marked with red-brown. To give some idea of the persecution to which the Peregrine is subject, I may mention that this was the sixteenth bird shot by this keeper from nests on this fell.

Leaving the Peregrine's desolated home, we paid a visit to the Raven's nest on the other side of the fell, and inspected the raw-looking little creatures, now three days old, which were gaping vigorously beneath. The female Raven left the nest in a very different fashion to that adopted on the 29th ult., when she slunk away in the quietest manner possible; now she was very noisy, and flew around croaking during the whole of the intrusion. The male bird did not put in an appearance on either occasion. The Raven has bred on this fell for a great number of years, confining its choice to the sites on the eastern or western slopes. The Peregrine varies its choice between this fell and two other sites a few miles off, in all of which it fares very badly.

I saw an extremely fine variety of the Blackbird on Strensall Common on April 24th; the head and neck were pure white, and most sharply defined from the black of the body. Redshank, Teal, and Snipe were nesting on the Common in some numbers; but the place is too near York, and consequently is completely ransacked.

Migratory waders, on their way north, made their first appearance on the Humber "clays" on May 20th, when Sanderlings in partial summer dress and Turnstones in full breeding plumage were observed. On the 25th eight Dotterels (*E. morinellus*) and

nine Whimbrels were noted. But it was not until the 27th that the great rush from the south took place, when thousands of waders were to be seen.

The Dotterel when on its way north appears to be an extremely stupid bird. For some years past a party of them have repaired annually, in May, to an identical field on the Holderness coast, where they linger for about a fortnight, during which period they appear to know no fear, and should a local gunner appear upon the scene the lot fall an easy bag.

In May a nest and eggs of the Shoveller were found by a friend of mine on an extensive tract of heath in the vicinity of the coast. This is, I believe, the first undoubted record of the breeding of this species in Yorkshire.

Waders from their northern breeding haunts made their appearance on the coast early. A Knot, in summer dress, was killed under the Spurn telegraph-wire on July 23rd. Three Grey Plovers, an immense flock of Dunlins, and several Whimbrels were observed on the 25th. The first Sanderlings were seen on August 15th.

The year 1880 witnessed the destruction, by enclosure, of Riccall Common—a locality which, until the commencement of the present century, could claim the Ruff among its annual breeding birds, and since those palmy days has been the resort of Redshanks, Black-headed Gulls, Teal and other Ducks; but, alas! it has had its day, and Strensall, like it, is soon to follow suit. But while we are thus banishing certain species from old haunts, it is a pleasure to hail the return of others to former ones. Thus the Sheldrake, once not uncommon on the Holderness coast, has returned, and this year reared her young in safety; a brood of six were seen to issue from a rabbits' burrow, and on digging out the nest two addled eggs were found. Now that Spurn is so very strictly preserved, it is to be hoped that this species may become numerous there. This year has also seen the return of the Cormorants to the Flamborough cliffs, from which they were driven by the murderous times preceding the Sea-Birds Act.

An immature Black Tern was shot at Easington on the 28th August. This species, in the inconspicuous plumage of immaturity, is probably much overlooked; at all events it is not often reported. Redstarts and Wheatears swarmed on our coast-

line, as elsewhere, during the latter days of August. The Redstarts departed from Spurn, to a bird, on September 3rd. A white Martin, a true albino with pink eyes, was shot at Patrington on September 6th.

Some of the autumn immigrants put in an early appearance on our coast. Goldcrests were seen on September 13th, and a Short-eared Owl was shot on the 29th. Probably these very early arrivals are not from the Continent, but British-bred birds following the coast-line south along with our summer visitors.

On October 5th, the weather cloudy with passing showers, a considerable immigration of Goldcrests and Redwings took place on the Holderness coast. A male Great Grey Shrike was shot on the 6th, and sent to me in the flesh: the crop was filled with coleopterous remains, chiefly belonging to the genera *Geotrupes* and *Carabus*. A few Woodcocks and a more considerable immigration of Goldcrests occurred on the 9th, when the gardens on the southern portion of our coast literally swarmed with the latter species. The first Grey Crow was seen on the 10th. On the night of the 16th a large flight of Hedge Accentors arrived, the village of Easington being alive with them on the following morning; a few Common Wrens accompanied them. On the night of the 19th, when a keen frost prevailed, the first Fieldfares and Redwings put in an appearance, and were accompanied by a few Snow Buntings and Siskins. The last few days of October I spent with Mr. Cordeaux on the Holderness coast, when we made the following observations:—On the 26th a few migratory Goldfinches, old male Blackbirds, and a Short-eared Owl seen. 27th, wind strong from the E, cloudy with rain, a solitary Greater Spotted Woodpecker and a Long-eared Owl shot; Carrion Crows passing in great numbers from E. to W. at 2 p.m. On the 28th, after a strong N.E. gale, I shot a female Blackcap at Kilnsea; a Willow Wren was obtained at Flamborough on the same day; a considerable immigration of Fieldfares, Redwings, and Snow Buntings, and a few Siskins also occurred. Purple Sandpipers—a species which seems to be somewhat erratic in its visits to this portion of our coast—were not uncommon. Two Hoopers appeared at Crofton, near Wakefield, on the 30th, one of which was shot.

On November 5th a large flight of Scaups passed up the Humber. A solitary Swallow was seen at Spurn on the 17th.

A rather curious incident occurred at Spurn on the 22nd. Three Crows were observed disputing, on the wing, about a morsel which one of them, more fortunate than the rest, had managed to secure, when suddenly a Great Black-backed Gull appeared upon the field, and put in a claim, much to the alarm of the Crows, and resulting in the fortunate one relinquishing his capture, which fell upon the sands, and was secured by my informant before the Gull could pounce upon it. This bone of contention proved to be a Storm Petrel, just dead and still quite warm. I received this bird in the flesh on the day following, and on dissection it proved to be a male in emaciated condition; the lungs were considerably diseased, each containing a consolidated whitish mass, about the size of a small pea, showing on section the bronchial tubes running through the centre standing wide open. A question is here suggested as to the nature of the diseases in the lungs of undomesticated animals; and whether this mass was of a cancerous nature, or the result of acute phthisis? Many Storm Petrels occurred far inland during November, being blown off the sea and carried before the easterly gales which prevailed.

A fine adult male Bittern was shot in a stubble-field at Tunstall, near Withernsea, on December 15th. This bird weighed thirty-nine ounces, and the contents of the gizzard, sent to me for examination, consisted of a mass of coleopterous remains, including an entire head and elytron of a *Dytiscus marginalis*, and a stringy substance much resembling wet tow.

On December 30th an adult male Tengmalm's Owl was shot at Normanby, near Whitby, by some rabbit-shooters whose dog put the bird out of a broom-covert. This specimen was kindly sent to me for inspection by Mr. Wilson, of Whitby, in whose collection it now is. The bird agreed with the description given by Mr. Dresser, with the exception that there were *five* white spots on the tail-feathers, whilst Mr. Dresser only mentions four. This fifth spot, however, is not observable until the tail-coverts are raised. I also noticed decided traces of a sixth spot at the extreme end of each feather, but this was not very marked, owing to abrasion. Of the five Yorkshire occurrences of this species, three of them have been from the neighbourhood of Whitby: an adult now in the collection of Mr. W. Lister, of Glaisdale, was shot from a tree at Egton, on November 19th, 1872; whilst

one, which some years ago occupied a place in the Whitby Museum, was shot on Sleight's Moor about the year 1840. Unfortunately this specimen was badly preserved, and had to be destroyed.

NOTES AND OBSERVATIONS ON BRITISH STALK-EYED CRUSTACEA.

By John T. Carrington, F.L.S., and Edward Lovett.

(Continued from p. 50.)

Genus Pinnotheres, *Latr.*

This genus embraces two British species, remarkable on account of their habitat being in the living shells of Bivalve Mollusca. The generic characteristics are as follows:—Carapace nearly round, hard in the male and soft in the female; anterior pair of legs nearly equal, with normally developed forceps; remaining legs having the terminal joint somewhat hooked and strong. Peduncles of eyes short. Abdominal somites seven in number in both sexes, those of the male being narrow, whilst those of the female are very broad; in fact, more so in proportion to the size of the animal than those of any pre-considered species.

M. Milne-Edwards includes four other allied genera in the family *Pinnotheridæ*, and gives the localities for them as the Red Sea, Cape of Good Hope, and Australia.

Pinnotheres pisum, Latr.

This little crab, known as the common Pea Crab, is, as its name suggests, very small—the male being even smaller than an ordinary sized pea, whilst the female is about three times as large. The anterior portion of the carapace in the male projects, and there is a depression on the latero-posterior margin; whilst in the female the anterior part is rounded, and the depression is wanting. The forceps of the male are robust and strong, whilst those of the female are weak. As it appears that most probably it is the female that is most addicted to inhabiting the shells of Mollusca, this weakness of the forceps would be thus accounted for, as they would be but little required.

The colour of this species varies, particularly in the case of the male, which is usually of a pale yellowish brown, somewhat mottled; the female is yellow, with brownish markings, the brown sometimes having a reddish tinge. *Pinnotheres pisum* is found in the shells of several species of Mollusca. We have found it chiefly in that of the common mussel, *Mytilus edulis*, from Southend. This species is very generally distributed. It has been recorded from St. Andrew's, in *Modiolus modiole;* from Devon, in *Mytilus*, *Cardium*, and *Ostrea;* and Couch, in the 'Cornish Fauna,' says it is rare, and only found in the shell of the mussel, the natural inhabitant of which it either finds diseased or leaves it so. In Norfolk they are considered poisonous, and are known as "Swinards."

Pinnotheres veterum, Bosc.

This species, which is much rarer than *P. pisum*, is known as the Pinna Crab, and also as the Ancient Pea Crab. It is larger than the former species, being often of a length of five-eighths of an inch. In general habits it much resembles *P. pisum*, with the exception that it is found chiefly in the shells of the Pinna; in colour, too, it varies, this species being of an uniform brown tint, and devoid of the markings that characterise *P. pisum;* it is interesting to note that the tint of *P. veterum* corresponds in colour to the mantle of its host, the Pinna. The following is a short description of a specimen which we recently obtained from about thirty miles off the Devon coast, in deep water, from a Pinna:—Length of carapace, five-eighths of an inch. Colour of an uniform dirty umber-brown, with a darker tinge down the centre of the abdominal segments and the latero-anterior portion of the carapace. Eyes of a rich pink. Sex female. Abdominal segments extremely large and broad, covering the whole of the sternum.

It is recorded in the reports of the British Association from Devon coast; and in the 'Cornish Fauna' as rare on that coast.

As the fables of the association of the *Pinnæ* and *Pinnotheres* of Pliny and other early naturalists are so well known, we need not do more than refer to them. That the crab finds the habitat in the Pinna-shell of advantage there can be no doubt, but it

seems very doubtful whether this advantage is mutual. We must not expect to find a crab in every Pinna-shell.

Gonoplax angulatus, Fabr.

This remarkable crab is a common Mediterranean species, but it occurs frequently on our southern and south-western shores. It fully justifies its popular name, "the Angular Crab," and its curious forms in this and other respects cause it to be one of the most interesting of the British Crustacea.

Its carapace is much broader than long, with the sides almost at right angles with the anterior and posterior margins, the former being nearly straight, with the space between the orbits slightly projecting. The anterior angles are armed with two spines, one on either side. The lateral margin has one spine only projecting, and not nearly so large as that at the angle. The first pair of legs are remarkably long, broadest at the base of the forceps, the latter long and toothed. The remaining legs long and attenuated, the last three joints of the second and third pairs being furnished with setæ on the edges. The eyes are fixed upon very long peduncles, which are capable of being turned back for protection beneath the anterior edge of the carapace so as to be quite hidden. Abdominal segments seven in number in both sexes; the third segment of the male is broader than the rest, and the posterior segments to this are form a triangle. Those of the female are oval, the fourth, fifth, and sixth being the broadest.

The colour of this remarkable species is yellowish or pinkish red, occasionally bright and coral-like in its tints, but most frequently dull.

We have as yet had no specimens in ova, and so cannot speak as to the date of spawning or the appearance of its ova.

This rare species is stated by Prof. Bell to have first been found in British waters by Montagu in the estuary of Kingsbridge, Devon; he also states that it has since been found on the coasts of Cornwall and Wales, as well as Ireland. In the 'Annals and Magazine of Natural History' for 1870 this crab is recorded from the Isle of Mull, its first appearance in Scotland. From the reports of the British Association we gather that it has been taken on the Cheshire coast (rare), South Devon (occasionally), and Dublin (rare). In the 'Cornish Fauna' we learn tha tit is

common off that coast in undoubtedly deep water.* Prof. Celler says that it occurs at the Cape of Good Hope. We have obtained it from Weymouth and Torbay, off both of which parts of the coast it is not unfrequently found. The localities given by M. Milne Edwards are the north-western and southern coasts of France. It is said to be a very favourite food of many fishes, particularly the Cod.

We were told by the Penzance and Newlyn fishermen that they only get this crab when the trawlers are beset by calm, so that the trawl remains still for a time on the bottom of the sea. These fishermen consider that *Gonoplax* is then tempted by the fishy smell of the net to enter through the meshes, which are tightened when being drawn up, and so closed as to prevent the escape of the crabs.

Planes Linnæana, Leach.

This crab can only be said to be British from the fact that specimens are washed ashore on our coasts occasionally, "*nolens volens*," in the same manner as are sometimes tropical seeds. Its true home is no doubt the Sargasso or Atlantic Gulf-weed (*Fucus vagans*), but it has also been found attached to the bodies of Turtles.

P. Linnæana is a curious-looking species; its carapace is nearly square, with the posterior angles rounded, and the anterior angles replaced by concave cavities to receive the eyes, which are fixed upon stout peduncles. The antennæ are very small. The posterior legs are nearly equal, robust, and having the arm toothed. The remaining legs are flat and clothed with setæ. The abdominal segments are seven in number in both sexes, those of the male triangular, and of the female circular.

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* In the 2nd edition of the 'Fauna of Cornwall,' 1878, the section on Crustacea, originally written by the late Mr. Couch, was edited by Mr. C. Spence Bate. At p. 72 Mr. Bate says, after *Gonoplax angulatus*, "Mr. Couch next describes a very doubtful species under the name of *Gelasimus Bellii*, which Mr. Bell thinks may be the young of Roux's *Gonophax rhomboides*, which most carcinologists consider as a variety of *G. angulata*." Then follows Couch's description in full, the chief points of difference being, "Foot-stalk of the eye long and slender, the transparent cornea small. Carapace resembling that of *Gonoplax*, but more advanced in front and less extended laterally."

The colour is greyish or pale yellowish brown, some specimens having a mottled appearance.

In the report of the British Association, 1867, this crab is recorded as occurring off the French coast, attached to the under side of the Hawk's-bill Turtle. In 'Cornish Fauna' it is recorded as being a "stray inhabitant" of the coast of that county. It is also recorded from the Devon shores by the Devon Association.*

In November, 1881, we received, through the kindness of Mr. Stephen Clogg, a remarkably fine specimen which that gentleman obtained amongst the stalk-barnacles upon a balk of timber that had been thrown up on the shore at Looe, Cornwall. The specimen, which is exceptionally large, is seven-eighths of an inch each way over the carapace. In the present volume of 'The Zoologist' (p. 118) Mr. Cornish records the capture of seven specimens near Penzance, from amongst soil and sea-weed growing on a derelict cask of paraffin found floating at sea. Mr. Cornish having kindly presented to us two of the specimens, we find them smaller and darker than that above recorded.

Genus Ebalia, *Leach.*

This genus, which is a very decided one, includes three species that are not only British, but in all probability peculiar to our seas; for M. Milne-Edwards in his description of them does not give any other locality. They are commonly known as the "Nut Crabs," and their generic characteristics are as follows:—

The carapace is roughly diamond-shaped, with the angles rounded or elevated, the size of it rarely exceeding five-eighths of an inch by half an inch. The anterior pair of legs more or less robust in the different species, as we shall describe. Antennæ very small, as also are the eyes. Abdominal segments seven in number in both sexes.

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* *Grapsus pelagicus*, Prideaux. The reference to this crab occurs in 'Cornish Fauna' (p. 74), where Mr. Couch says: "A species of the genus *Grapsus* is in the Athenæum at Plymouth under the name of *G. pelagicus* by Mr. Prideaux, and known to Dr. Leach, but not in any published work. It is understood that the collection in the Museum of that Institution is confined to the specimens taken on the borders of Devon and Cornwall." This is now usually considered by carcinologists to be a variety of *Planes Linnæana*.

Ebalia tumificata, Mont.

This species, like *E. Cranchii*, differs from *E. tuberosa* in that its carapace is much more flat and hollowed, but to this we must except the female of this species. The lateral margins are prominent and rounded, with a flat sharp edge, whilst on the anterior margin are two small projections immediately above and between the eyes. Of the three prominences situate on the thorax, one is proximate to the posterior margin, while the other two are centrally placed between the fore and hind margin, one on each side of the medial ridge. It is these two that in the female are so remarkably different in appearance, from their globose and swollen form, as to almost decide in the mind of the student its specific value, as no such difference occurs in the other two species to be described. The anterior pair of legs are depressed, warty, and broad. In the abdominal segments the fourth, fifth, and sixth joints are united. The size of this species rarely exceeds half an inch across the carapace, and its colour usually of a pale dull pink or yellow, occasionally speckled with red.

Although this species is rather rare, it is recorded by Prof. Bell from Weymouth, Exmouth, Plymouth Sound, Belfast, and off the Mull of Galloway. According to the reports of the British Association, it has been taken on the coasts of Durham and Yorkshire, as well as from the Hebrides, and a single specimen from Shetland; and is, according to the 'Cornish Fauna,' rare in that county. We have obtained it, in company with the former species, from Guernsey, in comparatively deep water, where it clings to the Algæ; also from mid-channel off the Sussex coast, and occasionally from South Devon.

So far as we have observed, it is with ova in the early months of the year, so that it would spawn in the spring, This ova greatly resembles that of *E, tuberosa* both in colour and size.

Ebalia Cranchii, Leach.

The carapace of this species strongly resembles that of the male of *E. tumificata*, each of which species has the ridge from the anterior to the posterior margins more prominent than the transverse one, thus being unlike *E. tuberosa;* it is very finely granulated, and has two additional tubercles to those of the

former species, which are more forward and closer to the medial ridge; it is these additional tubercles that are its chief specific feature. The anterior pair of legs are very long in the male, robust, and having the forceps slightly serrated. The female has these limbs of the normal length, while the carapace is similar in both sexes.

This species is considered by Bell to be the most rare of the British *Ebalias;* he gives it as having occurred at Plymouth Sound, the Frith of Forth, Connemara, and Belfast Bay. It has also been recorded from St. Andrew's; Galway (common); Dublin (rare); Aberdeen; the Hebrides; Moray Frith; and the coast of Northumberland. It is said to be rare in Cornwall. We have obtained it from off Torbay and Start Point, in which locality it is not unfrequently found.

Ebalia tuberosa, Pennant.

This species is the largest of the genus, and may be distinguished by several decided specific features. The carapace is raised and divided by two rounded ridges crossing each other from the four angles; it is roughly granulated and of a reddish brown colour, though in favourable localities it often assumes a much brighter tint. The anterior pair of legs are robust, and, like those of *E. Cranchii*, are rounded, carinated slightly, and have the forceps serrated; the remaining legs are simple. The abdominal segments of the male are long and narrow, having also the third, fourth, fifth, and sixth joints "soldered" together; those of the female are broad and rounded in form.

According to Prof. Bell, this species, although less rare than the preceding ones, is by no means common; but as their habitat is the coralline zone preferably, this may to some extent account for their apparent rarity. We have obtained it in considerable numbers from Guernsey, the South Devon coast, and from mid-channel off the Sussex coast. Those from the latter locality were remarkably fine specimens, and one had a young oyster, about one-fourth the size of the animal itself, attached to its carapace. In Jersey we observed it to be somewhat scarce.

In Bell's work it is recorded from Devon, Dorset, Berwickshire, Cork, Belfast Bay, and off the Mull of Galloway. It has also been taken at St. Andrew's and Shetland (at the former

place often in fishes' stomachs); according to Couch, it is "not common" in Cornwall.

Its ova are small and of a golden colour, being exuded during the early part of the year.

Atelecyclus septemdentatus, Leach.

This remarkable crab may be readily recognised by the circular form of its carapace; hence its popular name, the "Circular Crab." It is the only species of the genus known to occur in our seas, and the following may be taken as a general outline of its description:—

Carapace, as we have already stated, almost circular, the posterior margin being, however, flattened; lateral margins regularly and evenly serrated; orbits slight, and having two notches in their cavity; space between the orbits armed with three even denticulations; carapace generally convex, with the regions decidedly but not harshly defined. Antennæ well developed and plumose, somewhat resembling those of some of the Lepidoptera.

The anterior pair of legs are massive and broad, capable of closing together beneath the cephalo-thoracic portion of the animal; they are armed with rows of small tubercles and warty prominences. The forceps are curved so that they cross at the tips; they are brownish black in colour. The remaining legs do not differ much from the normal form, except that they are closely fringed with hair, as also is the carapace and anterior pair of legs. The abdominal somites are five in number in the male and seven in the female; it is remarkable that the female segments are not so broad in proportion as is the case with most of the *Brachyura*; from this it would appear as if the ova were not so much in need of that protection which is so necessary to other species. The colour of this crab is a very pale yellowish white, speckled over with a brick-red tint. The hair-like fringe is a pale warm brown.

This species is evidently a deep-water one, for, according to Bell, it is common in the stomachs of fishes from a depth of twenty to fifty fathoms. He records it from the coast of Devonshire, the Welsh coast, and Scarborough; as well as from the Frith of Forth, Scotland, and several localities in Ireland. We have received this species from Milford Haven; also obtained several specimens by dredging off the South Devon coast in about thirty fathoms of water.

(To be continued.)

OCCASIONAL NOTES.

White Stoats.—Whether it is that during a winter when much snow falls these creatures are not so easily seen, or that at such a time they are not so much abroad, I am not prepared to say, but it always seems to me that a mild winter is the most productive of these animals in their white or partly white garb, and the past mild season has helped to confirm my supposition. In this neighbourhood they have been met with in comparative plenty in all stages of change, and some of them have been very prettily marked, reminding one at first sight of a spaniel dog. One I saw—a very large specimen—appeared at a short distance to be of an uniform gray colour on the upper parts, and lighter underneath, but on closer inspection it proved that brown hairs were scattered amongst the white all over the body, which gave it such a peculiar appearance. This was probably an old one, as its teeth were very much broken and decayed. The most remarkable that has come under my notice was one wholly white except the characteristic black tips to its tail. It is the first I have ever seen not having some indications of the dark summer coat. It is my usual experience that if the body is perfectly white, the head in a greater or less degree shows some marks of the dark dress, and especially on the crown; but the specimen in question has no such markings, for except a few scattered gray hairs about the eyes, its head is as uniformly white as the rest of its body. I may mention that its eyes were of the usual dark colour. Has the unusual occurrence of these creatures during the past winter been noticed by other correspondents?—G. B. Corbin (Ringwood, Hants).

The Lesser Horse-shoe Bat (*Rhinolophus hipposideros*) in Yorkshire.—I have to record an interesting addition to the bat-fauna of Yorkshire, specimens of the Lesser Horse-shoe Bat having been sent me by Mr. Henry Laver, of Colchester. They were collected in January, 1876, in a cave near Eavestone, Ripon, a very wild and exposed part of the country, 700 feet above sea level, and sent to Mr. Laver by Mr. James Ingleby, of that place. I have had some correspondence with Mr. Ingleby on the subject, and he informs me that the species is the prevalent one of his neighbourhood, the others occurring there but sparingly in numbers. Of the Long-eared Bat, which in some parts of Yorkshire is the commonest species of all, he has only found one or two examples, while the Whiskered Bat, which I recorded in 'The Zoologist' for April, was the first of the kind he ever saw. I fully agree with Mr. Laver's determination of the species as *R. hipposideros*.—W. Denison Roebuck (Sunny Bank, Leeds).

Variety of Mole.—Some years ago I sent a note to the pages of 'The Zoologist' on the occurrence, in this neighbourhood, of a few specimens of "cream-coloured" Moles. Since last autumn I have seen several specimens of a similar colour, suspended with many of their black relations upon the bushes which the Mole-catcher appropriates as a gibbet for his captures. Perhaps the term "cream-coloured" scarcely describes the variety in question, for although the upper parts of the body are of a creamy buff hue, yet all the under parts are of a brownish red, or brownish orange colour. I believe I have seen the record of the occurrence of similar varieties in several other localities, but are they of general distribution, and do they occur regularly or only at intervals? In this neighbourhood they are somewhat uncertain in their appearance, and seem to affect particular localities. —G. B. Corbin (Ringwood).

Occurrence of the Grey Seal off the Norfolk Coast.—On December 24th, 1881, one of the Trinity pilots, whilst in the neighbourhood of the Long Sand in the Lynn Roads, saw a very large Seal, watching over the dead carcase of a recently-born young one. On attempting to capture the old one she immediately showed fight, and had to be killed before she could be secured. Through the kindness of Mr. F. J. Cresswell and Mr. Garrod, of Lynn, I have had the opportunity of examining the skins of both individuals, which are unquestionably those of the Grey Seal, *Halichœrus gryphus*. The old female measured seven feet one inch in total length, and five feet nine inches in girth behind the fore flippers; the claws were very long, the first two measuring two inches and a-half and two inches and a-quarter respectively. The general colour was yellowish buff, indistinctly with spots and blotches of dark brown. The young one was a beautiful silvery white, the muzzle sooty grey, a slight tinge of the same colour being visible on the back of the head and for some distance along the spine. Unfortunately the skull of the old Seal was not preserved. I have for some time suspected that this species occasionally visits the sands in the Wash, as I have heard of large Seals being seen or killed, which could scarcely be any other than the Grey Seal. Mr. Cordeaux also tells me that some years ago he saw on the same sand a large Seal, which he believes belonged to this species; it was in company with several Common Seals and "was a veritable Triton amongst the Minnows, looming like a big bullock in the haze."—T. Southwell (Norwich).

Nesting of the Long-tailed Titmouse.—I should like to ask other observers at what height from the ground the nest of the English Long-tailed Tit (*Acredula rosea*) is generally placed? There is now in a large oak tree of mine here, a Long-tailed Tit's nest, at least fifty feet from the

ground. My experience in Holland led me to think that *A. caudata* always, or nearly always, built its nest some way from the ground, and generally in the fork of an oak branch. In Corsica also, I should say, that *A. Irbii* builds at about the same elevation as the last-mentioned species. But my experience of *A. rosea* is that the nest (and I have found a great many) is not placed more than from five to twelve feet high, and then generally in a hedge-row or blackthorn bush. It may be said, with regard to the nest that I am here referring to, that circumstances alter cases—such as lack of suitable or ordinary positions for the nest, abundance of vermin, &c. Now suitable hedges are in the near neighbourhood of the oak tree in which the nest is placed, and my cats (Persian) never go birds'-nesting. Macgillivray (ii. p. 457) says of *Mecistura longicaudata*, that the nest is "supported by the twigs or branches of a tree or bush, sometimes at the height of many yards, but not unfreqnently very near the ground." Prof. Newton (Yarrell, i. p. 506), writing of *A. caudata* (apparently not recognizing *A. rosea* as a species), says the nest is "sometimes even high up in the fork of a tree." Mr. Dresser, in his 'Birds of Europe,' gives no special heights for the nests of the different species of European Long-tailed Titmice. In 'The Ornithology of the Straits of Gibraltar' *A. Irbii* is said to nest at "about fifteen to sixteen feet from the ground." Temminck, obviously describing *A. caudata*, says (Man. d'Ornithologie, 1st ed., p. 174), "Construit avec assez d'art un nid à quelque distance de terre et posé sur l'enfourchement des branches." Again, Degland et Gerbe (i. p. 571) say, "Elle niche sur les buissons, dans les tailles, les vergers, contre le pied des grands chênes. Son nid, qu'elle établit à une elevation mediocre." Now I should like to ask, Is there any difference in the nidification between our species of *Acredula* and those species belonging to the Continent? I confess I believed there was, but now my theory is overthrown. Needless to say that if any ornithologist who reads this, happening to be in the neighbourhood, cares to look at the nest referred to, I shall be very pleased to show it to him.—C. Bygrave Wharton (Hounsdown, Totton, Southampton).

Buffon's Skua in the Channel Islands.—As this bird has not hitherto, I believe, been recorded from the Channel Islands, I send you the following note of its occurrence in the island of Herm. In November 1881, Mr. Jago, a birdstuffer in Guernsey, wrote to me as follows:—"A female Skua was found dead in Herm on the 29th October; it was very thin, but in good plumage; it is very like the Pomatorhine, but much smaller, being about the size of a Kittiwake; I think it is Richardson's." I did not record this supposed occurrence of Richardson's Skua in 'The Zoologist' at the time, as I was a little doubtful as to the identity. Mr. Jago, however, forwarded the bird to me a few days ago, and it turns out to be a Buffon's Skua, *Stercorarius parasiticus*, a young bird of the year. I have

carefully examined it and compared it with others, both of its own species and with Richardson's Skua, and have no doubt as to its identity, for besides its considerably smaller size, it has the shafts of the first two primaries only white, the rest being decidedly darker: this is Mr. Howard Saunders's test, and seems perfectly reliable at all ages, though in some specimens the shafts of the third and following primaries do not seem to be quite so strongly marked as in others, but always sufficiently so to distinguish the bird from Richardson's Skua. Mr. Jago, in his letter to me, describes it as very like a young Pomatorhine Skua, but smaller: this is as nearly as possible Mr. Dresser's description of the young bird in the 'Birds of Europe,' where he says it differs from the young of *Stercorarius crepidatus* in being much darker, and in colour resembles more the young of *Stercorarius pomatorhinus*. This seems also a perfectly good distinction in young birds, but I should think it doubtful in intermediate stages. It is not included in Professor Ansted's list, nor have I been able to hear of any other occurrence of this kind in the Islands.—Cecil Smith (Bishop's Lydeard, Taunton).

On the Note of the Nuthatch.—Why one of the sounds made by this bird is called "churring" by Mr. Young (p. 113), and by the Rev. O. P. Cambridge (p. 149), I do not know; but I am quite confident that the sound referred to by both the above writers emanates from the Nuthatch, and *not* from the Lesser Spotted Woodpecker. The former (locally termed the "Mud-dabber") is very common in the New Forest, where the Lesser Spotted Woodpecker is comparatively rare, though I have had fair opportunities of observing both species. Anyone reading the article by the Rev. C. A. Johns on the Nuthatch, in 'British Birds in their Haunts' (p. 311), will not doubt for a moment that the note referred to in the above-mentioned letters was that of the Nuthatch.—C. Bygrave Wharton (Hounsdown, Totton, Southampton).

Eider Duck at Scilly.—An Eider Duck was recently taken by Mr. Dorrien Smith at the Scilly Islands. It is a male bird in perfect plumage, and has been forwarded to Mr. W. H. Vingoe to be set up. Mr. Dorrien Smith's gamekeeper recollects having obtained another specimen of this bird there some years since, but the occurrence does not appear to have been recorded.—Thomas Cornish (Penzance).

Imitative Powers of the Hawfinch.—I do not recollect having seen any notice of the imitative powers of the Hawfinch, *Coccothraustes vulgaris*, and therefore subjoin a few words on the subject. A bird of this species, now in his third year (which I brought up by hand), constantly imitates the "sweeting" and "clucking" sounds with which I have talked to him and other birds. In his youth, and especially during his first moult, he used to "record" in a low tone a few notes, probably those which he heard in the

nest from his parent. Unfortunately he dropped this true song, in favour of the slightly eccentric noises aforementioned, to which he has recently added the piercing whistle of a Gray Parrot. Devoted to insects, particularly in the summer months, he nevertheless, of late, has shared all dainties with a timid Grey Cardinal, with which he paired. He invariably cracked all hemp-seeds before presenting them to her, and exhibited the deepest concern when she died in moult last autumn. Only in the matter of the first bath in the morning did he insist on holding his own. They lived together on the happiest terms for two years, though they both resented the intrusion of any other birds into their cage. This Hawfinch constantly repeats his own name, "Jock," though the J baffles his efforts sadly.—H. A. Macpherson (120, Westbourne Terrace, W.).

Hooded Crows in Hampshire.—From various notices in recent numbers of 'The Zoologist' it seems that Hooded Crows, both native and migratory, have been very plentiful in many localities. It is not altogether a frequent winter visitor to this immediate neigbourhood, yet its occurrence at that season is by no means rare; during the past winter, however, it has been unusually abundant, so that many casual and disinterested observers have noticed its appearance, or seen its mischievous depredations. The first I saw was about the middle of October, but since that date I have seen a most unusual number for this locality, and several gamekeepers tell me that the birds display a considerable degree of cunning in avoiding snares and traps prepared for their especial destruction. How can their occurrence be accounted for in this neighbourhood during such a mild and spring-like winter? With such interesting and able articles as we often get in these pages from well-known pens, our knowledge of the migration of birds must necessarily increase, yet it seems that the more we know of the subject the wider grows the field for investigation and research. The winter of 1880–81, from its severity, caused many northern birds to visit us in great numbers, whilst the "hoodies" were comparatively few, or at least no commoner than in ordinary seasons. How different the experience of the past mild winter! The great bulk of "visitors," and especially waterfowl, were rare or entirely absent, but the species (or variety) in question came to us in unusual quantities, and yet I suppose the same instinct and laws of migration actuate the movements of each and every individual of the feathered race. —G. B. Corbin (Ringwood).

Kite in Cornwall.—Very recently a Kite was shot at Clowance, near Camborne, the seat of the Rev. St. Aubyn St. Aubyn, I believe by his keeper. A Kite (probably the same bird) had been previously seen by Mr. R. G. Lakes at Trevarrack, St. Austell; and shortly afterwards a Kite (probably the same bird) was seen by Mr. E. Vingoe at Scorren, near Redruth. The specimen killed at Clowance, which proved to be a male in

excellent plumage, is now in the hands of Mr. W. H. Vingoe, of Penzance, for preservation.—Thomas Cornish (Penzance).

Blindness in the Codfish.—Fishes, as a rule, are provided with two eyes, symmetrically placed one on either side of the head, while they are undoubtedly large as compared with what obtains in other vertebrates, or even in comparison with the extent of surface in their own bodies. Their size, however, is modified in accordance with local surroundings and their habits. Some frequent muddy waters, where vision would be of less service than tactile organs; in such cases appendages for feeling, as barbels, are more developed than eyes. Others again are restricted to living in dark caves where rays of light can hardly enter. Irrespective of the foregoing cause of atrophy there are many forms residing in the dismal abysses of the ocean where light is unable to penetrate, for solar rays are computed to be lost at a depth of two hundred fathoms or less; while in the fresh waters of the Lake of Geneva, Prof. Forel ascertained that at thirty fathoms photographic paper was entirely unacted upon. Another modifying influence is whether the habits of the fish are nocturnal or diurnal, the former, unless residing in dark places, requiring the larger organs of vision. Active animals residing in the light are provided with eyes, while those having limited powers of progression and residents in the dark are usually more or less deficient in these organs. They may consequently be present in almost the lowest animal forms, and absolutely wanting in some of the higher, as the Shrew Mouse and the Mole. Eyes likewise may be only rudimentally developed, as in the *Amphioxus* or *Myxine*, wherein they appear as mere dark specks, but still have a nerve distributed to them. Or they may have retrograded to so considerable an extent as to be entirely absent in some forms which have taken up their abodes in dark caverns, but even here the lens and other constituent portions of the eye may usually be detected, whereas examples of the same species living outside are provided with fully formed eyes. When we commence investigating the relationship which exists in fishes' eyes to the localities they reside in or their general habits, we must be struck by the fact that some forms live where the rays of solar light are absent, others in the glare of the sunshine. But I do not purpose entering in detail into the organs of vision of fish and their numerous modifications, but to restrict myself to whether light can have such a modifying influence on the eye of the Codfish as to occasion morbid symptoms and even total blindness. In the thirteenth volume of the 'New Sporting Review' exists a most interesting account of a visit to Colonel McDowell's vivarium for Codfish in the Mull of Galloway. An excavation was formed in the rock about fifty feet in diameter, and at low tide about eight feet of water remained in this basin, and six feet more at high tide. It was

observed as a curious fact that fish when they have remained long in this pond always became blind; this was supposed by Colonel McDowell to be due to there being insufficient shelter for them from the heat and glare of the sun, owing to the shallowness of the water as compared with the depths of their usual haunts. The various members of the Cod family appear to be very susceptible to disease, especially of the vertebral column, and during the past year, when visiting an aquarium in the north, supplied with pure sea water, I observed several of these fishes blind with one or both eyes. The eyeball in those which were totally deprived of vision moved on the blind similar to that on the sound side. In some examples of the Common Cod, *Gadus morrhua*, the pupil instead of being circular was transversely oval, or even pear-shaped, probably due to an adhesion of the posterior surface of the iris to the lens or its covering. The pupil was either dull or greenish, while in some a film appeared to cover the eye. Without the opportunity of examining these eyes it would be difficult to determine the exact lesion, but I am disposed to think that the theory advanced at Colonel McDowell's was the correct one. I was lately observing a fine school of Bibs, *Gadus luscus*, which had been upwards of eighteen months in the Westminster Aquarium, where the water had not invariably been particularly clear, nor had all of it come direct from the sea. Here numerous cases of blindness were not apparent. Before, however, attributing this immunity entirely to the character of the light, we have to consider the relative susceptibility of such in the Common Cod to what obtains in the Bib. The Cod, although hardly a deep-sea fish, resides in localities at one hundred to one hundred and fifty fathoms, while the Bib, although it lives in deep waters during the winter, approaches the shore in spring and summer, consequently does not so invariably remain in dark or semi-dark places as does the Cod. Before offering any opinion on the frequency and probable cause of this blindness among members of the Cod family while in confinement, it would be interesting if managers of various aquariums would let us know whether they have observed such cases in the establishments under their control. If so, the time at which they commenced as well as the clearness and depth of water in which the fish have been kept.—Francis Day (Cheltenham).

Rare Fishes on the Cornish Coast.—I have received the Lesser Weever, *Trachinus vipera*, from a new locality. This is the first specimen I have ever seen, although I have heard of it as occurring in Pra-Sand in Mount's Bay, and in Hayle Sand. This specimen was taken out of some hard lug-sand just westward of Laregan Bridge, Penzance. I have again received a Dorse, *Gadus callarius*, taken in Mount's Bay. This specimen was sent to me as a present by the fisherman who caught it, and who considered it to be a Cod in very fine condition. I have also obtained a

Lump-fish, *Cyclopterus lumpus*, of very large size. It is remarkable that during the whole of my experience I have never (judging by colour) seen a a male or red Lump-fish. The female or blue Lump-fish occurs frequently. I received a second female taken in the mackerel drift-nets, and on the 5th April my boatman caught another in a very singular manner. He was fishing at night in the Bay, with his brother, when they observed something phosphorescent making its way towards their boat on the surface of the water. As it passed them my man struck it with the gaff and secured it. It turned out to be a blue Lump-fish of large size and shotten.—Thomas Cornish (Penzance).

The Torpedo on the Yorkshire Coast.—A specimen of the Torpedo, *T. hebetans*, the first that has occurred on the shores of this county, so far as I have been able to ascertain, was captured while among the breakers on the beach at Easington, on the 14th April, and kindly sent to me for identification. In length it measured two feet five inches, and was one foot five inches from pectoral to pectoral at its greatest width. The fish was in a dying condition when caught, and no shock was felt by its captors.—W. Eagle Clarke (Leeds).

MEMOIR OF THE LATE CHARLES DARWIN, LL.D., F.R.S.

The name of Charles Darwin has so long been a "household word" that the news of his decease, which took place on April 19th, will be received with profound regret by the entire civilized world. At the ripe age of seventy-three, in the arms of those nearest and dearest to him, he passed calmly and peacefully away, full of honours, and leaving behind him an illustrious and imperishable name.

The studies and researches which contributed to render his name so famous appear to have been commenced at an early period of his life, when, meditating the pursuit of medicine as a profession, he was sent to Edinburgh, then at the height of its reputation as a medical school, and in the University of which city his grandfather, Dr. Erasmus Darwin, had taken his degrees. After two years of study there he proceeded to Cambridge, where in due course, at Christ College, he graduated B.A. and M.A. Finding about this time that his private means were sufficient to render him independent of a profession, he abandoned the idea of adopting the practice of medicine, and devoted himself, from the love of it, to the study of Biology.

Although known at this time to only a small circle of scientific friends, his abilities as a naturalist soon became more widely recognised; and in 1831, when the Hon. Capt. Fitzroy—afterwards better known as Admiral Fitzroy, of meteorological fame—was ordered, with the 'Adventure' and 'Beagle,' to survey the coasts of Antarctic America, Charles Darwin was appointed Naturalist to the Expedition.

He sailed in December, 1831, and returned in October, 1836, during which interval he visited the Straits of Magellan and the coasts north of that Strait, and crossed the country from Valparaiso to Buenos Ayres, visiting besides the Galapagos, Ascension, the coasts of Australia, and other regions touched by the vessels during their voyage. In every locality visited he made large and important collections of rare or new animals and plants, recording in his journal a mass of valuable notes to be afterwards utilised. His services on this expedition were highly appreciated by Capt. Fitzroy, who paid a deserved tribute to his merits when receiving the medal voted him by the Royal Geographical Society; and the esteem in which he was held by his fellow voyagers has been fitly perpetuated in the names bestowed on Port Darwin in North Australia, and Darwin Mount and Sound, in Tierra del Fuego.

On his return from this expedition he settled at Down, near Beckenham, in Kent, where he has ever since resided, and where he commenced and prosecuted those literary and scientific labours which have since procured for him a world-wide reputation. In 1839 appeared his 'Journal' of a Naturalist, giving a narrative of his voyage, and written in a style so pleasing, and withal so instructive, that it has maintained a popularity to this day, and is regarded as quite a model work of its kind.

Between 1839 and 1842 appeared the official 'Zoology of the Voyage of Her Majesty's ship Beagle,' in four quarto volumes, by "various eminent hands," though the whole work was edited by Mr. Darwin, and the habits of the animals and their range were given by his own pen. In this work, for the first time, were described those great mammals of geological ages which are found on the Argentine Pampas, in addition to a series of observations on almost every other group of mammals. Not to enumerate many detached memoirs of interest, the next conspicuous work of

Mr. Darwin was 'The Structure and Distribution of Coral Reefs' (1842-46), in which was enunciated the theory of their growth which is now generally accepted. This treatise was the first part of the Geology of the 'Adventure' and 'Beagle'; the 'Geological Observations on Volcanic Islands' (1844) formed the second volume; 'Geological Observations on South America' appeared in 1846, as the third section of the work; and this, with the exception of a number of detached papers, may be said to have completed the formal systematic account of the task he had officially undertaken between 1831 and 1836. 'A Monograph of the Fossil *Balanidæ* and *Verucidæ* of Great Britain' (1854), published by the Palæontographical Society, was an elaborate and laborious treatise on the extinct Barnacles; while that on 'Fossil *Lepadidæ*' (1851), published three years before, referred to another section of the same group. In the same year he also published, through the Ray Society, a monograph of the living forms of Barnacles.

But the treatises here enumerated were merely the forerunners of that work which, more than any other, has made the name of Darwin famous, namely, 'The Origin of Species,' which appeared in 1859, and which in its turn became the preface, as it were, to the elaborate series of works which at intervals followed it. The theory, as set forth in this remarkable volume, of the evolution of species from a few simple organisms, by a system of natural selection, is now too well known to require comment, but the circumstances which led to its somewhat premature publication may be briefly referred to.

In 1858 Mr. Alfred Russel Wallace, who was exploring the Malay Islands, sent home a paper describing his own views as to the "Origin of Species." Sir Charles Lyell and Dr. Hooker on reading it were struck by the fact that Mr. Wallace had arrived at conclusions almost identical with those which Mr. Darwin had already communicated to them. It was felt that delay would no longer be fair to Mr. Wallace, or just to Mr. Darwin, whose manuscript was still unpublished. Accordingly, on the 1st July, 1858, papers by both authors were read to the Linnean Society, and from that period must be dated the birth of the "Darwinian Theory," though it was not till the 24th November, 1859, that Mr. Darwin's 'Origin of Species' appeared.

In 1862 was published 'The Various Contrivances by which Orchids are Fertilised,' and, 1865, 'The Movements and Habits

of Climbing Plants,' both works of the highest botanical value. In 1868, 'The Variations of Plants and Animals under Domestication,' and in 1871 'The Descent of Man' revived the controversy regarding the character of the Darwinian doctrines which had been occasioned by the appearance of 'The Origin of Species.' 'The Expression of the Emotions in Men and Animals' did not do much to allay this, though none could deny that the author had enriched knowledge with a marvellous series of curious observations. In 1875, 'Insectivorous Plants,' describing the carnivorous propensities of certain plants, *Drosera*, *Dionæa*, &c., contained another excellent series of botanical observations. 'The Effects of Cross and Self Fertilisation' (1876), 'The Different Form of Flowers on Plants of the same Species' (1877), and 'The Movements of Plants' (1880), at once proved Mr. Darwin not only to be an ingenious theorist, but the first physiological botanist of his age. Finally, in 1881, his now familiar treatise on the Earthworm and its ways has only served to enhance his reputation.

Whether his now well-known theory of evolution will meet the fate of others which have preceded it, or become more enduring amongst scientific doctrines than the views of Lamarck and the author of 'The Vestiges of Creation,' it is of course impossible to say; but the impetus which his various works have given to modern thought and research, and the extraordinary number of biological facts which have been collected and brought to light by his untiring industry, will cause naturalists of every nation to be for ever indebted to him.

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

Linnean Society of London.

March 16, 1882.—Sir John Lubbock, Bart., M.P., F.R.S., President, in the chair.

Messrs. H. M. Brewer, V. I. Chamberlain, and A. P. Withiel Thomas were elected Fellows of the Society.

Mr. Worthington G. Smith called attention to certain very destructive Australian Fungi new to England, viz., *Capnodium australe*, fatal to conifers, especially *Thuyas* and *Isaria fuciformis*, a great pest to grass in Kent and Sussex. The latter plant is popularly supposed to induce a

disease similar to diphtheria, and said to be fatal to cattle. *Isaria* frequently grows on animal substances, dead and living, as on larvæ and pupæ of ichneumons, spiders, moths, wasps, &c.

Mr. Smith showed a bee caught alive in this country, and having a profuse growth of the *Isaria* condition of the *Cordiceps sphecocephala*, a W. Indian form, the latter genus being closely allied to *Clavieps*, or Ergot.

Dr. Francis Day read a paper upon the *Salmones* found in the British Isles, remaking how great changes are occasioned by retaining any of them in unsuitable localities. He objected to the augmentation in number of the British forms of non-migratory Trout from three to seven, as made by Dr. Günther, holding that we possess only two:—the Loch Leven Trout, which is in reality a marine form acclimatized to fresh water, whereas the remainder are solely local races of the common Brook Trout. A most interesting fact was brought forward, *viz.* that Mr. Arthur, in New Zealand, having lately examined the Trout which were introduced there in 1869, from ova originally obtained from the Thames and the West of England, found great structural changes had taken place. The fish in question, moreover, living in different streams in New Zealand, had also assumed local peculiarities of size and change of form; and, due doubtless to increased food, the annual increment of weight had risen from 1½ to 2½ pounds, and an example had been seen weighing 20 pounds. The cœcal appendages, hitherto held as significant of species, were found augmented from 33 to 50, as exemplified in British fish, to from 43 to 54 in the New Zealand examples, showing that these organs are inconstant in number. Having alluded to the different species, Dr. Day concluded that, as the various species of non-migratory Trout, accepted by Dr. Günther, interbreed, and the hybrids are not sterile, the fact gives increased reason for supposing these various forms are merely local races, and not different species; that if they are really distinct species, division has not proceeded sufficiently far, because the Gillaroo, a form of Trout with a thickened middle coat of the stomach, has been termed *Salmo stomachicus*, Günther, whereas the Great Lake Trout with a thickened stomach, and the Charr, having a similarly transformed organ, have not yet been differentiated into species. Dr. Day considers that all our non-migratory freshwater Trout (excluding the Loch Leven) are merely local races; that interbreeding will produce mongrels, in which sterility need not be anticipated, while introducing new races (unless on the principle of preventing breeding in and in) will not be of much benefit to fisheries, unless the food is in excess of local requirements, for if not the new-comers will revert to the colour, form, and size of the original tenants of the water.

Two papers by Mr. Charles Darwin—(1) on the action of carbonate of ammonia on the roots of certain plants, and (2) the influence of carbonate of ammonia on chlorophyll bodies—were read. The observations which led

to the first of these papers were originally made many years ago on *Euphorbia peplus*, and have now been extended to other genera. A plant of *E. peplus* having been dug up and carefully washed, the smaller rootlets may be placed under the microscope without further preparation, the thicker roots may be examined by means of sections. If such roots are left, before being examined, in a solution of carbonate of ammonia (1 to 7 per 1000) for a short time (varying from a few minutes to several hours), they present a wonderfully changed appearance. The most striking alteration is that the surface of the root assumes a *longitudinally striped appearance*, due to longitudinal rows of darker brown cells, alternating with lighter-coloured rows. The darker colour is seen under a high power to be due to the presence of innumerable rounded granules of a brown tint, which the lighter-coloured cells are without. Similar brown granules are deposited in cells scattered throughout the parenchyma, and markedly in the elongated endoderm cells surrounding the vascular bundle. The granules are apparently neither resinous nor fatty, for they are not removed by alcohol or ether; they are, however, slowly acted on by caustic potash, and seem to be of the nature of protein. The most remarkable part of the phenomenon is that the granules are only formed in some of the external cells, and that these cells are, before the treatment with ammonia, indistinguishable by their shape or by their contents from their fellows, which are unaffected by the solution. There is, however, a curious functional difference between the two classes of cells, namely, that the granular cells do not produce root-hairs, which arise exclusively from the cells of the light-coloured rows. Effects similar to those now described were observed in some other Euphorbiaceous plants, e. g., *Phyllanthus compressus*, though not in all the genera of this family which were observed. Among genera belonging to other families may be mentioned *Drosophyllum* and *Cyclamen*, as showing the phenomenon especially well. Altogether 49 genera were observed; of these 15 were conspicuously acted on, and 11 in a slight degree, making together 26 genera, while the roots of the remaining 23 genera were not acted on in any plain manner.

The view suggested by Mr. Darwin is that the granular matter is of the nature of an excretion, the arrangement of the dark-coloured cells in rows agreeing with what is known of the disposition of certain cells whose function admittedly is to contain excretions. The granules, moreover, are deposited in the loose exfoliating cells of the root-cap, where they cannot take part in the life of the root; and this fact points in the same direction.

In his second paper, above referred to, Mr. Darwin adduces facts to prove that carbonate of ammonia causes a kind of aggregation in chlorophyll bodies, and as these are protoplasmic, the belief in the protoplasmic nature of the aggregateed masses in *Drosera* and other carnivorous plants is supported.

Zoological Society of London.

April 4, 1882.—Prof. W. H. Flower, LL.D., F.R.S., President, in the chair.

Mr. Sclater exhibited and made remarks on an example of a rare Flycatcher, *Cyanomyias cælestis*, from the Philippines, which had been sent to England for determination by Dr. Moesch, of Zurich.

Mr. Sclater also exhibited and made remarks on two specimens of the Subcylindrical Hornbill, *Buceros subcylindricus*, which had been formerly living in the Society's Gardens.

Dr. A. Günther read the description of a new species of fresh-water Turtle from Siam, a specimen of which had been recently acquired by the British Museum. The author proposed to name it *Geoemyda impressa*, from the peculiar shape of the principal upper plates, which are not merely flattened, but distinctly concave.

Mr. W. A. Forbes read a paper on the structure of the convoluted trachea of two species of Manucode, *Manucodia atra* and *Phonygama Gouldi*, and added remarks on similar conformations in the tracheæ of other birds.

Mr. J. E. Harting read a paper on the eggs of three species of wading birds which had been obtained by the Rev. W. Deans Cowan in the neighbourhood of Fianarantsoa, in the Betsileo country, Madagascar. The species to which these eggs belonged were *Glareola ocularis*, *Ægialitis Geoffroyi*, and *Gallinago macrodactyla*. Much interest attached to these eggs as not having been previously described.

A communication was read from Mr. E. P. Ramsay, containing the description of a supposed new species of *Tephras*, an example of which had been obtained by the late Mr. S. White while collecting at the Aru Islands. The author proposed to name it *Tephras Whitei*, after its discoverer.

April 18, 1882.—Prof. W. H. Flower, 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 March, and called special attention to a Radiated Fruit-Cuckoo, *Carpococcyx radiatus*, from Sumatra, purchased March 31st, and quite new to the Society's Collection.

Prof. Flower read a paper upon the mutual affinities of the animals composing the order *Edentata*, in which the usual binary division into *Phyllophaga* (or *Tardigrada*) and *Entomophaga* (or *Vermilingua*) was shown not to agree with the most important structural characters. These, according to the interpretation put upon them by the author, indicate that the *Bradypodidæ* and *Megatheriidæ* are allied to the *Myrmecophagidæ*, and

also, though less closely, to the *Dasypodidæ*—all the American forms thus constituting one primary division of the order, from which both the *Manidæ* and *Orycteropodidæ* of the Old World are totally distinct.

A communication was read from Mr. Charles Darwin, introducing a paper by Dr. Van Dyck, of Beyrout, on the modification of a race of Syrian street dogs by means of natural selection.

Mr. Oldfield Thomas read an account of a small collection of mammals made by Mr. A. Forrer in the State of Durango, Central Mexico, in which examples of several northern forms not hitherto recorded so far south, and several southern forms not hitherto known so far north, occurred.

A communication was read from Mr. Edward Bartlett, containing notes on a collection of mammals and birds formed by Mr. J. Hauxwell in the neighbourhood of Nauta, Elvira, and Loretoyacu, on the Peruvian Amazons. The collection contained examples of new species of *Thamnophilus* and of *Crypturus*, which were proposed to be called *T. loretoyacuensis* and *C. Balstoni*.

A communication was read by Mr. Edgar A. Smith, containing an account of the collections of terrestrial and fluviatile Mollusca lately made in Madagascar by Mr. W. Johnson and the Rev. W. Deans Cowan. Various new and interesting species of the genus *Cyclostoma*, *Vitrina*, *Helix*, *Stenogyra*, *Melanatria*, *Cleopatra*, *Ampullaria*, *Limnæa*, *Physa*, *Planorbis*, *Corbicula*, and *Pisidium* were described.—P. L. Sclater, *Secretary*.

Entomological Society of London.

April 5, 1882.—H. T. Stainton, Esq., F.R.S., &c., President, in the chair.

Mr. Lionel de Nicéville, of Calcutta, was elected a member.

Mr. T. R. Billups exhibited a box of Hymenoptera, the specimens being mounted on glass, which admitted of their under sides being readily examined.

The Rev. H. S. Gorham exhibited a remarkable variety of a *Coccinella*; although intermediate between *C. oblongo-guttata* and *C. ocellata*, Mr. Gorham did not believe it to be a hybrid. Several members remarked on the really small amount of variation to be found in this group, although commonly believed to be variable.

Mr. R. M'Lachlan exhibited his collection of Trichoptera, contained in five cabinet drawers, and made some remarks thereon.

Mr. A. G. Butler communicated a continuation of his "Heterocerous Lepidoptera collected in Chili by Thomas Edmonds, Esq." Forty-five *Noctuæ* were noticed in the present paper.—E. A. Fitch, *Hon. Sec.*

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ON THE BREEDING OF THE OTTER.

BY A. H. COCKS, M.A., F.L.S.

IN the 'Proceedings of the Zoological Society' for February last I gave some account of the breeding of a pair of Otters in my possession, and as I am now able to add some supplementary notes of interest I may perhaps be allowed to preface these by briefly recapitulating the substance of my former communication.

A female Otter was sent to me in March, 1873, from North Wales, as a cub of about $2\frac{3}{4}$ lb. weight, with the permanent incisor teeth just cut. From about the time she was full-grown she came in season nearly every month; but I never possessed an adult until October, 1879, when I obtained one in Hamburg. Owing to the female animal's extreme jealousy, I was not able to let them run together until they had been duly introduced to each other through the bars of adjoining cages for some weeks. Early on the morning of July 17th they paired in the water, the female loudly chattering, or whistling, in a peculiar way all the while. They remained thus for about an hour; and the sides of the tank being perpendicular, they were of necessity swimming the whole time, Nothing further was noticed until the morning of August 12th, when they again paired in the water. They remained together on this occasion for an hour and a half.

On October 2nd, the female being evidently with young, I separated the animals; and (about 5.45) in the afternoon of the 12th I heard young ones squealing; in all probability they

had not been born more than an hour or two when I discovered them. Reckoning from August 12th (the date of the second pairing), the gestation was therefore sixty-one days. We constantly heard the cubs squealing; but nothing was seen of them until the 25th, when I looked at them, and found them to be two in number, measuring about eight inches in length, including the tails, which were about two inches, or perhaps rather more, in length, and which were curved tight round on the abdomen, as in a fœtus. They were completely covered with a fine silky coat, very different from the somewhat rough "puppy-coat" they afterwards assume. They were still blind, with the eyes very prominent. Within two hours after I had looked at them the mother removed them to the other bed-box. From this time they were frequently shifted by the mother from one box to the other, often daily, the longest stay in one box being from October 28th to November 15th.

On November 17th, while I was in the act of putting clean straw into the unoccupied bed box, the Otter came out of the other box with one of the cubs in her mouth, and, swimming with it across the tank, came right up to the box I was filling, as if totally unconscious of my presence. On finding that the bed was not ready, she swam back with the cub across the tank; and, although I left the tank as quickly as possible, she made altogether about six journeys across the tank (which is between thirteen and fourteen feet long), holding the cub by the neck in her mouth, and carrying it most of the way under water. I could not be sure about its eyes, but believe it to have been still blind. It appeared to be then about fifteen inches long, or possibly hardly so much, On the 29th the cubs were about one foot long in head and body, with tails six inches long. Weight probably about two pounds. Eyes open.

On the night of December 5th one of the cubs first showed ilself, lying with its head hanging out of the box. On the 9th the cubs first came out of their own accord, and went into the water several times (both accidentally and purposely it was supposed); the tank being nearly brimfull, they were able to get out without assistance. On the 10th I first saw the mother carry fish into the box to try to tempt the cubs to eat. In the afternoon of the same day the cubs were anxious to come out of the box; but the mother, hearing the gardeners at work close by,

would not allow them. Presently, one of the cubs having become very refractory, the old Otter seized it by the side of the neck, carried it to the tank, and gave it a thorough ducking, and thence straight back to bed, where, after another short demonstration of independence, it subsided. On the 12th one of the cubs when out, being frightened at an accidental noise, plunged without hesitation into the tank, and swam across nearly all the way under water.

On the morning of December 13th, on my feeding the old Otter while the cubs were out with her, she took two small roach to them, and tried to make them eat, taking first one fish, then the other, then both together in her mouth, and moving them about close in front of the cubs to attract their attention, at the same time uttering a peculiar whine or growl, or something between the two, which sounded ferocious. This she continued to do every day up to January 15th. On this first occasion, though they occasionally gnawed at the fish, they appeared to get nothing off.

On December 28th I turned out the cubs to exhibit: they had now become shy, and bit fiercely. On the 31st, about 11.15 p.m., I found the cubs out, and calling, as if hungry; so I gave them a supply of food, which they appeared to appreciate. They continued from that date to expect some food the last thing each night, in addition to a meal about 6 p.m. About the same date they began to eat a little the first thing in the morning; but would lie up all through the day, and the mother, when fed at other times than those specified, made no attempt to induce them to eat.

On January 25th they came out an hour earlier than usual (5 p.m.); and continued gradually to come out earlier, until February 20th, when they were out as early as 2.20 p.m.

I could not satisfy myself as to how long they suckled, but believe they continued to do so all through the spring—of course in addition to a more solid diet.

I parted with one of the cubs in June, for "a good consideration," they being by that time nearly full-grown. Early in July I went abroad, and on my return, at the end of September, I found the remaining cub quite full-grown, and was told that she had been in season during my absence—probably during August, or when she was ten months old.

The mother (now more than nine years old) and daughter continue to the present moment in apparently the best possible health, but I have been unlucky enough to lose the male, from blood poisoning—the effect, I believe, of the extreme cold of the early part of last year acting upon an abscess at the root of one of the lower premolars, and causing the mischief to spread to a fatal extent. My hopes of again breeding Otters are therefore for the present at an end.

ORNITHOLOGICAL NOTES FROM NATAL.

By Majors E. A. Butler and H. W. Feilden, and Capt. S. G. Reid

(Continued from p. 171.)

Pandion haliaëtus (Linn.), Osprey.—One seen at the mouth of the Umgeni River, near Durban, on the 24th and 26th December, by Reid. On the 26th this solitary individual flew quietly up to within a few yards of him and picked up a wounded Kingfisher, *Ceryle rudis*, which he had just shot, from the water, flying off to a neighbouring post to make a meal of it.

Bubo capensis (Daud,), Cape Eagle Owl.—A female shot near Newcastle by Feilden on June 5th.

Bubo maculosus (Vieil.), Spotted Eagle Owl.—Common everywhere, frequenting rocky krantzes near streams. Butler took eggs from a ledge among rocks near Newcastle on the 30th June, and contributes the following note:—"Shot a hen bird off the nest on the 1st June; the three eggs, which were incubated, were in a sandy depression of the ground on a ledge of rock, with a bush growing out of the rock in front that concealed the eggs from view. The rocks were on the top of a low hillside, and almost perpendicular for about fifteen or twenty feet at the spot where the nest was found, with a slope of grass for about a hundred yards below. The following day on revisiting the place I found another pair there, but I do not think they bred." A female obtained at the Horn River on the 22nd July, had eggs considerably enlarged in the ovary; another female shot near Richmond Road Camp on December 5th showed no signs of breeding. Iris brilliant pale yellow (B).

Scops capensis (Smith), Cape Scops Owl.—Butler obtained a single example of this rare little Owl in the Drakensberg kloofs

near Newcastle on the 23rd August. It was a female, and was sitting in a tree, mobbed by a number of small birds. Iris pale yellow; feet and bill leaden-grey.

Asio capensis (Smith), African Short-eared Owl.—Very common in the grass-grown edges of the "vleys" in the neighbourhood of Newcastle. Five or six may be seen on the wing together at times. A pair obtained on the 18th May showed unmistakable signs of breeding, but no nest was found.

Strix capensis (Smith), South African Grass Owl.—Common, but not so numerous as the preceding species, in company with which it is found among the long dead grass near "vleys," or small streams, in the Newcastle district. Reid found a pair at Richmond Road Camp, near Maritzburg, on the 5th December, and obtained the female. The ovary contained three enormously developed eggs, the largest as big as an average-sized grape; she was evidently just about to nest. This time is at variance with that in Layard's description (Atmore, *in epist.*), where a nest contained large young birds on the 26th May, but our experience of the breeding of South African birds shows that no reliance can be placed on any given dates for nests. Birds seem to breed in the most erratic fashion, independent of seasons and state of plumage. A male shot by Butler on the 28th September had the iris blackish brown; bill livid white, inclining to pink at the base; feet slate-colour.

Strix flammea (Linn.), Barn Owl.—Reid shot a female near Camperdown Station on December 15th. When first discovered it was sitting in a dense bush at the bottom of a deep "donga," or ravine.

Caprimulgus europæus, Linn., Common European Nightjar.—One, a male, obtained on the stony bed of a "donga" at Camperdown on the 15th December (R).

Cypselus apus (Linn.), Common Swift.—Seen in considerable numbers at Durban and Maritzburg in April; one was noted at the latter place on the 15th August, and it was common there on the 30th of that month (R). Towards the middle of September Swifts made their appearance in the neighbourhood of Newcastle, where they were afterwards common. They must breed, in our opinion, in the crevices of the rocky ravines, otherwise why should they choose their particular spot, fly constantly in and out of it throughout the day, sometimes remaining there for a long time,

screaming loudly the while? In Tiger Kloof, near Newcastle, Reid found them numerous, and all apparently nesting. One pair kept flying in and out of a hole in a rock just out of his reach, regardless of his presence, and appeared to have young. This was on the 11th November.

Cypselus caffer, Licht., African White-rumped Swift.—First observed near Newcastle on the 27th October, afterwards fairly common. Seen at Tiger Kloof in considerable numbers on the 11th November, in company with *C. apus*. A pair were breeding in a nest stolen from *Hirundo cucullata* in the verandah of Mitchell-Innes' Hotel, at Sunday's River, on the 17th November.

Cypselus melba (Linn.), White-bellied Swift.—Visits the north-western portion of the colony in considerable numbers, appearing there early in September. As with *C. apus*, it is more than probable that they breed during their stay in South Africa, for Reid shot a female with eggs very much enlarged on November 4th, on the Incandu River. See Layard's remarks on this question, in the 'Birds of South Africa,' both editions. Many of these fine Swifts were seen daily in the vicinity of Fort Napier, Maritzburg, between the 12th and 25th April, making their appearance regularly every morning in company with *C. apus*. Six were observed flying about the city of Maritzburg on the 23rd August (R).

Alcedo semitorquata (Swains.), Half-collared Kingfisher.—Not common near Newcastle. One was shot by Lieut. Giffard, of "The Welsh" Regt., in September, and others were seen occasionally along the upper waters of the Incandu and its tributaries (R).

Corythornis cyanostigma (Rüpp.), Malachite-crested Kingfisher.—Exceedingly common on all the rivers, skimming along like a little ball of blue fire just above the surface of the water.

Ceryle rudis (Linn.), Pied Kingfisher.—Common on the Incandu and other streams in the Newcastle district, and observed at Rorke's Drift (breeding), Colenso, Estcourt, &c.; in fact, it seems generally distributed throughout the colony. Reid found two pairs at the mouth of the Umgeni, near Durban, in December.

Ceryle maxima (Pall.), Great African Kingfisher.—"While I was crawling through the bush at the mouth of the Umgeni River, on the 24th December, in a vain attempt to stalk a wily Curlew in the lagoon, one of these enormous Kingfishers flew just over my head, but I had not time to get a shot at him" (R).

Ispidina natalensis (Smith), Natal Kingfisher.—Several times observed in December in the bush near the mouth of the Umgeni, perching indiscriminately on trees, telegraph-wires, and stalks of reeds overhanging the ponds. When approached it disappeared into the bush. One seen at Colenso on the 20th November (R).

Halcyon albiventris (Scop.), Brown-hooded Kingfisher.—One shot by Sergeant Williams, of "The Welsh" Regiment, near Ladysmith, in the winter months (R).

Upupa africana, Bechst., South African Hoopoe.—One shot at the Ingagane River on July 9th; four seen at Guinea-fowl Kopje, near Ladysmith, on August 21st (specimens afterwards obtained there by Lieut. Harkness, of "The Welsh" Regt.); two or more at Blaauw Krantz River on November 22nd, where Butler also observed it. Seen at Pietermaritzburg by Mr. Chapman on August 30th, and by Mrs. Savile Reid about the middle of September (R).

Rhinopomastes cyanomelas (Vieil.), Scimitar-billed Wood Hoopoe.—One obtained in the winter near Ladysmith by Sergt. Williams, of "The Welsh" Regiment (R).

Colius striatus, Lath., Cape Coly.—Obtained by Reid at Estcourt, where they were not uncommon, in April, and at Durban in December.

Cuculus solitarius, Stephens, Red-chested Cuckoo.—Butler obtained a single specimen of this bird, sitting on a bush in the open "veldt" near Newcastle, on September 27th, but observed no other specimens. Developed for breeding: iris dark brown; legs and feet yellow; orbital skin lemon-yellow; bill blackish, greenish yellow at base of lower mandible and at gape; inside of mouth yellow.

Chrysococcyx smaragdineus (Swains.), Emerald Cuckoo.—One shot by Lieut. Jenkin Jones, of "The Welsh" Regt., a short distance from Newcastle, on October 22nd (R). Butler heard of several others being killed by men in the Natal Mounted Police between Colenso and Maritzburg.

Coccystes glandarius (Linn.), Great Spotted Cuckoo.—"I shot the only one I ever saw in Natal, a male breeding, at Blaauw Krantz River, on November 23rd" (R).

Coccystes jacobinus (Bodd.), Black and White Cuckoo.—A pair seen and the male obtained, at Blaauw Krantz River, on the 23rd

November (R). Butler noticed it on one occasion near Newcastle, and on two or three other occasions about Colenso in November.

Centropus natalensis, Shelley, Lark-heeled Cuckoo.—A female in wretched plumage, but with eggs considerably enlarged, obtained in the bush between Durban and the Umgeni River on December 24th. Another, probably the male, seen but not procured (R).

Indicator sparmanni, Stephens, White-eared Honey-guide.—Butler shot a female specimen, developed for breeding, in a kloof on the Drakensberg, near Newcastle, on October 9th. It was on the ground at the time, pecking at a large piece of the comb of a wasp's nest. He observed another one at the same place a few days later, and noticed the species also at Blaauw Krantz. Legs and feet plumbeous; iris brown; bill dusky plumbeous.

Pogonorhynchus torquatus (Dum.), Black-collared Barbet.—Lieut. Harkness, of "The Welsh" Regt., obtained a specimen near Ladysmith in the spring (R).

Geocolaptes olivaceus (Lath.), Ground Woodpecker.—Exceedingly common, especially in the upper portions of the colony. Specimens obtained in all stages, and a nest taken by Butler on August 2nd, which he describes in the following note:—"Aug. 2nd found a nest containing four fresh eggs. The nest-hole was bored in soft earth on the face of a precipitous rocky bank or cliff overlooking a running stream. The eggs were laid in a depression of the ground about one foot and a half from the entrance. The passage inclined slightly upwards. No attempt at a nest. Bill dusky slate; legs and feet greenish plumbeous; iris whitish pink." Fond of perching in twos and threes, sometimes in family parties of five or six, on a big rock or ant-hill, the head and neck only visible to the intruder.

Dendropicus menstruus (Scop.), Red-vented Woodpecker.—"Lieut. Giffard and I obtained one, a male, on the 19th June, in a kloof underneath the Drakensberg, not far from the Leo Kop Mountain" (R). Butler obtained two or three specimens also in a kloof on the Drakensberg, near Newcastle, in August.

Dendropicus fulviscapus (Ill.), Cardinal Woodpecker.—Butler mentions a pair that were shot by an officer in his regiment, on the march down country in November, at Blaauw Krantz.

Yunx pectoralis, Vigors, Red-breasted Wryneck.—"A pair shot, and others seen, by Lieut. Harkness, near Ladysmith, in

November. Common along the Tugela at Colenso, where I obtained specimens, the same month" (R).

Turdus guttatus, Vigors, Natal Thrush.—"I was shown a specimen of this Thrush at Durban, in December, which had been obtained in the bush, not far from the coast" (R).

Turdus olivaceus, Linn., Olivaceous Thrush.—Appears to be universally distributed. Butler obtained four, all males, in the Drakensberg kloofs, near Newcastle, in August, three of which were developed for breeding. In some the legs and feet were brownish yellow, but in the adults yellow. Iris brown; bill brown above, yellow below. In some the upper mandible was partly yellow also. Reid shot a male in the bush, close to the beach, at Port Natal, on August 25th, and another, also a male, in the Drakensberg (Newcastle), on September 19th.

Chlorocichla flaviventris (Smith), Yellow-breasted Bulbul.—Several seen, and one obtained, in the bush close to the town of Durban, on April 9th (R).

Andropadus importunus (Vieil.), Sombre Bulbul.—One, a male, breeding, obtained near Camperdown Station, on the 15th December (R).

Pycnonotus layardi, Gurney, Black-eyebrowed Bulbul.—Common everywhere. All our specimens are alike in having the black unwattled eyelid. "Capt. Watkins, R.E., and I took a nest containing three lovely eggs near Richmond Road, on the 7th December. It was built in the fork of a small mimosa, and very badly concealed from observation. I found these birds unusually tame in the bush near Durban at the end of December; they remained perched on the telegraph-wires, a few yards from passing carriages and pedestrians. I did not shoot one, but presumed they were males watching over their sitting spouses" (R).

Crateropus jardinii, Smith, Jardine's Babbling Thrush.—"Lieut. Harkness, of 'The Welsh' Regt., shot one near Ladysmith in November, and kindly presented it to me" (R).

Monticola rupestris (Vieil.), Cape Rock Thrush.—Found commonly in the kloofs at the foot of the Drakensberg, near Newcastle, and evidently breeds in that neighbourhood.

Monticola explorator (Vieil.), Sentinel Rock Thrush.—Numerous in all parts of the Newcastle district, frequenting the stony "kopjes," throughout the winter, but only a few scattered pairs remained to breed. Shy and retiring at first, they soon

got accustomed to the presence of strangers, and we could have obtained dozens if we had wished.

"At the Ingagane, when I was engaged in building some forts, these birds gradually got so tame that they would sit on the rocks within a few yards of the working party, darting eagerly down on the insects disturbed by the removal of the smaller rocks for building the walls. A pair took up their quarters in the rocks close to my tent, and used to come within a few feet of the door while I was sitting writing within" (R). Butler considers this species much more closely allied to *Saxicola* than to *Petrocincla*. It frequents the open country, and in habits and appearance in the field it is truly Saxicoline.

Cossypha caffra (Vieil.), Cape Chat Thrush.—Obtained at Newcastle by Butler, also by Lieut. Giffard, "The Welsh" Regt. Lieut. Harkness, of the same regiment, obtained it at Ladysmith (R). It is common and breeds in all suitable places in that locality.

Myrmecocichla formicivora (Vieil.), Southern Ant-eating Wheatear.—Exceedingly common after passing Estcourt. One of the most characteristic birds of the dreary, treeless "veldt," the monotony of which it does much to relieve. Though not difficult to get near, they keep the best possible look-out from the tops of the ant-hills, and it is exceedingly hard to find their nests. Butler obtained a single white egg, measuring 0·90 by 0·70 in., from one nest near Newcastle, on September 7th, and Reid found two nests containing young birds. Butler's nest was in a hole in an ant-hill, composed of dry grass and rubbish, but the two latter were in tunnels or holes (whether made by the bird or not is not known) in the sides of holes excavated by the Ant-bear. Often seen in family parties on an ant-hill after the young are hatched; the young are browner and dingier-looking than the old birds. Their flight is straight and rapid, and it quite startles any one unacquainted with their habits to see them suddenly check themselves and drop like a stone from a height of several feet on to a convenient rock or ant-hill, with a shock sufficient apparently to break every bone in their little bodies. The males sing very prettily at times, both stationary and on the wing, the note being loud and rich. An ant-hill recently broken into by an erratic ox-waggon or by an Ant-bear is a sure find for them. When wounded they go to ground like a rat if there is a hole near.

Saxicola galtoni (Strickland), Galton's Chat.—One obtained out of a pair seen by Reid, near Ladysmith, on August 21st.

Saxicola pileata (Gm.), Capped Wheatear.—A familiar bird in the vicinity of habitations throughout the district, preferring the more level "veldt" and the society of man to the hill-sides and boulder-strewn "kopjes" patronised by the two succeeding species. Nests about September in rat-holes, frequently choosing one close to a frequented road or path. The sexes are alike in plumage.

Saxicola bifasciata (Temm.), Buff-streaked Chat.—Plentiful in the neighbourhood of the Drakensberg, at the foot of the slopes, breeding there in considerable numbers. Butler obtained some beautiful specimens in breeding plumage on October 20th. Lieut. Giffard took a nest containing two incubated eggs near Newcastle, on or about the same date. They appear to winter in the same situations, for Reid observed several, and obtained one, at the Ingagane River on June 7th.

Saxicola monticola (Vieil.), Mountain Wheatear.—Almost as common on the rocky hills as *M. formicivora* is on the "veldt." Like *Monticola explorator*, they are very shy on first acquaintance, but soon acquire confidence if unmolested. Their song is pretty, though not very often heard. Many nests were taken in the neighbourhood of Newcastle; in most cases the complement of eggs was only three; pale bluish green, spotted with brownish rufous at the larger end; they measure 0·90 by 0·65 in. The plumage of the male is subject to great variation; the ordinary type, or rather what we believe to be the *first* breeding dress, being that given in Sharpe's edition of Layard's work. As the bird gets older the black of the head changes gradually to grey, followed by that of the back and under parts, so that an old male has the greater part of the plumage grey. We saw several in this strikingly handsome plumage paired with the ordinary white-tailed black female; the latter does not appear to undergo any such modifications of colouring. It seems clear that the grey colour is not, as stated in the first edition of Layard, a sign of immaturity, for no females were ever observed with any grey at all about them; and, moreover, young birds just out of the nest and barely able to fly, seen on the 26th October, were dull black, without the faintest trace of grey. We suspect that an examination of the series of skins of this species in all stages of plumage, which we have placed in Capt. Shelley's hands, will lead to the

lumping together of two or three species that have hitherto been regarded as distinct. Butler adds the following notes on its nidification :—

(1) "Found a nest on the 10th September, near Newcastle, containing two fresh eggs, and the fragments of another that had been broken. It was built on the side of a hill under a slab of rock overlooking a running stream about twenty yards below, and consisted of fine dry grass, roots, &c., neatly put together, and well lined with sheeps' wool, horse and cow hair, &c., the whole being supported by a strong embankment of short pieces of coarse stems, grass-fibres, roots, lumps of dry earth, &c., matted together, and extending some eight or ten inches from the edge of the nest, so as to suit the slope of the ground. Eggs pale green, well marked with chestnut-red and with a few faint purplish markings as well, chiefly at the large end, forming a conspicuous confluent cap."

(2) "Another nest, under a ledge of rock, October 1st, containing three fresh eggs. The nest was similar to the one described above, consisting of moss and dry grass, well lined with cow-hair, wool, &c., but the eggs were more richly marked. After taking the eggs I threw the nest on the ground, and two days afterwards I noticed the old birds removing the *débris* to a fresh site under another rock, about twenty yards off. On the 12th October I returned to the spot, and found the nest finished and containing three slightly incubated eggs, which I took."

Pratincola torquata (Linn.), South African Stonechat.—Universally distributed and very abundant. Butler thus describes the nidification :—"Snared a hen bird on the nest, 11th Sept. The nest, which was placed under a tussock of grass on a bank overlooking a stream, was a neatly built structure, composed principally of dry grass, and lined with rats' fur, cow-hair, and a few feathers, being prolonged on the outer side for six or seven inches, so as to form a sort of embankment to suit the slope of the ground. Eggs three, fresh, pale green, somewhat faintly marked with light chestnut or fawn-colour, the markings being confined chiefly to the large end, forming a cap or zone. Two more nests, precisely similar, on the 14th of the same month and the 22nd October respectively, one containing five fresh eggs, the other three fresh eggs."

(To be continued.)

THE BIRDS OF BRECONSHIRE.

By E. Cambridge Phillips,
Member of the Woolhope Naturalists' Field Club.

(Continued from p. 50.)

Before concluding my notes on the game-birds, it will be interesting to state that a few years since two very curious hybrids were killed in the neighbourhood of Builth—a cross between the Pheasant and Black Grouse. Both have been preserved, and are now in the possession of a gentleman in that town. A friend of mine who has inspected them tells me that they partake of the shape and plumage of both parents in a marked degree, and that the cross is distinctly visible; he also says that they are apparently birds of the year.

Collared Pratincole, *Glareola pratincola.*—One of these curious birds was seen near Hay, in Breconshire, some time since by the brothers of Mr. Baskerville, of Clyro Court. They are quite certain it was the Collared Pratincole, for it alighted several times, and allowed them to walk close to it. They knew the bird well, as they had both been stationed in South Africa, where they had often observed it.

The Stone Curlew, *Œdicnemus crepitans.*—We have not this bird with us, nor have I ever heard of its being seen here, although one would imagine that our hills were well suited to its habits.

Golden Plover, *Charadrius pluvialis.*—Resident with us; it breeds sparingly on some portions of the Eppynt hills, and on the hills between Llanafawfawr and Nantgwilt it breeds in some numbers. It also breeds on the range of hills stretching from the Sugar Loaf, near Llanwrtyd, to Llanafanfawr. Occasionally it comes down to the lowlands, but very seldom; it is essentially a bird of the hills. In the severe winters of the last and preceding years large flocks frequented the fields at Newton, close to Brecon, and remained for a considerable time.

Lapwing, *Vanellus cristatus.*—Very common with us all the year round; it breeds all over the county. The Welsh call it by the appropriate name of "Cornicell" (the bird with the little horn).

Dotterel, *Endromias morinellus.* — A friend of mine has seen this bird near Abergwessin, and I was recently shown a

beautifully stuffed specimen that had been shot in the adjoining county of Cardigan. It is very rare in this part of the county.

Greenshank, *Totanus glottis*.—Also very rare. I have seen it once, and only once, and that was on the banks of the River Usk, about two miles above Brecon, running along a little sandy beach. I was fishing at the time, and watched it for some minutes before it was aware of my presence, when it quickly flew away. Mr. David Thomas, of Brecon, has a stuffed specimen in his collection that was killed near this town.

Common Redshank, *Totanus calidris*.—Very uncommon with us, and, in fact, is considered quite a rarity; occasionally, however, one is killed. In the autumn of 1880 one was shot, by a gentleman living in Brecon, on the Eppynt Hills; it was a young bird of the year, and it is therefore quite possible that it was bred somewhere near the spot where it was killed. The Welsh name is "coesgoch" (red-leg).

Common Sandpiper, *Tringoides hypoleucus*.—As its name denotes, is most common with us, especially on the banks of the Usk and Wye, where it breeds; it is also to be found on most of our smaller streams. It is very tame during the breeding season, and its beautiful flight and twittering wailing cry form a pleasing accompaniment as with rod in hand you follow the windings of our beautiful rivers.

Knot, *Tringa canutus*.—The only instance I can quote of its occurrence here is a specimen killed near Hay, most probably an exhausted migrant.

Woodcock, *Scolopax rusticola*.—Our county has long been celebrated for its Woodcock-shooting, but alas! it is but too true that the Woodcock gets scarcer and scarcer each succeeding year. I think the two last hard winters have considerably lessened their numbers. The season 1881-82 was the worst for Woodcocks I ever remember. In beating a large cover for Woodcocks in February last I only flushed a single bird, where in years past I have often found a dozen, it being a favourite place for them early in the year. I have never with certainty known of its nesting with us, but Mr. David Thomas, of this town, has a very small Woodcock of an entire light fawn-colour, without any bars whatever, that was killed in this county some years since, and which has all the appearance of a young bird about three parts grown, and therefore must have been hatched here.

Great Snipe, *Gallinago major*.—Occurs oftener with us than is generally imagined, being regarded by many people as merely a very fine Common Snipe. About six years ago I flushed what appeared to me a very large Snipe on a bog on the Eppynt Hills. It made no noise on rising, and on my missing, it flew steadily and slowly for about one hundred yards, when it pitched again. I killed it on flushing it the second time, and found it to be the Great Snipe, a bird of the year. On the large bog at Oullwyn in September, 1880, I had just knocked down a Common Snipe, which my retriever was bringing, and on taking it from her a splendid Great Snipe rose at my feet, and flew, very like a Woodcock, slowly away; all my efforts to find it again were unavailing, although it must have settled out close by. Mr. Alfred Crawshay has killed this bird at Llangorse in August, 1876, and a man at Senny Bridge, who showed me a particularly large Snipe that he had killed near Cray about five or six years ago, seemed quite astonished when I informed him that it was a Great Snipe.

Common Snipe, *Gallinago media*.—Breeds commonly on the various bogs on all the hills in the county. Last season when flapper-shooting on a large bog in the neighbourhood of Devynnock, on August 1st, I killed seven Snipe, all young birds, which may, I think, fairly represent the average number of young birds that may be killed on any large bog in the county at this time of the year. The Snipe, however, on the whole, are not nearly so numerous in the winter season as they were. As with the Woodcock, the last two severe winters played sad havoc in their ranks. They are plentiful on the many bogs on the Eppynt Hills, and I know nothing more delightful than to wander with dog and gun on a fine November day, after rain, over these beautiful hills, now picking up a few Snipe, then a Duck or Teal, sometimes a Cock or two, often a Golden Plover, and listening to the cry of an old cock Grouse, as he springs whirring up far out of reach. The largest bag of Snipe I ever made on these hills was seven couple. The Welsh name for the Common Snipe is "giach," and as pronounced in Welsh admirably expresses the sound it makes on rising.

Jack Snipe, *Gallinago gallinula*.—Very common with us, especially during the season 1881. I think this bird stands the severe cold better than the Common Snipe, and is, as its French name implies, of a more sluggish nature, and consequently usually in excellent condition. A gentleman in this town who

had been shooting over one of the large Snipe bogs near Trecastle in December last, told me that his party had moved from thirty to forty Jack Snipe in one day. This little bird has a very strong scent; most dogs hunt them with eagerness, and pointers and setters usually stand them with great staunchness.

Curlew, *Numenius arquatus*.—Breeds very generally with us on most, if not all, of our hills, making its appearance with great regularity about the middle of March, and going away again—I think to the sea-side—before or by the 1st September. Miss Lloyd, of Llandefailog, tells me that this year the Curlews have come to their breeding places earlier than their usual time. They are certainly on the increase, and I think that being protected in this county from the 1st March to the 1st August may, in a great measure, account for this. The Curlew is a bold bird in the breeding season, when, like many other birds, it seems to throw off its exceeding caution. I once saw a Curlew make a very determined attack on an old Carrion Crow that was probably on the look-out for one of its young ones. The Crow stood no chance against the Curlew, with its grand free flight, and was soon beaten off and pursued until both were close to me. The exceedingly appropriate name of the Curlew in Welsh is "Chwibanog-y-mynydd" (the whistler of the mountain).

The Whimbrel, *Numenius phæopus*, is unknown in this county.

Common Crane, *Grus cinerea*.—Although now, of course, extinct, yet I think it must have formerly occurred here in years gone by in some numbers, from the fact that the Welsh, both here and in Carmarthenshire, invariably call, in English, the Heron a "Crane"—indeed I never remember hearing a native call the Heron by any other name. The Welsh for Crane, as given in Richard's Dictionary, is "Crychydd," but he does not apply this word to the Heron, although two of the other names of the Crane and Heron are identical in Welsh; still I always hear the Heron called "Crychydd" by the Welsh both here and in Carmarthenshire, and this would lead one to believe that the name of the Crane had in some way descended to the Heron, and although this is far from conclusive as to the former occurring here, still I think it is well worth noticing.

Heron, *Ardea cinerea*.—Very general everywhere on all our rivers and streams. It breeds sparsely in scattered pairs all over the county; sometimes there are two or three nests in the vicinity

of each other, but we have no regular heronry in the county, and numbers must go elsewhere to breed. Formerly there was a heronry at Llwynwormwood Park, near Llandovery, Carmarthenshire, about twenty miles from Brecon, as the Crow—or rather the Heron—flies, but from some inexplicable cause, and without any apparent reason, about fifteen years ago this heronry suddenly broke up into two parties, one going to Neuadd-fawr, Cilcwm, near Llandovery, the residence of Mr. Campbell Davys, where they still are, and now number about one hundred birds, and the other, and smaller portion coming to Bailyddu, Llandilofan, in the county of Brecon, where, however, they did not stay long, but no doubt gradually distributed themselves over the county. The distance from Llwynwormwood to Neuadd would be about six miles, and to Llandilofan about twelve miles. I am indebted to my friend Col. Jones, of Velindre, Llandovery, for the above interesting particulars. The severe weather of January, 1881, was most fatal to the Herons. In looking for Woodcocks in that month, on one of the coldest days I ever remember, I moved a splendid cock Heron from a spring, or as it is called here a "soak," near the Gludy Lake. Happening to be in the same place a few days after, I found one (probably the same bird) dead from starvation. About the same time I also saw another Heron dead from the same cause on the banks of a pond at Penlan, close by Brecon. A very small colony of Herons have bred in a wood near Senny Bridge for many years, but their nests never seem to increase beyond half-a-dozen. These birds, I am glad to say, have a very easy time of it here, not being often molested, as if killed they are seldom or ever eaten.

Purple Heron, *Ardea purpurea*.—Has once been killed in the county, near Talybont. The gentleman who shot it told me there were three together on the River Usk, near this place. This specimen, which has been preserved, I have had the pleasure of inspecting, and a beautiful specimen it is.

Squacco Heron, *Ardea comata*.—One of these unusually rare visitors was shot by Capt. Hotchkis on the River Wye, near Hay, in Breconshire, on May 3rd, 1867, and is now in the collection of Mr. Baskerville, of Clyro Court, Hay, who has kindly favoured me with these particulars.

Bittern, *Botaurus stellaris*.—If ever there was a county that formerly echoed with the "boom" of the Bittern, it must have

been Breconshire; now, however, it is scarce. Still a great many have been killed in various parts of the county from time to time. Mr. Gwynne Holford shot one at Llangorse Lake some years ago, and several have been killed there since. Near Llandulas Church, situate in the most wild and desolate part of the county, and which is hunted by Col. Jones, of Llandovery, with his excellent pack of harriers, there are several rushy bogs, and not long since in one of these the Colonel when hunting constantly flushed a Bittern; it did not fly far, but settled again close by. As it seemed to have a decided attachment to the spot I hope it is still in the neighbourhood. The feathers of this bird were formerly—and I believe still are—in great request with anglers for making a particular salmon-fly. The Welsh for Bittern is, like most other Welsh names, wonderfully descriptive, *viz.*, "Aderyn-y-bwn" (the bird with the hollow sound), from "bwmp," a hollow sound; hence probably the English word "boom," so generally applied to the noise made by the bird.

The Little Bittern, *Botaurus minutus*, so far as I can learn, is unknown in this county, for after numerous enquiries I am unable to record any instance of its occurrence here. It is possible, however, that being only an occasional summer visitor, it has, from the nature of its haunts and its shy retiring habits, hitherto escaped observation.

Water Rail, *Rallus aquaticus*.—Remains with us all the year round, and may be very generally found in all the marshy places of the county; it is seldom seen, on account of its skulking habits, but it is far more common with us than is generally supposed. It counterfeits death exceedingly well. In shooting round a lake near here, I flushed a Water Rail close to me. I fired, and down fell the bird. On picking it up, it lay in my hand for some minutes motionless, and to all appearance dead. I was looking for a shot-mark, when suddenly, as I looked away for a moment, without the slightest warning, it flew off. I was so surprised that I could hardly believe my eyes. My dogs moved the bird twice afterwards, but I gave the clever little fellow the liberty it had so well earned. The late Mr. Marsh used to say that dogs hunt the Water Rail with greater avidity than any other water bird, when once it has been killed to them; and I have found this to be the case, several dogs I have had taking the greatest pleasure in hunting them. Some years ago I had a fine stuffed

Bittern with a skeleton of a Water Rail which had been taken from its crop after it had been killed.

Landrail, or Corn Crake, *Crex pratensis*.—Fairly plentiful, but I have never seen them in any numbers. In August and September they are often found on the hills, where I think they resort before returning. They are not nearly so plentiful with us as in England, and I think have decreased in numbers of late years. Here again the Welsh name, "Ysgrech y gwair" (the screamer of the hay), is most expressive, the word "ysgrech," as pronounced in Welsh, being a good imitation of the cry of the Corn Crake, and preferable in this respect to our word "crake."

Spotted Crake, *Crex porzana*.—A regular visitant, but very local. On many large bogs in this county it is never seen, on others it is invariably to be found. On the numerous bogs on the Eppynt Hills, over which I had the privilege of shooting for many years, I have never seen it, whilst on the Trath, a large bog on Mynydd Illtyd, near Brecon, it is to be found every year; but the favourite spot for them in this county is in the large bog near Onllwyn, and here in the early part of the shooting season I invariably flush several, and many breed in this place. I one day flushed six and killed four, three of which were birds of the year. The station-master who was then at Onllwyn informed me that there were two broods of them hatched in that part of the bog close to the station that year. This is an enormous bog, the middle of it being very deep, and about half a mile of it absolutely unapproachable, thus forming a secure retreat for many water-birds. From the thickness of the reeds it is almost impossible to beat this stronghold of the Spotted Crake with dogs, and many have been lost in attempting it. I generally find them where a warm spring or two runs in a little rivulet through the centre of a bog, and they greatly frequent this part. The flight of the Spotted Crake varies greatly, sometimes, like the Moorhen, flapping slowly out with its legs hanging straight down; at another time tucking them up under their bodies, and flying with all the speed of, and very similar to, a Quail, and the more the autumnal season advances the stronger I fancy they fly. I have never seen one after October. I once had one alive in my hand, a winged bird that my dog caught before it could escape into the reeds; its eye was a brilliant olive-green, and exactly matched the colour of its legs. I mention this because bird-stuffers invariably return you

the bird with a red eye. Like all the Crakes, it is very difficult to flush the second time, but dogs hunt it with the same eagerness that they do the Water Rail. It has been killed on some of the bogs near Cray, and its nest and eggs have been taken on the Trath, near Brecon. Mr. Dilwyn Llewellyn tells me that in the fall of the year he can at any time move three or four in some bogs in Glamorganshire. Of course, as in the process of time many of our larger bogs are drained, the area used by this bird must necessarily get smaller until it ultimately has no place to breed, but I hope that the county will yet afford this graceful and elegant little visitor a safe breeding place for many a year. May not its exceeding rarity in many parts of England arise from this cause? The late Mr. Marsh told me that he had seen it twice in his life, and those were days to be marked with a white stone. I never kill one now except to oblige a brother naturalist. I may add that I have never seen it on any of the bogs near Llanwrtyd, which bears out my observation as to its partiality for particular localities. It has also been obtained near Hay, on the other side of the county.

Moorhen, *Gallinula chloropus*.—Very general everywhere, except on our rivers and brooks. Though plentiful on the Brecon Canal, and on all our lakes and ponds, especially Llangorse Lake, it is hardly ever seen on bogs on the hills, preferring water where it can swim and feed in quietude, and this it is unable to do on rapid streams.

Coot, *Fulica atra*.—Very common on Llangorse Lake, where it breeds, as it does also on a few other smaller lakes in the county; but the large number of Coots that appear in the early part of the winter are migrants from other parts. I think it is increasing of late years, and since the Gludy Lake, near Brecon, has been looked after, it has become much more numerous there. This would also be the case at Llangorse Lake, but for the constant fusilade which takes place there every year directly the shooting season opens (August), and which must inevitably drive away every bird from its waters. It is worth remarking that on our deep hill-bogs the Coot is never found, and only occasionally the Moorhen. On the Onllwyn Bog, before mentioned, I have never seen either of these birds, and this is, I should think, the largest and deepest bog in the county, as well as the most dangerous.

(To be continued.)

THE SEVERN SALMON—WHENCE IT COMES AND WHERE IT GOES.*

By Francis Day, F.L.S., F.Z.S.

There was a time when the "King of Fresh-water Fishes" so abounded in England that the friends of every intending apprentice were careful to cause a stipulation to be inserted into each bond of apprenticeship that the lad should not be compelled to dine off Salmon more than two or three days in a week. The rivers wherein these fish were born, reared, and nourished still remain, but scarcity of the article (as demonstrated by its market value) shows that at the present time there is a woeful falling off in the supply. How many among us, may I ask, have witnessed the capture of a Salmon in the Severn off the ancient city of Gloucester? Is it not a fact that the fishery there gives but little comparative employment to the fishermen, sport to the angler, or food to the town? It may well be said of the Salmon—

"They come like shadows, so depart."

We all know the appearance of a good healthy fish when we see it exposed for sale, and are cognisant of its taste when served at table; but how few of us are aware of the many and strange adventures it has passed through before it has reached a sufficient size to reward the net-fisherman's toils, or attained to the dignity of appearing at an aldermanic feast! I propose to consider its life-history—that is, its eggs in the nest, the parr or young in our rivers, the smolt as it assumes its silvery migratory dress, the grilse which returns from the sea to our fresh waters (mostly during the summer months), and the adult Salmon that, residing in the sea, ascends our streams at certain periods in order to deposit its eggs and maintain, so far as it is able, the continuation of its race.

The eggs of the Salmon are small, round, elastic bodies, of a clear white, pink, or even coral colour. Owing to their tough outer coat, they are very elastic, as may be seen by throwing one on the ground, from which it will rebound like an india-rubber ball. This strength and elasticity must be an important property,

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* Abstract of a paper read at the Gloucester School of Art.

if we remember where these eggs are deposited and what an amount of pressure they may have to undergo. Young Salmon are hatched from eggs deposited in rivers, such as the Severn—not near its mouth, where the tide or the current would be too strong for the baby-fish to live in, but in small and often mountainous streams, where the water is pure and shallow, having a gravelly bed which permits the redd, or nest, to be constructed, while deep pools in the vicinity allow the breeding-fishes to retire into them for rest.

The places selected by fishes for depositing their eggs vary in different families. Thus the ova of the Cod floats on the surface of the sea until the young come forth; that of the Herring sinks to the bottom, where, by means of a glutinous substance, it becomes attached to sea-weeds, rocks, or other objects. One form of Sea-sucker (*Lepadogaster*) attaches its eggs to the inside of an old shell, as a butterfly does to a leaf. The Perch in our fresh waters have stringy ova, which is made fast by one end to some stationary object, as grass or timber. That of some species of Carp sinks into the mud of ponds; while a few of the tropical scaleless Siluroids that reside along the coasts have this remarkable peculiarity, that the male carries the eggs about in his mouth until the young are hatched. Our Common Stickleback forms a veritable nest, which is attached to a water-plant, and this nest has one hole by which the fish enters and another on the opposite side by which it emerges.

But none of the foregoing plans are followed by the Salmon, which ascends our rivers to a suitable spot, and in the gravel at the bottom of the stream constructs its redd or nest, which work seems to be the occupation of the female. She lies on one side, and, by moving her tail rapidly from one side to the other, fans up the gravel until she rapidly sinks into a kind of trough, the male remaining near ready to give battle to any intruder, for which purpose his lower jaw is furnished at this period with an offensive weapon in the shape of a cartilaginous, hook-like process. The female (waited upon by the male) now deposits her eggs in the trough she has made in the gravel, and these are subsequently covered to some feet in depth, the whole forming a redd. She now falls back into one of the deep pools until she has acquired sufficient strength to deposit more eggs. During this period Salmon (like Shad and many other fishes) are indisposed to feed,

and live on the stock of fat they have laid in while at sea. It has been computed that every female Salmon deposits about 900 eggs for every pound of its weight, and that only 900 of these in every 17,000 shed in British rivers ever attain the parr stage. As might be anticipated, eggs deposited in a running stream are very liable to be carried away by the current, and, as I shall presently show, the places selected by Salmon for their redds are precisely the localities where Trout have previously deposited their eggs, which now become routed up and carried away down stream to be devoured by every hungry fish.

The length of time the eggs remain in their nest before they are hatched may now be considered. This is subject to variation as great as from 50 to 128 days, which last period occurred at Stormontfield on the occasion of a very severe winter. Acting upon previous experience, Mr. Youl succeeded in transmitting Salmon-eggs to the Antipodes in small boxes packed in ice, which retarded hatching until the 145th day. Mr. Branden examined a redd that appeared to have been left dry, but on opening it found that a little water was trickling through the stones and gravel, which was sufficient to keep the ova healthy. Having scraped a hole he obtained a considerable number of eggs, and these he transferred to a pail of water, where two-thirds hatched within periods varying from five minutes to twenty-four hours. About a week subsequently he returned to the same spot, and had another dig for Salmon-eggs, no rise having occurred in the river during the interval. He collected more, and putting them into the water they hatched, as the former ones had done. He very fairly suggests that this may be a wise provision to prevent ova deposited in localities where the depth of the stream is liable to considerable fluctuations from becoming lost or destroyed, which must occur unless some delay be provided for; for as the floods come and sweep up these redds, the imprisoned ova are let loose at a time when they are ready to burst and the young to emerge.

But Salmon-eggs, even in redds, are not permitted to rest in peace and hatch in security: they have many accidents to escape from and numerous enemies whose vigilance must be avoided. Not only may floods prematurely sweep away redds with their unripe eggs, but during the continuance of such high waters spawning fish are unable to occupy their usual breeding grounds,

because they are too deep in the water. They consequently may have to shed their eggs in the stream, where they become lost, or push higher up to where there will be more chance of their redds being left dry and the ova perishing; even in their annual spawning grounds, where their eggs may have been deposited, severe seasons of drought may occasion most disastrous results. Irrespective of season, the eggs have numerous water enemies, as Fresh-water Shrimps, which hunt out the nest, where they are as merciless to the eggs as Rats are to corn in a granary. The larva of the May-fly and of the Dragon-fly, and even some birds, cannot be deemed innocent of joining in this great work of destruction; while Swans and Ducks enjoy nothing so well as the spawn of fishes, in which taste the Vole or Water Rat appears to coincide. In consequence of the many destructive agencies at work, an ingenious plan of artificial hatching and rearing has been adopted with great success. By regulating the water, droughts and floods are prevented, and many enemies are excluded which run riot among fish-eggs left in a state of nature in our rivers.

Supposing all to have gone well with the eggs, and some young fish hatched, it does not follow that the fry are always strong and healthy. The temperature of the water ought to range out of doors about 40° or 45°, for if it should rise to 50° the eggs may become prematurely hatched. The higher the temperature the sooner the young appear, and the more weakly they may be expected to be: sometimes the jaws are deformed in the fry, or the spinal column is curved; even two fish may be connected together, like the Siamese twins; again, two or even three heads have been seen attached to one body. When the young fish emerge from the eggs they have a large bag, the umbilical vesicle, attached to their stomachs: this contains the nourishment which is to serve them for several (three to eight) weeks' subsistence, and they do not commonly take in any food by the mouth until it is absorbed. Weighed down by it, they lie quietly among the stones at the bottom of the stream, and seek concealment from fish larger than themselves, aquatic insects, and other enemies which would at once commence to feed on them.

When the fry has become an ounce or so in weight, it is commonly known in our river as the "last spring" or "parr." Its colours are very similar to those of its relative the Common Trout. Several so-called "finger marks" appear down its sides, and

numerous scarlet spots are scattered over its body. Many discussions have arisen to prove or disprove this being the young Salmon, and it has been pointed out that in rivers destitute of Salmon there are no parrs, and where parrs exist there are Salmon. The question is now set at rest by eggs having been taken direct from Salmon and artificially hatched, the young produced being parrs. The parrs in their second or third year, about the month of May, begin to be restless, assuming a silvery or smolt dress, and, assembling in shoals, drop down the river towards the sea. Here again it has been asserted that smolts are not parrs. A number of the latter were placed in a fresh-water tank in the Brighton Aquarium, and when the month of May came round all but four assumed the silvery livery of the migratory smolt. Sea-water was now gradually introduced, when all became smolts!

We have now traced the Salmon-eggs to the fry, these to the Trout-looking parr, and the latter to the silvery smolt that descends to the sea. These smolts when reappearing from the sea, do not present the same appearance as when they entered it, but assume a larger form, weighing more pounds than they did ounces—miniature Salmon, termed "grilse," which ascend in shoals. These by popular repute were the intermediate stage between the smolts and the Salmon, being supposed to be those forms which descended to the sea, where they remained one or two seasons and then returned, mostly to the river where they were originally bred. Russell tells us that of all the smolts which were marked by the attachment of rings, or other effective means, none were obtained until the second year, or fifteen months after they had been turned loose. These "grilse," or young Salmon, ascend from the sea, and some of them breed, but do not deposit so many eggs as do the old Salmon: after a time they descend again as grilse-kelts, coming back subsequently from the sea as Salmon.

Salmon enter our rivers in varying numbers throughout the year, unless impurities (as in the Thames) have annihilated the breed. At certain times, as during the cold season, they ascend the Severn for the purpose of reaching their spawning-beds, and having deposited their eggs in the redds, as described, they descend to the sea in a miserable condition, many of the males succumbing from exhaustion. At this period the female fish is known

as a "shedder" or "baggit," and the male as a "kipper," but speaking generally they are termed "kelts." Such fishes, as might be expected, are positively unwholesome.

Let us follow our Salmon stage by stage up the Severn, past the city of Gloucester, where laws against polluting the river are not in force, to the weirs at Tewkesbury and elsewhere, which the fish can only cross at high floods. Here the poachers prey upon them at every obstruction; and disease, due to contagion, conjoined with filth, carries off numbers. But irrespective of the physical difficulties they must experience in surmounting natural or constructed obstacles (as weirs), the Salmon has many other dangers to contend with. First, and foremost, are those of pollutions of the river-water. Drains, manufactories, and water mines, are wholesale causes of destruction, more especially to young fish. During the last few seasons I have collected some of the accounts recorded respecting poisoning fish. A poacher having placed some chloride of lime in an old stocking, sunk it in a sluggish stream, and killed many Trout He was convicted and punished, I suppose, as a *retail* sinner, for it was lately recorded in 'The Field' that the proprietors of a large paper-mill, on the Cray River, have obtained a special Act of Parliament to permit them to discharge the same poisonous substance into that river, where they would be *wholesale* destroyers. The washings of bags which have contained artificial root manure, or bones dissolved in sulphuric acid, have been known to kill all the fish in a pond; the self-same substance, to the extent of two or three cwt. to an acre, is often employed in fields contiguous to rivers, into which much of it would obtain access were a sudden storm to occur immediately subsequent to its employment. The washing of sheep, from the drugs employed, has also been observed to poison the water.

An old gas-tank was drained into a sewer, and from thence obtained access to the River Roden, poisoning the fish for miles. Peat-water, or the bursting of peat-bogs into rivers, has produced similar results. Not only does the presence of pollutions in rivers concern the owners of fisheries, the fishermen who have to earn their living, as well as the consumers of fish, but it also raises the very interesting home-question of how such pollutions operate upon the dwellers residing on its banks? Does not the stream thus rendered unfit for domestic purposes drive the public

to purchase and consume other and apparently less tainted fluids? On this point Salmon and other fishes play a most important part by demonstrating whether the water they reside in is sufficiently pure to sustain their lives, for if not, it stands to reason that human beings and cattle that may incautiously partake of it may be doing so to their own destruction. Anybody may pollute the Severn at Gloucester where it is tidal, the authorities declining to consider it a stream, and thus it escapes the provisions of the Rivers Pollution Act!

We are now in a position to enquire why it is that the interests of the proprietors of Salmon fisheries are not identical throughout the entire extent of the river, and also to consider whether this clashing of interests is not inimical to the fisheries, and consequently to the general public? The proprietors of fisheries living on the higher waters may fairly argue that from Tewkesbury to the sea pollutions are permitted unchecked access, that immoderate netting is almost continuously carried on, giving the fish, except in close time, but little chance of escape. Thus the upper proprietors see but few fish, excepting during the breeding season, when it is illegal to capture them. They are, in a manner, "clucking hens," whose duties seem to be to take care the eggs are hatched, rear the fry, and "speed the parting guest" as it descends to the sea, from whence nets and other obstructions, and pollutions in the lower reaches of the Severn, will most probably prevent their ever re-ascending, or only in sufficient numbers to maintain a supply for the lower waters. Official statistics are worse than useless—they are positively misleading; for they ought to show the yearly quantity of Salmon taken in each portion of the river—not the number of boxes of Severn Salmon received at Billingsgate. Can it be a source of surprise if the breeding grounds are not strictly preserved? For the rearing of Salmon is effected at the expense of the local fish, which are residents of the upper waters. Take the Trout as an instance: it has constantly been observed that a Salmon river is not, as a rule, well stocked with Trout. Several reasons have been advanced to account for this, but the most prominent seems to be that the Trout breeds some little time earlier than the Salmon, and deposits its eggs in the identical spots that the Salmon likewise selects. As the Salmon turns up the gravelly bed, in order to form its redd, it disturbs the previously deposited Trout eggs,

which are then carried down stream by the current, and afford a repast to every fish in the vicinity.

The Salmon is rare in the Severn in comparison with the number of fry hatched there, and which would be quite sufficient to form a good supply had they a chance in the battle for life in the lower waters. The paucity of these fish is due to three main causes, excluding poaching:—(1) Difficulty in the ascent of breeding fish, owing to natural or artificial obstructions in the river; (2) immoderate netting; and (3) pollution of the water. The present policy of masterly inactivity against the great destroyers of the Salmon, aided by local activity against the petty ones, are characteristic of our fishery laws and regulations, and will probably form a subject for marvel to the antiquarians of future ages, when naturalists will perhaps observe—"What could have been expected from a legislature that left the young fish to take care of themselves, but protected the useless birds which destroyed them, and concluded every Parliamentary Session by dining at Greenwich off 'whitebait,' the fry of the Common Herring?"

NOTES AND OBSERVATIONS ON BRITISH STALK-EYED CRUSTACEA.

By John T. Carrington, F.L.S., and Edward Lovett.

(Continued from p. 185.)

Thia polita, Leach.

This rare species is described by Bell in the Appendix to his work, at the time of writing of which very little seems to have been known as to its habitat; though it seems probable, according to M. Milne-Edwards, that it is a Mediterranean form.

The carapace is somewhat shaped like a thumb-nail, but produced posteriorly; it is rarely quite an inch in length, and nearly as broad in the widest part; it is remarkably smooth and polished, and fringed with fine downy setæ. The antennæ are about a quarter of an inch in length, and slightly plumose.

The anterior pair of legs are robust, rounded and smooth, the forceps curved; the legs are capable of being closed in beneath the carapace. The remaining legs are hairy and rather short, the fourth pair being the shortest. The abdomen is five-jointed

in the male and seven-jointed in the female, and in both fringed with setæ. Its colour is white, with a faint greenish tinge; but specimens are not unfrequently found of a delicate pink suffused over the whole of the carapace, whilst the legs are of the normal white colour. There is often a circular spot of red on each side of the carapace, over the branchial region, which greatly varies in size, and which is quite absent in some specimens.

According to Bell, this species is only recorded from Galway, where it was first discovered about 1857. We have obtained it in somewhat considerable numbers from Jersey, where it is found buried in the sand, being similar in habits to the next species.

This has been called by Jersey fishermen the "Thumb-nail Crab," the only popular name we ever heard for the species.

Corystes Cassivelaunus, Leach.

This species, again the only one of the genus known to inhabit our seas, is popularly known as the "Masked Crab," from the resemblance of the marking of the regions on the carapace to a human face or mask. It is a remarkably interesting species for several reasons, and may be described as follows:—

The carapace is much longer than broad, somewhat cylindrical, and approaching in form the carapace of the *Macroura*. It is about an inch and a half in length and about half that in width, roughly oval in shape, and armed with three spines on each lateral margin. The orbits are large, and the space between them is notched. The antennæ are very long, being nearly as long as the carapace, and slightly plumose.

The anterior pair of legs are remarkably long in the male, but only about a third as long in the female; they are rounded in form, and enlarged at the base of the forceps, which are serrated and hairy; the wrist is armed with spines. The remaining legs are somewhat compressed, and slightly fringed with setæ on both margins. The abdominal somites are five in number in the male and seven in the female, narrow in the former and, as usual, broader in the latter.

The ova are small, and resemble that of *Carcinus mænas;* they are exuded in the spring-time, and are a dull yellowish brown, becoming very interesting under the microscope as the formation of the enclosed zoæa proceeds.

The colour of this species is a pale yellowish white, often, however, tinged with red.

Corystes Cassivelaunus is a rather deep-water species, usually found in the laminarian zone; and appears not to have occurred very commonly when Bell wrote his work. He records it from Wales, Torquay, Sandgate, Scarborough, Hastings, Cornwall, and also from Ireland. We have obtained it from Weymouth, Teignmouth, Torbay, and in considerable numbers some distance off the Sussex coast, where it was also thrown upon the shore in thousands during the great storm of January, 1881.

(To be continued.)

OCCASIONAL NOTES.

Pine Marten and Polecat in Lincolnshire.—I have much pleasure in recording the occurrence of the Pine Marten near Bardney, in Lincolnshire; the specimen (which I have just seen at Mr. Barber's, taxidermist, Lincoln, and which he asked me to record) was caught in a trap a few weeks ago: it was unfortunately very much mauled by dogs. As many inquiries have been made lately in various quarters as to the extinction of this animal in Lincolnshire and other districts, the capture is very interesting. A Polecat was taken near Grantham two or three months ago: this animal seems to be becoming very rare in this district.—W. W. Fowler (Lincoln).

Notes of the Nuthatch and Lesser Spotted Woodpecker.—The correspondence recently published in 'The Zoologist' on this subject, taken in connection with a letter received a short time since from Mr. J. H. Gurney, jun., and a conversation with Prof. Newton, convince me of the great difficulty—to say no more—of attempting to translate into words the sounds made by many birds or other animals. In my communication (Zool. 1882, p. 149) I took it for granted that Mr. J. Young and I were alluding to the same note or sound, described by him as "churring," a sound he attributed (*l. c.* p. 113) to the Nuthatch, but which I believed to be that of the Lesser Spotted Woodpecker. Mr. C. B. Wharton (*l. c.* p. 189) is confident that the sound we allude to is that of the Nuthatch, and wonders why we should call it "churring"! It seems now to me more than probable that we are all three of us alluding to different notes, and therefore possibly to different birds as their cause. I will not add to the evident assumptions and confusion of the matter by attempting to give a

name to the sound I mean. I certainly should never myself have called it "churring," nor should I, in a manner, have adopted it from Mr. Young, had I not then been convinced that no note I ever heard from the Nuthatch could be so translated, while the jarring note of the Lesser Spotted Woodpecker—so very familiar to me—might by possibility be so called. The note I have had, and still have, in my mind is that of the latter, and not of the former bird: and, so far as my own experience goes, the two birds have no single note in common; nor, when heard, liable to be mistaken for each other's by anyone who has had sufficient opportunities of verifying the producer. Although, however, I will not venture to translate the sound I allude to, I may remark that it can be fairly reproduced by drawing a piece of hard stick rather quickly across some wooden palings not set too close together; in fact, by so imitating it I believe that in several instances the attention of the bird was drawn, and that I was thus enabled to induce it to continue tapping, and so to discover its position. Prof. Newton and Mr. Gurney will, I know, forgive my here alluding to them without their formal consent. The latter, writing to me on the subject, assumes that he is referring to the same sound as myself, and asks if I do not think it is like that of the Wryneck! stating his belief that "some of the Wrynecks recorded in March were only Nuthatches." This seems to me to prove that the verifying of the notes of birds is a matter at present beset with, at any rate, some little difficulty and confusion, quite apart from the attempt to translate the notes when verified. On this last point it is that Prof. Newton's observations are instructive to me. In part xiv. of his new edition of Yarrell's 'British Birds' (I have not the part by me at this moment) Prof. Newton translates the ordinary cry of the Lesser Spotted Woodpecker by the words, "kink, kink." The cry of this bird, which I should call the *ordinary* one, is very familiar to me, but those syllables are about the last by which I should ever have thought of describing it. It bears a certain resemblance to that of the Green Woodpecker—very much weaker, of course, and also less clear and resonant. I understood Prof. Newton to agree with me that, besides the jarring spring note, the Lesser Spotted Woodpecker is only known to utter the one in question, and I allude to it here merely to "point the moral," that if "kink, kink" sounds to him like this cry, the attempt to translate obscure notes of birds into ordinarily intelligible language is almost hopeless, and will probably prove misleading.—O. P. Cambridge (Bloxworth).

Uncommon Birds in the Isle of Wight.—I am informed by Mr. Dimmick the Ryde naturalist, that a Great Grey Shrike was shot near Brading last October; a Great Northern Diver, in November, off Ryde; a Red-breasted Merganser, in December; and a Red-throated Diver, in the same month, which was in a transition state of plumage, that of summer

predominating. A Common Buzzard was procured in the neighbourhood of Ryde in December. Starlings were first observed about the roofs and chimneys in the town early in March, and Blackbirds were found to be nesting early in the same month, when its song was first heard. Young Thrushes were on the wing by the middle of April. The Chiffchaff was unusually late in arriving, none having been heard of till the beginning of April, nor did I see one till the 14th of the month. Though I am told that the Nightingale was heard towards the end of March at St. Lawrence, its song was not again heard till April 14th, a mild day, therm. 52° at 10 a.m. Swallows were rather late in arriving, none having been observed till the 14th April; they seldom remain on the coast on their arrival, as I have had occasion to point out in former notes. On the 20th April I did not observe one between Ventnor and Ryde, though the meadows on the Yar abound with them later on in the season. Rooks had returned to their nesting trees in the village of Bonchurch by the first week in March.—Henry Hadfield (Ventnor, Isle of Wight).

Breeding of the Short-eared Owl in Suffolk.—One if not two pairs of the Short-eared Owl, *Asio accipitrinus*, have bred this season in Tuddenham Fen. In the fourth edition of Yarrell's 'British Birds,' the year 1864 is stated to be the latest known to the Editor in which this bird nested in the Eastern Counties: and nothing is there said of this bird's habit of placing its young, soon after they are hatched, one here and one there within a radius of about twenty yards of the original nest. By the side of one of the young ones so placed in Tuddenham Fen was a full Snipe.—W. T. Angove (Mildenhall, Suffolk).

[Our correspondent appears to have overlooked the fact that the third part of the fourth edition of Yarrell's 'British Birds,' which contains the account of the Short-eared Owl to which he refers, was published ten years ago—February, 1872. Since then this bird has been reported to have nested again in the Eastern Counties. For instance, Mr. Christy last year reported a nest in Wicken Fen, Cambridgeshire (see Zool. 1881, p. 336), and Messrs. Clarke and Roebuck, in their lately published 'Handbook of Yorkshire Vertebrata,' refer (p. 41) to the occasional nesting of this Owl in their county.—Ed.]

Teal and Redshank breeding in Yorkshire.—Allow me to record the finding of e eggs of the Teal on Strensall Common, on Easter Monday, which is exactly a year since I recorded the last taken there. The nest contained nine eggs, and, unlike that previously recorded, was in the immediate vicinity of water. The nest was visited twice, and each time the bird allowed a near approach before quitting the eggs. A friend of mine also purchased in a poulterer's shop here four eggs of the Redshank, taken in the vicinity of Melbourne, near York. On Easter Monday I procured

five eggs of the Little Grebe or Dabchick on Strensall Common; the eggs were, as usual with this bird, completely covered up. Since this note was written I have found three more nests of the Teal. That many nests of this bird should be found in the same locality is an unusual occurrence. I may add that since the breaking up and enclosing of Riccall Common, several pairs of Black-headed Gulls, *Larus ridibundus*, now breed on Strensall Common.—W. Hewett (Clarence Street, York).

Curious capture of a Great Black-backed Gull.—Thomas Sorrell, naturalist, of Old Humphrey's Avenue, Hastings, informs me that he had a Great Black-backed Gull, *Larus marinus*, brought to him at the end of February, which had been obtained in a very singular manner. The bird dived down into the hold of a fishing-smack, at sea, which was half full of Whiting. The men on the smack surrounded the hold, snatched at and secured the bird as it came up. They killed it and brought it to Sorrell, who tells me that it was an old male in fine plumage, the stomach full of half-digested Whiting. It hardly seems as if hunger could have made it endanger its life in such a strange manner.—Thomas Parkin (Halton, near Hastings).

Nesting of the Long-tailed Titmouse.—Mr. C. B. Wharton (p. 187) asks other observers at what height from the ground the nest of the English Long-tailed Tit is usually placed. Although only three nests have come under my notice it may be as well to mention their position. The first was built at a height of about twenty feet from the ground, and although hundreds of other sites could have been chosen, it was placed in the fork of a tree, quite close to another tree in which was suspended a farm-yard bell, rung four times daily. The second nest was at the top of a very high Scotch fir, on an outer branch. My attention was attracted by observing the two birds flying about the nest. These two were at Tower Hill, Co. Limerick. The third I saw a few days ago, in an apple-tree, in the garden of my friend Mr. R. J. Ussher, of Cappagh, Co. Waterford. This nest, he told me, was eleven feet from the ground. I may mention that I saw on the 12th of this month (May) a family party of old and young Long-Tailed Tits flitting restlessly about in the Curraghmore Woods.—William W. Flemyng (Portlaw, Co. Waterford).

Nesting of the Long-tailed Titmouse.—Referring to Mr. Wharton's enquiries on the above subject (p. 187), I write to say that a nest of this species is just being completed (May 6th) in an apple tree in my garden. It is placed eleven feet from the ground, at a point where a branch had been cut short some years since, among the offshoots that have sprung from the cut limb, and so artfully adapted to its surroundings, with the usual covering of silvery lichens, as to resemble a knob or excrescence of

the tree. This is late for the Long-tailed Tit to commence breeding here. I have seen two other nests in apple trees in my garden, at a similar or greater distance from the ground; and a fourth nest in a hawthorn bush, which, as well as I remember, was but six or eight feet from the ground, but this was in an unfrequented island in my ponds.—Richard J. Ussher (Cappagh, Co. Waterford).

Nesting of the Long-tailed Titmouse.—Since writing my note on this subject (p. 187), I found in the New Forest, on April 27th, a Long-tailed Tit's nest containing eight eggs, and placed in a large beech-tree, exactly forty-five feet from the ground. Within two hundred yards of this tree was another nest, containing ten eggs, of the same species, but placed in the ordinary way in a blackthorn bush, and only four feet from the ground.—C. Bygrave Wharton (Hounsdown, Totton, Southampton).

Cole Tit nesting on a Window-sill.—There is now (May 2nd) sitting on ten eggs, on a window-sill at Hoddesdon, at the height of about twenty-five feet from the ground, in a little box, a Cole Titmouse. Its perfect tameness and the extraordinary situation of the nest seem worth a record.—J. H. Gurney, jun.

Firecrest in Oxfordshire.—The only example, so far as I can learn, hitherto recorded from this county, of the Firecrest, *Regulus ignicapillus*, was killed near Banbury, in December last. It appears to be an adult male, the crest being of a brilliant orange colour, and the lines on the face very distinct. The "remarkable yellowish green patch which pervades the shoulders and sides of the neck" (*vide* Rodd's 'Birds of Cornwall,' p. 42) is very noticeable.—Oliver V. Aplin (Banbury, Oxon).

Norfolk Plover in Confinement.—The Norfolk Plover, the particulars of which were mentioned by my father in 'The Zoologist' last year (p. 384), lived five months, and died on the last day of December. I have more than once known them kept as late as this. It always sought concealment in the day-time, and its power of hiding was certainly curious. If its feet had not got diseased, from the soil of the garden, so different from its native heath, it would have lived all through the winter. Though Norfolk has always been considered the head-quarters of this species, it is not a common bird, and a very local one.—J. H. Gurney, Jun. (Northrepps, Norwich).

Manx Shearwater in Jersey.—It may be interesting to place on record the recent occurrence of the Manx Shearwater (*Puffinus anglorum*) in Jersey. This is a rare bird in the Channel Islands, where it is regarded as an accidental visitor. It is omitted from Prof. Ansted's list of the 'Birds of the Channel Islands,' and Mr. Cecil Smith, in his 'Birds of

Guernsey,' only notices one specimen, which was killed near St. Samson's, in September, 1876. The example to which I have now to refer was picked up in St. Clement's Bay by a fisherman who was collecting Crustacea for me. It was perfectly fresh and in adult plumage.—J. Sinel (Bagot, Jersey).

White-winged Black Tern at Scilly.—A specimen of this rare Tern has lately been taken at Scilly, and is now with Mr. W. H. Vingoe for preservation. So far as I can ascertain this is the first recorded occasion of its capture either at Scilly or in Cornwall.—Thomas Cornish (Penzance).

Remains of the Great Auk.—The discovery of the remains of the Great Auk, *Alca impennis*, in the Isle of Oronsay, off the coast of Argyllshire, formed the subject of a paper by Mr. Symington Grieve, read at a recent meeting of the Linnean Society. The purport of his observations, which are of much interest to naturalists, will be found briefly noted in our report, in the present number, of the meeting referred to. In connection with this paper of Mr. Grieve's may be mentioned one by Dr. John Alexander Smith on the remains of the Great Auk discovered a few years since in Caithness. This very interesting memoir will be found in the 'Proceedings of the Society of Antiquaries of Scotland' for 1879 (vol. xiii. pp. 76–105, and 436–444), and deserves to be read *in extenso* by all who are curious on the subject of the former existence in the British Islands of this now extinct sea-fowl.

On the Food of Sea Fishes.—An investigation into the food of sea-fishes is an indispensable preliminary to the framing of enactments applicable to marine fisheries, for at the present time we have but few established upon this all-important subject. On May 12th I received, in spirit, from Mr. Dunn, of Mevagissey, in Cornwall, the contents of the stomach of a single Herring captured there, with the remark that hundreds having been opened contained the same food. I found nineteen small Sand-launces, *Ammodytes*, varying from one and a half to two inches and a half in length, while the intestines of these young fishes are of a bright orange colour, due to the crustacean food they had been consuming. Last month Mr. Dunn sent me, in spirit, the contents of the stomachs of several Mackerel, which fish had appeared off Cornwall somewhat earlier this year than is usual. The food consisted of young Shrimps. A few days subsequently the fishermen reported to Mr. Dunn numerous fry of fish out at sea, too small to be captured by their nets. He proceeded to the locality indicated, and obtained many small but adult Shrimps, which were identical with those forming the Mackerels' food. I sent some to Mr. Norman, who

identified them as *Thyranopoda Couchii*, Bell. The original examples when obtained by Couch were constituting at that period the food of the Mackerel, but they have escaped observation until about two years since. It seems very probable that these crustaceans may play an important part in the appearance of the Mackerel. It has been constantly remarked that Flat-fishes, *Pleuronectidæ*, are decreasing around our coasts, the result of over-fishing, and one of the remedies proposed has been that Soles under six inches in length should be returned to the sea. During the autumn last year I was along the Devonshire and Dorsetshire coasts, from whence a large number of small Soles are fished. I therefore closely investigated the subject, and though I found very large numbers of the young of the Common Sole, *Solea vulgaris*, were being wantonly destroyed, still the majority of these small ones belonged to the Little Sole, *Solea minuta*, which rarely exceeds three inches and a half in length, and the Thick-backed Sole, *Solea variegata*, which is generally about five inches and a half long. Should the proposition to make it penal to possess Soles less than six inches in length be passed into a law, then the two last-named species would escape capture, and most probably, as a result, increase in prodigious numbers. Here the question arises, Do all these forms feed upon the same food? because, if they do, such an enactment would be tantamount to preserving a form useless as human food, but which is consuming the sustenance required for the maintenance of our most valuable species.—Francis Day (Cheltenham).

Holibut at Penzance.—A Holibut, weighing about one cwt., was taken on hook and line (Spiller), in the Bay here, on May 15th. It is a rare fish in this district.—Thomas Cornish (Penzance).

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

Linnean Society of London.

April 6, 1882.—Sir John Lubbock, Bart., M.P., F.R.S., President, in the chair.

Mr. John Blaikie, Mr. C. C. Lacaita, Mr. J. W. Phillips, and Mr. John B. Wilson were elected Fellows of the Society.

Mr. Patrick Geddes exhibited and described a series of living specimens under the microscope, illustrating the presence of *Algæ* in Radiolarians and in certain forms of *Cœlenterata*.

Mr. Marcus M. Hartog afterwards drew attention to microscopic sections of *Cyclops;* and he demonstrated structural peculiarities in the eye of *Daphnia*, and compared it with that of certain other crustaceans.

Parts xiii. and xiv. of "Contributions to the Mollusca of the 'Challenger' Expedition," by the Rev. R. Boog Watson, were read. These comprised descriptions of new forms of the families *Buccinidæ* and *Muricidæ*. Other papers discussed were botanical.

April 20, 1882.—Sir JOHN LUBBOCK, Bart., M.P., F.R.S., President, in the chair.

The President, addressing the meeting, said that they would all, no doubt, have heard the sad news of the irreparable loss which Science, the country, and the Linnean Society have sustained in the death of Mr. Charles Darwin. Only a month ago they had the pleasure of hearing a paper of his—unhappily his last—which showed no sign of any abatement of vigour. That was not the occasion to speak of the value of his scientific work, but he might say that while the originality and profound character of his researches had revolutionized Natural History, he had also added enormously to its interest, and given—if he might say so—new life to biological science. Many of them, and no one more than himself, had also to mourn one of the kindest and best of friends. He begged to propose, as a small mark of respect to the memory of their late illustrious countrymen, the greatest—alas! that he could no longer say living—naturalists, that, after the formal business was concluded, the meeting should adjourn. The motion having been put was adopted in silence.

The Auditors of the Treasurer's accounts were then agreed to, *viz.*, Dr. J. Millar and Mr. H. T. Stainton, for the Fellows, and Messrs. R. M'Lachlan and A. W. Bennett, for the Council.

Sir Thomas D. Acland, Bart., M.P., was then elected a Fellow of the Society, and the meeting adjourned.

May 4, 1882.—Sir JOHN LUBBOCK, Bart., M.P., F.R.S., President, in the chair.

Dr. Cuthbert C. Gibbes was elected a Fellow of the Society.

A resolution of Council was read by the President, embodying the Society's sense of the loss sustained by the death of Mr. Charles Darwin, and expressing sympathy with Mrs. Darwin and the family in their bereavement, a copy of which was unanimously agreed to be forwarded to them.

A paper was read "On the discovery of remains of the Great Auk, *Alca impennis*, in the Island of Oronsay, Argyllshire," by Mr. Symington Grieve. A series of wing and leg bones of the bird were obtained, along with a various assortment of remnants of the Guillemot, Red-deer, Marten, Otter, Sheep, Rat, Rabbit, Common Seal, Pig, Wrasse, Mullet, Skate, Crabs, and several kinds of Mollusks. These were dug out of a large

cone-shaped mound which the author believes must in early times have been occupied by man. The exceeding rarity of Gare-fowl remains in Britain gives a special interest to the record of their being found in these Western Scottish isles, and as associated with animals and other material giving evidence of the presence of man.

A communication followed from Mr. P. H. Gosse, dealing with the clasping organs auxiliary to the generative parts in certain groups of the Lepidoptera. After preliminary remarks the author mentions his mode of manipulation, and proceeds to a description of the organs in question, finally dealing with the modification of the apparatus as investigated in a very considerable number of species of the genera *Ornithoptera* and *Papilio*.

A paper "On the Ornithology of New Guinea," part viii., by Mr. R. Bowdler Sharpe, was read. This contribution comprised the results of collections made by Mr. A. Goldie in the districts at the back of the Astrolabe Range in South-East N. Guinea, and by Mr. Charles Hunstein on Normanby Island, on the south shore of the mainland of the China Ghauts, and on the banks of a river at the end of Milne Bay.—J. Murie.

Zoological Society of London.

May 2, 1882.—Prof. W. H. Flower, LL.D., F.R.S., President, in the chair.

After the Secretary had read the minutes of the previous meeting, the President said,—"The minutes just read recall the fact that at our last meeting we were honoured by a communication from Mr. Darwin, probably his last contribution to that science to which he devoted his life-long labours. No one who heard that paper—showing as it did no sign of faltering from that eager interest which he had always manifested in a subject which he had made peculiarly his own—expected that not twenty-four hours would elapse before those labours would be brought to a close. During the fortnight that has passed the whole world has been moved at the loss it has sustained, and his work and his character have, more than any other theme, filled the minds of thinking people of all countries, classes, creeds, and occupations. We who humbly follow him in cultivating the science he adorned must feel elevated at the sight of the full recognition accorded to his work. The general acceptance of Darwin as one who has exercised a powerful influence upon the whole realm of human thought, the cordial reception of his remains in our magnificent Abbey, among the illustrious men of whom our country is proud, are triumphs in the history of Zoology, for it was mainly zoological observation which led to those philosophical speculations which have made his name famous. The nation's grief at his

loss has already found eloquent and feeling expression in many quarters; the resources of our language seem to have been exhausted in bearing testimony to his worth. No words that I could find would add anything to what has been so well said by others; and surely here, if in any place in the world,— among those who are always occupied with subjects the pursuit of which has been so profoundly modified by his writings, and among many who loved him as a personal friend,—nothing is needed but to mention his name to call forth the strongest feelings of admiration for his work and reverence for his character. If it is not given to any of us to emulate him in brilliancy of scientific induction, or to light upon discoveries that will change the current of human ideas, we can at least endeavour to follow the example he has set us of patient perseverance in observation, scrupulous accuracy of statement, deference for the opinions and feelings of others, candour towards opponents, and of that invariable modesty and gentleness of demeanour which shed such a charm round his public as well as his private life."

Mr. Sclater exhibited a drawing of a Tapir presented to the Society by Mr. Fritz Zurcher in August last, which had been captured on the Yuruari River, in Venezuela. Mr. Sclater observed that in form and colour this animal seemed to agree better with *Tapirus Dowii* than with the ordinary *T. americanus*, and suggested that it was quite likely that the former species might be the Tapir of the northern coast-region of Columbia and Venezuela.

Mr. J. E. Harting made some remarks on the desirability of adopting a standard of nomenclature when describing the colours of natural objects.

Dr. Hans Gadow read a paper on the structure of feathers in relation to their colour, in the course of which he endeavoured to show how the optical appearances of the various colours met with in the feathers of birds were produced.

Prof. Flower gave an account of the cranium of a Cetacean of the genus *Hyperoodon*, from the Australian Seas, upon which he proposed to found a new species, *H. latifrons*.

A communication was read from Dr. O. Staudinger, containing the description of some new and interesting species of *Rhopalocera* from the New World.

A communication was read from Mr. H. J. Elwes, containing a description of a collection of Butterflies made on the Tibetan side of the frontier of Sikkim, amongst which were examples of several species new to Science.

A communication was read from Mr. Edgar L. Layard, describing a new species of Parrot of the genus *Nymphicus* from Uvéa, one of the Loyalty group, which he proposed to call *N. uvæensis*.

May 16, 1882.—Osbert Salvin, Esq., F.R.S., Vice-President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of April, 1882, and called special attention to the following birds, all of which were said to be new to the collection:—(1) A male Rifle-bird, *Ptilorhis paradisea*, in immature and worn plumage, changing very slowly into the adult dress, but apparently in good health; (2) a pair of Black-headed Tragopans, *Ceriornis melanocephala*; (3) four Rüppell's Parrots, *Pœocephalus Rueppelli*, from Western Africa; (4) a Western Black Cockatoo, *Calyptorhynchus naso*, conspicuously differing from the eastern *C. Banksi* in its smaller size; (5) a male Cabot's Tragopan, *Ceriornis Caboti*, making a fine addition to the gallinaceous series; and (6) two of the recently described Uvæan Parrakeet, *Nymphicus uvæensis*.

There was exhibited, on behalf of Mr. Henry Stevenson, a specimen of the Dusky Petrel, *Puffinus obscurus*, which had been picked up dead in the neighbourhood of Bungay, Suffolk, in April, 1858. (See Zool. 1858, p. 6096.)

A communication was read from the Rev. O. P. Cambridge on some new genera and species of *Araneidea*. Of the sixteen species described two were from Caffraria, one from St. Helena, two from Ceylon, and the remaining eleven from the Amazons.

Mr. W. A. Forbes called attention to a peculiarity recently observed in a young male specimen of *Pithecia satanas*, in which the third and fourth digits of both hands were completely "webbed."

Mr. Forbes also read a paper on certain points in the anatomy of the Todies (*Todus*), and on the affinities of that group. He dissented from the views of most previous authors as to the close affinities of these birds to the *Momotidæ*, considering that they must form a group by themselves, to be called *Todiformes*, of value equivalent to the *Pici-*, *Passeri-*, and *Cypseliformes* of Garrod. There were many grounds for supposing that *Todus* is a very ancient form, more nearly representing the ancestors of the whole group of Anomalogonatous birds than any other living form.

A communication was read from Mr. Roland Trimen, containing a description of an apparently undescribed Sun-bird obtained in the province of Mossamedes, South-Western Africa, which he proposed to name *Cinnyris Erikssoni*, after its discoverer, Mr. Abel W. Eriksson.

Mr. P. L. Sclater read some notes on a species of Duck, *Anas gibberifrons*, examples of which had recently bred in the Society's Gardens.

Mr. W. A. Forbes gave an account of some points in the anatomy of a rare Australian Duck, *Biziura lobata*, from examples that had recently died in the Society's Menagerie.—P. L. Sclater, *Secretary*.

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THIRD SERIES.

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ON AN INLAND BREEDING HAUNT OF *LARUS CANUS*.

BY ROBERT WARREN.

ON the 17th May, accompanied by my friends Dr. S. Darling and his brother, Mr. James Darling, of Ballina, I visited a breeding haunt of the Common Gull, situated on some small loughs about ten miles from the sea, the same distance from Ballina, and about three miles from the little town of Crossmolina, Co. Mayo. Driving to Glenmore, we put up the horse, and employed a boy to guide us to the loughs. In about half an hour's smart walking we reached a wide expanse of flat wet moor, having many little loughs in the low-lying parts of it, and in these loughs islands or clumps of turf covered with heath or coarse grass.

On reaching the first of the loughs we observed a Gull resting on a clump in the middle, but seeing only a solitary bird, which flew off at our approach, we did not suppose there was a nest there. Dr. Darling and I went on ahead; James Darling remaining to take another look round, and wading out to the clump of turf found a nest of dried grass on it, containing three eggs. This "find" was most encouraging, for not seeing any Gulls about we were beginning to fear that our journey would prove in vain. We walked on to a group of loughs about a quarter of a mile farther on, and there we saw two Gulls resting on clumps, and in a few minutes we had three pairs of the Common Gull circling around us, plainly showing by their

anxious movements that three nests at least must be somewhere about the islands of the lough. Unfortunately for us, owing to the great depth of the black soft mud forming the bottom of these loughs, it was quite impossible to wade out to the islands, except where the roots of the water-plants supported our feet, but the plants were too scarce to be available. While walking around this lough, vainly seeking a passage, we disturbed a pair of Dunlins, but though we made a long and careful search for the nest, were not successful in finding it. Although so far fortunate in discovering a breeding haunt of the Common Gull, we had not found the particular lough reported to me of which we had come in search. We again questioned the boy, but he knew of no other lough, nor of one where Gulls built on the tree-stumps of an old submerged forest, as had been described to me. Finding the boy therefore of no further use as a guide, we decided upon going in different directions over the bog, and, while time allowed, persevere in searching for the missing Lough-na-Crumpawn, "the lough of the stumps."

Dr. Darling and I then proceeded to examine some small pools that appeared about a quarter of a mile off, at the same time James Darling and the boy went off in the opposite direction to a little ridge about twice that distance away, from which they could obtain a better view over the surrounding bog, and perhaps discover the particular lough of which we were in search. Soon we heard the boy whistle, and saw James Darling run to meet him (we afterwards learnt that just then he had come upon a Dunlin's nest with four eggs). We then saw them walk to the top of the ridge, and then James Darling immediately whistled, and waving his hat to us disappeared over the ridge. Not seeing him return, we concluded that he must have discovered the lough; so as soon as we finished exploring those we were at, without finding anything, we hastened after him, and on reaching the top of the ridge we saw to our delight, in a hollow about half a mile away, the lough we were in search of, easily identified by the tree-stumps studding its surface. A number of Gulls were flying over the head of our friend, who was wading out through the muddy water to where the Gulls had nests.

On reaching the water we soon had eight pairs of *Larus canus* flying around us, and found eight nests composed of dried grass on the tree-stumps; James Darling visited seven of these, and

six contained eggs; the eighth he was unable to reach, owing to the depth of the mud; nor would he have reached any of them had he not made use of two pieces of board to prevent his sinking. We expected to have seen a larger colony of Gulls, for there was ample space, even on the last lough, for the nests of many more birds; but, from what we heard from a man who was cutting turf beside the water, there was the usual number of birds there.

In the summer of 1855, when visiting Lough Talt, in the Ox Mountains, Co. Sligo, I saw a few pairs of the Common Gull that had bred on two small islands in the lough, and found the young just fledged, and in one nest an addled egg. Shortly afterwards, however, that place was deserted by the Gulls as a breeding haunt, in consequence of boats being placed there for trout-fishing; and as the lough was often fished, especially in May, the birds were never undisturbed in the nesting season.

I never saw the bogs so bare of birds, for during the long time we walked over them, visiting a number of loughs, not a Snipe was seen; only one Grouse, a Curlew, and the pair of Dunlins already mentioned, which I think must have been the owners of the nest found. It was certainly rather early for the Dunlins to pair, for the next day I saw a flock of over two hundred individuals on the shore here, and nearly all in summer plumage.

ORNITHOLOGICAL NOTES FROM NATAL.

By Majors E. A. Butler and H. W. Feilden, and Capt. S. G. Reid.

(Continued from p. 212.)

Drymœca affinis (Smith), Tawny-flanked Grass Warbler.—A single specimen, male, obtained by Reid at the Umgeni River, near Durban, on the 26th December.

Drymœca hypoxantha (Sharpe), Saffron-breasted Grass Warbler.—Not uncommon in the Newcastle district, where we all obtained specimens. It is a conspicuous bird, in spite of its shy habits. We usually found it in the neighbourhood of water, especially in bushes among rocks and high grass.

Cisticola natalensis (Smith), Natal Fantail Warbler.—Reid shot two specimens of this Grass Warbler—one, a female, at the

edge of some dense bush, near Durban, on the 12th August, and another, a male, in the "Town Bush," near Pietermaritzburg, on the 31st August.

Cisticola curvirostris (Sund.), Brown Fantail Warbler.—Two males obtained hy Reid near the camp at Richmond Road, near Pietermaritzburg, on the 8th December. Fauces blackish. The species appeared to be common in the long coarse grass below the camping ground.

Cisticola tinniens (Licht.), Le Vaillant's Fantail Warbler.—Common in the neighbourhood of Newcastle, along the rivers and streams; a restless and noisy bird. Reid found a nest on the 25th October, containing two young birds just hatched, and an addled egg, pinkish white, with spots of a darker pink collected at the obtuse end; and a nest full of clamorous young birds on the following day. Both these were placed in the centre of a tuft of coarse grass growing on the bank of the River Incandu, and were discovered by watching the old birds; they were of the usual Cisticoline construction, purse-shaped, and supported by the grass-stems.

Cisticola chiniana (Smith), Larger Grey-backed Fantail.—Very common near Newcastle, where we obtained numerous specimens in May, June, and July. It frequents long grass in swampy ground, and by the side of streams.

Cisticola aberrans (Smith), Smith's Fantail Warbler.—Two specimens were procured by Reid—a male near Camperdown Station, between Pietermaritzburg and Pinetown, on the 15th December, and another at Richmond Road Camp.

Cisticola cisticola (Temm.), Common Fantail Warbler.—Numerous on the "veldt," and a most conspicuous bird in spite of its diminutive proportions. It frequents the long grass, and betrays the greatest alarm on the approach of an intruder—flying round him with a jerky, spasmodic flight, and making a curious snapping noise, apparently with its wings. This species is pronounced by Messrs. Finsch and Hartlaub, and Mr. R. B. Sharpe, to be specifically inseparable from the common Fantail Warbler of Europe.

Sphenœacus natalensis (Shelley), Natal Pointed-tailed Grass-Warbler.—This species has been separated, as a new one, from *S. africanus* of Cape Colony, from which it differs in the almost uniform rufous-buff colouring of the under surface of the body,

and in the absence of black shaft-stripes to the upper and under tail-coverts. It is common in the vicinity of Newcastle, frequenting scrubby bush and long grass by the sides of the rivers and water-courses, from which it is very hard to dislodge it after its first weak flight. Specimens vary a good deal in size. Iris reddish-brown; legs, feet, and bill lavender.

Apalis thoracicus (Shaw), Bar-throated Warbler. — One obtained by Feilden and Reid on the 15th May, in a "kloof" on the Drakensberg mountains, near Newcastle. It was creeping about like a mouse along the leafy branch of a tree. Butler also found it not uncommon in the same locality, and obtained several specimens. He remarked that the note is loud for the size of the bird, and peculiar, so that, once having heard it, it is impossible to mistake it. Iris pale yellowish white; legs and feet pinkish flesh (B).

Bradypterus brachypterus (Vieil.), Stripe-throated Reed Warbler.—Butler found this species not uncommon about Richmond Road, and shot a female developed for breeding at Karkloof on the 16th November. It frequents long grass and rushes growing in swamps or by the side of streams. He also noticed it occasionally in the swamps about Newcastle, and in other localities on the march down country during the wet season.

Bradypterus gracilirostris (Hartl.), White-breasted Reed Warbler.—Not uncommon in the thickest reeds in the "vleys" near Newcastle in September and October, at which season it breeds. It is a noisy bird, betraying its presence by its loud musical notes. We had hard work, however, to obtain specimens, as it is very shy on the approach of an intruder, creeping about like a mouse among the stems of the reeds, and keeping to the densest parts. The note is almost as rich and powerful as that of the Nightingale. A hen shot on the 27th October was undoubtedly sitting. Bill brown above, flesh below; legs and feet dark plumbeous-olive; iris brown.

Acrocephalus arundinaceus (Linn.), Great Reed Warbler.—The Great Reed Warbler from Natal is now pronounced inseparable from the European bird, *A. turdoides* (Meyer) = *A. arundinaceus* (Linn.) The only specimen obtained was a pale-coloured variety shot by Reid at Richmond Road, near Pietermaritzburg, on the 7th December. He saw another the same day, but could not secure it. Male, immature; iris light brown;

legs and toes flesh-colour; claws brown; bill bluish horn-colour; lower mandible flesh-colour at base (R). Butler also noticed it in this locality.

Acrocephalus bœticatus (Vieil.), South African Reed Warbler.—Two specimens, both males, shot by Reid on the Incandu River, near Newcastle, on the 25th October. Several others were seen. They were uncommonly lively, flitting to and fro among the reeds at the water's edge, singing lustily at intervals.

Phylloscopus trochilus (Linn.), European Willow Warbler.—Several observed and one shot by Reid in a patch of thick trees about three miles south of Newcastle, on the 28th October. He also fell in with a small party of three lively little birds close to Camperdown Station, on the 15th December, and obtained a specimen. Both these were males, showing no signs of breeding; it is very doubtful if the species does breed in its South African winter-quarters.

Dryodromas fulvicapillus (Vieil.), Tawny-headed Bush Warbler.—Not an uncommon bird; but the only specimens obtained were one at "Guinea Fowl" Kopje, near Ladysmith, in August, and one on the banks of the Tugela, near Colenso, on the 21st November; both shot by Reid.

Sylvietta rufescens (Vieil.), Short-tailed Bush Warbler.—"Only one specimen met with, shot near Ladysmith on the 18th August by Lieut. Harkness, of the Welsh Regiment, who kindly gave it to me in the flesh next day" (R).

Nectarinia famosa, Malachite Sun-bird.—Very abundant in the Newcastle district, where it is by far the commonest species of Sun-bird. Fielden discovered it wintering in the Drakensberg kloofs, and obtained specimens there in July. In October and November they were scattered in pairs all over the country, and numerous examples were obtained in all stages of plumage up to the full summer livery. It was abundant at Ladysmith in August, so perhaps it winters in sheltered kloofs there as well. Common at Richmond Road in December, many beautiful males falling victims to "Tommy Atkins" during the time the troops were encamped there (R).

Cinnyris afer (Linn.), Greater Double-collared Sun-bird.—Found commonly in the Drakensberg kloofs in company with the succeeding species. It evidently winters there, for specimens were obtained in May and June. Reid obtained one near Ladysmith in

August, and saw several others there. About the same time (August 21st), Butler found it breeding in the Drakensberg, near Newcastle. The nest he describes as very similar to many of the Indian "Honey-suckers," consisting of a pear-shaped ball of dry grass, vegetable fibres, cobwebs, &c., very neatly constructed and suspended by the small end from the top of a good-sized green shrub about ten feet from the ground. The entrance was at one side, with a portico over it; it was warmly lined with feathers. Unfortunately this nest was blown down in a snow-storm before the eggs were laid. One can hardly realise the fact of birds of this genus building with two feet of snow lying on the ground, but it is nevertheless a fact (B).

Cinnyris chalybæus, Lesser Double-collared Sun-bird.—Very common in the Drakensberg, near Newcastle, where we obtained examples in mid-winter (May and June), and where it breeds. Seen in small flocks, or rather assemblies, on flowering trees in the Town Bush at Maritzburg, on 31st August.

Cinnyris gutturalis (Linn.), Scarlet-chested Sun-bird.—"I was shown a stuffed specimen at Maritzburg in August, which my informant had himself shot in the 'Town' Bush in summer; he stated that the species was not uncommon there in the hot months" (R).

Cinnyris amethystinus (Shaw), Amethyst Sun-bird. — Not uncommon from Durban as far up country as Ladysmith, but not obtained beyond. At the latter place a male was killed by a boy with a catapult. It was common at Colenso in November, and at Durban both in August and December. Reid obtained some lovely specimens at these two places.

Cinnyris verreauxi (Smith), Mouse-coloured Sun-bird. — A female shot in the bush between Sydenham and Durban on the 12th August (R).

Cinnyris olivaceus (Smith), South African Olive Sun-bird.— Reid obtained a female in the bush near Durban on the 12th August.

Anthreptes collaris (Vieil.), Natal Collared Sun-bird. — Specimens obtained in the bush near the mouth of the Umgeni (Durban) in December (R).

Zosterops capensis (Sund.), Cape White-eye. — A common species, universally distributed throughout the colony. Many specimens were obtained in the kloofs of the Drakensberg, near

Newcastle, and it was also shot near Durban. It was usually found in small parties. "Legs and feet lavender" (B).

Parus niger (Vieil.), Southern Black-and-White Titmouse.—A small party seen in a bushy "donga" at Camperdown, near Pietermaritzburg, and one specimen, female, obtained by Reid, on the 15th December.

Pachyprora capensis (Linn.), Cape Flycatcher.—Universally distributed and common in every wooded kloof we explored. Specimens were obtained from May to August at Newcastle, and in August also at Durban. Iris deep golden or orange-yellow. These birds are of a very affectionate disposition, and on one occasion when Butler shot a male bird, the female, instead of being driven away by the report of the gun, flew down with it as it fell lifeless to the ground, and kept hopping around it, evincing the greatest anxiety and refusing to leave it till its mortal remains were consigned to the collecting-basket.

Pachyprora molitor (Hahn & Küster), White-flanked Flycatcher.—Not so common as the preceding. Reid obtained a male specimen at Ladysmith on the 21st August, seeing several others, and another male at Colenso on the 21st November. We did not meet with this species in the kloofs of the Drakensberg, near Newcastle.

Muscicapa grisola (Linn.), European Spotted Flycatcher.—Several were seen by Reid in the bush at Blaauw Krautz River, between Colenso and Estcourt, and one obtained on the 23rd November.

Stenostira scita (Vieil.), Fairy Flycatcher. — This is the *Platysteira longipes*, Swains., of Layard's first edition of the 'Birds of South Africa.' We met with it frequently in the kloofs at the foot of the Drakensberg Mountains in July, August, and September, and obtained several specimens.

Parisoma subcæruleum (Vieil.), Red-vented Flycatcher.—"One shot by Lieut. Harkness, of the Welsh Regiment, near Ladysmith, on the 18th August, and given to me" (R).

Parisoma layardi (Hartl.), Layard's Flycatcher.—An immature male obtained by Reid, in the thick bush between Durban and the Umgeni River, on the 26th December.

Terpsiphone perspicillata (Swains.), South African Paradise Flycatcher.—Obtained by Butler in the Drakensberg kloofs, near Newcastle, in October. Very common towards the coast, Butler

meeting with it (nesting) at Colenso in November, and Reid at Camperdown in December. Measurements as follows:—Male; length, 8 in., wing, $3\frac{3}{8}$ in.; tail, $3\frac{3}{4}$ in.; bill from front, $\frac{1}{2}$ in.; from gape, $\frac{7}{8}$ in.; expansion of wings, $9\frac{3}{4}$ in. The total length and length of the tail are exclusive of the long tail-feathers, which were shot away. Bill and eyelids bright blue; legs and feet lavender-blue; iris dark brown; extreme tip of upper mandible blackish. Butler's notes of the nesting of this species are as follows:—"Found two nests near Colenso on the 13th November, one containing three young ones ready to fly, the other a single young bird that flew out of the nest as I approached it. Both nests were exactly alike, neat little cups composed of dry grass with lichen attached exteriorly and placed upon a thin stem or fork of a low bough, being bound to it by cobwebs. about five feet from the ground, by the side of a stream running through a wood. The old birds evinced great excitement and anxiety whilst the nests were being examined" (B).

Cryptolopha ruficapilla (Sund.), Yellow-browed Flycatcher.—Butler found this species not uncommon in the kloofs on the Drakensberg, near Newcastle, and obtained several good specimens in August. It frequents the thick bush, and has much the same habits as *Zosterops capensis*, with which species it often associates, flitting from tree to tree in the same restless manner, searching the branches in quest of insects. On one occasion he observed a party of these birds, in company with a few "White-eyes," in the greatest possible state of excitement, mobbing a small Scops Owl which was seated motionless on a branch, fast asleep, though with one eye, as usual, half open, and looking for all the world like the stump of an old broken branch. In all probability it is migratory, not having been noticed before the middle of August. Soft parts as follows:—Iris dark brown; legs and feet olive-grey; lower mandible fleshy yellow (B).

Petrochelidon spilodera (Sund.), Prince Alfred's Swallow.—This is the *Hirundo lunifrons* (Sav.), of Layard's first edition, and a very numerous species in the Newcastle district. We found many colonies breeding near Newcastle in October. The nests are large globular mud structures, very similar to those of *Chelidon urbica*, with a hole near the top, and warmly lined with feathers matted together. As a rule they are built under cliffs and rocks overhanging small streams, from one to nine feet above

the surface of the water, and are packed closely together. In some instances the entrance-hole slightly projects, but never so much as to form a passage, as in the nests of *Hirundo cucullata*. In a colony at the Ingagane River, visited by Reid, there were as many as two hundred nests together in one clump, and several smaller ones close by, quite four hundred nests in all, while in others there are not more than fifteen or twenty. Three eggs appear to be the regular number, for in one nest only did we meet with four. The eggs, which vary much in size, are white, rather finely spotted and blotched with reddish brown or chestnut and inky purple, the markings being rather more numerous towards the obtuse end. We took them in October and November. The birds were first noticed about their nesting-places at the end of August. They appear to resort to the same place to breed every year. It would appear that they make use of the "daaga," or cement-like mixture of which the ants form their hills, in the construction and repairs of their nests; one was shot by Reid, sitting on the top of a broken ant-hill with its bill full of this material, which from its binding properties is collected and used as mortar throughout the upper districts of the colony. "Iris dark brown; bill, legs and feet dusky" (B).

Cotyle cincta (Bodd.), Brown-collared Sand Martin.—First noticed in the Newcastle district early in October, after which it was fairly abundant, frequenting river-banks and "vleys." It has a very noticeable flight, less jerky and more vigorous than that of its congeners. Butler's measurements of a fine female specimen shot by Reid, when the two were duck-shooting at "Spoon-bill" Vley, near the Buffalo, are as follows:—Length 6·9 in.; wing, 5·25 in.; tail, 2·6 in.; bill, from front, 0·4 in.; from gape, 0·6 in.; expansion of wings, 14·4 in. Legs, bill, and feet dusky; iris dark brown. They appeared to be going to breed in November, in holes in the river banks, but we did not meet with any occupied nests. The length given in Layards's work, *viz.*, 5·9 in., is probably an error, as these birds do not appear to vary in size to any extent in either sex.

Cotyle fuligula (Licht.), Brown Sand Martin.—A familiar species throughout the year in the upper part of the colony, especially noticeable on rocky hill-sides in winter, hawking in straggling bodies for its food among the sheltered ravines. In such situations it also breeds, in October and November, fixing its

shallow cup-shaped nest to the under side of a projecting rock or side of a cave, and laying three or four eggs, white, spotted with reddish brown chiefly at the larger end. The nest is made of mud, warmly lined with feathers. "They roost at night in caves, often congregating in large colonies and sitting huddled up together on the ledges in long rows or in a cavity of the rock" (B).

Cotyle paludicola (Vieil.), South African Sand Martin.—A permanent and most abundant resident in the neighbourhood of Newcastle. Two phases of plumage occur, as mentioned by Layard in his first edition; one with the under parts white, the other with these parts of a brownish colour like the rest of the plumage. We were unable to solve this question, but are inclined to the belief that the darker-coloured birds are immature. It probably breeds twice, for Feilden found a nest containing three incubated eggs in the bank of the Buffalo River, on the 6th August, and it was undoubtedly breeding in the clay banks of the rivers and streams near Newcastle, in October and November.

Hirundo rustica (Linn.), Chimney Swallow.—First observed in the Newcastle district by Butler and Reid on the 19th October. Much more numerous down country; large flocks seen both at Richmond Road and Durban.

Hirundo albigularis (Strickl.), White-throated Swallow.—Appeared at Newcastle early in September in numbers, and noted all the way to the coast. Numerous at Richmond Road in December. The nest is open, of a half-cup shape, built of mud, warmly lined with grass and a large quantity of feathers, and is placed on the under surface of rocks, usually over water. Eggs four, measuring 0·75 in. by 0·55 in., white, with small blotches and spots of reddish brown, most numerous towards the obtuse end. Nests were taken by Butler and Reid in October and November; one found by Butler was on a cliff about one hundred yards from the water on a sloping hill-side. When the nest is destroyed by accident or removed, the birds usually commence a fresh one on the same foundation within a few days. Reid took one on the 15th October, and on the 21st found a new nest ready for eggs in the same place.

Hirundo cucullata (Bodd.), Rousseline Swallow.—This Swallow visited the upper portions of the colony somewhat later than the preceding, not being recorded by us earlier than the 2nd October.

From this date it was extremely abundant, and was observed constructing its peculiar gourd-shaped nest in the verandahs of houses as well as in the wildest and most remote "krantzes" and ravines. No eggs were taken, though a nest was found, apparently ready for them, on the 11th November.

N.B. We were disappointed at not meeting with the Black Swallow, *Psalidoprocne holomelæna* (Sund.), in any part of the colony, as we had fully expected, on the strength of Mr. Ayre's experiences (quoted in the original edition of Layard's book), to find it common. This can hardly be the case, or we must have noticed it. Reid heard of it at Durban as having been seen there on Christmas Day, but did not meet with it himself.

Lanius collaris, Fiscal Shrike.—Extremely abundant everywhere, from Durban to the Transvaal, breeding in thick bushes. Some specimens obtained in the Newcastle district are larger (measuring 10 in.) than usual, and have the under parts *pure* white; but they have no claim to rank as anything more than an accidental form. Nests were found containing eggs in September, October and November. The eggs are of the ordinary Shrike type, not unlike those of *Enneoctornis collurio*. Butler shot two specimens carrying small field-mice in their claws like a hawk, and in one instance the mouse, although its head was battered in by blows of the Shrike's bill, was alive. Butler adds the following note:—"Found a nest near Newcastle containing four fresh eggs on the 9th September. It was a massive and well-built structure, placed in an orange tree in a garden, and about five feet from the ground, being composed externally chiefly of the stems of a species of white mildewed-looking herb intermixed with strips of rag, string, tufts of sheep's and goat's wool, a few feathers, &c., and well lined with grass roots, feathers, tufts of wool, and a few horse and cow hairs interwoven. Eggs of the usual *Lanius* type, whitish, with a conspicuous ring or cap of olive-brown and slaty grey confluent markings at the larger end, the markings on the rest of the egg sparse. Another similar nest, containing three fresh well-marked eggs, at Sundy's River on the 10th November. It was in a garden and placed in a fork on one of the outside boughs of an apple tree about eight feet from the ground." (B).

Lanius collurio (Linn.), Red-backed Shrike.—Specimens of this well-known bird were obtained by Reid at Blaauw Krantz

River and Weston (Mooi River) in November; it was common at Richmond Road, near Pietermaritzburg, and at Durban, in December.

Laniarius rubiginosus, Sund., Ruddy-breasted Bush Strike.—Butler obtained two specimens in a kloof on the Drakensberg, near Newcastle, in August, but it does not seem to be common in that part of the country. A female obtained by Reid in the bush, near Durban, on the 12th August.

Laniarius ferrugineus, Cuv., Greater Puff-backed Shrike.—Butler procured a few on the Drakensberg, near Newcastle. It is not very common, and strictly a woodland species, frequenting the densest bush. It is very shy, keeping out of sight as much as possible, and is usually found singly, except perhaps in the breeding season. A male shot in the "Town" Bush, near Pietermaritzburg, by Reid, on the 31st August. "The note is loud and rich, and not unlike some notes of the Indian Magpie, *Dendrocilta rufa*. Male: legs and feet light greyish plumbeous; bill dark blackish plumbeous, horny white on the terminal two-thirds of the upper mandible; iris blackish brown" (B).

Laniarius cubla (Lath.), Lesser Puff-backed Shrike.—An example of this was obtained near Ladysmith, in August, by Serjeant Williams, of the Welsh Regiment, and examined by Reid on the 19th of that month. Butler procured one also near Newcastle, in a kloof on the Drakensberg, in August, but it is not common according to our experience, and belongs to the forest tracts. Iris brilliant orange or golden yellow; legs and feet lavender; bill black" (B).

Laniarius gutturalis, Müller, Backbakiri Shrike.—Extremely common in the neighbourhood of Newcastle. Also numerous at Colenso, where it was nesting in November, and at Ladysmith. Not observed at Pietermaritzburg, though doubtless occuring there. A shy bird, though betraying its presence by its loud and not unmusical notes. Both male and female have the black collar in adult plumage. The eggs are lovely, but lose their beautiful colouring sadly when incubated; they are accurately described by Layard in his first edition. Both birds take part in sitting. Iris dark brown; bill blackish horn colour; legs and feet lavender colour, or plumbeous grey" (B).

Telephonus longirostris, (Swains.), Long-billed Bush Shrike.—Common in the bush between Durban and the Umgeni River,

where it was doubtless breeding. Reid obtained two males there and saw several others. They were very noisy and restless, and came close to him, uttering a harsh scolding cry. Butler observed a Drongo Shrike in a densely wooded ravine about three miles north of Colenso, but unfortunately had no gun with him at the time. He thinks it was, in all probability, *Dicrurus musicus*, agreeing well with the description of that species in Layard's first edition. It was quite tame, and he watched it hawking for insects for several minutes close to him.

Corvultur albicollis (Lath.), White-collared Raven.—Widely distributed, though somewhat local. As many as fifty were frequently seen together on deserted camping-grounds at Maritzburg in April. Though by no means absent in the intervening districts, it was not met with in any great numbers on the march up country at that time of the year; the camp at Newcastle, however, seemed to have drawn together the scattered parties, for they were common there throughout the winter months. We were, unfortunately, unable to investigate their breeding habits, but it seems certain that they breed all along the Drakensberg in October and November, as Butler noticed several isolated pairs scattered about the hills at that season; and early in October, Reid came suddenly on a large number of them, paired but still gregarious, on the Zulu side of Rorke's Drift, which were evidently nesting there, in a steep "krantz."

Corvus scapulatus, Daud., White-bellied Crow.—Scattered throughout the colony, but not observed below Howick. Seen in small parties, keeping together; also in pairs. Note extremely guttural and hoarse, only to be compared to that of a frog with a bad cold! Nests in both trees and rocks. Reid took a nest in a "krantz" close to Newcastle, containing four eggs, on the 9th October; the old birds, nothing daunted, built another nest on a ledge of rock close by, and in twelve days one of them was sitting on a fresh clutch of eggs. It is worthy of note that the first nest was so compactly built, though to all appearance a most flimsy construction, that it was lifted bodily from its site by the end of one of its component sticks, and that the lining consisted solely of a mass of pieces of ox-hide (evidently torn from a carcase), weighing quite two pounds. The eggs agreed exactly with Layard's description. Butler noted it as specially abundant between Colenso and Estcourt, but found it far less numerous

north and south of that district. Reed observed a considerable number—enjoying a gale of wind like Rooks in England—at Howick.

Heterocorax Capensis (Licht.), African Rook.—Like the last, universally distributed between Maritzburg, or rather Howick (about twelve miles up the road), and Newcastle. Gregarious, feeding in small bands, never exceeding, perhaps, twenty in number, attaching themselves to particular spots, and maintaining a regular line of morning and evening flight. Several pairs bred in the immediate neighbourhood of Newcastle, where eggs, agreeing with those described by Layard, were taken both by Butler and Reid in September and October. Nests bulky, built in isolated thorn trees, frequently close to farms or Kaffir "kraals," composed of twigs lined warmly with hair. These nests may be counted by dozens in the thorn bush near Ladysmith, and all along the main road between that and Estcourt. The call-note of this Crow is even more guttural and unmusical than that of *C. scapulatus*. Butler furnishes the following interesting notes regarding the nidification:—"Found a nest containing fresh eggs about the 12th September, which were unfortunately destroyed by Kafirs. The same pair built another nest at once in an adjoining tree, but being again disturbed by Kafirs deserted it before completion, and built a third nest at the top of the tree in which the first nest had been placed. From this last I took a single egg on the 2nd October. The birds then built again in a low peach tree about ten yards off, but the eggs were again destroyed by Kafirs on the 5th November. The Kafirs regard them as birds of ill omen, and consequently destroy their nests and try to drive them away. Another nest on a low tree by the side of the road between Colenso and Ladysmith contained four fresh eggs on the 14th November. The eggs are not at all like Crow's eggs, but resemble rather some of the Rails', especially those of the Indian White-breasted Water Hen, *Erythra phœnicura*."

Buphaga erythrorhyncha (Stanl.), Red-billed Beef-eater.—Only seen at Durban on April 7th, where the arrival of a flock on the backs of the horses belonging to the 7th Company Royal Engineers, which had just landed from the troop-ship, almost produced a "stampede;" and from the railway near Pinetown, perched on the backs of oxen (R). Does not, apparently, occur any great distance inland.

Lamprocolius phœnicopterus (Swainson), Red-shouldered Glossy Starling.—This is the *Juida phœnicopterus* of Layard's first edition. It was observed at Blaauw Krantz in November, by Butler and Reid, and found common at Camperdown in December. Immature birds have the iris brown, and but slight traces of the magnificent purple gloss of the adult (R).

Spreo bicolor (Gm.), Brown and White Glossy Starling.—A very familiar bird in the upper portions of the colony, remaining in flocks even after the breeding season has commenced. Nests in numbers in the Incandu River, at Newcastle, also in crevices in the rocks among the hills. Materials similar to those used by our common European Starling. Eggs four to six, light blue, sometimes spotted with red. Reid took two nests near Ladysmith from the inner walls of a deserted farm-house, one containing five pure blue eggs, the other six red-spotted ones. This was on the 18th November. It is sometimes seen on the backs of the oxen, which it diligently attends when they are grazing. It has a soft note, "pwipe," "pwipe," when disturbed.

Amydrus morio (Linn.), Cape Glossy Starling.—Common in flocks in rocky places, especially in the Newcastle district, scattering in pairs for the breeding season, in October. Butler gives the following account of its nidification:—"Found a nest nearly finished, on the 6th November, 1881. It was placed on a ledge of rock under a projecting slab of rock overhanging a stream, about 3 ft. above the level of the water, and consisted of a large mass of dry grass, matted together with mud, and lined with the same kind of grass, looking not unlike a large Blackbird's nest; the old birds were by no means shy, flying to and fro with building materials in their beaks in my presence. Unfortunately I had to leave the district before the eggs were laid. A few bits of green moss, collected from the neighbouring wet rocks, were stuck round the edge of the nest, and seemed to be growing, and there was a large colony of *Petrochelidon spilodera* breeding about 4 ft. above the nest. The note is loud and striking."

Dilophus carunculatus (Gm.), Wattled Starling.—One obtained by Lieut. Giffard near Newcastle in December.

Amblyospiza albifrons (Vig.), White-fronted Grosbeak.—One shot in the bush on Sydenham Road, near Durban, on the 12th August (R).

Hyphantornis capensis (Gm.), Cape Weaver Bird.—Not often

observed in the winter months, but Butler obtained a male on the 10th June there, and shot a couple of specimens in some bush near Ladysmith on the 21st August; so they do not, apparently, leave the colony at all. About Newcastle they were first noticed in numbers about the middle of October, when they at once proceeded to the construction of their nests. These we found in tall trees, on bushes overhanging steep krantzes, as well as in bushes and reeds by the river-side. Over thirty nests were counted on one tree. The male appears to do most of the building, but this may be only a supposition, arising from the much greater shyness of the female while an intruder is near. The first eggs were taken on the 29th October. How they can possibly remain in the nest when a gale of wind is blowing is quite a mystery, the entrance being so large and the depression inside the globular portion so little below it. "Apparently not so numerous down country as *H. velatus*, which seems almost to replace it at Ladysmith, Colenso, and Blaauw Krantz, but a colony were breeding on an island in Mooi River, at Weston, in November, and it was also nesting, in small numbers, at Richmond Road, in December" (R). Butler mentions that the nest is shaped like a snail's shell, with the entrance directed downwards, and that out of some dozens of nests examined, containing eggs in all stages of incubation, he failed to discover more than *three* eggs, many containing only *two*. "The male only assumes the bright yellow plumage in the breeding season; at other times he closely resembles the female, but is greener above and more yellow below" (B). "Legs and feet brownish flesh; bill blackish; iris brownish-white, in some greyish brown and dark brown. The crop of one examined was full of caterpillars" (B).

Hyphantornis velatus (Viel.), Black-fronted Weaver Bird.—Seen in September in small reedy vleys between Newcastle and the Drakensberg. Butler obtained specimens there, and found one or two nests, but these were afterwards knocked down by a hailstorm. Not observed elsewhere (though doubtless occurring in suitable places) in the Newcastle district, but we found it very common, and came across many colonies, nesting at most of the halting-places on the march down country, notably near Ladysmith, Colenso, and the Blaauw Krautz River. The eggs are most variable in colouring, as mentioned by Layard. Like *H. capensis*, the birds are very shy and difficult to get near,

approaching their nests with extreme caution, when once disturbed. "Iris orange-yellow; bill and inside of mouth black. Legs and feet fleshy brown. Iris brown; bill horny brown above, pale flesh below. Legs and feet brownish flesh" (B). Butler adds the following note:—"Clusters of nests of this species observed about Colenso on the 10th November, on trees along the river bank and out in the open fields, but in most instances the young had left the nests. At Ladysmith as many as forty or fifty nests were observed on one tree, and the tree was often completely stripped of its leaves by the birds. Some of the nests contained young, and some fresh eggs (two as a rule, but sometimes three), of two types, white spotted with chesnut, and pale green spotted with greyish green."

(To be continued.)

NOTES AND OBSERVATIONS ON BRITISH STALK-EYED CRUSTACEA.

By John T. Carrington, F.L.S., and Edward Lovett.

(Continued from p. 230.)

Having completed our notes on the first sub-division of the Podophthalma, *viz.*, the Brachyura or Crabs proper, we now come to the Anomoura, a sub-division which embraces the most remarkable examples of these animals.

It would appear as if the Anomoura consisted of a series of stepping-stones in the development of Crustacea, from those constructed on one plan to those constructed on another; for in this sub-division we have genera of the "crab" form, as in *Dromia* and *Lithodes;* others of the "lobster" form, as in *Galathea* and *Munida;* whilst the remarkable genus *Pagurus* cannot be identified with either form of construction. One curious feature, however, exists in common, and it is this, that the fifth pair of legs are quite rudimentary in all the genera classed under this sub-division. What their use can be is not very clear, beyond the possibility of their being utilized to cleanse the carapace, for which purpose they seem well adapted. If, however, this be so, why are not those of the two other sub-divisions, *viz.*, the *Brachyura* and *Macrura* furnished with the same appendages? The habits of all the *Podophthalma* are not widely different, and

in fact many are found living together under similar conditions. In describing the species of this class we shall refer more fully to this striking characteristic.

Anomoura.

Dromia vulgaris, Edwards.

This common Mediterranean species has the carapace, when the limbs are at rest, almost round like a ball. The whole body, excepting the forceps, is densely covered with a warm brown mass of closely-set setæ; this gives it the appearance of an Echinoderm (*Amphidotus cordatus*), for which at a short distance it might easily be mistaken. Its first pair of legs are massive; the extreme tips of the forceps are bare and shining, and are of a most exquisite pink colour. The remaining legs are comparatively short and armed with strong hooked claws, the last pair being rudimentary and curiously turned upwards, so as to rest flat upon the upper surface of the carapace. This unnatural position for ambulatory appendages may be accounted for by two remarkable specimens obtained from the Channel, off the Sussex coast, now in Mr. Carrington's collection. These two animals bore on each of their backs a finely grown sponge, each large enough to protect its host from observation. Unlike the instances to which we have already referred, notably that of *Pisa Gibbsii*, where the sponge grows *in* the villous coat of the carapace, this is not so with *Dromia;* for although the lower surface of the sponge was a perfect mould of the carapace of the crab, it was nevertheless quite free, and simply held in its place by the sharp claws on the two pseudo-legs already described as turned over on to the carapace of the animal. This instance of protective adaptation is without exception the most wonderful that we have yet met with in the whole of the British Crustacea. Although there are many very striking cases constantly attracting attention, they may be said almost to exist in spite of the animal itself; here, however, we have an example of quite another kind. It appears that the animal has actually taken, in its small rudimentary feet, a sponge which it has held upon its carapace, but not permitted it to obtain a hold upon that structure. At the same time the sponge has been able to grow; the remarkable way in which it has taken the form of the carapace of the animal without adhering to it is a proof of this.

The abdominal segments of *Dromia vulgaris* are somewhat

narrow in the male, but very broad in the female. They project slightly beyond the posterior edge of the carapace, as if distended.

When alive the eyes of this species are bright, and give the animal a most interesting expression. The antennæ are comparatively short.

Dromia vulgaris can be said to answer to its specific name only in the Mediterranean, for it is undoubtedly very seldom obtained on our coasts, possibly no doubt owing to its being a deep-water species. We have obtained a few specimens from Guernsey, Jersey and in the Channel off the Sussex coast. Bell, who, by the way, only describes the species in the appendix to his work, states that it has been taken at Whitstable Bay, Worthing, and Selsey Bill.

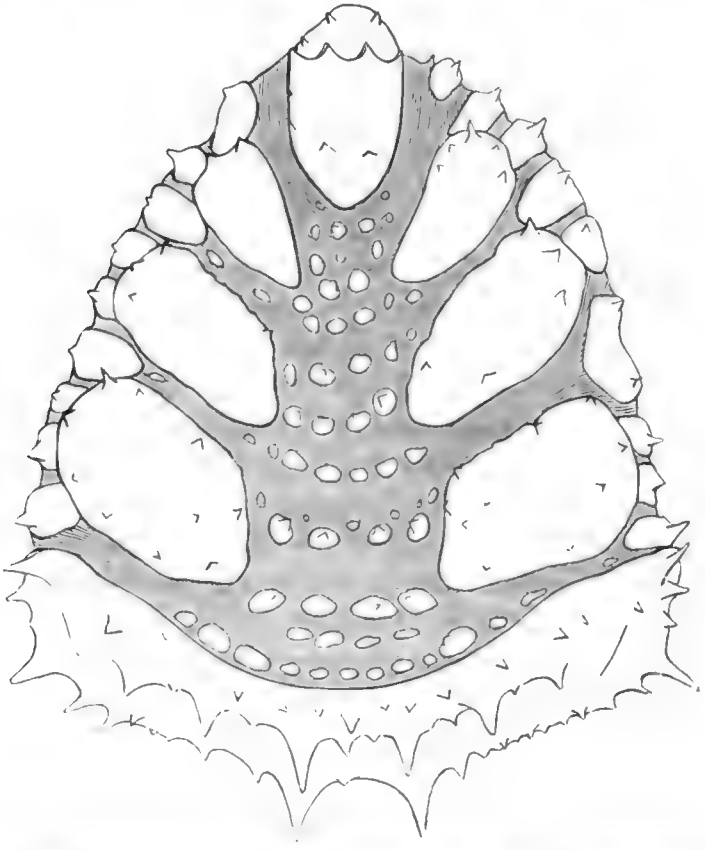

Fig. 1. Diagram showing symmetrical plates on abdomen of male *Lithodes maia*.

Lithodes maia, Leach.

The carapace of this species is of considerable size, often attaining the length of five or six inches; it is somewhat rounded

in form, but is gradually extended forward into a powerful rostrum consisting of a double bifurcated spine. The carapace is strongly tuberculated, and the regions are well marked; it is also armed with sharp and powerful spines, very strongly developed on the margin. The eyes are fixed on stout peduncles, protected by strong spines, and the antennæ are simple and of moderate length. The first pair of legs are unequal in size, resembling in this respect the *Paguridæ;* the larger one is robust and powerful. These appendages are from four to five

Fig. 2. Diagram showing asymmetrical plates on abdomen of female *Lithodes maia*.

inches in length, and both are armed with numerous spines. The next three pairs of legs are tapering and thorny, the

terminal joint being a sharp claw. The third pair are often eight to nine inches in length. The fifth pair are characteristic of the class, and are simply small brush-like appendages.

The abdominal segments of *Lithodes maia* are very remarkable, and in the female sex differ from any other of our known Crustacea. It will be observed by referring to Fig. 1, that the plates on the abdomen of the male in this species are quite symmetrical, being three on each side. Very different however are those of the female, which are remarkably asymmetrical, as shown in the sketch (Fig. 2.)

It is difficult to account for this difference in the sexes, and we cannot help thinking that this must be a species undergoing a change in form. Possibly, at some period of its existence, it was akin in its habits to the Hermit Crabs, but for some reason has discarded its artificial protection, and may ultimately become like true crabs (Brachyura) in having symmetrical plates on the abdomen in each sex. It is difficult to imagine that the process of change is in an opposite direction.

The colour of this species is a pale dull red, varying slightly according to the age of the specimen.

We have been fortunate enough to obtain the zoæa form of this somewhat rare crustacean, which is as curious in structure as many other examples of this stage of development. It resembles in appearance *Nebalia bipes*, as figured on p. 130, vol. i., of Mr. Gosse's 'Manual of Marine Zoology.' Its cephalo-thoracic region is cylindrical, enlarging into a good-sized thorax; the eyes are large and sessile, and the legs are purely swimmers. The abdominal segments are simple and graceful in form, terminating in a remarkable filamentous tail. A comparison of this description with that of the perfect animal just mentioned will show how difficult it is to identify the unknown zoæa forms of Crustacea, unless they are attached to the swimmerets of the parent.

Although this animal is not so much subject to the growth of foreign substances upon its carapace as many other species, yet it is occasionally encrusted with barnacles.

We have obtained specimens of *L. maia* from the coast of Northumberland, upon which were fine groups of Balanidæ of over an inch in height of the calcareous structure. Besides the locality above mentioned, this species has been recorded by Bell from the Mull of Galloway, Firth of Forth, coast of Ayrshire,

Aberdeen and Yorkshire, and from the Orkneys. It is usually found in deep water, and obtained by dredging.

(To be continued.)

OCCASIONAL NOTES.

Variety of the Mole.—I have a specimen of a Mole trapped in this neighbourhood last February, which is of a pure cream-colour. There is not a single black or dark hair on its body, but the under parts are of a light brownish red. It is not only remarkable for its colour, but also for its size, measuring 8½ inches in length and 5 inches round the body. I have also a Mole that I bought some years ago which has two white or nearly white spots on its back, one about the size of a half-crown and the other of a shilling. The white hairs are just twice the length of the black ones on the rest of its body.—Roger Ford (Wraxall, Somerset).

A Visit to Ramsey Island, Pembrokeshire.—On June 1st, a long-projected visit to Ramsey Island was accomplished under very favourable circumstances. A beautiful summer's day made the flower-covered cliffs, with the blue water rippling at their feet, seem like a piece of fairy-land; and the company of Mr. Mortimer Propert, of St. David's, a most efficient guide to the island and its bird-haunts, enabled me to proceed at once to the parts most attractive to a naturalist. It would be impossible to describe the bright appearance of the cliffs beneath the June sunshine. Here large patches of the pink sea-thrift, and there vast beds of the snowy blooms of *Silene maritima;* white roses of an exquisite perfume were not wanting, growing entwined with the heath, and ferns were everywhere, in some places reaching almost to the water's edge; and here and there cropped out on the rocks those bright orange lichens which Mr. Brett loves to paint in his exquisite views of the Cornish coast. As our boat ran into the little harbour a Sea-pie was observed sitting on a rock, and on our approach flew off with his shrill whistle. A few pairs breed round the island. Landing, we made our way to the S.W. end, our object being to see the ledges of the cliffs most affected by the sea-fowl. It was a busy scene. Guillemots, Razorbills, and Kittiwakes were in profusion, but as yet not many of the birds had eggs. Parties of them were continually flying off to sea; others arriving and settling on the cliffs, shaking their wings from time to time to dry them in the sun. We were astonished at the velocity of the flight of the Razorbills when once on wing. As we stood on the top of the cliff, the birds flashed backwards and forwards beneath us, some of

them circling round their special ledges in alarm at our appearance, afraid to settle and jealous as to the safety of their eggs. All the while there was a weird concert proceeding from the birds. The caterwauling wail of the Kittiwakes, by far the most numerous of the sea-fowl tenanting the island, reminded one of the sounds proceeding from the hyena-den at the Zoo; with these were blended the crooning and husky barking of the Razorbills and Guillemots and the laughing cry of the Herring Gulls. Proceeding round the island we disturbed a pair of Buzzards from a rocky inlet, where they were doubtless nesting; a Peregrine was seen in the sky overhead; a pair of Ravens settled near the cairn of stones marking the summit and watched us narrowly; Choughs and innumerable Jackdaws flew along the cliffs. Time not allowing, we did not visit the north end, where the Puffins have their quarters. Mr. Propert told me that he had never seen the Black Guillemot on Ramsey or any of the smaller islands in its neighbourhood, nor can I hear of species being now on Skomer or Caldy, and probably it was entered by mistake on the list of Pembrokeshire birds. Some years ago I picked up a Black Guillemot which had been washed ashore on the N. Devon coast, which I at the time suspected might have been brought across from Wales. On the western slopes of Ramsey we found a pretty little moth (*Philea irrorella*) occurring in great numbers, and were glad to box a few. The tide runs with tremendous force between Ramsey and the mainland, and we had a troublesome pull across on our return against it, a brisk east wind raising a choppy sea. The rocks below the water cause countless eddies and back currents with broken water, locally called "shots," and anyone navigating the narrow channel in a small boat soon has experience of these. However, we reached Portstinnan, our harbour on the mainland, in safety, and shall always recal our pleasant visit to Ramsey as a day worthy to be marked with white chalk, *favente Jove* and Mr. Propert.—Murray A. Mathew (Stone Hall, Haverfordwest).

Curious Nesting Place of the Common Wren.—In April I found the nest of a Wren placed in some flags standing out about three feet in the water. It was fastened to three or four stems and only about two inches above the water. It is well known that this bird tries to match its nest with surrounding objects, and two nests here fully carry this out. One is on a fir-bough where the bracken has grown through and is still standing, being supported by the branch; the outside of this nest is entirely made of bracken, and most difficult to see; I only found it by the bird flying out. The other is on a stack of straw in my stackyard, the straws having been drawn out and woven round in the most beautiful manner, quite proving that this interesting little bird is not colour-blind, because if built with moss and leaves (the usual material) it would at once have been seen; whilst anyone might walk within three yards and never see this one. As

this piece of stack was going to be cut I took this nest, but she has since built another like the first one: I trust she may be rewarded for her cleverness by rearing her brood. I have this year found twelve nests within one hundred yards of the house.—J. Whitaker (Rainworth Lodge, near Mansfield).

Call of the Long-eared Owl.—For several years past the Long-eared Owl has bred in a plantation of tall Scotch and spruce firs, a few hundred yards above my house, generally I believe in old Magpies' nests. In 1880 I first noted the peculiar warning note I am about to describe. On the 16th May last, while standing among these firs with the Rev. W. W. Flemyng, about nine p.m., and while the young were uttering from the nest their plaintive call for food, the parent Owl, seeing us, alighted on a neighbouring tree and made a distinct quacking sound, repeated three or four times in close succession, and then, after an interval of silence, similarly repeated. It took up more than one position, observing us all the time. On hearing this sound (which decidedly resembles the word "quack"), the young became quite silent and remained so as long as it was repeated. It resembles not so much the long quack of a duck as the sound produced by a toy which is squeezed to make it squeak or quack, with something of the conventional tone of a "Punch and Judy" performance. On the evening of June 6th, the young, having left their nest, were uttering their call from other trees, when the parent flitted past, hushing them at once by this note, and perched on tree after tree in full view, even closer than twenty yards from me, trying to draw me away from the young, and at the same time warning them of danger. I could observe her distinctly while uttering the "quack." Her back was arched, neck stretched forward, mouth opened wide, and wings compressed as the sound was uttered. I have never heard any Owl hoot, the Tawny Owl being unknown here.—Richard J. Ussher (Cappagh, Co. Waterford).

Marsh Warbler's Nest near Taunton.—The nest of the Marsh Warbler has been again obtained in the neighbourhood of Taunton the beginning of June, and, like former ones, was attached to the stalks of meadow-sweet (*Spiræa Ulmaria*). The eggs are very handsome ones, and have been placed in the collection of Mr. J. Marshall, of Belmont, Taunton.—Murray A. Mathew. [See Mr. Cecil Smith's remarks on the breeding of the Marsh Warbler in Somersetshire, 'Zoologist,' 1875, p. 4713.—Ed.]

Eggs of the Cuckoo in Buntings' Nests.—On May 16th I found near here a Cuckoo's egg in the nest of *Emberiza cirlus;* on the 24th, on this place, one in a nest of *E. citrinella;* and on the 25th, also on this place, one in another nest of *E. cirlus*. In each nest were three Bunting's eggs. In no instance did the Cuckoo's egg at all resemble a

Bunting's in markings, but the eggs of the Cuckoo found on this place on the 24th and 25th were quite undistinguishable from one another, and I should say were certainly laid by the same bird.—C. Bygrave Wharton (Hounsdown, Totton, Southampton).

Ornithological Notes from Jersey.—During last winter an unusual number of Great Northern Divers remained with us, their favourite haunt being the shallows around La Rocque Point, where, on almost any day during December and January, from thirty to forty of these beautiful birds might be seen at once. On one occasion no less than ten of them were in the little harbour there, within a hundred yards of the fishermen's houses. We also had a great number of Sclavonian Grebes, some which came into my possession in the month of January, having the beautiful bronze-coloured ear-coverts of their summer dress. The Red-necked and Great Crested Grebes (the latter a rare visitor) were fairly represented. Other winter visitors, such as Brent Geese, various Ducks and Mergansers, were very scarce. Of the large flocks of the first-named, which usually occupy the bay of St. Aubin, I only saw a few solitary specimens, and the markets, generally well supplied with these birds from La Rocque and the Minquier rocks, had very few of them. Our inland visitors, the Woodcock, Snipe, and Plovers, were scarce. Of uncommon visitors, one Richardson's Skua, in immature plumage, was taken alive (having been wounded) in St. Brelade's Bay, and is now in my possession. It is, I think, only the second specimen recorded from Jersey. Reverting to the Great Northern Diver, many of your readers have probably been struck with the great difference in the measurements of this bird, as given by different authorities, Bewick giving the length as three feet six inches, Yarrell two feet six inches to two feet nine inches. Bearing this in mind, I carefully measured some twenty specimens which I obtained during the winter, with the following result:—Males, two feet nine inches to three feet three inches: females, uniformly two feet six inches. As regards weight, I found that, in all cases, below that given by the books (fourteen and sixteen pounds); the largest specimen I have had, although in good condition, weighed but nine-and-three-quarter pounds. Of specimens obtained in January, one female was in full plumage and two others nearly so; males uniformly in the more sombre dress, or with just a few white spots on the scapulars.—J. Sinel (Bagot, Jersey).

Curlew Sandpiper in Cornwall.—While fishing on the banks of the Bude reservoir towards the end of May, my brother, Col. Mathew, found himself close to a Curlew Sandpiper in the rich chesnut dress of the complete summer plumage. This Sandpiper is very rare in the spring on the south-west coast, although common enough in the autumn. Many years ago Mr. S. B. Heaven shot some in the month of May on Lundy Island, and this is the only other instance within my experience of the

occurrence of the Curlew Sandpiper in its breeding plumage, on the south-west coast.—Murray A. Mathew (Stone Hall, Haverfordwest).

Marsh Harrier in Herm.—As the Marsh Harrier does not very frequently occur in the Channel Islands, I think it worth while to record the occurrence of one in the Island of Herm, near Guernsey, on the 2nd of May this year, when it was killed by the keeper in that island, and soon afterwards forwarded to me by Mr. Jago, the bird-stuffer, in Guernsey. It was in immature plumage, the Moor-Buzzard plumage of Bewick. May seems an odd time for it to be found wandering about, but still that is the month in which the more recent occurrences of this bird in Herm which I have been able to record in the 'Birds of Guernsey' have taken place. Probably the young birds of the year before are driven away by the old ones in the spring, and consequently have to wander about and pick up a living on their own account,—Cecil Smith (Bishop's Lydeard).

Turtle Dove in Co. Sligo.—On the 28th of May a specimen of that rare visitant to the west of Ireland, the Turtle Dove, appeared here and remained about the place until the 3rd of June, on which date I last saw it. On several occasions I observed it picking on the roadway of the avenue, and as it appeared to keep near one particular clump of trees, I was in hopes of its finding a mate and building a nest. However, as I have not seen or heard anything of it since the 3rd inst., I fear that it has left the place, probably for the young larch plantations of Belleek, at the other side of the Moy. The Turtle Dove is of such rare occurrence in this part of Ireland, that it has come under my observation only twice previously. So far back as the 27th of August and 3rd of October, 1862, I saw a Turtle Dove (probably the same individual) feeding in a stubble field. On the last-named date I had a very close view of the bird, and as I could not see the marks on the sides of the neck, I considered it a young one, probably bred in the larch woods of Belleek.—Robert Warren (Moyview).

Snipe perching.—When walking up the brookside here the other day I flushed a Snipe, which after flying about a couple of hundred yards settled on some posts and rails, where it remained about a minute before taking flight again. This is the first time I have noticed a Snipe perch on anything, but have, of course, read and heard of their doing so, though I believe the habit is far from common.—J. Whitaker (Rainworth Lodge, near Mansfield, Notts).

Two Kestrels Laying in the same Nest.—When lately in North Devon, my nephew came in one day with a Kestrel's nest, and said there were three Kestrels in the tree from which he took it, a male bird and two females. The nest contained six eggs; four of them were fine type, dark and handsome varieties; the other two were of the ordinary character in

markings and colour; and this great difference I thought indicated that the clutch was the joint production of the two female birds.—Murray A. Mathew (Stone Hall, Haverfordwest).

Firecrest in Yorkshire.—Messrs. Clarke and Roebuck, in their 'Handbook of Yorkshire Vertebrata,' remark (p. 22) that the Firecrest is a casual visitant to the county, and of extremely rare occurrence in winter. In December, 1880, I noticed at Clifton, near York, a pair of what I thought at the time were Golden-crested Wrens, *Regulus cristatus*, but on shooting one I discovered it to be the Firecrest, *R. ignicapillus*.—W. Hewett (York).

On the Food of the Herring.—At page 235 I remarked that small Sand Launces (*Ammodytes*) formed the food of the Herrings which were being captured off Mevagissey. On the night of June 9th some thousands were landed at the same place, having been taken about eight miles from land near the surface of the sea, where they appeared to be feeding on young fish. Mr. Matthias Dunn, observing that they were all crammed with one kind of fry, kindly placed the contents of one stomach in spirit and forwarded it to me. I found the whole or portions of about thirty-five small fish, the largest being an inch and a half in length, and to my surprise observed that they were almost entirely composed of the gobioid *Crystallogobius Nilssonii*, of which only a single example has been recorded from the British Isles, and which was captured by Mr. Edward, of Banff, in May, 1868. The large canines and persistent premaxillary and mandibular teeth were very distinct, also the large broad-based pectoral fin, the disk-like ventrals, and two spines only in the first dorsal fin, rendering identification easy. I however wrote to Mr. Dunn, who has kindly sent me more, which fully confirm my first views. These fish were filled with the remains of small Crustacea (not yet examined). I do not propose at present to discuss how these fish, usually believed to be almost restricted to the coasts of Norway and Sweden, may have been brought to our shores by currents or in pursuit of food. Still it is worth considering whether the Herrings may not have followed these Gobies from higher latitudes, as the Gobies have pursued their small prey. There is also another question that I hardly consider solved. Herr Collett, from whose investigations most of what we know of these fishes is derived, considered them *annual vertebrates*, or fish which having spawned die. Among the last batch of specimens received from Mr. Dunn are some very young ones, a little thicker in the body than horse-hair, also every intermediate size up to an inch and a-half in length, but no spawning fish, nor I believe spawned fish. It is very remarkable how such forms should be taken so far from the coast, and only shows how much we have yet to

ascertain respecting the food of sea fishes and what it is that influences these various migrations.—Francis Day (Pittville, Cheltenham).

Dogfish on the Coasts of Sligo and Mayo.—Dogfish in immense numbers have this season invaded the fishing-grounds off Killala Bay and the adjacent coasts; indeed so large have been the "schools" that fishermen speak of seeing acres of them, and owing to their voracity and numbers have seriously injured the coast fishings for some weeks past, more especially the Mackerel fishing; for although a ground fish, they rise to the surface and attack the Mackerel or Herrings suspended in the drift nets. Some eight or ten days ago, off the Sligo coast, the crew of a fishing boat shot their nets into a "school" of Mackerel, and a most successful haul was made; but to the great disappointment of the fishermen, on taking their nets on board, it was found that of nearly two thousand Mackerel taken, only two hundred were marketable, the remaining fish being so bitten and disfigured by the Dogfish as to be unsaleable; and as the marketable fish were sold for 18s. per hundred, the feelings of the men at such a loss may be better imagined than described. It appears that the Dogfish have thus come in-shore for the purpose of producing their young, and their presence has not only stopped the drift-net fishing, but has interfered also with the long-line fishing. The fishermen say that until these fish have left, it will be useless shooting either nets or lines. It will be interesting to know whether other parts of the coast have been similarly visited by Dogfish this season.—Robert Warren (Moyview, Ballina).

On a Leech found in Cornwall.—On May 12th, I found in a little rill at Tremeader, springing out of the granite rock of Zennor Hill, near Penzance, which rill makes its way through a total course of less than a mile to the sea, over a clear pebble bottom bordered by ordinary vegetation, a large Leech (either a Horse Leech or the Black Leech, probably from its decided colour the latter). I searched the rivulet for a considerable distance up and down, but could find no trace of animal life in it except this Leech and some tadpoles. The bed of this rivulet is throughout of a sandy nature, without any suspicion of a muddy bottom anywhere. There are leeches in ponds in this district, but the nearest that I know of are many miles away from this Tremeader rivulet, and spearated from it by a granite watershed. Of course the question is, where did this Leech come from?—Thomas Cornish (Penzance).

[Some Leeches are parasites on fishes; the specimens in question may have been transported in this way, but without seeing it, or having a more detailed description, we cannot express an opinion. "Horse-Leech" is a name given to two distinct species, or even genera—*Hæmopsis sanguinea* and *Aulostomum gulo*.—Ed.]

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

Linnean Society of London.

Anniversary Meeting, May 24, 1882.—Sir John Lubbock, Bart., M.P., F.R.S., President, in the chair.

Mr. H. T. Stainton, on behalf of the Audit Committee, read the statement of receipts and payments for the year, and the Treasurer, Mr. Frank Crisp, followed with a detailed explanation of the various items, showing that the Society was in a sound financial condition, for besides investments about £4000, the balance at bankers was £649 2s. 5d.

Afterwards the Secretary, Mr. B. D. Jackson, read his annual report. Since the last anniversary fifteen Fellows of the Society, two Foreign Members, and one Associate had died, and seven Fellows had withdrawn; while forty new Fellows had been elected. Between purchase, exchange, and donations 383 volumes and 348 separate parts had been added to the Library, and a large number of books and pamphlets had been bound.

The President then delivered his Anniversary Address, commenting generally on the events of the past year, with special reference to their bearing upon the Society. He also made allusions to the removal of the Botanical Department of the British Museum to South Kensington, and to the additions of Miss North's oil paintings, &c., to Kew Gardens. This was followed by reports on the various botanical and zoological publications published during the last twelvemonth.

The obituary notices of deceased Fellows was read by the Secretary, the Society having to deplore the loss of Mr, Charles Darwin, Prof. Rolleston, Sir C. Wyville Thomson, and others, besides their late Treasurer, Mr. Frederick Currey, who had been in office above twenty years; as also the Librarian, Mr. R. Kippist, who had been in the Society's service over fifty years.

The Scrutineers having examined the ballot, then reported that Mr. H. W. Bates, Prof. S. Cobbold, Prof. P. M. Duncan, Mr. E. M. Holmes, and Sir J. D. Hooker had been elected into the Council, in the room of Prof. Allman, Rev. J. M. Crombie, Mr. W. S. Dallas, Mr. A. Grote, and Prof. Lankester, who retired; and for officers, Sir J. Lubbock as President, Mr. Frank Crisp as Treasurer, and Mr. B. D. Jackson and Mr. G. J. Romanes as Secretaries.

June 1, 1882.—Frank Crisp, LL.B., Treasurer, in the chair.

Mr. H. C. Burdett was elected a Fellow of the Society.

In illustration of his paper, "On some Cutaneous Nerve Terminations in Mammals," the following preparations were shown under the microscope by Dr. Hoggan:—(1) Longitudinal and transverse views of the organ of

Eimer in the Mole, the nerves seen being representatives of the nerves upon an ordinary hair-follicle; (2) forked nerve termination on hair-follicle of Mole's tail; (3) nerve endings in nose of Cat; (4) termination of a nerve in the ganglion cells upon a "feeler" hair in the Horse, and that of an ordinary hair in the same, showing forked and cellular endings and encircling fibres. Dr. Hoggan related his observations on the habits of a Mole (*Talpa*) kept in confinement, more particularly concerning its nasal organ as a special sense of touch, and of the tail as a tactile organ. He compared the development of the nerve in these with the cutaneous nerve structures of other Mammalia, dealing with the effects of habit in causing evolution of the so-called "organ of Eimer." Treating in detail of the differentiation of structure and function in this latter, he summed up as follows:—The central fibrils in the organ in question, and the nerve-cells at the base, with which they are continuous, are similar in character to the subepidermic nerve-cells and their intra-epidermic fibrillar prolongations. The outer circle of fibrils have equally their existence and nature explained, as well as the cause of their being dragged into their present position in the epiderm. Then, as relates to function, Eimer was certainly correct, or at all events within the truth, when he spoke of the organ he had discovered in the Mole as a "tactile instrument," for it certainly possesses most remarkable powers of touch, but along with this other sensorial functions. Indeed it may be considered very probable that the inner circle of fibrils are the analogues and homologues of the forked endings, and that they provide for the sense of touch, while the centre fibrils and those of the outer circle provide for the sense of temperature, pain, and any functions connected with the sympathetic nerve system. The Paccinian bodies at the root of the organ, but not properly connected with it, are probably the agents for registering pressure, so that in itself the organ of Eimer is completely provided with the full armament of peripheral nerve terminations.

A paper was read "On the Ascidians collected in the South Coast of England during the Cruise of the yacht 'Glimpse' in the year 1881," by Mr H. A. Sorby and Prof. W. A. Herdman. A notice was given of the localities visited round the south coast of England, the depth where specimens were obtained, the nature of bottom, &c., followed by particulars respecting twelve species of simple Ascidians, one of these being a new form of *Molgula*, dredged in Hole's Bay, near Poole, and named by the authors *M. cæpaformis*. Only a few compound Ascidians were obtained during the cruise.

Mr. P. Herbert Carpenter followed with "Descriptions of new or little-known *Comatulæ*," being materials derived from the 'Challenger' Expedition and from the Hamburg Museum. These comprise three species of *Atelecrinus*, one *A. Wyvilli*, a new form dredged near the Fiji Islands; four species of *Ophiocrinus* (= *Eudiocrinus*, n. g.), three of which are new; nine

species of *Antedon*, of which eight are new; and seven species of *Actinometra*, two of these being hitherto unknown. The author institutes the new genus *Eudiocrinus* for Semper's *Ophiocrinus*, the latter name having been preoccupied by an obscure Crinoid described by Salter from the Devonian formation of South Africa.

June 15, 1882.—Sir JOHN LUBBOCK, Bart., M.P., F.R.S., President, in the chair.

The following gentlemen were elected Fellows of the Society:—The Rev. R. Collie, Chas. A. Ferrier, W. D. Gooch, T. D. Gibson-Carmichael, Sir J. R. Gibson Maitland, Bart., M. Murphy, Rev. H. A. Soames, H. C. Stephens, H. W. G. Stephens, and James Turner.

Specimens in illustration of the papers by Mr. Geo. Brook and Mr. R. M'Lachlan, were exhibited under low powers of the microscope.

Prof. E. Ray Lankester read "Notes on some Habits of the Scorpions, *Androctonus funestus*, Ehr., and *Euscorpius italicus*, Roes." Of the former he related its mode of burrowing in the sand, making horizontal tunnels occasionally eight inches long. The process of exuviation was also witnessed on several occasions, when the Scorpion, pushing its large chelæ into the sand, scraped rapidly backwards with the three anterior pairs of walking legs. The specimens of *Androctonus* were evidently timid; in walking they raise their body, and the tail and sting are carried highly arched over the back; in this mode of carriage differing from *Euscorpius*, which keeps its body low and flat, and drags the tail behind with only the very tip bent. *Androctonus* only fed at dusk, and then, seizing its prey with the left chelæ, archedly swung its tail over its head and pierced its victim with its sting, afterwards inserting its short cheliceræ and sucking in the nutriment of its victim. The so-called combs or pectiniform appendages do not appear to be ordinarily sensitive; they may possibly become more so during the breeding season. The old story of the suicide of the Scorpion when surrounded by a ring of fire, is to be partially explained by an individual accidentally lacerating itself by the sting when driven to extremities. The *Euscorpius* observed occasionally fought furiously with each other, and then only used their chelæ, but never the sting.

A paper was read "On a New Genus of *Collembola* (*Sinella*) allied to *Degeeria*, Nicolet," by Mr. Geo. Brook. It differs from *Degeeria* in having four eyes, instead of sixteen; in the absence of long abdominal hairs; and in the different construction of the claws and mucrones. *S. curviseta* is a new species, and on which the genus *Sinella* is founded; examples were bred, and watched through their immature stages onwards.

Mr. R. M'Lachlan read a communication "On a Marine Caddis-fly (*Philanisus*, Walker, *Anomalostoma*, Brauer) from New Zealand." Material for examination of this curious discovery was sent the author by Prof. Hutton,

of Canterbury, New Zealand. The larva, &c., were obtained in rock-pools between high and low water mark in Lyttleton Harbour. A small tubular cylindrical pupa case, with attached fragments of a coralline, a larva somewhat damaged, and disconnected portions of others, enabled the identification of the genus.

Prof. P. M. Duncan gave the salient points of a paper "On the Genus *Pleurochinus*, L. Agass., its classification, position, and alliances." After noting the diagnosis of *Pleurochinus* by L. Agassiz, and the description of the species *P. bothryoides* of A. Agass., in the 'Revision of the *Echini*,' the linking it with the fossil forms from Gand described by D'Archiac and Haime, was shown to be erroneous. The supposed affinities with *Opechinus*, Desor., a genus of no value, were considered, and the minute anatomy of the test of *Pleurochinus* was shown to correspond closely with those of *Temnopleurus*. Placing the form (with A. Agassiz) as a subgenus of *Temnopleurus*, its distinctness from *Temnochinus* and from the nummulitic so-called *Temnopleuridæ* of D'Archiac and Haime, was proved.

Mr. F. Maule Campbell detailed some interesting observations "On a probable case of Parthenogenesis in the House Spider, *Tegenaria Guyonii*." He concluded by submitting that the fertility of one of the female spiders in question, after a confinement of eleven months, during which time she twice moulted and afterwards laid eggs, which were duly hatched, can only be explained by one of the following alternatives:—either that she was impregnated previous to the casting of the two exuviæ, *i.e.*, in an early and therefore immature stage; or parthenogenesis occurs in the *Araneida*. Hitherto no instance of this latter has been recorded in the true Spiders, *Araneida*, though Megnin, Kramer and Michael have shown that the females of some *Acarini* couple with the males prior to their final moult, and that practically there are two stages of sexual maturity; moreover, Beck and others have related cases of undoubted parthenogenesis in the *Acari*.

A paper was read "On the Indication of the Sense of Smell in *Actiniæ*," by Walter H. Pollock, with an addendum by G. J. Romanes. These authors record experiments whereby it appears probable that these lowly organized creatures are aware or evince recognition of the presence of food when placed near them. This sense is possibly of a diffused nature, and as suggested may be equivalent to an imperfect olfactory kind.

A description was given of a new Infusorian allied to *Pleuronema*, and obtained in ponds near Hertford by Mr. F. W. Phillips.

Thereafter two papers were read, viz.:—"On the *Teredo utriculus*, Gmelin, with remarks upon other Shipworms," by Mr. Sylvanus Hanley; and the fifteenth "Contribution to the Mollusca of the 'Challenger' Expedition," by the Rev. R. Boog Watson; dealing with the families

Ranellacea, *Muricidæ*, *Scalariidæ*, and *Solariidæ*. With a few remarks from the President, concluding the session, the meeting adjourned till the 2nd November.—J. Murie.

Zoological Society of London.

June 6, 1882.—Prof. W. H. Flower, LL.D., F.R.S., President, in the chair.

The Secretary called the attention of the meeting to the curious way in which the young Cormorants lately hatched in the Gardens were fed by the parent birds, and exhibited a drawing by Mrs. Hugh Blackburn illustrating this subject.

A communication was read from Prof. St. George Mivart, containing a series of observations on certain points in the anatomy of the Cat tribe (*Æluroidea*).

Mr. Howard Saunders read a paper on some *Laridæ* collected by Capt. H. H. Markham, R.N., on the coasts of Peru and Chili, comprising, amongst other rarities, the third known example of the large Fork-tailed Gull (*Xema furcatum*), a species which had been vainly sought for on the Pacific coast of America for upwards of thirty years. The author drew attention to the peculiarities distinguishing the various species of Gulls found in the Pacific from those of the rest of the globe; and pointed out that, owing to oceanic currents, the connection between the species now only found on opposite sides of the equator had evidently been much more recent in the Pacific than in the Atlantic.

Prof. F. Jeffrey Bell read a paper containing an attempt to apply a method of formulation to the species of the *Comatulidæ*, and added the description of a new species, which he proposed to call *Actinometra annulata*.

Mr. Francis Day read some notes on the supposed identity of a specimen of a fish determined by Dr. Günther as *Anguilla Kieneri* with a Gadoid *Lycodes*.

Mr. E. J. Miers read the second portion of his paper on the Crustaceans received by the British Museum from the Mauritius; and called special attention to what appeared to be a variety of *Palinurus longimanus*, of the West Indies, which occurred in it.

Mr. W. A. Forbes read the fifth of his series of papers on the anatomy of the Passerine birds. The present communication was devoted to the consideration of the structure of the genus *Orthonyx*, which was shown to be a true Oscinine form.

Mr. H. J. Elwes exhibited and made remarks on a Stonechat (*Saxicola*) which he had obtained during a recent expedition to the Aures Mountains of Algeria.

The Secretary exhibited a series of the diurnal and nocturnal Lepidopterous insects bred in the Insect House in the Gardens during the present season.—P. L. Sclater, *Secretary*.

Entomological Society of London.

May 3, 1882.—H. T. Stainton, Esq., F.R.S., &c., President, in the chair.

The President made some appropriate remarks upon the great loss Science had sustained by the death of Mr. Charles Darwin; and especially referred to his early interest in Entomology by becoming an Original Member of this Society, founded in May 1833, while he was travelling in South America.

Dr. Evald Bergroth (11, Robertsgatan, Helsingfors, Finland) and Mr. W. J. Williams (Zoological Society, Hanover Square, W.) were balloted for and elected Members of the Society.

The Secretary read a communication from the Secretary of the Essex Field Club, requesting that Members would join in a memorial to the Conservators of Epping Forest and others, requiring that the Forest should be preserved in its *natural condition*, in accordance with the Act of Parliament.

Messrs. M'Lachlan, Meldola, Cole, Fitch, and others expressed the wish of all naturalists that Epping Forest should be retained in its present wild state rather than be converted into a park.

Mr. W. C. Boyd exhibited a dark variety of *Fidonia piniaria*, L., taken at Woking in 1880 by Mr. Mugford; it was a female, resembling, but even darker than, a Scotch specimen. Also a curious pale variety of *Anchocelis pistacina*, Fabr., captured at Cheshunt last autumn.

Mr. T. R. Billups exhibited a series of *Cryptus migrator*, Fabr. These were bred from a cocoon of *Trichiosoma betuleti*, Klug; four specimens emerged on April 6th, and no others until the cocoon was cut open on April 20th, when thirteen more flew out; of the seventeen specimens bred only two were females.

Mr. W. F. Kirby read some notes on a Hybrid between *Antheræa Pernyi*, Guér., the well-known oak-feeding silkworm of North China, and *A. Roylei*, Moore, a North Indian species, also an oak-feeder. The cocoon was fully as large as that of *A. Roylei*, but instead of there being a considerable space between the outer and inner cocoon there was scarcely any interval between them. *A. Pernyi* has a similar but much smaller cocoon; and hence it would appear that that of the hybrid would be of greater commercial value than either." The specimen with its cocoon, also cocoons and imagos of the two parent species, were exhibited.

Miss E. A. Ormerod exhibited a curious abnormal growth of the flowers of the common ash (*Fraxinus*) from Osterley Park.

Mr. Fitch said this gall was the work of *Phytopti*, and referred to Dr. Franz Löw's description and figure (Verh. z.-b. Ges. Wien. xxviii. 134, pl. ii. fig. 2). He directed the attention of the members to an unknown woody, irregularly spherical, gall on the ash-keys, of which he once received two specimens from the late Mr. F. Smith; one which he opened contained a fat, white, apparently curculionideous, larva.

Mr. J. B. Bridgman communicated some "Further Additions to Mr. Marshall's Catalogue of British *Ichneumonidæ*." Sixty-seven species were added to the British fauna, ten of which were new to Science.

Mr. E. Saunders read a continuation of his "Synopsis of British Hymenoptera." The *Diploptera* and *Anthophila* to the end of the *Andrenidæ* were now treated of.

Prof. J. O. Westwood communicated a memoir "On the supposed abnormal habits of certain species of *Eurytomides*, a group of the hymenopterous family *Chalcididæ*." A general *resumé* of the life-history notices of the *Eurytomidæ* was given; and Prof. Westwood inclined to the belief expressed by Harris, Fitch, and Walsh in America that certain species were phytophagous; thus having phytophagous and sarcophagous species included in one family, or even genus.

Mr. E. A. Fitch could not concur in the belief that any of the *Eurytomidæ* were of phytophagous habits, since he had bred many hundreds of specimens belonging to various species from twenty-seven distinct hymenopterous and dipterous galls, in all of which they were undoubtedly parasitic. He especially referred to Dr. Giraud's and Dr. Mayr's papers in the Vienna 'Verhandlungen' (vol. xiii. pp. 1250–1296, and vol. xxviii. pp. 297–334). The evidence of phytophagism seemed to rest on the "joint-worm" (*Eurytoma hordei*, Harris) of America, and on *Isosoma hyalipennis*, Walk., or *I. longipennis*, Walk., a species bred from galls on *Triticum* in this country. He had bred some scores of this latter insect, but believed it to be parasitic on a dipterous gall-maker, either an *Ochthiphila*, as stated by Giraud, or a *Lonchæa*, as stated by Perris. On comparing these twitch-galls with the reed-galls produced by *Lipara lucens*, Meig. (specimens of both being exhibited), from their analogous structure it seemed fair to conclude that our *Triticum* gall was produced by one of the *Muscidæ*. *E. hordei* is also more probably a parasite of some Muscid allied to *Chlorops;* in both cases the parasite being far more frequently bred than its host. Mr. Fitch exhibited numerous specimens of galls in illustration of his remarks.

June 7, 1882.—H. T. Stainton, Esq., F.R.S., &c., President, in the chair.

Mr. P. B. Mason exhibited a specimen of *Zygæna filipendulæ*, var. *chrysanthemi*, Esp., figured by Hübner, which was captured by Mr. J. E.

Nowers last June in Bewdley Forest; also a corresponding greenish black variety of *Callimorpha dominula*, L., bred at Dover.

Mr. Mason also exhibited two specimens of the *Noctua* recorded by Dr. Knaggs as *Agrotis helvetina*, Boisd. Three specimens were taken near Derby in 1870; one of these Mr. Mason received direct from the captor, and the other but one remove from him. He had recently sent these to Dr. Staudinger for his opinion, who returned them as "perfectly unknown to him, but doubtless a great aberration of some *Noctua*, most probably *N. augur*." This agreed with what Mr. Mason had previously surmised. He also remarked that he had the exact locality of capture well searched again, but without any success. A specimen of the true *A. helvetina* from Staudinger's collection was exhibited for comparison; it differed widely from the British examples.

Mr. H. T. Stainton said that he thought the specimens more resembled *N. xanthographa* than *N. augur*.

Mr. Stainton called attention to the fact that apparently all the larvæ of *Nematus ribesii* had died in their infancy this spring; the leaves of the currant-bushes had been riddled by the young larvæ, but he had not yet seen a single tree stripped.

Mr. R. M'Lachlan read "A revised list of British Trichoptera, brought down to date, and compiled with especial regard to the 'Catalogue of British Neuroptera' published by the Society in 1870." That catalogue included 136 species; 152 were now enumerated.

Mr. W. L. Distant read "Descriptions of new species and a new genus of *Cicadidæ* from Madagascar." He remarked that the distinct character of the Rhynchotal fauna of Madagascar was specially marked by the fact that every species of the widely distributed genus *Platypleura* received from that island was new to Science.

Mr. A. G. Butler communicated a continuation of the "Heterocerous Lepidoptera collected in Chili by Thomas Edmonds, Esq. Part III. Geometrites."—E. A. Fitch, *Hon. Sec.*

NOTICES OF NEW BOOKS.

The Birds of South Africa. By E. L. Layard. New Edition thoroughly revised and augmented by R. B. Sharpe. Part V., pp. 337—528. London: Quaritch. 1882.

We are glad to notice the issue of another part of this important work, which is announced to be completed in six parts.

It has been a considerable time in progress, but it is only fair to observe that considerable emendations and additions have been made to the original octavo volume of less than 400 pages which appeared in 1867.

Since Mr. Layard's book was written, much additional information has been collected by naturalists and travellers in South Africa respecting the birds of that vast region, which has resulted not only in the identification of numerous species not included in Mr. Layard's original list, but also in the rectification of the synonymy of species described by him, but then imperfectly known.

The part before us, with two coloured plates, includes the Flycatchers, Swallows, Shrikes, Starlings, Weaver Birds, Finches and Larks.

The scientific name of each species is printed in small capitals, preceded by a reference number, and followed by the English name of the bird; but why does the Editor give the name of the author or original describer of the species in some cases and omit it in others? In none of the Swallows, for example, do we find any authority given for the specific names employed. This is surely an oversight, and we think Mr. Sharpe should have gone a little further, and have given not only the authority for the name which he considers entitled to priority, but also a brief reference to the work in which the description under that name is to be found.

We notice here and there some variation in the orthography of the generic names, as compared with the first edition, which, at least in cases where it is not justifiable (as in Campophaga for Campephaga), must be attributed, we presume, to a slip of the pen or a typographical error.

It would, in our opinion, have added much to the value of the work had Mr. Sharpe given brief diagnoses of the generic characters at the head of each fresh genus. The Shrikes, for example, are grouped in no less than eleven different genera, *Lanius*, *Enneoctonus*, *Urolestes*, *Laniarius*, *Nilaus*, *Campephaga*, *Graucalus*, *Eurocephalus*, *Bradyornis*, *Prionops*, and *Sigmodus*, embracing as many as thirty-four species, and yet the collector of any one of these species is not furnished with any key to aid him in discovering to which particular genus his bird belongs. This omission, we think, is to be regretted, especially as the paragraphs

suggested would have made but a slight addition to the cost of printing.

The ensuing part (the sixth) will complete the work, in which Mr. Sharpe proposes to include all the species of birds found in South Africa between the Cape Colony and Benguela on the west, and the Zambesi on the east coast, this country forming his *Subregio capensis*, and having natural boundaries. This is about double the area dealt with by Mr. Layard in his original work, and thus some idea may be formed of the labour bestowed by Mr. Sharpe in the preparation of this new edition.

Die Vögel der Zoologischen Gärten. Von Dr. Ant. Reichenow. 1st Part. Leipzig: 1882. 8vo, pp. xxx. and 278.

Dr. Reichenow has given to this Introduction to Ornithology the title of 'The Birds of the Zoological Gardens,' because his chief aim is to produce a work suitable for visitors to institutions which he looks upon as being even more instructive than museums. In accordance with this aim he gives an account of the characters of the several species which he mentions under each genus; desiring, at the same time, to avoid confusion, he has selected only such forms as are likely to be found in our vivaria. When we test our author so far, by comparing him with the list of animals exhibited in our own Zoological Gardens in London, we find that, if we select almost at random two cases, there have been here exhibited more species of the genus *Larus* than he enumerates, and just the same number of *Ocydromus;* perhaps the comparison is hardly a fair one, for, as the management of the Zoological Society is at present constituted, its Fellows and the public may any day be notified of the arrival of some rare and so-called unique specimen.

The first part of the work, which deals with what the author calls "Park-Vögel," is alone now before us; the second will treat of the smaller birds which can conveniently be kept in cages; this of course so far as Nature will allow of a somewhat arbitrary division.

As Dr. Reichenow adds on to forms likely to be obtained for zoological gardens an account of such genera as *Didus*, it will be seen that his work appeals to a sufficiently wide audience, and we

have no doubt that there are some who will be glad to have a work of this kind. When, however, we look upon it as an introduction to Ornithology, for such it is also intended to be, we cannot say that it comes up to our standard. Were a youthful naturalist to go to a zoological garden with this work in his hand, and gain, as he can, from it a knowledge of the specific characters of some ten or fifteen species of the genus *Turtur* he would, we are confident, have got just the very kind of knowledge that he ought not to have. The accurate discrimination of species is the work of the specialist, who, however well Dr. Reichenow may here briefly define his forms, will be content with nothing less than personal manipulation and monographic revision. The young naturalist should try to gain a wide, though accurate, conception of what may be called the plan of ornithological structure, and this he can never work out for himself by the study of species and specific characters. Nor will he, we must add, be at all aided in any such attempt by the very unsatisfactory introduction which is to be found in this volume. An 'Introduction to Ornithology,' containing a general account of the anatomical structure, well illustrated by wood-cuts, followed by a sketch of the geographical distribution of birds, and an outline of their palæontological history, and having not much more than half its whole taken up by a history of the orders, families, and a certain number of well-selected genera, would be a very much better book for a commencing student; and, were we later to add on to this a manual of the Ornithology of one's own native land, we should be taking much more effectual steps for the production of a really scientific zoologist—of one, that is, who would be able to work in the narrowest groove and on the most minute questions, without being blinded, either in eye or mind, to wider problems or great general truths.

With only one volume before us we cannot say anything as to the classification which the author has adopted, but we feel bound to protest against the introduction, in a work of this kind, of the name of *Hippalectryo* in the place of our old friend *Casuarius*. If the present author is aiming at being a purist in zoological nomenclature he might, at least, have used *Ortalis* in place of the incorrect (accusative) form *Ortalida*.

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A VISIT TO LOCH SWEN, ARGYLLSHIRE.

By T. M. Pike.

Having been resident on the shores of this west country loch from February to May last, it has occurred to me that a few notes on the Ornithology of the district may be of interest to the readers of 'The Zoologist,' more especially as little information from this part of Scotland—during winter, at all events—appears to have been published.

Loch Swen is situated in Argyllshire, a little southward of the western end of the Crinan Canal, running in from the Sound of Jura, for a distance of about eight miles, in a tolerably broad sheet of water; it then breaks up into a number of heads, which run up another two miles amongst the hills—a beautiful bit of scenery. The narrow channels of the loch, winding round well-wooded islands, form sheltered bays and lagoons which the heaviest winter gales can scarcely ripple. At the mouth of the loch, stretching well out across the Sound of Jura, are the MacCormaig Isles—a number of rough craggy summits, as it were, of hills, upheaved above the level of the Sound, varying in size from the bare skerry hardly rising above the spring-tide level (the nesting-place of Terns) to islands large enough to pasture a few sheep in the hollows amongst the craigs. A well-known haunt for birds are these islands, and tolerable security awaits them here, as they practically reduce the Sound of Jura to half its natural width, thus producing a very rapid tide, which

rushes with many a swirl and eddy through the narrow rock-strewn channels of the isles, foaming with races and overfalls to such an extent that the surrounding inhabitants of Knapdale compare them—"*magnis componere parva*"—to that far-famed gulf, where "Coirebrechain surges roar," whose northern portal, the frowning island of Scarba, lies but a little distance to the north-west. Thus an approach to these islands in unsettled weather is anything but pleasant, and a landing on the outer and more exposed skerries impossible. The largest island, Eileam Mor, is interesting also from an antiquarian point of view, on account of the ecclesiastical remains on it, consisting, so far as I could see, of an old ruined chapel, part of whose vaulted roof remains intact, an ancient cross, and the effigy of an ecclesiastic carved in stone, and reclining beneath, in solitary state, save when a party of fishermen make the place their temporary abode in summer, when the channels amongst the isles absolutely teem with fish.

As we pass up the loch, not far above Castle Swen, on the left hand side is an inlet, consisting of a large muddy bay, which joins Loch Kiels on the Sound of Jura, the whole forming a capital feeding-place for wildfowl. Farther up are other inlets, more especially the Linne Vurich, where the waters of the loch rush on both sides of an island, over a shallow, into a large sheet of water two miles long, forming, when the waters within and without are at different levels, a dangerous rapid at spring tides. This, too, is a favourite place for wildfowl, Wigeon, and more especially the diving ducks, such as Goldeneyes and Scaups, and the Red-breasted Merganser. The way in which sea and land are interlocked in this part of Scotland must be seen to be appreciated, and to a lover of Ornithology is well worth a visit, as it is out of the ordinary route of the innumerable tourists who crowd the Scotch hotels during midsummer and early autumn.

In ornithological interest Loch Swen, owing to its muddy bays and inlets, stands high amongst west country lochs, though the West may be said to compare unfavourably with the East of Scotland in regard to the variety of birds which attract the puntsman, such as wildfowl and waders, although with sea-fowl and rock-birds the West is well supplied.

For instance, every winter when shooting on the East coast, I have always seen, if I have not shot, several Wild Swans. Two

winters ago I saw eight, in one lot, pitch in the Findhorn Bay, and shot one—a fine specimen—later on. In the winter of 1880-81 a flock of twelve pitched close to the village of Findhorn, but I happened then to be at a place farther along the coast, so they escaped molestation. Others I saw at the inlet I was shooting in, so that they must have been numerous on the coast generally. Now, here in the West, I have seen none, and the country people seem scarcely to know them. As to wild geese, the Brent, which affords so much sport on the east coast, is decidedly scarce, and its place is sparsely supplied by the larger Grey-lag, which is locally numerous, but prefers green fields to the puntsman's domain—salt water.

Ducks—*i. e.*, the Common Duck and Mallard—are tolerably plentiful in the West, and on Loch Swen the pretty little Teal is abundant, and the Wigeon in some places numerous. Last winter I frequently saw over one hundred together, which for mild weather is pretty fair. The Golden-eye is a very common duck in the West, the Scaup not so plentiful, the Tufted Duck conspicuous by its absence, and the Sheldrake's variegated plumage a rare sight, there being but half-a-dozen pairs on this large loch—contrasting ill with the sandy plains of Moray, where I have seen at least three hundred together. The Velvet Scoter was to be seen, though not numerous; the Common Scoter I did not properly identify, but the Eider, as the spring came on, became numerous at the mouth of the loch and amongst the isles. That handsome bird, the Long-tailed Duck, whose sonorous cry rings out so frequently over the waters of the Orcadian sounds, and bays and firths of the north-eastern coast, was not met with; perhaps we were too far south, for I fancy this bird is common enough in the Outer Hebrides.

The Red-breasted Merganser was about the commonest bird we had. This bird is about the most destructive to Trout of any in the Highlands, and as it is very prolific—sometimes having a brood of a dozen—the mischief it does is hardly repaid by the gratification afforded by the undoubtedly handsome appearance of the male bird. When not much molested, Mergansers are fond of sitting ashore and basking on the rocks, in sheltered nooks and corners, and many a time, when cautiously pushing round some bay in my punt, I have approached within a few feet of them before they observed me. At such times it was amusing

enough to notice the ridiculous scramble and rush they make to get away, sometimes going head first under the surface, but usually flapping heavily into the water in their efforts to get upon the wing, the fright rendering still more troublesome their usually laborious attempt to accomplish this. In similar circumstances, I have seen a Heron so utterly unnerved by my sudden appearance, within a yard or so of where it was standing,—needless to state this was behind a bank,—that it ran off, flapping its wings uselessly and uttering loud screams, for a considerable distance before it sufficiently recovered presence of mind to use its mighty pinions in the legitimate way.

It is, however, more particularly in the waders that the divergence between the East and West of Scotland is most manifest. Here the Oystercatcher and Curlew are most conspicuous; but even their numbers are few, compared with the congregations of these birds to be seen in Nairn and Moray, while the multitudinous swarms of Knots and Godwits that delight the puntsman's eye on those same sandy shores are not to be found in the West at all, at least in winter; for I believe an occasional spring and autumn migrant does turn up here. Of other waders I saw a few Redshanks, Dunlins, Ringed Plovers, Turnstones, and, on the rocky skerries, occasionally little parties of the Purple Sandpiper, more particularly when the time for their vernal migration came on, it being their habit to collect together before their departure for the north.

The Heron was well represented, there being a tolerably large heronry in a sheltered bay at the landward end of the loch. Gulls were numerous enough, but only the common species, the Great and Lesser Black-backed, Herring and Common, and the ubiquitous Black-headed Gull being the representatives of the family; the only approach to a rarity being an immature Glaucous Gull that I saw pitched on a sandy beach at the mouth of West Loch Tarbert.

In the memorable November hurricane of last year, amongst other birds, a number of Petrels were driven ashore. I picked up about a dozen at Loch Killisport, a little to the south of Swen, where a party of us had a large winter shooting. These were all the common little Storm Petrel, but I saw accounts in the Scotch papers of the Fork-tailed Petrel being picked up at other places on the west coast.

The rock-birds, most of which come right up the loch in their fishing expeditions, were Razorbills and the Common and Black Guillemot; the last named is comparatively rare, for in Orkney in winter it is more frequently met with than the other. To supply the numerous fish-eating birds in this loch there must be a tolerable supply of fish, and it was a pretty sight to watch the different species, when—as often happens—a lot of small fry would break up to the surface. A Gull, probably, hovering in the air, would first make out the prize, but its first dart downwards to secure its booty is the signal for its congeners to hurry up in swarms, and a gyrating column of Gulls is rapidly formed, flying round and round, broken frequently by individuals shooting down to the water, as an unfortunate fish comes to the surface. The keen eyes of the Razorbills and Guillemots discern this at once; they know that under that column of Gulls are the fish. The Red-breasted Mergansers are equally alert. Up they all fly and splash heavily into the water, right under the Gulls, and in a few minutes, where you could not see a bird, you may now see fifty; and, unless one wantonly disturbs them, they will permit you to approach within twenty yards to watch them as long as the fish remain.

Of Grebes there were a few of the Great Crested and Sclavonian species, and the common Dabchick; these were none of them numerous. Possibly the Eared and Red-throated Grebes were there, but, unless shot, one cannot identify them. The two kinds of Cormorants were, of course, common.

The Divers proper were well represented too, the Great Northern and Red-throated being numerous; the Black-throated I did not identify, but, as in the case of Grebes, unless in full breeding plumage, one cannot at a glance distinguish between individuals of this genus. There is a considerable difference in the habits of even birds so similar in appearance as the Great Northern and Red-throated Divers. The larger bird is more local in his habits; he takes up his winter quarters in some place in October or November, and earns his living there or thereabouts until his departure for his northern breeding haunts, regardless of wind, weather, fish, or anything else. Such powerful birds as the Gannet and Red-throated Diver occasionally succumb to stress of weather and get washed ashore. Not so the Great Northern Diver; no one ever hears of his getting driven ashore,

unless previously struck by shot. In winter this bird rarely flies; the water is his domain, and he adheres faithfully to it, not but what he can use his wings well enough if he chooses. I have seen one pursued by boats for two hours, shot at perhaps twenty times, and then, with heavy beats of his wings striking the water for perhaps ten yards, get up in the air, and go out of the harbour at a rate that would do credit to a Swift.

The Red-throated bird is more of a vagrant; he follows the fish round the coast, and in one day I have seen several hundreds of these birds where a week before only a few scattered individuals would be met with. If frightened this bird trusts to his wings to escape, and rarely dives, save when you happen to be dead to windward of him in your boat, as he then knows that he must rise to windward, and so would be unpleasantly near. So in Loch Swen, at times when rowing up from the mouth in my punt, in the twilight, I might see two or three dozen Red-throated Divers flying rapidly down the loch towards the open Sound, as they do not care to trust themselves in inland waters during the night. On other days not one of these birds could be seen, but the Northern Divers were constant in their attendance, and every day one might see several pairs of them in different parts of the loch. I like to see these fine birds about, and do not molest them, so beyond quickening up a bit as I passed they paid little attention, occasionally saluting me with their weird long-drawn note, which resounded far and wide over the quiet waters long after the birds themselves were lost to sight. This wild cry, to my ears at least, is one of the strangest sounds proceeding from the vocal organs of birds, and to superstitious minds may well account for sundry tales of Water Kelpies in Scotland. Still, weird and melancholy as is the cry of this large bird, it harmonises not unfitly with the wildness of the scenery, where in front the high rounded summits of the Jura hills look boldly over the broad Atlantic; while behind, in far distance, the double-crested ridge of lofty Cruachan, clad in its white mantle, towers above the neighbouring hills; and on all sides, as far as eye can reach, are displayed to view the islands, lochs, and moorlands of the Argyllshire seaboard.

THE BIRDS OF BRECONSHIRE.

By E. Cambridge Phillips,
Member of the Woolhope Naturalists' Field Club.

(Concluded from p. 220.)

Wild Swan, *Cygnus musicus.*—At one time probably visited Llangorse Lake regularly in severe weather. The last birds seen there, as recently reported to me by a fisherman who still frequents the lake, was about twenty years since, when he saw six there one winter's morning, but has never observed any since. About fourteen years ago, in riding down the beautiful valley of the Usk towards Talybont I myself saw a single Swan, probably a wild one, flying very high in the direction of the sea. The grand and powerful flight of that snow-white bird, cleaving its way through the air, I shall not easily forget.

Greylag Goose, *Anser ferus.*—Only occasionally seen in severe weather, and then passing over at a great height. A few have been shot from time to time, and a friend of mine tells a good tale of a gamekeeper of his seeing some Geese in very hard weather in a meadow, and in an excellent position for stalking them, but after watching them for some time he came to the conclusion they were tame birds until undeceived by their flying away.

Brent Goose, *Anser bernicla.*—I have received reports of individuals of this species having been killed in this county, but I imagine they must have been exhausted birds detached from flocks, or, what is more probable, driven inland by the violence of some storm, the Brent Goose being essentially a bird of the sea-coast.

Sheldrake, *Tadorna vulpanser.*— Has been obtained here from time to time, although rare. Three winters ago one was seen, close to this town, on the Usk, and others have been killed on the Wye. It is not generally a difficult bird to approach, and its bright colours render it very conspicuous. It breeds all along the sandy coasts of South Wales, and passengers crossing the Severn in the steamboat at Portskewett may often observe it, as it is fairly plentiful in that neighbourhood.

Wild Duck, *Anas boschas.*—Common, breeding all over the county on the numerous hill-bogs, and in quiet places adjoining

our streams. I have flushed a Wild Duck in a green lane not far from the Usk, and from her movements, as she declined leaving the place, allowing me almost to catch her, I am certain she had a nest in the hedge there, but not wishing her to forsake it, I did not further disturb her. A great many breed in the bogs about Dovynnock, and the large bog called the Trath, near Brecon, is a favourite place for them. Some years since, happening to be on the highest point of the hill near Merthyr Cynog, and walking over a small bog, an old duck suddenly rose near me, and looking down I saw a young one, quite grown and in full feather, squatting in a little "form" in the reeds, like a hare, its neck drawn back, its head resting on its back, and its tail up, evidently endeavouring to make itself look as small as possible. I put my hand cautiously down, and easily caught it, when it seemed all at once to develop into a full-grown, fully fledged Wild Duck, in excellent condition; so I and my old retriever, who evidently considered something unusual was up, beat the bog carefully, and before we left he brought me five more full-grown young ducks, which with the one I had caught myself, made no slight weight to walk down to the shooting-box with—two miles off and more. To this day I cannot make out why they did not fly, as it was the first week in August. The Wild Duck is on the increase here, and I account for it from the fact that so many young birds are too strong on the wing to approach on the 1st August (the "close time" for wildfowl in the county being from the 1st March to that date). Perhaps it would be better to make it the 1st February, for if the weather is mild the ducks are generally paired during this month.

Shoveller, *Anas clypeata*.—Very rare. The only instance that has reached me of its occurrence here is one killed on the Wye, near Hay.

Pintail, *Anas acuta*.—The same remarks apply to this as to the preceding bird. One has been killed on the Wye, near Hay, and, with the last-named bird, is now, I believe, in the possession of Mr. Baskerville, of Clyro Court, who has kindly supplied me with the above information. I also, about twelve years since, saw a Pintail on the Gludy Lake, near Brecon, in company with a small flock of Wild Ducks.

Wigeon, *Anas penelope*.—Common in the winter on Llangorse Lake, where in hard weather it congregates in numbers, but is scarce elsewhere in the county. Occasionally a few visit the

Gludy Lake, and a very few frequent the Usk and Wye in severe weather. I have never seen it on any of the mountain bogs, and, I need hardly add, it never breeds with us.

Teal, *Querquedula crecca.*—Fairly plentiful with us, and breeding sparsely in several places in the county. I have found its young in a very small and deep pond called by us the "Teal Pond" on the Eppynt Hill, near Merthyr Cynog. They seem to have taken a great liking for this small pool, and I invariably found a flock there in the winter, and a pair nested there regularly. They breed in a large bog near Cray, on the Trath bog near Brecon, and on the large bog at Onllwyn, besides other places. I have little doubt that, if they had anything like quiet, they would breed at Llangorse in some numbers. They are occasionally plentiful there in the winter, but I do not think these can be birds reared in the county. A few breed on other parts of the Eppynt Hills.

I may here remark that I have seen two Garganey, *Querquedula circia*, believed to have been killed on the Wye, near Hay, but as there is some doubt about it I cannot with certainty include the species in my list.

Pochard, *Fuligula ferina.*—Occurs on Llangorse Lake in the winter months; it has also been killed on the Usk and Wye, but is very uncommon on both these rivers.

Scaup, *Fuligula marila.*—A very rare duck with us, but visits us occasionally. Mr. Alfred Crawshay shot one on the Usk last winter. Some years ago I killed a Scaup under rather singular circumstances in Wiltshire. I kept some very small black East Indian ducks on a pond quite in the country: the man who looked after them told me that a strange duck was with them, but was very wild. I was returning from snipe-shooting at the time, and going to the pond the stranger immediately dived, and I killed it on its reappearance with a charge of snipe-shot, and found it was a female Scaup in perfect plumage. Doubtless it had mistaken the tame black ducks for a flock of its own kind.

Tufted Duck, *Fuligula cristata.*—Quite as rare as the preceding, though occurring here at intervals. One was shot on the Wye at Clyro, near Hay, and Mr. Williams-Vaughan has another in his collection that was killed in the county. Mr. David Thomas has also a specimen procured on Llangorse Lake, where

years ago I have no doubt our rarer species of ducks were more frequently found.

Goldeneye, *Clangula glaucion*.—Very rare indeed. One has been obtained on the Wye, near Hay, and another by Mr. A. Crawshay on the Usk.

Smew, *Mergus albellus*.—This pretty little bird sometimes visits Llangorse Lake. I have had one brought me that was killed there, and Mr. David Thomas, of this town, has a very good stuffed specimen obtained at the same place.

Red-breasted Merganser, *Mergus serrator*.—Occurs very rarely with us in severe weather, both on the Usk and Wye. I have seen the skin of a beautiful male which was shot on the Wye, near Erwood.

Goosander, *Mergus merganser*.—A rare winter visitant, though of more frequent occurrence than the last-named. From what I can learn, they were formerly often observed on the Usk in the winter season. Mr. Williams, when living at Manest, has often shot them there. Lower down the river, at Talybont, Mr. Alfred Crawshay has killed several female Goosanders and one male; and, still farther down, two or three have been shot by Sir Joseph Baily at Glanusk Park. They have also occasionally been seen and killed on the Wye.

Great Northern Diver, *Colymbus glacialis*.—Many years since the late Mr. Duncan, of this town, shot a beautiful male bird on Newton Pool, close to Brecon. Mr. David Thomas has also a pair from the Usk near Brecon. Mr. A. Crawshay has observed it at Llangorse, and last winter one was killed there and two others seen. Some specimens have also from time to time been obtained on the Wye, near Hay and Glasbury.

Black-throated Diver, *Colymbus arcticus*, & Red-throated Diver, *C. septentrionalis*.—I have only seen one Black-throated Diver, a stuffed specimen, believed to have been killed on the Wye, near Glasbury. I have never actually observed either, but it is very probable that occasional birds of both kinds very rarely visit us from time to time, but escape notice, and so are unobserved and unreported.

Great Crested Grebe, *Podiceps cristatus*.—A special haunt of this bird is Llangorse Lake, where at one time it must have been quite plentiful. It is still fairly common there, breeding regularly, but in no other place in the county that I am aware of.

Its shy and retiring habits, its wonderful sight, and diving powers, have alone preserved it from extirpation; but with all these in its favour it often gets killed, as the many stuffed specimens both here and elsewhere so abundantly testify. Mr. Alfred Crawshay, shooting round the lake the year before last, and noticing a great commotion in the reeds made by a Grebe, fired at it, and on rowing up, found he had killed a female Great Crested Grebe and two young ones, which at the time he fired must have been sheltering under her wings. He has had the three stuffed to commemorate the incident. It is a pity this bird should be killed, for on a large lake like Llangorse it would do actual good by keeping down the extraordinary number of small roach and perch that swarm there.

Little Grebe, *Podiceps minor*.— Common throughout the county. It breeds on Llangorse Lake, and occasionally on smaller lakes and ponds here, but in sparse numbers. It may be often seen on any large pool in the Usk, or Wye, in the winter, diving incessantly. I have never noticed it on the deep bogs of the county, nor on any of the hill-streams.

Guillemot, *Uria troile*.—I can record the occurrence of one specimen, which was picked up dead after a storm in the neighbourhood of Llanwrtyd, in this county.

Cormorant, *Graculus carbo*.—I think visited us formerly oftener than is generally supposed, probably following the course of the river from the sea in search of Trout. I have seen one on Newton Pool, near Brecon, but not of late years. Two or three have been killed at Glanusk, on the Usk, the seat of Sir Joseph Baily, Bart. Mr. Alfred Crawshay has observed it at Llangorse, and other specimens have been obtained in this county. It has, however, greatly decreased here, and is now seldom seen. The Shag, *G. cristatus*, does not come so far inland, but keeps to the coast.

Gannet, *Sula bassana*.—Miss Lloyd tells me that at Nantgwilt, some years ago, she picked up a fine Gannet alive (evidently blown in by a storm), and kept it alive for some little time by feeding it with fish and periwinkles. The nearest sea-coast must be at least thirty miles from where the bird was found, and shows the fearful power of the storms that occasionally occur on our iron-bound coasts. Within the last few years a man passing by Cefn Park, near Brecon, seeing a large white bird in a wood

there, fired and killed it; he brought it to Mr. Williams, late of Manest, who had it preserved. On inspecting it I found it to be a Gannet, an old bird, in most beautiful plumage, and it had evidently arrived at its strange resting place in the same manner as the first-named specimen. I must not omit to mention that Cefn Park is certainly forty miles from the sea, as the crow flies.

Common Tern, *Sterna fluviatilis*.—May often be seen at Llangorse, skimming over the expanse of the lake with its peculiarly easy and graceful flight. A connection of mine shot a solitary bird of this species on the summit of the Eppynt Hills. It has also been obtained on the Wye and Usk, but is, I regret to say, only an occasional summer visitant with us.

Kittiwake, *Larus tridactylus*.—A specimen of this Gull was killed on Llangorse Lake. It is, however, very scarce here.

Common Gull, *Larus canus*.—Not uncommon in the county, especially after a stress of weather. I have observed it on the Wye, near Builth, at Llanwrtyd, occasionally also on the Usk, and it may often be seen at Llangorse. It takes good care of itself when inland, being fully alive to the fact that its large breadth of wing and snowy plumage renders it most conspicuous.

Herring Gull, *Larus argentatus*.—I have seen it here but very seldom. I remember fishing in the Wye, at Erwood, late one beautiful summer evening, when a very large Herring Gull flew slowly up the river and passed close over my head. When exactly above me he turned his head on one side, without deviating in the slightest from his course, gave me a look, as much as to say, "Only a harmless brother angler," and passed on his way without the slightest apparent concern.

Manx Shearwater, *Puffinus anglorum*.—One of these birds was picked up dead close to the border of the county, near Llanwrtyd. It was fortunately preserved, and I have often inspected it. Of course it was only borne there "on the wings of the wind."

Storm Petrel, *Procellaria pelagica*.—This is the last bird I have on my list, excepting a few which have been reported to me too recently to be inserted in their proper places, and whose occurrence I propose to notice presently by way of "Addenda." A specimen of this homeless little wanderer was picked up dead

on the Wye, at Clyro, near Hay, some years since. Last winter another was picked up at the Skreen, Erwood, on the borders of the county, by Mr. Williams Vaughan, jun., after one of the violent storms of last winter; and at the same time a third was found dead on the "Captain's Walks," one of the most favourite promenades of our town.

ADDENDA.

Honey Buzzard, *Pernis apivorus*.—Another Honey Buzzard was killed at Dany Park, near Crickhowell, by Mrs. Crawshay's keeper either in 1871 or 1872. I am indebted to Mr. A. Crawshay, of Llansantfraed, for this information.

Great Grey Shrike, *Lanius excubitor*.—One was seen at Tredustan, near Tregunter, in November last, by Mr. Roche, of Tregunter, and his brother. It was easily recognised by both of them, they having often observed it on the Continent. It has also been observed in the county by Miss Lloyd, of Llandefailog, Brecon.

Hooded Crow, *Corvus cornix*.—One was killed here last winter on the hill called the "Allt," near Buckland, by Cross, the keeper. It is most rare with us. I have never yet seen it here, and its occurrence so far west is most unusual.

Hoopoe, *Upupa epops*.—In addition to the two specimens already mentioned, I have to record a third which was killed in the neighbourhood of Llangorse by Mr. Penry Lloyd, who then lived at Brynderwen, and who was kind enough to give me this information.

Wood Wren, *Phylloscopus sibilatrix*.—This bird has been more numerous than usual with us during the present summer.

Grey Phalarope, *Phalaropus fulicarius*.—One killed on the Wye, near Glasbury. I have seen this bird, which has been preserved; it is in winter plumage.

ORNITHOLOGICAL NOTES FROM EAST NORFOLK.

By J. H. Gurney, Jun., F.Z.S.

The following notes on an expedition to Gunton Lakes on June 13th will perhaps be of interest to naturalists.

I cannot help thinking that the Heron is increasing in numbers, and at Gunton there is a colony of thirty-eight nests on an island, fairly secure from vermin, though Foxes and Otters are said to go there, and one of the latter was recently poisoned with two strychnined Bream. When Mr. Harting published his list of British Heronries (Zool. 1872, p. 3264), which I find very valuable for reference, Gunton heronry had been only recently established, and was said to boast thirty-one nests. There are now about thirty-eight on alders, and as the island is small they can hardly increase beyond this number. But Mr. Southwell informs me that a splendid heronry has sprung up at Mautby, where there are something like one hundred nests; and I hear from Mr. Norgate of small heronries at Billingford and Bylaugh, and from Mr. Newcome of six nests at Wilton, near Brandon. The nest recorded at Hempstead (Zool. 1880, p. 366) was not followed by any more, and the same year a pair or two nested at Sheringham, but have now ceased to do so.

Gunton Lake is a great home for Canada Geese; at least one hundred live there in an unpinioned state, roam about the country, and are often shot. There are also a great many more at Holkam Park, Blickling Park, and Melton Park, and it need hardly be said that not the slightest value attaches to any Canada Goose—however wild it may seem, and however unsoiled its feathers—which may happen to be killed on the coast in this part of England. We had an exciting chase in a punt after a very young one, which we eventually captured and pinioned; but except a few which are pinioned in this way, none are disabled from escaping. On the Heron's island I was sorry to see five or six deserted nests, all containing eggs, amounting to about forty. I suspect that the Foxes were accountable for this, for I know from experience that a Canada Goose is not too large for them to kill.

There is only one pair of Great Crested Grebes at Gunton, and the Rev. Henry Lubbock, the Rector of Gunton, informs me

that they annually appear about the 5th of March. I do not know any prettier sight than to see the old hen Grebe, with her young ones on her back, with her beautiful crest and tippet raised to the utmost in her agitation, and I was not sorry that the eggs were hatched off, for the sake of seeing this, to me, more interesting spectacle. On pulling up the nest, for the chance of an addled egg being left behind, I found the middle of it quite hot,—in fact, a regular natural incubator,—and I fancy that the bird must have left it just before we saw her.

Two of the Honey Buzzards mentioned in my last notes on Norfolk birds (Zool. 1881, p. 487) are dead. We obtained wasps' nests for them far into the winter, but "butcher's lights" finally killed them. My father has been feeding the third one for some time past entirely on sparrows' eggs. When I had them I tried them with raspberry jam, which they ate, but their favourite food was the larvæ of wasps. The insect itself is not touched—at any rate, when the larvæ are obtainable. The terrible gales, which bereft us of so many fine trees in the autumn, blew down their cage, and a singular instance of tameness in a bird of prey was exhibited by one of them, which, possessing full powers of flight, allowed itself to be recaptured a day or two afterwards by a boy holding out a plate of meat. They are very quiet, sociable birds, but perhaps the Buzzard recognised in the boy the same lad who had fed it a few days before. Although it was late in November, when they escaped, their instinct led them to two wasps' nests, and the dexterity with which they scooped them out showed how well adapted their comparatively feeble beak is for the purpose.

It seems desirable that the interesting question raised by Mr. E. T. Booth, in 'The Field,' whether the adult male Norfolk Plover has, or has not, a fleshy tubercle at the base of the upper mandible in the spring, should be settled this summer, and with a view of contributing a small mite of information on the subject, I would say that there are at present at Mr. Dack's, the bird-stuffer at Holt, a male and female Norfolk Plover killed about May 3rd and 15th, and which Mr. Dack, with whom I had had some previous conversation on the subject, carefully dissected. Neither of these has, or had, the slightest trace of a rounded knob or protuberance; but there are also in the shop a pair taken three or four years ago (Mr. Dack believes in July), being set up with the nestling and eggs, and one of them shows a very clear

indication of the protuberance; it is nothing more than an indication, but still one can well imagine that when the bird was alive it may have been as large as that in Mr. Booth's specimen.

On the 4th of June, near Cromer, a bird was seen by Mr. I. W. Cremer, which I have no doubt was a Night Heron. The last shot in Norfolk was at Ranworth on July 21st, 1880,—a young bird, indeed apparently but a few months old,—and has not been recorded. The bird seen by Mr. Cremer settled on a pond about a quarter of a mile from the sea, and, though twice shot at, escaped.

Mr. W. Eagle Clarke's remarks on the tail of the Tengmalm's Owl shot at Whitby (*ante*, p. 177) led me to examine the tail of one which I got at Cromer Lighthouse on the 30th October last, as recorded by Mr. Stevenson (*ante*, p. 115), and I find that, as in the bird obtained at Whitby, there are five, and not four, pretty distinct bars formed by the spots on the tail. I cannot say that my bird agrees very well with the plate in Dresser's 'Birds of Europe,' taken from an adult male from Sweden, and in which, besides minor differences, the bird is drawn with ears, or rather horns, of which I see no signs.

Mr. Clarke, in another part of his interesting paper, mentions that the name "Rock Goose" is applied in Yorkshire to the Brent. I have never heard it called anything but "Brant Goose" at Blakeney, and that has been the Norfolk name for it since the days of the L'Estranges, according to whose 'Household Accounts,' extending from 1519 to 1578, the value of a "Brante" was twopence. But I have many times heard it called "Road Goose" at the mouth of the Tees, in Yorkshire, a name which, meaning perhaps nothing more than that these birds frequent harbours and roadsteads more than the Grey Geese, has been persistent in that particular locality since the time of Willughby ('Ornithology,' Book iii., p. 361). Mr. Dresser says that in Holland the Brent is called "Rotgans."

[It is curious that neither Willughby nor Pennant, to say nothing of later naturalists, have hit upon the origin of the old northern name of this bird, *Rotgans*, *Radgaas* (of which "Road-goose" is doubtless a corruption), signifying "Root-goose," its chief food being the root and lower portion of the stem of aquatic plants. The word occurs in the Durham Household Book, under date 3rd Feb. 1534:—"Item, 3 Februarii, 1 Rutgoys, 3d."—Ed.]

ORNITHOLOGICAL NOTES FROM NATAL.

By Majors E. A. Butler and H. W. Feilden, and Capt. S. G. Reid.

(Continued from p. 258.)

Hyphantornis spilonotus (Vigors), Spotted-backed Weaver Bird.—A male obtained by Reid on the banks of the Tugela River, near Colenso, on the 21st November. A colony of these birds was breeding in some tall trees close to the river; the nests were suspended from the topmost branches, and resembled those of *H. velatus*, but were inaccessible.

Hyphantornis ocularius (Smith), Smith's Weaver Bird.—Reid shot an immature male in some very dense bush near Durban, on December 26th; one or two others were seen at the same time.

Euplectes xanthomelas (Rüpp), Yellow Kafir Fink.— Obtained commonly throughout our stay in the country. The sexes resemble each other closely in their winter dress, the deep velvety plumage not being completely assumed by the males till September or October.

Euplectes oryx (Linn.), Red Fink.—Common and universally distributed. Specimens of the male bird were obtained in all stages of transition from winter to summer plumage, in October and November. "Found breeding in considerable numbers along the reedy streams near Maritzburg (Richmond Road), and eggs obtained in December, though at that time many nests contained young birds" (R). "Also breeding in the same places in March, so it must nest twice" (R). The nests are constructed of grasses, domed with a side entrance, and usually placed among reeds, on the stems of which they are formed, about four or five feet from the ground-level, and at the water's edge. Eggs taken at Richmond Road on the 11th December are rather pale greenish blue, unspotted; they measure 7·55 in.

Vidua principalis (Linn.), Dominican Widow-Bird.—Very abundant all over the colony; found in flocks, both in winter and summer plumage. Specimens were obtained from June to December, the males assuming their long tail feathers and strikingly handsome breeding plumage in September and October. As in *Chera procne*, the long-tailed males, even in December, were singularly outnumbered by the tailless females and young males, giving rise to the idea that the species is polygamous.

The explanation may, however, be the same, *viz.*, that the young males do not assume their nuptial livery during their first, and perhaps their second, year. Legs and feet grey. "Bill coral red or scarlet, orange in some cases" (B).

Urobrachia axillaris (Smith), Scarlet-shouldered Reed Finch.—Extremely common at Richmond Road in December, where it was breeding. The nest is a slight, but strong, construction of grasses, nearly spherical, with a side entrance, built among the reeds. Eggs bluish green, tinted with olive, with large blotches and a few small spots, some clear dark olive, others obscured, as if washed over by the ground-colour; ·8 in. by ·6 in. Seen at Durban; also a single specimen at Calleba's Laagte, about twenty-five miles from Newcastle, but not noted further north. Butler did not notice it north of the foot of the Karkloof.

Niobe ardens (Bodd.), Red-collared Reed Finch.—Generally distributed and fairly common. Some specimens of the male were obtained near Newcastle in November, with the collar orange, rather than scarlet, but this is doubtless only an intermediate stage.

Chera progne (Bodd.), Long-tailed Widow-bird; Kaffir Chief.—Called by the Kaffirs "Saca-bulo." One of the commonest birds in the upper portions of the colony, but not observed in any great numbers below Howick, or rather Riet Spruit, a few miles lower down on the Pietermaritzburg road. Reid met with a small colony on the downs near Richmond Road Station in December, but did not observe them elsewhere in that neighbourhood. They roost in hundreds, or even thousands, in the reedy "vleys," flock after flock pouring in from all sides about sundown till the whole place is alive with them. The males begin to assume their summer livery, with its long tail-feathers, as early as August, but some of them are not in full breeding-plumage as late as October. They were still in flocks, and apparently not nesting, when we left Newcastle in November. It would seem that the black plumage and long tail are not assumed by the males during their first year (and perhaps their second), for specimens were obtained in the immature or female dress as late as the 26th October, which could not possibly have subsequently gone through the various stages; and this would appear to receive confirmation from the marked preponderance of the brown tailless birds over the long-tailed males in the various flocks. So great, however, is this preponderance that it

can really only be satisfactorily accounted for by assuming the species to be polygamous. Butler inclines to this theory, from having so constantly seen parties of what appeared to be female birds following single males in nuptial plumage, and we can only regret that we were not long enough in the country to observe the nesting of these singular birds. Mr. R. B. Sharpe, in his second edition of Layard's book, is of opinion that all the *Viduas*, as well as the present species, are polygamous. Some more observations are necessary, however, to confirm our suspicions on this point. There is a marked difference in size between the males and the females, the former being considerably the larger. After a severe hailstorm in October, Butler found several of these birds near Newcastle so injured by the hailstones that they were unable to fly. He observed a cream-coloured specimen in one flock, but failed to procure it.

Vidua principalis (Linn.), Common or Dominican Widow-bird.—Very abundant all over the colony; found in flocks, both in winter and summer plumage. Specimens were obtained from June to December, the males assuming their long tail-feathers and strikingly handsome breeding livery in September and October. As with *Chera progne*, the long-tailed males were in small proportion to the brown females and immature males, and we are inclined to the belief that the species must also be polygamous. We did not, however, meet with it actually nesting during our stay in the colony.

Estrelda astrild (Linn.), Common Waxbill.—Everywhere common, in small flocks, as a rule, though quite a cloud of them occasionally congregate together. Nests found at Richmond Road in December were tenanted by several birds; they were built on the ground in thick tufts of grass, composed entirely of fine grasses, with a curiously placed entrance just above the ground-level. The eggs were of a lovely pink colour before being blown. From one nest examined by Reid five or six birds were seen to fly. Are they also polygamous, like the *Viduas?* Mr. R. B. Sharpe appears to think this possible.

Ortygospiza polyzona (Temm.), Little Barred-breasted Finch.—These pretty little birds are very common, both winter and summer, round Newcastle, and as far south as Ladysmith, but they do not seem to extend to the coast-line. For an excellent account of this species we may refer ornithologists to the notes

published by Mr. F. H. Guillemard in 'The Field' of November and December, 1880. We did succeed in shooting specimens on the ground, one day, after much patient watching, but they move about like mice when once settled. They are strictly terrestrial in their habits, never settling, as far as our observations go, on anything but the ground. On the wing they are very noisy, the whole flock keeping up an incessant chattering, when flushed, until they again alight. These little birds were always in the most excellent condition, their crops being invariably crammed with small grass-seeds. The sexes do not vary very much, but the male has the under parts of a brighter colour and the throat considerably blacker than the female. Iris, orange; bill, upper mandible dark red, blackening at the base, lower mandible bright coral-red; legs and toes, pale brown (R).

Ortygospiza subflava (Vieil.), Sanguineous Waxbill.—"Lieut. Giffard and I met with a small flock near Newcastle in September, very shy indeed, and obtained several specimens, both male and female. I was somewhat surprised at meeting with a large flock also, frequenting a reed-grown stream at Richmond Road, near Pietermaritzburg, in December. They stuck pertinaciously to the thick covert, perching, however, on the reeds, and not on the ground, like *O. polyzona*, and I had to shoot my specimens on the wing. Not met with on any other occasions. The note is not unlike that of *O. polyzona*, but rather less harsh and grating. In flight the crimson rump is very conspicuous, and serves to distinguish the species from the last-named" (R).

Ortygospiza Dufresnii (Vieil.), Dufresne's Waxbill.—Butler saw several of these birds in a cage belonging to a lady he met on board ship returning home, and she told him that they were caught near Pietermaritzburg, and that they were not uncommon in that locality. He obtained one of these birds, which died of cold shortly after reaching England.

Ureginthus phœnicotis (Swains.), Blue-breasted Waxbill.—Found in considerable numbers by Reid in the bush near Ladysmith in August, and at Colenso and Blaauw Krantz in November, in which latter locality Butler noticed it. Not observed in the Newcastle district.

Passer diffusus, Smith, Southern Grey-headed Sparrow.—A small flock frequented some large Syringa trees near the Ingagane Drift in the winter, and specimens were obtained there in July by

Reid. Observed in a large flock at Ladysmith in August, in small numbers at Dundee in October, and appeared to be numerous and generally distributed in November from Ladysmith, where it was very abundant (feeding in the roads like the common House Sparrow of Europe), as far down as Howick, where we noted its presence in November.

Passer arcuatus (Gmel.), Cape Sparrow.—Not seen in mid-winter in the Newcastle district, though probably it remains there the whole year round. First observed by Butler in September, when he found them in scattered pairs, one pair attaching itself to each farmhouse for the breeding season. He found them very shy, but obtained specimens. If one of the pair was shot another generally took its place within a few days, but where its successor came from is a puzzle, as these farmhouses are often miles apart, and it is difficult to understand how a disconsolate widow or widower could find another mate in so short a time. One pair were observed building in a low orange tree in a garden within a few yards of the front door of a farmhouse. Nest similar to that of the English House Sparrow, but only six feet from the ground. Reid met with a pair in a thick patch of bush some distance from any buildings, the male being obtained, but no nest was observed. "Iris, dark brown; bill, black; legs and feet, dusky plumbeous" (B).

Poliospiza gularis (Smith), Streaky-headed Grosbeak.—A male, developed for breeding, obtained by Reid near Colenso on the 21st November.

Crithagra scotops, Sundev., Sundevall's Seed-eater.—Butler found this species not uncommon in the kloofs on the Drakensberg, near Newcastle, in August. It associates in small flocks, and has similar habits to *C. canicollis*, but is more of a woodland species.

Crithagra canicollis (Swains.), Cape Canary.—Common, both in winter and summer, in the colony. In the cold weather it frequented the bush-grown kloofs in the Drakensberg, near Newcastle, and as the breeding-season approached was more often found in the open veldt among weeds and scrubby bushes. Lieut. Giffard took a nest containing fresh eggs in a bush on the bank of the Incandu, on the 25th October. Reid found numerous nests containing fresh eggs at Mooi River on the 24th November; these nests were chiefly built in the pendant branches of willows overhanging the river.

Fringillaria flaviventris (Vieil.), Golden-breasted Bunting.—Reid obtained two specimens at "Guinea-Fowl" Kop, near Ladysmith, on the 21st August; there were a good number about, frequenting the bush at the base of the hill.

Fringillaria capensis (Linn.), Cape Bunting.—Not uncommon in the Newcastle district, where we all obtained specimens, in July and October.

Fringillaria tahapisi (Smith), Rock Bunting.—Specimens obtained at Newcastle by Butler, and at Ladysmith by Reid, in June, July, and August.

Certhilauda rufula (Vieil.), Rufous Long-billed Lark.—Extremely abundant about Newcastle, found in small flocks about the open veldt, generally where there are ant-hills, or loose rocks among the grass. Flies low and rapidly, displaying its white-tipped tail very conspicuously, and dropping with astonishing suddenness into the grass. Nest very small indeed, placed under a slightly projecting lump of earth, or bit of coarse stunted grass. Eggs three, very variable in colouring, the ground colour being white, more or less distinctly speckled and blotched with brownish ash or brown: they measure ·7 in. by ·5 in. In some the markings are fine, in others they take the form of large obscure blotches.

Alæmon semitorquata (Smith), Grey-collared Lark.—A very abundant species on the rocky "kopjes." The male has a curious way of rising suddenly and silently from its perch on a rock, in a nearly perpendicular direction, for a height of twenty or thirty feet. Just at the summit of its flight it gives a long-drawn whistle, "phe-e-ew," not unlike that of the Clapper Lark; then, with wings nearly closed, descends in a slanting direction to another neighbouring rock to repeat the manœuvre in a few minutes' time. Reid shot one in the very middle of this singular performance, so there is no question as to correct identification of the bird; moreover, *Mirafra apiata* is not found near Newcastle, and there is no cracking of the wings as with that well-known species. The male bird is considerably larger than the female, and has the iris greyish brown; in the female it is brown.

Tephrocorys cinerea (Gm.), Red-headed Lark.—Found in abundance throughout the colony, though somewhat local and attaching itself to particular spots, as described by Layard in the first edition of the 'Birds of South Africa.' These neat little

birds are fond of the roads, or broad tracks, over the sandy portions of the "veldt." They are wonderfully tame, and frequently crouch on the approach of a horse, man, or waggon, instead of taking flight. The Kaffirs occasionally knock them over with their whips. The nest is a neat structure, not unlike that of our Sky Lark, composed of dry grass, and concealed under a tussock of grass on the open veldt. The eggs are three, frequently only two, in number, pale greenish white, freckled and blotched with brown. In a nest taken by Butler they measured ·95 by ·55 in, but these are doubtless unusually elongated, for in three nests taken by Reid the average size is ·85 by ·6 in. A young bird, obtained by Butler, which had just left the nest, was beautfully variegated above with dark brown and buff, not the least like the old bird that was feeding it.

(To be continued.)

OCCASIONAL NOTES.

Badger in Essex.—The occurrence at the present day of so shy and retiring an animal as the Badger in such a highly cultivated agricultural county as Essex is of sufficient interest to deserve a record in the pages of 'The Zoologist.' I have pleasure therefore in forwarding the following particulars of the death of one. On the 2nd April last some children who had been gathering oxlips informed an old man named Spencer, who is in the employment of my uncle, Mr. Joseph Smith, of Great Saling, as foreman, that they had found a Fox asleep on the edge of "Newpster" (New-pasture) Wood, close behind his house. A few days later they told him they had been again, and found that it was dead; but it was not till the 8th that, passing that way, he went to look, and finding that it was not a Fox, brought it home and skinned it, spoiling the skin considerably in the operation, but it has since been placed in good hands. Spencer is of opinion that it was a female, and from the worn appearance of the teeth I have no doubt that it is an old one. He says that when found it had its mouth full of grass, and lay as if it had died a natural death. There was no appearance of any wound. So far as I can discover no other Badger has been seen or heard of in the neighbourhood for many years, and I should have thought it to have been an extinct animal. It is difficult to understand how it could have lived, as the district is not very thinly populated, is almost all under cultivation, there are no large woods, and the Essex Hounds have one of their regular meets within a mile of the spot, and with those of East Essex are constantly

through all the neighbouring covers.—Robert Miller Christy (Chignal St. James, near Chelmsford).

Marten in Durham.—A female Marten was trapped on the 31st May last, at Hoppyland, about seven or eight miles west of Bishop Auckland. The last record of this rare animal in this neighbourhood is dated August 14th, 1849 (Zool. p. 2588), when a nest containing three young ones was found in North Carr Wood, on the estate adjoining Hoppyland.—T. H. Nelson (North Bondgate, Bishop Auckland).

Ornithological Notes from the Solway Firth.—The Peregrine Falcon is permanently resident, and breeds annually on our sea-cliffs. I have watched with interest a pair of these birds which nest every year near here. From some cause the eggs have not hatched the last two seasons, but last year the keeper shot the male bird, under the impression that another mate would do better. The result will, I hope, be successful, for the birds are preserved under ordinary circumstances from molestation, and there is a good chance for them here for years to come. The Peregrine also occurs among the mountains of Cumberland, thirty miles distant, and I am satisfied that the Cumberland birds come over here occasionally on their foraging expeditions, as they have several times been seen passing to and fro across the Firth. Although the distance appears considerable, yet it is a mere trifle to a Peregrine Falcon. The Merlin was formerly common, but is now rare on our moors, owing to the more strict preservation of game. The Common Buzzard is permanently resident; one pair at least succeeded in rearing their young, not far from here, in 1881; the nest was in a fir tree. Each year brings a few Rough-legged Buzzards: they are lazy birds, and I have more than once shot a duck at dusk which I have been unable to find, and next day on going for my bird have found only a lot of feathers, and the bones picked clean by a Buzzard. One day in autumn, when sitting among some rocks near the sea, a dark-coloured bird came flying past over the water, and alighted on the surface at some distance from me. I was much puzzled at first to make it out. The dark colour suggested a Petrel, and as I crept nearer and saw the beak, Phalarope suggested itself. When near enough I stood up, and the bird rose and flew landwards, passing within easy shot, when I saw to my surprise, on shooting it, it was a Starling. When swimming it made for the shore, and as struck by each wave gave a flap with its wings and struggled forward, reminding me very much of the action of a wounded Dunlin. Possibly it had been terrified by a hawk, but I am quite satisfied that the act of taking to the water was voluntary, and could easily have been avoided, as there were rocks close at hand upon which it could have perched. The Stock Dove, *Columba œnas*, breeds in holes and ledges of rocks shaded by ivy, &c., often facing the

sea; but the Rock Dove, *C. livia*, I have never yet met with on this part of the coast, though our sea-cliffs are in many places tenanted by stray pigeons from the farm-houses. These birds breed in the caves, and some of them very much resemble the wild Rock Dove, and might be mistaken for it. The Ring Dove, *C. palumbus*, often nests in ivy and other bushes on our sea-cliffs, as well as more commonly inland. I have several times found its nest in low bushes in coppices, within twelve or eighteen inches of the ground. I have met with two instances of the occurrence of the Virginian Quail, *Ortyx virginianus*, near the Solway. One I remember very well, a good many years ago, being shot while picking about among the refuse caused by threshing operations, near Allonby, in Cumberland. The other was at Dalbeattie, in Kirkcudbrightshire, some years ago, and had been several times seen in the neighbourhood before it was finally obtained. The Golden Plover was scarce on the coast last winter, owing no doubt to the mildness of the season. We usually have a few Grey Plover at certain places along the coast. Last winter I did not see one, though probably a few may have occurred at some stations. The Lapwing usually disappears entirely during December and January, but last winter many remained with us. The Turnstone and Purple Sandpiper were both decidedly more plentiful than usual, though nowhere common, and remained in about the same numbers throughout the winter. A Forked-tailed Petrel, *Thalassidroma Leachii*, came ashore and was picked up on the 6th December last. It was rather spoiled, but owing to its rarity I stuffed it, and it is now in my collection. Another was picked up some miles to the westward about the same time; and a Petrel seen on the wing near shore by a friend of mine might probably belong to this species, which seems to have occurred at many other places in Great Britain about the same time.—J. J. Armistead (Douglas House, Dalbeattie, N.B.)

Kentish Plover in Sussex.—This bird breeds on the Sussex coast between Newhaven and Beachy Head. Each pair appears to be confined to a limited district on the shingly shore, and if disturbed fly but a short distance and soon return to the spot left. I have observed a pair on each side of Seaford for years. The pair on the eastern side of the town were this year breeding in the old spot, notwithstanding that last year a sea-wall was made from the eastern cliff to the town, and this year a road is being formed within the wall, and several roads leading from the town to the sea-side. A number of workmen are employed in removing large quantities of chalk from the cliff, carting it along a tramway, and throwing it over the embankment to make the road. In addition, there are more than a dozen men engaged in breaking up the wreck of a ship of 2000 tons burden, making as much noise as one would hear in a foundry. Then there are numerous visitors to the wreck and to the beach. Yet in the midst of all

this bustle and turmoil I never failed to see these birds flitting across the shingle, or perched on the highest stone on the look out for the safety of their young. That they were breeding I think there can be no doubt, as two of the young of the western pair were seen running on the beach.—J. Jenner Weir (Blackheath).

Marsh Warbler near Taunton.—After hearing of two nests with eggs of the Marsh Warbler being taken this season on the north side of this town, and thinking that other birds may be breeding in or near the same spot as the nest and eggs were found in 1877 (on the south side of the town), I went with Mr. F. Morle in search in this neighbourhood for several mornings and evenings in succession. On the evening of June 30th our researches were rewarded, for very close to the old spot (indeed but a few paces distant from the site of the 1877 nest) my friend came upon a nest containing four beautiful eggs. The nest, which was attached to two stalks of cow-parsnep and one of the nettle, is much more compact and somewhat deeper, and built higher from the ground, than the two found earlier in June; both which nests, with the eggs, now in the well-known collection of Mr. John Marshall, of Belmont, I have had the pleasure of examining. We spent some time in watching the birds, to make ourselves thoroughly acquainted with the song, which is somewhat similar to that of the Blackcap, having very few of the harsh notes of the Sedge Warbler, and with now and again a trill of liquid notes very like that of the Nightingale, but softer, which I have never noticed in the Reed or Sedge Warbler. Altogether the song of the Marsh Warbler is very sweet, and distinct from either.—F. Stansell (19, Silver Street, Taunton).

Woodcock's mode of carrying its Young.—Since Mr. Harting's article on this subject appeared in 'The Zoologist' in November, 1879, I have heard the following statement made by James MacEvoy, an intelligent man whom I believe to be a trustworthy witness, and who is constantly employed in the extensive oak woods at Brittas, Queen's County, where Woodcocks habitually breed. I have refrained from communicating it until it should receive some corroboration. I am glad to hear from Mr. Reeves, of Capard, in the same part of the country, that he will state his own experience of the Woodcock's mode of carrying her young. MacEvoy told me that one day, while he was quietly employed in the Brittas woods, he saw a Woodcock remove three of her young in succession. It does not appear that she was alarmed or hurried, but seemed to be removing them deliberately, as some little interval elapsed between each of the removals, which were all made in the same direction. He distinctly stated, of his own accord, that he saw the old bird support her young, not only with her feet, but with her bill, which she pressed inwards against them towards her breast. If this be so, it explains Scopoli's statement,

"*pullos rostro portat*," while at the same time it confirms what the Rostrevor correspondent observed, that a Woodcock "had a young one pressed between its breast and feet." (See 'Zoologist' for November, 1879, p. 439.) None of these observers, however, corroborate the position of the old bird in the illustration, which shows the bird with outstretched beak grasping her young one in her claws. A little reflection will show that the Woodcock, whose prominent eyes are placed so far back in her head, is more fitted than most birds to direct her flight while her bill is pressed downwards in the peculiar position described by MacEvoy. On the 27th May last the Rev. W. W. Flemyng and I found a Woodcock sitting on three eggs, all of which were addled, in the oak woods near Portlaw, where the same evening I saw three other Woodcocks flying out to feed, uttering a sharp little note. Woodcocks breed frequently in these woods, as well as at Coolnamuck, also in the valley of the Suir.—Richard J. Ussher (Cappagh, Co. Waterford).

Habits of the Woodcock, as observed in Ireland.—Having had ample opportunity for watching the habits of this bird, I give for your readers my experiences on the subject. On the Sleive Bloom range the largest flight comes about the first week in October, and, after stopping until January, or rather end of December, we have very few until March. Should the weather be open, I have frequently found them in numbers in the heather and the wet rushy flats on the mountains. The woods being full of springs, afford them, should frost set in, good feeding for some time, but, should the frost last for a long time, they leave for the banks of the Banno river and the large wet ditches, which are very numerous in the lower part of this county. Many remain and breed here, and there is hardly an evening that four or five do not fly, calling, over the house. I have seen them moving their young frequently, but never by the feet alone. The first time I was witness to this fact was in June, 1876. Whilst walking very early in the morning I saw a bird fly rapidly across me, holding something in a peculiar manner. I waited for some time, when I saw the bird fly back in the direction she had come, and, as I at once perceived her to be a Woodcock. I went to the spot whence she rose: on the ground lay two little fluffy birds, the largest part of them being their head and eyes. Anxious to see would she return, I lay down close under a holly bush; in a short time she came back supporting a little one, not only with her feet, but with her bill pressed over the bird against her breast. This mode of carriage I have frequently seen, certainly since then five times, but I have never seen the bird carry her young as in the illustration (Zool., 1879). She may do so; I only state what I have myself observed. One of the prettiest sights I ever saw was an old Woodcock teaching her four young ones to fly. It was some time in July, 1878. They made flights just like a clever skater

cutting figures on the ice, and then dropping down suddenly, dodging in and out of trees, and flying in circles and triangles. I watched them for nearly half an hour, and their morning parade being ended they collected together. Curious to say, I have never seen but one old bird at a time. As to their extraordinary liking for a peculiar locality, there is a small stream within ten yards of the carriage-drive, and planted; the centre of it is soft and muddy. It generally holds a cock. For curiosity's sake, on the 17th July, I walked down to try for one, and found two, evidently residents. There must be something very good there to attract them in this way.—R. E. Reeves (Capard, Rosenally, Queen's Co.).

Notes from the Northumbrian Loughs.—The Loughs (pronounced Luff) of Northumberland, or as they are there called the Lakes, are well worth visiting both for Natural History and scenery. On June 20th I left Newcastle by an early train for Bardon Mill Station, on the Newcastle and Carlisle Railway. By half-past nine we had reached the first lough, very appropriately called Crag Lough. On the north side of the tarn the land slopes gently away, but on the south side high and steep cliffs rise almost from the edge of the water, on which a pair of Coots with their young were swimming. A solitary pair of Black-headed Gulls served to remind us that we were not far distant from a gullery. One of my companions caught sight of a hawk as it rose from the ground, but failed to identify it. We found it had been feeding on a Rock Dove, which was still warm. These doves, as well as Jackdaws, breed in great numbers amongst the crags. Climbing another hill we visited Greenlee Lough, which is one of the largest. In it was a Coot's nest with five eggs, a few feet from the bank. A pair of Sandpipers evidently had their nest somewhere near the edge of the water, from the noise and fuss they made on our approach. Three fine Blackcocks rose from the thick herbage of fern and bilberry which clothes the steep ascent on the south side. They winged their way up the length of the lough, and were at last lost to sight in the distance. Following the general direction of flight which some Black-headed Gulls took, brought us to Hallypike Lough, which is very small, but by far the most interesting, as being a breeding haunt of these birds. The sight, looking down the hillside, was one to be remembered. The small mountain tarn was a living mass of white bodies which, as we drew nearer, rose in clouds, uttering their cries. All that could do so, circled overhead, whilst the young scuttled to the rushes or gathered together in the middle of the pool. A few yards from the south side was an island, to which I waded out middle-deep in mud and water. On reaching the island I was disappointed to find no firm ground, but merely trampled-down rushes, with a nest every few feet. The nests were masses of filth, baked dry by the sun. Slowly drawing myself up I succeeded in getting a knee into one nest, and, by dint of lying flat on my face over a reeking gulf of dirt, I laid my hands on two nests with

three and two eggs respectively, much incubated. There seemed very few eggs, but plenty of young in the down. On our way to the Roman road we saw Red Grouse, Redshank, Snipe, Curlew, &c. The Roman road follows alongside of the Roman wall, which in many places is quite a prominent feature in the landscape.—Edward J. Gibbins (The Graig, Neath).

Wildfowl breeding at Rainworth, Notts.—Though last winter was the worst one I ever knew for wildfowl in this district, we have a good many ducks nesting with us. There are about sixteen pairs of Tufted Ducks which were sitting June 8th, though there is one on the island, within fifteen yards of my front door, which only began to sit on June 15th; we also have several pairs of Teal and common Wild Duck, and when driving over the forest I saw, on a pond of about six acres, five pairs of Shovellers which were evidently nesting, it being the middle of May. I hear from my keeper that he thinks there are six or seven Woodcocks also nesting in the big wood near here, and there are five Snipes' nests in a small bog not far off.—J. Whitaker (Rainworth Lodge, near Mansfield).

Curious Site for a Flycatcher's Nest.—In an orchard adjoining a farm near here a tin laving-pot was hung upon the branch of an apple tree, about six feet above the ground. The orchard is used as a drying-ground, and several clothes-pegs had been thrown into the laving-pot, to suit the convenience of the moment, on a washing day. When the owner of the clothes-pegs went to take down the laving-pot, it was found that a pair of Spotted Flycatchers had taken possession of it, and were building their nest, cleverly interweaving it amongst the pegs. The pot was replaced, and the little builders left undisturbed; the nest was soon completed, and when I saw it about a fortnight ago, the hen bird was sitting upon four eggs, which have since been hatched. One of the birds takes up a position upon a clothes-line stretching between two trees, and from this vantage-point keeps a sharp look-out for passing insects.—T. H. Nelson (North Bondgate, Bishop Auckland).

Short-eared Owl breeding in Cambridgeshire.—Last year I had the pleasure of recording in 'The Zoologist' (p. 336) the fact that the Short-eared Owl had bred on Wicken Fen, near Cambridge. On the 24th of June last I was again on the Fen, and, seeing an old man cutting reeds, I inquired of him if he ever found Owls' nests there. He told me that about three weeks back, his "mate" had found a nest with several hard-set eggs, which he took, and laid them on a heap of sedge, but the Crows came and destroyed them. The old bird was either seen or caught on the nest. I could get no further information than this, but I should think the old man might be trusted to know an Owl when he saw one. If so, it seems probable that at least one pair still breeds regularly on the Fen.—R. M. Christy (Saffron Walden).

Unusual Site for a Chaffinch's Nest.—On June 17th I examined the nests of several Swallows in outbuildings on a farm at Stocksfield, near Newcastle. In several nests I found eggs, some of which were much incubated. My curiosity was aroused by seeing a quantity of moss inside an old Swallow's nest on a beam. Climbing up I found that a nest of moss, somewhat loosely put together, lined the mud platform of the Swallow's, and contained several young, some days old. By the shape of their bills I at once saw they were not Swallows, but, thinking that a Sparrow had probably made use of the nest, I thought no more of it. Shortly afterwards, repassing the nest with a friend, I pointed it out to him; at the same moment we spied a female Chaffinch perched beside the nest with food in her mouth. It required a second look to assure us that our eyes were not mistaken, but so it was; a Chaffinch had built her nest and hatched her young in a Swallow's nest in a shed.—Edward J. Gibbins (The Graig, Neath).

Merlin striking at Cage-bird.—On the morning of July 15th Mr. Phillips, dog-fancier, of Ship Street, Brighton, saw a bird make a swoop at a Siskin in a cage hung out in his back yard. So determined was it that it made four swoops before it was caught, although several attempts were made to catch it before it was finally secured. It proved to be a Merlin. The bars of the cage were quite bent from the force of the onslaught. I may add that the Merlin is by no means a common bird here, and Ship Street is nearly the centre of the town.—Herbert Langton (Brighton).

Reed Warbler and Nightingale in South Wales.—The accompanying Reed Warbler's nest was forwarded to me by Mr. C. J. Young, who states that he found the bird breeding abundantly in marshes about Scilly, and Cadoxton, near Barry Island, Glamorganshire, this summer. He also states that he heard two Nightingales singing last May near Leekwiths, Glamorganshire.—J. Young (64, Hereford Road, Bayswater).

Teal and Marsh Harrier nesting in Glamorganshire.—During the spring, nests of the Teal, containing eggs, were found on the Crymlin Burrows, near Swansea, and on the Crymlin Bog adjoining. One of the keepers (an intelligent man who has studied birds all his life) tells me that a pair of Marsh Harriers have been and still are to be seen. He has no doubt that they have nested there.—Edward J. Gibbins (The Graig, Neath).

Common Buzzard in Nottinghamshire.—I saw one of these now rare birds flying round in circles over a cornfield near my house. It continued on the wing for a quarter of an hour, twice dropping down into the corn, but I could not perceive that it captured anything: it then sailed away over the forest. I heard of it being seen soon after at Newstead.—J. Whitaker (Rainworth, near Mansfield, Notts).

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

Zoological Society of London.

June 20, 1882.—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 May, 1882, and called special attention to the following recent acquisitions:—four Pigmy Hogs, *Porcula salvania;* a Mediterranean Seal, *Monachus albiventer;* two male Argus Pheasants, *Argus giganteus;* a Koala, *Phascolarctus cinereus;* a Jackass Penguin, *Spheniscus magellanicus;* and a fine pair of the Great Ant-eaters, *Myrmecophaga jubata.*

The Secretary exhibited a series of the diurnal and nocturnal Lepidopterous insects bred in the Insect House in the Gardens during the present season, and called attention to several specimens of clear-winged Moths (*Sesiidæ*), a group of insects which had not before been exhibited in the Insect House. The cocoon of *Cricula trifenestrata,* together with the imago, was also exhibited.

Mr. W. A. Forbes made remarks on the presence of a rudimentary hallux in certain birds—the Albatrosses and two genera of Woodpeckers (*Tiga* and *Picoides*), commonly described as being three-toed, and exhibited preparations showing its condition in the birds in question.

Prof. Owen read the twenty-fifth of his series of memoirs on the *Dinornis.* The present communication gives a description of the head and feet, with their dried integuments, of an individual of a species proposed to be called *Dinornis didina.* These specimens had been obtained by Mr. H. L. Squires, at Queenstown, South Island of New Zealand, and being parts of one individual tended to elucidate in an unlooked-for degree the external characters of the Moa.

A second communication from Prof. Owen contained some observations on *Trichina spiralis.*

Prof. E. Ray Lankester gave a description of the valves of the heart of *Ornithorhynchus paradoxus,* and compared them with those of man and the rabbit. Prof. Lankester also made some observations on the *fossa ovalis* of the Monotremes.

Prof. Huxley read a description of the respiratory organs of *Apteryx,* which he showed did not differ fundamentally from the Avian type, and pointed out that neither of the structures that had been termed diaphragms in the *Apteryx* was really in correspondence with the Mammalian diaphragm.

Mr. W. A. Forbes read the sixth of his contributions to the anatomy of Passerine birds. In the present communication the author showed that *Xenicus* and *Acanthisitta,* hitherto considered to be allied to *Certhia, Sitta,*

and *Sittella*, were really mesomyodian forms, most nearly allied perhaps to *Pitta*. The discovery of such low forms of Passerine birds in New Zealand was a fact of considerable interest, none of the allied groups being at all represented there at the present day.

A communication was read from Mr. Sylvanus Hanley on the shells of the genus *Leptomya*, to which was added the descriptions of two new species.

Mr. Sclater read a note on Rüppell's Parrot, and showed that the more brightly-coloured individuals, ordinarily supposed to be the males of this Parrot, were really the females.

A second paper from Mr. Sclater gave the description of two new species of the genus *Synallaxis* from the collection of Messrs. Salvin and Godman.

A communication was read from Prof. M. Watson, containing an account of the muscular anatomy of *Proteles*, as compared with that of *Hyæna* and *Viverra*.

Mr. Oldfield Thomas read a paper containing the description of a new species of Rat from China. The specimens upon which the author had founded the description had been sent by the Abbé Armand David to M. Milne-Edwards, of Paris, who had placed them in the hands of Mr. Thomas for identification. The author proposed to call this Rat *Mus Edwardsi*.

A communication was read from Mr. E. W. White, of Buenos Ayres, in which he gave an account of the birds collected by him in the Argentine Republic.

Mr. R. Bowdler Sharpe read the descriptions of two apparently new species of *Erythropygia*, one from the Zambesi, the other from the Congo River, which he proposed to call respectively *E. zambesiana* and *E. ruficauda*.

A second paper by Mr. Sharpe contained the description of a new Flycatcher, which had been obtained by the late Governor Ussher on the Gold Coast. The author proposed to call it *Muscicapa Ussheri*, in acknowledgment of the services which its discoverer had rendered to ornithological science.

A communication was read from Mr. F. Moore on the Lepidoptera collected by the Rev. J. H. Hocking, chiefly in the Kangra District, N.W. Himalaya. The present communication, being the second on the same collection, contained the descriptions of seven new genera and forty-eight new species. An account of the transformation of a number of the species was also given.

This meeting closes the present session. There will be no more scientific meetings until the commencement of the session 1882-83, in November next.—P. L. Sclater, *Secretary*.

NOTICES OF NEW BOOKS.

Matabele Land and the Victoria Fall; a Naturalist's Wanderings in the Interior of South Africa. From the Letters and Journals of the late Frank Oates, F.R.G.S. Edited by C. J. Oates, B.A. London: Kegan Paul & Co. 8vo, pp. 370. With maps and illustrations.

If we have delayed until now to notice this excellent book of travels it has been rather for want of space to review it than because we have had any doubt as to its merits. The author was one of those young and ardent spirits who, had he not underestimated his own powers of endurance and the difficulty of the task he had set himself, might have lived to attain the height of his ambition. Unfortunately for himself he neglected the advice of older and more experienced travellers than himself, and fell a victim to African fever at the early age of thirty-four.

The intention which he had formed in setting out for South Africa was to reach the Zambesi from Natal, and see the Falls, and, if possible, visit some of the unexplored country to the north of that river. In the latter hope he was disappointed, and the numerous difficulties encountered in realising the former part of his project serve to illustrate some of the many obstacles to be met with in African travel. He had to cope not only with unfavourable conditions of climate, scarcity of food, and difficulty in procuring bearers, but experienced endless opposition from what his editor has termed "the obstructiveness of native character."

The King of Matabele Land, Lobengula, the son of Mosilikatze, who conquered the country, is "absolute monarch, feared and obeyed far and wide"; and though well disposed to Europeans travelling through his dominions, is very exacting in his demands of tribute before giving the necessary permission to proceed, and appears to dread nothing so much as the death of a white man from sickness in his territory, and the introduction of cattle disease. On one or the other of these pretexts, leave to proceed is often withheld until the rains fall, and the traveller threatened with death and confiscation of his goods should he advance after notice to the contrary.

Four distinct attempts did our traveller make at various times to reach the Zambesi Falls, and in each of the first three was he destined to disappointment. His first effort was made in September, 1873, his fourth journey undertaken towards the close of the following year; nor was it until the last day of 1874 that he actually beheld the white spray of the great cataract breaking through the trees upon the rivers beneath.

It is to be regretted that from the time of his reaching the Zambesi till the date of his death, five weeks afterwards, the entries in his journal are of the briefest description, for it has so happened that the various accounts of these Falls furnished by previous travellers—Livingstone, Baldwin, Baines, and Chapman—were written in the dry season; whereas the date of Frank Oates's visit, *viz.*, at the height of the rainy season, the river was at its fullest, and the vegetation at its best. Unfortunately our traveller delayed until too late committing his impressions to paper in the shape of a written description, and only a few pencil sketches and two water-colour drawings (reproduced in chromo-lithography) are available to convey an idea—doubtless very inadequate—of the view which delighted him on reaching that goal of his ambition.

The river for some distance—at least two miles—above the Falls is of great width, and flowing between hills some three or four hundred feet in height, presents to the eye a smooth open surface, dotted over by a number of picturesque tree-covered islands. Where the Falls occur the river is upwards of a mile in width, and the Falls extend the whole of this distance, their line broken at intervals by dark projecting buttresses of rock, forming, some of them, small islands with trees upon their tops; whilst others of much less size present merely a bare and jagged surface. The actual height of the Falls, as estimated by Livingstone, is about 360 feet from the top of the precipice to the surface of the water in the abyss; the columns of spray which are driven upwards by the rush of air from the channel as the water descends into this narrow space, ascending to a height variously estimated at from six to eight hundred feet. It is these vapour clouds which, visible at a distance of upwards of twenty miles, as distinctly observed by Livingstone, mark the position of the Falls long before the traveller approaches them. Frank Oates distinguished them at a distance of about eighteen miles,

and his followers heard the roaring of the water at that distance, though he was not sure of doing so himself.

Comparing the Falls with those of Niagara, Livingstone points out that they are twice the height of the latter; whilst in the amount of water Niagara probably excels, though not during the months when the Zambesi is in flood.

It is unfortunate that no general view of the Falls, except a bird's-eye view from the high ground some miles distant, can be obtained, owing to the vegetation on the south side of the fissure, and the dense clouds of spray rising from the chasm. But for this, says Chapman, the Victoria Falls, presenting one unobstructed view, would not only have been the most magnificent, but the most stupendous, sight of the kind on the face of the globe. No wonder, then, that Oates should have been fired with a longing to visit them.

We have referred to the difficulties which he encountered ere he accomplished this, and to the several attempts and failures which only served, it would seem, to stimulate him to still further effort. Under all these difficulties, however, he found much to divert him in an observant study of the animals and plants, of which some new form was daily presenting itself to his eyes. His devotion to Natural History beguiled throughout his journey what might otherwise have proved many a weary march. He found opportunity not only to note the various species met with along the route, so far as he or his companions were able to identify them, but also to make collections which, on future examination by specialists at home, were found to contain several new and undescribed species. Indeed, the Appendix to this volume, which contains Reports by well-known naturalists on the various collections made by Frank Oates, may be regarded as the most valuable portion of the book. Thus we have a chapter on Ethnology by the late Professor Rolleston, based on his examination of the crania and other remains of Bushmen collected by Oates; a chapter on Ornithology by Mr. R. B. Sharpe, in which two new birds are described and figured—a Wood Shrike, *Bradyornis Oatesii*, and a Chat, *Saxicola Shelleyi*. Mr. Sharpe remarks that the collection of birds containing 213 species represents without doubt a very fair idea of the avifauna of the parts of the Transvaal and Matabele countries through which Mr. Oates travelled, and is of great utility by reason of the careful way in

which every specimen is labelled with locality, date, and other particulars relating to its capture.

In a report on Herpetology two new snakes are described and figured by Dr. Günther, *Coronella tritœnia* and *Dryophis Oatesii.*

Professor Westwood, reporting on the insects, remarks that "the collection, although not of considerable extent, fortunately comprises examples of many of the very peculiar groups and genera characteristic of the greater part of the African continent." His report is illustrated with four beautiful plates, prepared by his own hand, in which some eighteen species of Lepidoptera and Coleoptera are figured, as also the dreaded Tzetze fly.

The plants collected by Oates have all been named at Kew under the direction of Professor Oliver, whose report thereon is printed in the present volume, with coloured plates of two novelties, *Anthericum Oatesii* and *Adiantum Oatesii*, originally described by Mr. J. G. Baker in the 'Journal of Botany.'

It must have been no slight undertaking to prepare this volume for the press, and perhaps no one but a brother with that intimate knowledge of the traveller's disposition, tastes, and habits of life could have interpreted his journals and letters so admirably as the editor in this case appears to have done. For the story of the journey seems complete and well told, and it is difficult to realise the fact that it is told second-hand, albeit that many passages are in the traveller's own words.

The editor has certainly performed his part well, and making due allowance for a partiality which naturally arises from brotherly love and affection, we doubt if any reader of the book will gainsay the estimate which his biographer has formed and expressed of the manly character of the author and his persevering energy in the cause of progress and scientific research.

Notes and Jottings from Animal Life. By the late Frank Buckland, M.A. 8vo, pp. 414, with illustrations. London: Smith, Elder & Co. 1882.

From amongst the numerous articles contributed by him to the columns of 'Land and Water,' the author, shortly before his death, selected for republication in book-form those which are

now brought together under the above title. Whether they were all worth reprinting is a question which we will not venture to decide. From a utilitarian point of view they are certainly not all of equal merit. Some, from the information which they afford on out-of-the-way subjects, may be said to have a practical value, but the majority of them, although pleasant reading enough, can scarcely be said to advance the cause of Natural History, while many of them (*e. g.*, John Hunter's Chair, Relics in the Ashmolean Museum, Sir Walter Scott's Home, and the Waxworks in Westminster Abbey) have no sort of connection with the title of the volume.

The amusement which the reader will derive from its perusal is due to the originality of the author's style, to a felicitous mode of describing his own experiences, to the quaintness of his illustrations, and, above all, to the inexhaustible vein of good humour which flows throughout the book. An author who writes in this strain can hardly fail to please, whatever may be the practical value of his remarks.

Amongst the best chapters in the book perhaps may be named those on Collecting Salmon Eggs for Australia and New Zealand, the Cruize of the 'Jackal,' on the Herring Commission of Inquiry in 1877, and London Birdcatchers. An amusing account also is given of Lord Bute's Beavers, with a description of the author's visit to their home in the Isle of Bute. These animals, originally four in number, were turned out in the autumn of 1874. The largest pair from France disagreed with the smaller pair from America, growling and flying at them when they met. On the death of one of the latter it was found to measure three feet four inches in length; the tail ten inches; and the weight about twenty pounds. Another, which subsequently died, measured three feet three inches, and weighed twenty-two pounds and a half.

In January, 1875, Lord Bute obtained eight more Beavers from Germany, which had been previously imported from America. They passed through London, where they enjoyed a few days rest at the Zoological Gardens, and then travelled *viâ* Glasgow to the Isle of Bute, being fed on Indian corn, carrots, biscuits, and willow branches, of which they seemed very fond. In September, 1877, they were visited by Mr. Buckland. So far as could be ascertained there were then twelve, with one or more

young ones in the house which they had built. The keeper in charge thought that Beavers have two litters in the year.

After inspecting some of their dams, Mr. Buckland wrote :— "It is evident that they work with a design, I may even say with a definite plan. The trees have been cut down in such a manner that they shall fall in the position in which the Beaver thinks they would be of the greatest service to the general structure, generally right across the stream. The cunning fellows seem to have found out that the lowest dam across the river would receive the greatest pressure of water upon it. This dam therefore is made by far the strongest. They seemed to have packed, repaired, and continually attended to the tender places which the stream might make in their engineering work. A fact still more curious—the custodian of the Beavers pointed out to us a portion of the work where the dam was strutted up and supported by the branches of trees extending from the bed of the stream below to the sides of the dam, forming, in fact, as good supports to the general structure as any engineer could have devised."

When dissecting one of the Beavers that died Mr. Buckland was much astonished at the small size of the gullet, which, he says, was not large enough to admit the little finger. He observed the same peculiarity in the œsophagus of the Otter.

A young Otter, which he obtained at Cardigan, and which lived some time in confinement, enabled him to make some observations on its actions, which may be here transcribed :—

"When the Otter is pursuing a fish it is interesting to observe his manner of swimming. He does not use his fore and hind legs, as does a horse or dog, but folds his front paws alongside his body while he strikes out vehemently with his two hind legs. This causes his movement to be apparently by jerks, but the jerks are so exceedingly rapid that the creature progresses in the water with extreme velocity, almost as quick as a pike when he darts at his prey.

"The canine teeth are very trenchant, and almost scissor-like in their action ; they are conical in shape, much sharper than the canines of a dog or cat.

"When a fish is caught the Otter immediately transfixes it through the head with his sharp canines, the action of which is such that the fish is held by them as in a rabbit-trap, and cannot escape. The Otter holds the fish for some little time

between its canines before he begins to eat, waiting till it is quite dead and quiet. In eating he never uses his canines at all, but bites at the fish with the side of the mouth only. The molars and the præmolars are also very sharp, but capable of crushing any substance into very small bits,"—a process which seems necessary from the very small size of the gullet.

We might cite other chapters in which the reader will find much to amuse him, and much that is very original, but want of space precludes further quotation. The book forms a pleasing souvenir of one who has left behind him many friends, and whose name while he lived had become quite "a household word."

The Micrographic Dictionary: a Guide to the Examination and Investigation of the Structure and Nature of Microscopic Objects. By J. W. Griffith, M.D., and Arthur Henfrey, F.R.S. Fourth Edition, edited by J. W. Griffith, the Rev. M. J. Berkeley, M.A., and T. Rupert Jones, F.R.S. 8vo. Parts I.—XII. In progress. London: Van Voorst. 1881—82.

As a means of affording amusement, or as an aid to scientific research, the use of the microscope is daily becoming more general, and as a natural consequence the number and importance of publications bearing on the subject are also daily increasing.

The manual, of which twelve parts are now before us, has long since established itself as a valuable book of reference, and no better testimony to its utility exists than the fact that it is now in a fourth edition.

It may be briefly stated that the object of this work is to guide the microscopist in his researches, to give him a notion of the manner of making those researches, also some account of the characters, microscopic structure, and properties of objects in general, and to show how he may most easily arrive at satisfactory results.

Prefixed to the Dictionary is a long Introduction in which useful hints are given as to the principles which should guide in the selection of a microscope and the accessory apparatus; and this is by no means unimportant, because at the present day a

large number of instruments are sold which, though well calculated to afford amusement, are utterly valueless for the purpose of scientific investigation. The various parts of a microscope are described seriatim, and that which is useful distinguished from that which is not absolutely necessary to the student. A method of instruction is also indicated:—

"Next to the improvement effected in the optical construction of the microscope during the last few years, must be placed that of the method of investigation. Formerly almost all microscopic bodies possessing different forms and appearance were considered distinct beings, and were named accordingly. By the present method, prolonged observation is adopted to follow the changes which the individual bodies undergo; whence it has resulted that numbers of them have been found to be simply different stages of each other. Thus a large amount of useless nomenclature and confusion is being removed from the domain of the microscopic world." (*Introduction*, p. xiii.)

It was a happy thought on the part of the authors thus instructively to pave the way for a proper use of their work.

With a view to test the nature of the information conveyed by it, we have turned at random to *Acheta*, *Aphis*, *Blood*, *Bone*, *Cell*, *Chlorophyll*, *Crustacea*, *Desmid*, *Diatom*, *Eye*, and *Fungi*, and have been surprised, not only at the amount of information given under these different headings (some of the subjects extending over several pages), but also at the exactness and perspicuity of many of the definitions.

The labour of preparing such a work must have been very considerable, and it must be gratifying both to authors and publisher to know that they have supplied, in so practical and efficient a form, a want which has been long felt by scientific men.

It may be well supposed that fifty-three plates (many of them coloured) and more than eight hundred woodcuts (when well executed as these are) add considerably to the utility of such a work.

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NOTES OF A NATURALIST ON THE WEST COAST OF SPITZBERGEN.

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

THE publications of Prof. Newton, "On the Birds of Spitzbergen,"* and "On the Zoology of Spitzbergen,"† as well as of the Swedish Professors Malmgren and Nordenskiöld, in addition to works by numerous other writers during the last two centuries (a list of which is given by Prof. Newton in 'The Ibis'), have made the Ornithology of that country pretty well known; yet even in this tolerably worked-out class I was able during a short visit which I paid to Spitzbergen last summer to add two species not previously, I believe, obtained there. As my visit was confined to the best known side, the west coast, and as I was only about nine days actually in Spitzbergen waters, much novelty must not be looked for in the present paper: its chief claim to interest rests simply in being a record, however imperfect, of what was to be seen in that out-of-the-way region as lately as last summer. Among my fellow-tourists was Mr. Abel Chapman, of Sunderland, to whose notes I am indebted for the better portion of the facts here stated.

At the risk of making this communication somewhat long, I have thought it best to begin by giving, as shortly as possible, a narrative of the voyage from the time of leaving Tromsö (we sailed originally from Bergen) to the time of the return of the

* 'Ibis,' April, 1865. † Proc. Zool. Soc., 1864.

"Pallas" to that port, mentioning the various birds and beasts as they were met with, and reserving for another number of 'The Zoologist' a summary of the species, with some critical notes.

July 23rd. Without stopping to enumerate all the birds to be seen, or rather those we saw, at Tromsö, I may mention that the species characteristic of the place, whenlying at anchor off the town, are Richardson's Skuas and Kittiwakes; by the date of our return here the Skuas had almost entirely left. It is always a difficulty with me to know the exact meaning of such epithets as "common" and "abundant," when used in local lists of birds, but I think these words might be fairly employed in speaking of the White-tailed Eagle along this part of the coast. We started for the north during the afternoon, and as we steamed along, we observed Common Guillemots, Kittiwakes, Richardson's Skuas, a few Puffins, and Chapman saw two Little Auks at different places in the Fjord. At one place in the Fjord we saw from the ship a lot of tame Reindeer on the hill-side. Two large whales were spouting close to the ship in the evening; these I set down at the time as "Finners," *i. e.* the Common Rorqual (*Balænoptera musculus*, Linn.). Certainly the majority, and I believe *all*, without exception, of the whales that we saw, both off the coast of Norway and in the ocean to the north of that country, had dorsal fins. On reading in Nordenskiöld's 'Voyage of the Vega' (vol. i., p. 170, English edition) that Sibbald's Rorqual (*Balænoptera Sibbaldii*, J. E. Gray) is the commonest species off the coast of Finmark, or is at least almost exclusively the only species hunted there, and other accounts,* I suppose it likely that some at least of the largest of the whales seen by us off the north-west of Norway belonged to this species. But on examining the available figures of various species of whale, it seems to me that the Killer (*Orca gladiator*, Lacépède) is, from the rounded contour of the back, the broad flukes of the tail, and especially from the shape of the high dorsal fin, much more like those individuals that we saw most distinctly. However, I have little doubt that we saw more than one species, perhaps all these three, and, farther south, what may have been Pilot Whales (Ca'ing, or Bottle-noses = *Globiocephalus melas*,

* See the account of this Whale in 'The Fauna of Scotland,' Part I., Mammalia,' by the late Mr. Alston; also Bell's 'British Quadrupeds' (2nd edition), and Mr. Southwell's 'Seals and Whales of the British Islands.'

Trail). So far as I am aware not one Right Whale (*Balæna mysticetus*) was seen; to the White Whale I shall refer later on.

July 24th. At sea, lat. at noon 72° 8′ N., fine. A large flock of Kittiwakes followed the ship all day from the time of our first look out in the morning. These were chased by Richardson's Skuas, of which there were usually three to six or more in sight at once. About 2 p.m., about lat. 72° 27′ or 28′, saw two Long-tailed Skuas (*Stercorarius longicaudus*, Vieillot) together. Fulmar Petrels seen all day, getting gradually more numerous as we got north, one or more nearly constantly in sight. Guillemots, in parties of from ten to twenty individuals, at frequent intervals; we were unable to satisfy ourselves whether these belonged to the Common or Brünnich's species, but being to the south of Bear Island they were probably of the former. Many were flying rather high for Guillemots. Chapman observed a Richardson's Skua chase one of these birds, which thereupon went "flop" into the water, and dived out of the way of his persecutor. Several whales (? sp.) seen during the day. At 9 p.m. came to a field of ice in about N. lat. 73° 35′, long. E. from Greenwich 19° 20′.

July 25th. At sea, off Bear Island; thick fog in morning, sea very smooth. Through loose ice all the morning. Chapman saw a single Black Guillemot early this morning. At about 10.30 a.m. I saw a bird over the ship, the size of a Guillemot, but I caught sight (in the fog) of a Puffin-like beak; seeing it was turning back, I directed the attention of one of my fellow-passengers to it, he offering to bet any money that it was a Guillemot, from its size, but as it flew close past us he agreed with me that it was a Puffin, and this was no doubt the first Northern Puffin (*Fratercula glacialis*, Leach) that crossed our track. After steering for a long time dead slow through the ice, stopping the engines every few minutes until a "lead" through the ice should offer itself, the fog partially lifted for a moment, and allowed us a glimpse of Bear Island, to the S.W. of us. We then turned due south, and steamed in that direction for about thirty miles until we had cleared the ice, which we accomplished by about noon; then turned N.W. and saw Bear Island to starboard, distant about fifteen miles, when our course was once more altered to N., the fog clearing by degrees after we had left the ice. The surface-temperature of the sea, as taken by Mr. Chapman (11.30 a.m.) was 32° Fahr., the temperature of the air having been during the previous twenty-

four hours, max. 39°, min. 32° Fahr. To the west of Bear Island an Eider drake was seen by Faussett, the only individual of this species seen during the day, I believe. About 12.30 saw a Richardson's Skua sitting on a hummock, and although I had a shot at it with a rifle it did not move, and appeared as if frozen there (though Kjeldsen, one of our ice-pilots, ridiculed the idea), or at least in a bad plight. This was the only Skua seen during the day. Shortly afterwards Chapman saw a Little Auk. About nine this morning a couple of Fulmars and a couple of Kittiwakes were shot by one of the passengers from the deck, the latter bird not being nearly so plentiful as the day before; the Fulmars during the afternoon were abundant all round the ship and very tame. Soon after 1 p.m. Chapman saw two adult Glaucous Gulls close astern; he also saw an Arctic Tern, which flew round the ship for some time, and tried to alight on the mainmast head, but did not like the vane. Several Little Auks seen during the day. Brünnich's Guillemots were flying past the ship so commonly, after we were out of the fog, that some of the passengers took up their position on the forecastle, with their guns, and had "sweeps" at them!

July 26th. Heavy sea, early morning; rain and thick. Sighted South Cape, Spitzbergen, 8 a.m. Little Auks beginning to get abundant. Brünnich's Guillemots common. A few Glaucous Gulls and Kittiwakes. No Skuas in morning. When off Horn Sound, seeing plenty of flocks of Little Auks,—a bird we were anxious to get specimens of in summer plumage,—and not knowing how easily we could get any number farther on, Chapman and I went off in a boat in pursuit; and I must bear witness to the good nature of our fellow-passengers, not one of whom, so far as I am aware, offered any objection to the consequent detention of the ship. Some ladies of the party produced fishing-tackle, and caught some large Cod over the ship's side. We were only away half an hour, and I only succeeded in bagging one Little Auk. We saw many in flocks, but they were rather wild, added to which there was a considerable, though short, "chop" on the sea, which rendered shooting from a small boat rather uncertain. We also shot some Fulmars, which were ubiquitous; one Brünnich's Guillemot; saw very many. A few Eiders, one or two Glaucous Gulls, and one Richardson's Skua were also seen. Some of the shooters on board had dropped a few birds into

the water meanwhile, which we retrieved for them on our way back. Continuing up the coast, and passing the entrance to Bell Sound, about 5 p.m. we entered Is Fjord, and anchored at midnight in Green Harbour, as far in as the ice permitted. On our passage up the Fjord, Fulmars, Kittiwakes, Brünnich's Guillemots, &c., very abundant. Black Guillemots (= Mandt's Guillemots, *Cepphus Mandti*, Lichtenstein) began to get common up the Fjord.

July 27th. All the sportsmen of the ship landed in parties of four at 1 a.m. for a Reindeer hunt. The party to which I belonged proceeded first in a N.E. direction, but got separated, and Wolley and I, after fruitlessly endeavouring to force our way in that direction, returned to the low ground, and continued up a huge valley of unknown length, running nearly east and west, with mountains sloping down to it, from the north and south, and up which valley two other parties of sportsmen had got the start of us, which was the cause of our endeavouring to force our way in a different direction. Chapman got separated by going after three Ptarmigan, of which we caught sight on one of the crags a short distance ahead of us; he shortly afterwards found another single bird. He found them "all ridiculously tame, sitting among the loose rocks unconcernedly," while he "climbed within reach, and killed them all." They were all old cock birds. He only bagged two out of the four, the other two falling on to a crag which he could not scale, and lost much time in endeavouring to do so. The specimens obtained were moulting heavily—indeed I had never previously seen wild birds in such a ragged and dirty condition. Chapman describes these cock Ptarmigan as giving "a low call when lighting, a very weak imitation of the [Red] Grouse cock." Little Auks, and probably Brünnich's Guillemots, were breeding on a cliff-face a little way inland, at a height above the sea that we guessed at 1400 or 1500 feet. We observed Snow Buntings in pairs, but as we were bent on the pursuit of Reindeer we did not spend time in hunting for the nests of this or other species. We saw several pairs of Purple Sandpipers that were evidently breeding, and by whose nests we must have passed pretty close. Thomson, on the other side of the Fjord, found a nest of this bird this day containing four eggs, two of which were broken on the way back to the ship; the other two are now in Chapman's possession: the eggs are similar in

colour to those of a Snipe, but are smaller. There were a few Kittiwakes up the valley; Eiders were rather numerous there, also Fulmars. We this day saw Ivory Gulls for the first time. I first saw a pair about five or six miles up the valley. Faussett, during the day, on the mountains running into the valley from the north, and many miles inland, noticed that on shooting a Reindeer, and proceeding to cut it up, Ivory Gulls speedily found it out, and congregated where none had been previously in sight. Chapman rejoined us after some hours' separation; he had bagged (besides the Ptarmigan) a couple each of Eiders and Fulmars and a Richardson's Skua, of which last species we had both seen two or three examples inland. Our scattered party having gradually reunited, we marched on until we were at an estimated distance of about twenty miles inland, when we separated into pairs, the better to stalk Deer, and ascended different mountains on the south side of the valley. Lowson, who was with me, obtained a Reindeer, the only one we saw. It was a buck, probably in its third or fourth year. It measured from tip of nose to tip of tail, 54 inches; height at shoulder, 32½ inches. In colour it was rather silver-grey, compared to the colour of Reindeer in Norway in summer. It was extremely fat, especially in the "gluteal region." Its horns were, of course, in the velvet, but, I think, almost fully developed. By the beach on the way back (10 p.m.) we put up two Grey Geese, which flew back almost over our heads. Chapman, who was the only one of our party carrying a shot-gun, was not loaded at the time, so they went on their way unmolested; still closer to the water's edge, a little farther on, were three Purple Sandpipers. The following birds were shot during the day in the Fjord by various gunners:—Eider Ducks, no drakes; Brünnich's and Mandt's Guillemots; Little Auks, Northern Puffins, Arctic Terns, one Glaucous Gull, one Purple Sandpiper, Fulmars, and Kittiwakes. On our way back to the ship, across the Fjord, in a boat that night, Chapman, who was facing forwards, observed an adult Red-throated Diver; I was sitting facing the stern, so only saw the bird from behind as it flew over us, and have no doubt, from the size, that it belonged to this species; at any rate, I could be sure it was a *Colymbus*. We arrived on board at 11 p.m., after a twenty-two hours' tramp.

July 28th. What with being a night's rest in arrear and not retiring this night until we had discussed, not only supper, but

the various adventures of the different parties ashore, no one was up much before 1 p.m., so can say nothing about the birds passed during the morning; but the usual birds were about when at last we went on deck. We were then off the northern part of Prince Carl's Foreland, having left Green Harbour at 4 a.m. We put in to King's Bay about 3 p.m., but turned round and steamed out again without anchoring, as we understood that it was not a good locality for sporting purposes. We proceeded north to Magdalena Bay, where we anchored about 8 p.m. We found a schooner, 'Hvitfisken,' lying here, employed, as her name implies, in the White Whale "fishery." On going by boat to pay her a visit we found skins of White Whales floating all round her, which were left in the water as long as the ship remained in port, to get rid of as much of the blood and oil as possible. The next thing we noticed as we pulled round her counter was a leg of bear hanging over the stern, for want of a larder. Her crew had killed two bears in Bell Sound on their arrival there in May, and this was a joint belonging to one of them. The skins were on board in a cask of pickle, and were bought by two of our party. The deck, and everything on board was thickly coated with blubber, and it was quite difficult to keep one's footing in consequence. Swimming about amongst the White Whales' skins, quite close to the vessel's sides, and devouring the "spek" they thence obtained, were swarms of Fulmar Petrels. They were as tame as ducks in a farm-yard pond, and having borrowed a fishing-line and hook, and baiting with a scrap of blubber, we found we could catch them as fast as we liked. I possessed myself of three vigorous specimens, purposing to bring them home for the Zoological Society. With Lowson's assistance I got them safely on board the 'Pallas,' where one of the sailors told me I could just turn them down on deck in the waist of the ship, for they are quite incapable of rising off a flat surface like a deck, and this I found perfectly true; but unfortunately there was a gangway on each side in the waist, and these being opened the birds, when my back was turned, were quietly invited through them by some of the crew, so I lost them all, the men, I suppose, not caring for the extra trouble that would be incurred in deck cleaning. The 'Hvitfisk,' we were told, had a full cargo of 250 White Whales, said to be worth £1500 (I do not know whether this is correct or not), besides Seals and a lot of Eider-down. They catch both the White Whales and Seals in enormously

strong nets, and kill them by putting a bullet into the head. We saw the net, which had not long since been hauled on board a sort of lighter, and on the top of it were lying two or three Ringed Seals, one of which I bought, as they had been drowned, and would therefore make a skeleton, which would not be the case with any we might shoot, in which the skull is always broken—besides the well-known fact that a bird in the hand is worth two in the bush. I was also given the skeleton of another one, minus the phalanges of the feet, which were retained in the skin, but this skeleton, together with some other osteological specimens, was thrown overboard on the passage to Bergen, after I had left the ship. There were a good many Glaucous Gulls about, all adults, of which we shot several. A large series shows a surprising difference in the size of individuals.

July 29th. Leaving Magdalena Bay at midnight, we proceeded northwards, past the west side of Danes Island, and rounding Amsterdam Island, we turned about N.E., until about 3 a.m., we were off Vogelsang, lat. 79° 55′ N.,—surface temperature of the sea (2 a.m.) 32° Fahr. There we were stopped by a field of ice, which, for all we could tell to the contrary, might be continuous to the Pole itself, and several degrees on the other side of it. The night was splendid, calm and clear, and brilliant sunshine. An Arctic scene such as we were then looking upon is incomparably more beautiful (in my opinion at any rate) than any bit of show scenery that I have ever seen farther south. We hereabouts saw Fulmars, numbers of Little Auks, Brünnich's and Mandt's Guillemots, a few Kittiwakes, and a couple of Puffins; also a few Seals, probably all *P. hispida*. At about 3.30 we turned round and started south again, and about half an hour later I turned in, so know nothing about the birds until 12.30 p.m., by which time we were again in Magdalena Bay, but found that during the forenoon we had passed a sloop which had two Polar Bear cubs on board alive, for which one of our party made a bid. Chapman's diary is as follows:—"Landed after breakfast, with Faussett, and commenced operations by bagging seven splendid mature Glaucous Gulls at one rise, also two beautiful Ivory Gulls. Ascended Rottge's Hill, a vast precipice, 2000 feet high, where millions of Little Auks, Guillemots (both sorts), Fulmars, Glaucous and Ivory Gulls breed, in hopes of eggs; but the breeding-shelves were inaccessible to man, and ever will be. To see the clouds of

small sea-birds at so great an elevation was a wonderful sight; but their eggs were unattainable. Shot several specimens off the craig face at a 'dizzy height.' Next found a few Gray Geese breeding on a rocky slope above a morass, and secured five old birds (pink-footed), besides several young alive. Arctic Skuas, Rottges. Another party had gone up the Fjord by boat and bagged a lot of Eider Ducks, Glaucous and Ivory Gulls, Skuas, and the commoner sea-birds. We also found an old coffin disinterred by bears, with the remains of some poor whaler still inside. The steamer was now full of ducks and geese, Ivory and Glaucous Gulls, &c." In his summary of the birds seen, Chapman somewhat modifies the statement about the Ivory Gulls nesting, as follows:—"I think a pair was breeding at Rottges Hill, Magdalena Bay, but the craig was inaccessible, and all attempts to scale it were fruitless." The Little Auks, he told me at the time, were also breeding high up—up to the very top (say 2000 feet). Brünnich's and a few Black Guillemots were also breeding there, "also a pair or two of Ivory Gulls, and Glaucous," as I wrote it down at the time from his verbal account. Little Auks were carrying fish up, so doubtless had young hatched. Some Pink-footed Geese were observed flying about (probably three pairs), and on searching they found the young in down running about on the snow. Six young ones were caught, five being brought on board alive, but the last died within about forty-eight hours. At the bottom of the precipitous part of the mountain, at the top of the *talus*, was a very large quantity of their feathers and droppings, as if they had bred there and taken the goslings on being hatched to the bog lower down. Five old birds were killed (as before stated); two or three of them were unable to fly, the quill-feathers having moulted out. Snow Buntings seen, and a pair of Richardson's Skuas. No old cock bunting observed, but a brood of young ones below where the geese bred. Petrels as usual. There were scores of carcasses of White Whales stranded in the shallow water close to the shore, and although the skipper of the schooner we had seen in here on our previous visit was carrying home a skeleton for me to Tromsö (which I have since presented to the Oxford Museum), I thought I might as well try and get one for myself, but on landing and examining them I found that they were all imperfect, the bones of the flippers having been in every case cut away by

the whalers in removing the skins. I had therefore to content myself with skulls (and nearly all of these were injured by a bullet having been fired into them). After a tedious job, I succeeded in beheading two and hauling the heads up on the beach, clear of the water. Fulmar Petrels and other birds were very abundant, and came very close to me as I was working at the whales' carcasses, and I was fortunate in shooting two brace of Ivory Gulls; a pair of these fell into the water and one drifted away and was lost. While these birds were floating in the water nearly my whole time was occupied in keeping the Fulmars off them, and I had to continually throw stones at them; I hit one flying at twenty or twenty-five yards distance, but even that did not much frighten him. I saw some of the others in a boat; a little way farther up the Fjord shot several Glaucous Gulls, of which there were a good many about. At night the steamer again moved southwards.

July 30th. At 1.30 a.m. the steamer stopped, and a boat put off to a haunt of geese. Chapman was one of the party, but they only saw one lot of geese (Gray) arrive, just as they were leaving. The "loomery" at which they landed he describes as "truly a wonderful sight; millions of Auks, Guillemots, Dovekies and a number of Skuas, Glaucous and Kittiwakes breeding in a high craig." Here we saw a fox. I spent most of the morning in skinning my seal, an operation which I have seen described somewhere—I think in Captain Markham's 'Whaling Voyage to Baffin's Bay,' but cannot find the reference—as having been performed by a professional sealer in less than a minute! Certainly none of our crew whom I saw skin seals—and several of them were old Spitzbergen hands—had acquired this rapidity. Flensing a seal is not a nice occupation for cold weather; the "spek" of the Ringed Seal (in these latitudes and at this time of year) is about two inches thick all over the body, and is removed with the skin, which is then held over a board and the spek shaved off with a long, sharp knife, kept on purpose. The blubber is then put in casks. The skins having been rubbed with salt and alum we packed away in pickle-tubs, according to the Norwegian fashion, but it is not a good plan. Blubber and seal flesh are very different matter to the corresponding substances of land animals; the blubber cannot be stripped cleanly off the flesh, which is of a flabby consistency, and altogether the opera-

tion is much more troublesome and dirty than the skinning of any land animal of which I have had experience. We were off Is Fjord about 11 a.m., but found it completely blocked by ice, so continued south and reached Bel Sound about 4 p.m, and anchored in the harbour on the south side of Middle Hook, just to the east of Separation Point, the position of which was ascertained to be lat. 77° 38′ 20″, long. 14° 52′ 30″ E. I went off with a party in a boat in a south-east direction, past a cliff on which were quantities of Kittiwakes and Glaucous Gulls, Guillemots, Little Auks, and a few Puffins; whether they were all breeding there I cannot say. As we were passing, a short distance off the cliff, I observed a Little Auk fly to and catch a Gull's droppings, before it had fallen many yards. We landed immediately beyond this cliff, where there was just standing room between the cliff and the sea; one of the party here found an adult fox, dead; I suppose it had missed its footing when hunting high up; I kept its skull. We landed again a little farther on, at the mouth of a small river, where the mountains receded a bit from the shore, leaving a sort of amphitheatre, with perpendicular sides, and sloping gradually and irregularly upwards towards the back. As we came to land, we saw about three Purple Sandpipers close down to the water's edge, by the mouth of the river (the tide was about full), of which we shot a couple; and later on ten or a dozen more were obtained. Observed a pair or two of Snow Buntings, one of which was shot; and also saw two or three Richardson's Skuas. I walked a little way inland, but found bird life almost entirely absent. There is a "loomery" on the cliff forming the west boundary of the "amphitheatre"; the birds breed (chiefly at any rate) on the east face, and not on the south, which is the one facing the sea. It is, I suppose, the bird cliff that Chapman (who was in another boat) mentions—"He went ashore and visited a huge 'loomery,' but saw no interesting birds; all quantity, no quality." In the evening a Ringed Seal swam up towards the ship, apparently out of curiosity; it was greeted with a salute of three rifles, one of which took effect, but not killing it. Seeing this, I jumped into a boat lying alongside, followed by one of the other passengers, without waiting to take any weapon, and we rowed away in chase as hard as we could go. After a smart pull we overtook it, and got close to it, well within gun-shot, but having no

offensive weapon we might as well have been miles away. We followed it, however, hoping that it would get spent and allow us to capture it somehow; we were often close to it, but never within reach; it led us northwards, round Separation Point, and a good evening's work we had before we were again on board the 'Pallas.' Still later in the evening, Chapman, when some miles up the Sound in a boat, saw a bird, which he thus notices:—"Observed a large long-winged falcon, soaring high over the water . . . ; appeared to have a short tail." A large gull will sometimes look very like a bird of prey when soaring quietly high in the air, but Chapman, to whom I suggested this, was sure this was no such bird, nor is he likely to have been so mistaken. Faussett and Woolley were with him at the time, and fully believed it to be a falcon. Dr. Malmgren * mentions that a large falcon was observed on two occasions by some members of the Swedish Scientific Expedition, which visited Spitzbergen in 1861, under Nordenskiöld and Dunér. Professor Newton ('Notes on the Birds of Spitzbergen,' Ibis, April, 1865, p. 227), says of this:—"I can find no other record of the appearance of any of the *Falconidæ* in Spitzbergen." On this occasion Chapman saw several large seals, which may probably be referred to *P. barbata*.

(To be continued.)

ORNITHOLOGICAL NOTES FROM LOWESTOFT, SUFFOLK.

By Henry Stevenson, F.L.S.

I can fully endorse the remarks of Mr. J. H. Gurney, jun., in 'The Zoologist' for 1880 (p. 22), as to the advantageous position of Lowestoft, geographically, for observing the migration to our eastern shores in late autumn of birds which, in former days, were commonly regarded as residents only. The regular influx, for example, in October, of Starlings, Rooks, Larks, Chaffinches, Tree Sparrows, Greenfinches, &c., affords, day by day, to the ornithologist a ceaseless interest as he watches, glass in hand, the

* Anteckningar till Spetsbergen's Fogel-Fauna. Af A. J. Malmgren. Ofversightaf Kongl. Vetenskaps-Akademiens Förhandlingar, 1863, p. 113. *Id.*, 1864, p. 411. Quoted by Professor Newton in his 'Notes on the Birds of Spitzbergen,' Ibis, April, 1865. I have not seen the original.

passage of these birds, in large or small flocks, skimming low over the waves till they reach the beach, then rising as they approach the cliffs and houses, and passing inland with untired flight. To these, also, succeed our usual winter visitants,—Snow Buntings, Hooded Crows, Twites, Redwings, Fieldfares, &c.; Raptores of various kinds, and stragglers, more or less rare, and worthy of notice.

The neighbourhood itself is particularly attractive to the feathered tribe, with its long range of furze-covered hills and grassy denes to the north, stretching away towards Yarmouth and its far-famed Breydon. In the background, as it were, but in close vicinity, Oulton Broad, with its surrounding marshes and beautiful lake, and still used decoy at Fritton and Herringfleet; whilst, on the other hand, the cliffs of Pakefield and Kessingland trend southward, to Sole Bay and Eastern Broad, a snug retreat for fowl, where many a rarity has been obtained by local gunners. The whole sea-board, therefore, in all but the summer months, has special attractions for the ornithologist, as well as sportsman, and it is much to be regretted that there is no resident naturalist, with leisure sufficient, to make the necessary observations,—for which this spot affords such great facilities,—and preserve to us a record of the same from year to year.

The following notes, for the year 1880, have been chiefly supplied me by my friend Mr. Frank Barton, temporarily located at Lowestoft, who happily combines a discriminating power of observation with a sportsman's relish for the pursuit of wild birds.

Avocets.—One morning, about the middle of August, Mr. Barton was bathing off the beach, and having swam out to a sand-bank was just able to stand there, being low water. As he rested two birds, which he took at first for small gulls, from their white breasts, flew towards him, and as they passed over his head he noticed that their plumage was black and white, and their bills long and curved upwards. On examining an Avocet in my collection, shortly after, he quite confirmed his impression at the time that these birds were Avocets. They were flying in the direction of Southwold.

Sanderlings.—On the evening of the 19th of September I saw a flock of eight Sanderlings flying low over the sea, not far from shore, in the direction of Pakefield.

Swift.—A single bird was seen at Lowestoft as late as the 21st of September, probably the same straggler seen two days before in the same neighbourhood.

Purple Sandpiper.—About the first week in September a bird of this species was shot near Yarmouth, and having been preserved was shown to me on the 25th. Another was killed on the beach at Lowestoft by Mr. Barton on the 26th of November.

Kentish Plover.—On the morning of the 27th of September, about 6.30 a.m., Mr. Barton, when on the north beach, observed some birds running rapidly along the margin of a brackish pool of water, near the fishing pier, and from their size and actions, though varying somewhat in colouring, took them for the ordinary Ring Plover. As he was watching them a shore gunner came up who shot at, but missed, them, and this man told Barton at the time they were Kentish Plovers, as he had met with the same kind before. Examples of this species, which I showed Barton shortly after, did not quite settle the point in his mind; but some weeks later, happening to meet the same gunner, he told him that in the afternoon of the 27th of September he went again to the same spot in search of the birds, and succeeded in shooting one. This he had stuffed; and on showing it to Mr. Barton it proved, as the man had said, a true Kentish Plover. When first seen these birds were running about at a great pace, constantly thrusting their bills under tufts of grass, and retreating as if extracting something; and as they took wing they uttered a plaintive cry of two notes.

Migration of Finches, &c.—On the 27th of September, at the same time as the Plover, Mr. Barton also observed, on the beach and north denes of Lowestoft, flocks of Grey Linnets, Sky Larks, Siskins, Pied Wagtails, and Wheatears. Single Wheatears were also seen on the denes on the 8th and 9th of October.

Solitary Snipe.—One, brought to a Lowestoft bird-stuffer on the 9th of September, had been killed close by; and another was shot in the marshes at Carlton Colville on the 17th.

Red-throated Diver.—About the 20th of September, Barton purchased a good specimen, still retaining the red throat.

Honey Buzzard.—In the last week of the month Mr. Freeman, of Lowestoft, had sent him to stuff a Honey Buzzard, shot at Wangford.

Terns.—A flock of these birds were seen off Lowestoft on the 2nd, and again on the 9th, of October.

House Martins.—Nine or ten together were seen early in the morning of the 9th of October, flying direct out to sea. Four young birds still frequented the esplanade up to the 18th of November.

Shore Larks.—On the 15th of October Mr. Barton sent me a Shore Lark, one of two he had met with that morning on the north beach; and on the 26th a pair were shot on the Lowestoft denes.

Snow Bunting.—Very large flocks frequented the shore and denes about the middle of November, and on the 18th Mr. Barton saw one perched on a tree at Lowestoft, almost in the town, and one then flying round it.

ORNITHOLOGICAL NOTES FROM NATAL.

By Majors E. A. Butler and H W. Feilden, and Capt. S. G. Reid.

(Continued from p. 303.)

Mirafra africana, Smith, Rufous-naped Lark.—Reid procured two specimens of this bird near Pietermaritzburg, one on the 20th April, and another on the 5th December. Also a male, developed for breeding, at Blaauw Krantz, on the 23rd November. The last-named made a curious flapping noise in flight, perching on the tops of the high bushes..

Macronyx capensis (Linn.), Orange-throated Lark.—Universally distributed and extremely common. Besides its peculiar "mewing" cry, it has a rapid, spasmodic, but not unpleasant song, which it utters only when on the wing, and which is apparently confined to the breeding-season. Never seen in flocks. Fresh eggs were taken in October and November. A nest found by Butler on the 9th November near the Ingagane River contained two eggs, incubated, white, well marked with dusky spots.

Anthus caffer, Sundev., Cape Pipit.—Common at the Ingagane River, near Newcastle, where Reid obtained four specimens in June and July, feeding on the bare patches round the stone cattle "kraals." He also met with it near Ladysmith in November, and obtained the eggs from two nests on the 18th and 19th of that month. The

nests were cup-shaped, well concealed among the growing herbage, and resembling those of our common European Meadow Pipit. The eggs in the first nest, three in number, are white, with distinct freckles and small blotches of chocolate-brown, and a more obscure series of ashy grey markings, most numerous towards the larger end, measuring ·8 in. by ·6 in. In the second nest the two eggs have the markings smaller, but more numerous and of a slightly duller brown. Iris brown; bill brown, with the basal portion of the lower mandible flesh-colour: legs and feet yellowish clay-colour (R).

Anthus pyrrhonotus (Vieil.), Red-eared Pipit.—This species is the *A. sordidus* and *A. leucophrys* of Layard's first edition. It is an exceedingly common bird on the "veldt" in the upper portions of the colony, and we obtained many specimens. Several nests were taken near Newcastle and Ladysmith. From Butler's notes we extract the following:—"Found a nest near Newcastle, on the 1st October, under a tussock of grass. It was well concealed, and composed of dry grass, lined with finer material of the same description, cow-hair, horse-hair, &c., with a run up to it on one side, so that it was necessary to stoop down very low to see into it. Eggs three in number, fresh, white, spotted all over with grey. Another nest, precisely similar in composition and situation, at Sunday's River, on the 12th October, containing three eggs slightly incubated. One specimen, shot near Newcastle on the 23rd June, was pied, having the greater part of the head and neck and other parts of the body white" (B).

Anthus Butleri, Shelley, nov. sp., Yellow-breasted Pipit.—Feilden shot the first specimen on the 6th June, and Reid met with it at the Ingagane River in July, and obtained three specimens. Butler afterwards obtained a fine male, nearly in full plumage, on Nov. 9th, at Newcastle, where it was by no means common. Those obtained at the Ingagane were very local, and only to be found on one particular open flat near the main "drift." In their movements and flight they much resembled Wagtails. Iris dark brown; upper mandible, and tip of lower, neutral tint; base of lower mandible purple flesh-colour; legs and toes light yellowish brown (R). For a description of this interesting new species we must refer our readers to Capt Shelley's paper, in the 'Proceedings of the Zoological Society,' March, 1882. Butler adds the following notes referring to his type

specimen:—"Legs and feet brownish flesh; bill horny-brown above, lavender below; iris dark brown." He also notes that it is a bird of skulking habits, seeking concealment in the grass much more than the other Pipits, especially when pursued, lying close, and being consequently often difficult to flush a second time.

Motacilla capensis, Linn., Cape Wagtail.—Everywhere abundant inland, but not so numerous, apparently, in the neighbourhood of the coast. A graceful, lively bird, with an extremely pretty little song, not often heard. Nests were found in September, October, and November, built on the banks of streams or dry "dongas," among overhanging roots, or under projecting stones; they are cup-shaped, neatly and massively constructed of dry grass, lined with fur and cow's-hair. The eggs, three in number usually, are brownish cream-colour, very indistinctly freckled with brown, and very slightly glossed; ·85 in. by ·55 in.

Motacilla vidua, Sundev., African Pied Wagtail.—One seen and obtained by Reid on the edge of a sluggish stream near Colenso, on the 20th November, where Butler also observed a pair on the banks of the Tugela. Several pairs seen, and a specimen procured, at the mouth of the Umgeni, near Durban, on the 24th December (R). Not observed in the neighbourhood of Newcastle.

Columba phœnota, Gray.—This handsome Pigeon, which is most excellent eating, abounds throughout the hilly country in the north-west of Natal, roosting on ledges in the steep "krantzes," and descending to feed on the lower grounds in the roads and "out-span" places, where windfalls of scattered "mealies" are met with, and in cultivated land. They are very strong on the wing, and, like most Pigeons, require a deal of hitting to bring them down. Young birds have the white spots on the wing-coverts less pronounced than the adults, and they want the ruddy vinaceous feathers of the neck and breast; iris dirty white, or cream-colour; bill and bare skin round the eye cinereous; legs reddish brown. Old birds have the iris reddish pink, or sometimes cream-colour, with an outer ring of reddish pink; bill, &c., as given by Layard. It is worthy of note that an egg of this bird was found on a ledge of rock at the Ingagane River in mid-winter (July)! Butler also found a nest containing a single fresh egg on the 9th October. Can it breed twice?

Œna capensis (Linn.), Black-throated Dove.—Not observed at Newcastle, but extremely common at Ladysmith, and also found at Blaauw Krantz River in November. One kept as a pet, by a Sergeant of the Welsh Regt. at Ladysmith, was rescued by him, with one or two others, from some Kaffirs who were about to throw them alive into the fire to cook them, having merely pulled out the tail and wing-feathers! (R).

Turtur capicolus, Sundev., Cape Turtle Dove.—Common everywhere. Fresh eggs were taken in the Newcastle district on the 23rd October, and at Richmond Road, near Pietermaritzburg, on the 7th December. The nest is, like that of the common European bird, a slight construction of twigs, through which the eggs can plainly be seen from below. The eggs measure 1·08 in. by 0·87 in. This species is the *Turtur semitorquatus* of Layard's book.

Turtur senegalensis (Linn.), Senegal Turtle Dove.—Only met with in the mimosa bush along the Tugela River, at Colenso, in November. Reid found them common here, and obtained specimens.

Tympanistria tympanistria (Temm.), White-breasted Wood Dove.—Several seen, and one obtained in the thick bush near Durban on the 26th December (R).

Numida coronata, Gray, Guinea-fowl.—Though not obtained within the Newcastle district, this fine bird occurs in considerable numbers in places, as at Estcourt, Ladysmith, &c. As many as seventy have been seen together near the latter town, and it is no uncommon thing for a man with a good dog to bring home five or six. Reid met with them, and shot one at "Guinea-Fowl Kop," near Ladysmith, in August. As its name implies, this hill is a noted resort of these birds.

Francolinus levaillanti, Temm.—This is the only Francolin we obtained near Newcastle. It is not very numerous, but widely distributed. We heard of another kind at the top of the Drakensberg, but were unable to investigate the matter. We found it almost impossible to flush these birds a second time without dogs, though we had marked the spot where they settled to an inch!

Francolinus gariepensis, Smith.—A pair seen and the female obtained by Reid on the banks of the Tugela, near Colenso, on the 21st November. Iris reddish brown; legs yellow; bill yellow,

with the culmen and tip of upper mandible horn-colour. Eggs slightly enlarged in the ovary.

Coturnix communis, Bonn., Common Quail. — Without attempting to explain the migrations of this well-known bird, as far as Natal is concerned, we will merely give in detail the various occurrences that came under our notice. Reid saw five at Sunday's River on the 6th May; Lieut. Giffard saw one near the Leo Kop Mountain on the 9th July; Butler shot one near Newcastle about the same date; they appeared in considerable numbers in the district early in October, when many specimens were obtained; and in the Maritzburg country they were simply swarming in November and December. As many as one hundred couple were shot here in one day by a party (though they were breeding abundantly at the time). On the 2nd December Col. Russell, 14th Hussars, informs us, his dogs flushed two sitting birds from nests containing eggs. Are these the birds that breed in North Africa and the South of Europe in the summer months? If so, how is it that the thousands of birds that visit India in the cold weather do not breed there? In one case it looks as if they bred twice in the year, and in the other as if they only bred once.

Turnix lepurana (Smith), Hottentot Button Quail. — Only once obtained in the neighbourhood of Newcastle by Feilden, in August, though frequently seen. Observed also near Ladysmith. Lieut. Giffard shot several when quartered at Pinetown.

Struthio camelus, Linn., Ostrich.—Still found wild in limited numbers on the Buffalo Flats near Newcastle, where Feilden observed a small flock in the winter. Reid saw a single bird on the plains between Dundee and Rorke's Drift in October. Butler and Reid came across some broken fragments of egg-shells on the veldt near the junction of the Ingagane and Buffalo Rivers, in October; the undoubted remains, according to a sporting Boer farmer who was accompanying them, of a former nest. In a domesticated state they are now to be met with in numbers throughout the colony of Natal, where Ostrich-farming is rapidly becoming popular.

Otis kori, Burch., Kori Bustard; Gom-Paauw.—Common in the more open country between the Buffalo and the Drakensberg, but not obtained in the immediate vicinity of Newcastle, where its place is taken by *E. ludwigii*. Feilden killed a fine pair, right and left, in the Leo Kop district. Several were obtained

near the Leo Kop Mountain and on the Buffalo Flats. Reid found them plentiful in the former district, and they undoubtedly breed there, as well as between the Ingagane and Dundee.

Eupodotis ludwigii, Rüpp.—Not a scarce bird on the undulating hills near Newcastle, where it breeds, and we all obtained specimens. Female, iris greyish brown; bill blackish horn-colour, inclining to white towards the base of the lower mandible; legs and feet whitish green (B). The crop of one shot by Feilden contained beetles and grasshoppers. A hen bird, developed for breeding, shot on the 6th October, weighed $7\frac{1}{2}$ lbs., and measured as follows:—Length $32\frac{1}{2}$ in.; wing 19 in.; tarsus 10 in.; bill from front $2\frac{1}{2}$ in., from gape $3\frac{1}{8}$ in.; expanse of wings $62\frac{1}{4}$ in. (B).

Eupodotis cærulescens (Vieil.)—The commonest Bustard, in fact the only small kind observed, from Ladysmith to Newcastle. Butler was singularly successful in out-manœuvring them, and killed a good many. Specimens were obtained by Reid at Sunday's River, and he was shewn a beautiful pair, just killed near Ladysmith, in August. These birds are often seen on the veldt close to the main road, taking very little notice of passing waggons. A young male obtained by Feilden had its crop full of insects, chiefly beetles. "They are wild, as a rule, and difficult to approach if you walk straight towards them; but by walking away from them at first and then gradually circling in towards them, especially if there are two guns and each goes a different way, you can almost always get within shot of them as they squat, even when there is little or no covert, when they see that they are surrounded, and allow you to walk up to within a few yards of them before they rise. When they get up they utter a harsh note, resembling the words 'kuk pa-wow,' repeating the call several times as they fly away. We found the above plan of stalking also successful with the preceding species" (B).

Œdicnemus capensis, Licht., Cape Thick-knee; "Dikkop."—Met with commonly near Newcastle, on stony flats or slopes among the low hills. Specimens shot in May and June had the iris, bill, and legs all yellow, except the tip of the bill and the front of the legs, which were greenish (R).

Cursorius burchellii, Swains., Burchell's Courser.—Extremely common all over the veldt, in pairs and in small flocks. Apparently breeding in November, but no nest was found. On the wing they look somewhat like a Turtle Dove.

Cursorius chalcopterus, Temm., Bronze-winged Courser.—One was obtained by Reid at Colenso, on the 20th November, in thick dwarf mimosa bush, to which it kept close. Female, iris dark brown, eyelid thick and orange-scarlet; bill black, base of lower mandible reddish crimson, gape scarlet; legs crimson-pink, toes blackish (R).

Cursorius senegalensis (Licht.), Senegal Courser.—Reid met with several small flocks on the flats near the Tugela River, at Colenso, and obtained specimens on the 21st August.

Glareola melanoptera, Nordm., Black-winged Pratincole.—Observed in large flocks by Feilden on the way up country in March. A pair, seen by Butler and Reid near Newcastle on the 19th October, were the first noted in the spring. In November they were most abundant, in flocks, in the neighbourhood of Ladysmith and Colenso, and numerous specimens were obtained on our homeward march down country.

Hoplopterus coronatus (Temm.), Spur-winged Plover; "Kie-wit."—This noisy bird is everywhere abundant on the "veldt," in small flocks. No nests were found, though it was evidently breeding in October and November. An immature bird, shot near Estcourt on the 24th November, had the iris lemon-yellow, eyelid light crimson; bill dark purple, almost black; legs dark purplish, toes blackish; the nape and hind head greyish; forehead, chin, and throat yellowish white; top of head mottled with grey and brown, showing no sign of the black patch (R). They are very good eating (B).

Ægialitis tricollaris (Vieil), Three-banded Sand Plover.—Abundant in all the vleys throughout the colony. Not seen in flocks; more than three or four were seldom seen together. One shot on the 14th May—a female with eggs much enlarged—had the iris light brown, eyelid bright scarlet; bill flesh-colour at base, black at tip; legs brownish flesh-colour (R). A male shot by Butler on the 26th June, also developed for breeding, had the eyelid scarlet; legs and feet yellow-drab or buff; bill coral-pink at base and black at tip; iris brown (B).

Ægialitis marginatus (Vieil.), White-fronted Sand Plover.—Several small flocks seen by Reid on the beach outside Durban Harbour on the 25th August, and two, male and female, obtained. Also seen by him in the same place in December.

Charadrius asiaticus, Pall.—There were a good many of these

Plover about at the mouth of the Umgeni, near Durban, on the 26th December. Some boys who were shooting there on that day had obtained several, and presented one to Reid.

Laomedontia carunculata (Gmel.), Wattled Crane. — Not so numerous as the two following species, but seen occasionally, in pairs, in the Newcastle district. Though shy, if is generally possible to ride up to within a hundred yards of these stately birds before they take wing. We never attempted to shoot them, but a specimen was obtained close to Newcastle in the spring.

Grus paradisea, Licht., Stanley Crane. — These graceful Cranes are very common on the "veldt" all about Newcastle in pairs and small parties. We are unable to give particulars of their breeding habits, but Butler and Reid, when searching for their nests in "vleys" or marshy places, were informed by an old sporting Boer farmer that they scratched a hole and laid their eggs, like a Bustard, on the open veldt, and never constructed nests in the "vleys," like the other cranes. He described the eggs, also, as being of the usual Crane type, and nothing could shake his evidence. Unfortunately no nest could be found, though he did his best to find one, galloping hither and thither over the "veldt" on his well-trained pony after every pair of birds he could see, and searching carefully for young ones in the patches of weeds and rank grass. The question, therefore, must await further investigation, though we are strongly inclined to believe in the Boer's account. Bill, in this species, yellow-ochre, with a tinge of red; iris dark brown; legs black. A female examined by Butler measured 43 in. in length; wing 38$\frac{7}{8}$ in.; tarsus 9$\frac{1}{2}$in.; bill from front 3$\frac{1}{4}$ in., from gape 3$\frac{3}{4}$ in.; expanse of wings 52$\frac{1}{2}$ in.; slightly developed for breeding (B).

Balearica chrysopelargus (Licht.), Crowned Crane.—Observed frequently in the more open veldt, generally not far from a "vley" or marshy spot. Appears to breed in the neighbourhood of Newcastle, though no nests were found. Reid constantly met with a family party of five near the Ingagane Drift in June and July, and one night, when waiting for ducks, obtained an adult female and two immature birds. The iris of the adult bird is bluish white, bill and legs black. "The total length of the female above-mentioned was only 3 ft. 4 in., yet Layard and Tegetmeier give 3 ft. 8 in. and 3 ft. 9 in. respectively. Is the female smaller than the male? Called 'Mahem' by colonists, from their note; but

I was squatting in a vley within ten yards of a party of them for a quarter of an hour, and after listening to their notes all this time I could only make these out to resemble 'aan-aan—nor-aan,' uttered very softly and plaintively" (R).

Ardea goliath, Rüpp., Goliath Heron.—Butler and Reid had the good fortune to meet with this grand Heron nesting in a remote vley near the junction of the Ingagane and Buffalo Rivers, just over the Transvaal border, on the 17th October. As the account may be of some interest, we venture to transcribe from Butler's note-book as follows:—*Ardea goliath*, male; length 5 ft.; wing 25½ in.; tail 8½ in; bill in front 7½ in., from gape 10 in.; expanse of wings 7 ft. 3½ in.; legs and feet black; bill slaty black; iris bright yellow; orbital skin plumbeous. Nest with three fresh eggs situated in the centre of a vley, and placed upon the top of a patch of green sedge beaten down by the wind and rain, and raised some two feet above the level of the water; composed of dry sedge and reeds, and lined with dark-coloured sedge and a species of creeping weed—very flat and about two feet in diameter. The old bird raised himself off the nest as we approached, and walked slowly away, erect, for a few yards before taking flight; and, after remaining away for a few minutes, returned to the nest, when an unsuccessful long shot prevented him from settling. He only flew, however, for some 500 or 600 yards, and after a careful stalk we winged him; on being wounded he became excessively savage, tearing up the grass with his enormous bill and showing every inclination to fight to the last, so we had to despatch him with a charge of small shot. The female was not observed near the nest, though, oddly enough, another Heron, *Ardea cinerea*, was feeding within a few yards of it on our first approach. Eggs of the usual Heron type, bluish green, without gloss, nearly oval and equally pointed at both ends, 2·8 in. by 2·0 in. Rather a small egg for such a large bird, though considerably larger than the eggs of *A. cinerea* (B). One seen by Reid at Calleba's Laagte on the 15th November, very shy, and quite unapproachable.

Ardea cinerea, Linn., Common Heron.—Frequently met with, singly, in the vleys round Newcastle; always very shy. Not found breeding.

Ardea melanocephala, Vig. & Childr., Black-necked Heron.—Feilden obtained a female specimen at the Ingagane River on the

6th June, and Butler noted several other specimens shot in the same locality. Probably often mistaken for the preceding species.

Ardea purpurea, Linn., Purple Heron.—Occasionally met with in quiet, unfrequented vleys. Butler and Reid found a pair at a large reedy vley, on the Natal side of the Buffalo, on the 19th October. No nest was discovered, but they were probably going to breed there.

Ardeola bubulcus (Savig.).—One obtained by Lieut. Giffard near Newcastle, in the summer months.

Herodias garzetta, L.—White Egrets are a familiar feature in all the less frequented vleys in the Newcastle district. They are uncommonly shy. Butler and Reid found a small colony apparently breeding in October, but could not discover the nests.

Ardetta pusilla (Vieil.), South African Little Bittern.—Seen on the march up country, at Richmond Road, in February (B).

Botaurus stellaris (Linn.), Bittern.—By no means uncommon in the reed-grown vleys in the Newcastle district. Four or five were sometimes seen in the course of a day's shooting. Specimens obtained in September showed unmistakable signs of breeding, but no nest was met with.

Nycticorax griseus (Linn.), Night Heron.—Butler examined a specimen in the flesh, in immature plumage, that was shot near Newcastle by an officer of the 97th Regt.; but we did not come across it ourselves, so that it must be uncommon in the tract with which we are dealing.

Scopus umbretta, Gmel., Tufted Umbrette; Hammerkop.—A common bird in vleys and along sluggish streams; by no means shy. Four fresh eggs were taken from a nest at Calleba's Laagte by Lieut. Giffard, on the 30th May. Eggs were also taken by Lieut. Harkness near Ladysmith in October, and on the 21st November Reid found a nest near Colenso, containing an egg on the point of hatching and three young birds just out of the shell. It would appear from this that they, like many other South African birds, breed twice, winter and summer, if not all the year round. Butler adds the following note:—"Numerous nests about Newcastle all through the cold weather; they are huge stick structures, domed, with the entrance on one side, and usually placed upon a rock overlooking a running stream or waterfall, sometimes only three or four feet above the water, though usually higher. The

only egg I procured—as the nests were invariably destroyed by soldiers from the camp before the eggs were laid—was one from the nest taken by Lieut. Giffard, previously alluded to. This is decidedly small for the size and class of bird, of a chalky white, or pale straw when held up against the light" (B). The egg found by Reid was much larger than those in Lieut. Giffard's nest, measuring 1·88 in. by 1·41 in. One of the latter in his possession measures only 1·63 in. by 1·19 in.

Platalea tenuirostris, Temm., South African Spoonbill.—First seen by Butler, a single bird being noted by him near Newcastle on the 18th September. Afterwards occasionally observed in the "vleys"; and a small colony were found breeding by Butler on the 1st October, in a thick reed-bed near the Buffalo River, on the Transvaal side, of which he furnishes the following note:—"Found a small colony of Spoonbills, five or six pairs breeding in a bed of bulrushes growing in a 'vley' near Newcastle, on the 1st October, 1881. Nests large, composed of sedge, being built just above the level of the water and placed within five or six yards of each other. All contained young birds, either two or three in number, almost ready to leave the nest, except one, which contained three nearly fresh eggs, white, richly marked with chestnut-brown. The parent birds evinced great anxiety for their young as they hopped out of the nests, on my approach, into the water, flapping their wings and trying to swim, and descended on to the nests fearlessly within a few yards of me. In the old birds, as far as I could see, the legs and feet were red or pink (not black, as in *P. leucorodia*), and the young birds were white, with black tips to the primaries; bill livid grey; legs and feet grey. Not bad eating. The bulrushes, in which the nests were found, were growing in water about three or four feet deep."

(To be continued.)

THE INCUBATION OF SERPENTS.

By Arthur Stradling, C.M.Z.S.

Since the word "incubation" has an extended application beyond its literal meaning, let me premise that in the course of this brief account I shall use it only in its most limited signification—the act of an animal covering its eggs with its body after their extrusion.

On the 13th of July a common Ringed Snake (*Tropidonotus natrix*) in my small reptilium laid fourteen disconnected eggs. A few others were deposited both before and after the batch at intervals of several days, but these were all apparently either immature or addled; the fourteen being plump, perfect eggs, with the membranous envelope distinct and well formed. I inferred from the snake's uneasiness and restless wanderings about the cage on the night of the 12th that deposition was about to take place, and that she was seeking an eligible spot for the purpose; accordingly, I introduced a small open box filled with moss into the case, and on taking a last look before retiring about 2 a.m. I observed her lying quietly therein. Six hours later, however, I found her coiled on a pyramid of eggs in a distant corner of the cage, encircling and surmounting them in such a way as almost to conceal them—snake and eggs forming a sort of cone. She had deserted the moss, and had so cleared away the gravel where she was lying that the eggs rested on the wooden floor: this had probably occurred as soon as the morning sun struck that part of the cage.

Looking upon this position as indubitable evidence of an intention to incubate, I commenced to take observations of the temperature at once, and continued to record them regularly every four hours until her desertion of the eggs six days afterwards, making also frequent trials between these periods so that no unexpected exacerbation or development of other phenomena might escape notice. I employed for the purpose three carefully tested clinical thermometers, and as far as possible made use of *all* the surroundings as standards of comparison—the woodwork, gravel, the air inside and without the cage, and the other snakes—in order that the degree of retention and subsequent evolutions of heat derived from the direct sunshine in every case might be allowed for in calculating external influences. The temperatures which I have preserved as reliable were all taken between the coils or in the centre of the mass, those obtained by the mouth and anus being attended with so much disturbance that I hesitate to consider them trustworthy. The results of these experiments may be epitomised as follows:—There was a *minimum* elevation of 1·8° (Fahrenheit) above the surrounding atmosphere and objects, to be observed as constantly at the warmest hour of the day, when the sun was pouring full upon her, as in the middle of

the night. But for some time after the sun had passed off, and long after the temperature of even those snakes which had been lying in its direct rays and had not moved from their place had fallen to that of the air, and the stones, glass, and boards were cold again, there was a remarkable retention of heat—never rising above what had been lost, but sinking so slowly that it was sometimes nearly two hours before that of the surroundings, *plus* 1·8°, was reached. Thus, after all deductions were made, an *apparent* maximum of 4·6° was gained. I was entirely at a loss to account for this at first, and was unable to work the matter completely out, even by the end of the six days; and I regret for this reason more than for any other the stupid interference which put a stop to the incubation. I am almost certain, however, that it was due simply to a storing of the external heat in the eggs, this evaporating slowly afterwards through the mal-conductive membrane and the body of the snake; and that such apparent retention or maximum elevation was purely passive and mechanical. I therefore believe that 1·8° was the highest intrinsic or vital increase which the reptile exhibited. Perhaps I should have explained that the cage was not provided with any artificial heating apparatus, but that the sun shone upon it from about six to ten a.m.—if it shone at all; very luckily this happened to be the finest part of the day about that period. Beyond this, the cage had only such warmth as a dwelling-room at this time of the year affords, its inmates being hardy European and North American Colubers of several species.

There could be no doubt of the little serpent's energy and definite purposeful determination in its object. She was a rather small specimen, and though thin and weak she did not leave her charge for a moment, but resented disturbance most strenuously; she drank a little water which I presented to her in a saucer, but would not go to the bath, nor was she to be tempted with frogs. On several occasions she bit my hands as I busied myself about her with the thermometer; and I think that those who are familiar with the habits and characteristics of this species will agree with me that such an action is no less phenomenal than the rise of temperature, and that it may be looked upon as indicative of the intense revolution which the reptile's whole nature must undergo at such a period. I have never witnessed or heard of such a proceeding on the part of this singularly

harmless creature before; and that close observer, the late Mr. John Keast Lord, says, "From oft-repeated experiments, I feel sure that it is impossible, by any amount of provocation, to induce the Ringed Snake to strike or make any attempt to bite." Mr. Lord, of course, had not made his experiments with an incubating Snake, but it is difficult to find a reason for their never biting under ordinary circumstances, as they certainly have the wherewithal to a comparatively formidable extent, and are prone to excessive timidity. My little *natrix* seemed not to object to the other serpents passing over her; but, unfortunately, she lay in an angle, and as many of them were much larger than herself, they frequently displaced her and scattered the eggs by forcing themselves between her folds and the side of the cage. After such an occurrence she appeared to make some effort to collect the eggs together once more in a compact mass, throwing her body around the outlying ones, and perhaps constricting the coil a little so as to draw them towards the centre. I had seen this action described in the case of an incubating pythoness, and was therefore on the look-out for it; but here the evidence of such an intent, if it really existed, was not well-marked, and it may be fanciful to ascribe such a purpose to those movements. In consequence of this oft-recurring disturbance, I made several attempts to isolate her by interposing a barrier between her corner and the rest of the cage, by inverting boxes over her, and various other protective measures—all of which failed, owing to the awkward construction of the reptilium. Finding them of no avail against the intrusion of her cage-mates, I removed her with the eggs *en masse* on the evening of the 18th, and placed them in a compartment which I had securely partitioned off in a box containing a couple of boas—which box was of course constantly heated by artificial means. The compartment was partly covered with moss, but seeing that she herself had elected to deposit her eggs on the bare woodwork in the first instance, in preference to moss, I acted in accordance with what I presumed to be her taste now, and laid her on the boarded floor. An hour afterwards she forsook her charge, and though I altered the conditions in a dozen different ways in succession, she never returned to them, or appeared to take the slightest further notice of them.

Why did this snake incubate? Another belonging to the same species laid fifty-one eggs in the same cage a few days

subsequently, and took no heed of them whatever. Is it to be taken as an indication that the first only were fertile, and that a serpent possesses an instinct which impels it, when depositing properly impregnated ova under circumstances unfavourable for the development of the contained germ or embryo, to endeavour to hatch them instead of leaving them to a fortuitous combination of surrounding influences, as is undoubtedly the rule?

The matter is hardly susceptible of explanation on any hypothesis, so far as I can see. Neglected eggs of this and other species have recently been hatched over the warm tanks at the Zoological Gardens, so that if we assume that infertile ova are always disregarded, we must also admit that those which are fruitful are sometimes deserted. I regret that I did not add the immature and spoiled eggs to the group during the incubation, to note whether the behaviour of the reptile would prevent any variation when these were displaced. Again, the addition of 1·8° to the natural temperature in which these events took place would not have been nearly sufficient to foster the necessary vital processes in the egg; yet that temperature could differ very little from what such a snake would experience in its wild state at this time of the year. And whether she forsook them in consequence of disturbance, or because the heat of the boa's cage relieved her of further responsibility in promoting their germination, is equally a mystery; I incline, however, to the latter view, as an interval elapsed between the time of her removal to a new location (the fact of which did not seem to disturb her) and the moment of her roving.

The reason of a serpent's occasional incubation has never been satisfactorily demonstrated. We know, at any rate, that the practice does not obtain among them as a rule, in a state of nature; we are justified in believing that such a process is quite exceptional—we may indeed doubt whether it ever occurs at all. Even the evidence of the reptile's *defending* its nest is meagre and dubious. In tropical countries the eggs are usually laid on the damp sand, or in marshy jungle, and left without further care to the vivifying influence of the sun; in colder climates they are extruded in manure-pits, hot-beds, heaps of dead leaves and other decaying vegetable matter where heat is generated by fermentation, or in accidentally warm situations; but in both instances one often finds such a deposition without a trace of the snake's recent

presence. And for every one of the few cases which have been noted in captivity there have been fifty where no attempt at incubation has been made.

Nevertheless some very extraordinary anomalies have been pointed out with regard to these creatures in this respect. It appears that if a serpent, normally at the full period of ovo-gestation, finds no suitable place for its purpose, it has the power of retaining the eggs for a considerable time, so that they may be hatched within the body of an individual whose species is not ovo-viviparous (this would probably be accompanied by an exacerbation of temperature); and it is even said that the released brood may be retained within the uterus, or oviduct, until the external conditions are favourable for their extrusion. I believe the subject was first brought forward by Mr. P. H. Gosse, in some observations on *Chilobothrus inornatus*, made in Jamaica. It has not yet been thoroughly investigated, and will indeed be very difficult to pursue, since to be of much value it must be followed out among snakes in their wild state. Any embarrassment in this particular with specimens in confinement generally results in abortion or arrest of nutrition, or death of the prospective parent. In the case of a boa-constrictor (pythoness, *Python sebæ?* it was captured on the St. Paul River, Monrovia, Liberia, West Africa) which died suddenly at the Clifton Zoological Gardens in May, 1857, having been "in great health and beauty to within an hour of its death," and which was carefully dissected by Mr. Frank Buckland and other medical men prior to the maceration of its skeleton for the museum of the Royal College of Surgeons, no symptom of disease was discovered, and the cause of death could only be conjectured to be the want of a sufficient depth of sand in its den wherein to deposit the forty large mature ova which were found in it. On the other hand, ovo-viviparous snakes will occasionally extrude their eggs unhatched, from fright, injury, or other causes, and the living young may emerge subsequently. Thus, though different species are tolerably constant in their habit, it seems as though no very distinct line of demarcation can be drawn between oviparæ and ovo-viviparæ, so far as the actual process is concerned; and this close affinity is borne out by the fact that the eggs of some species, recognised as oviparous, are hatched almost immediately after their deposition, while others require a great length of time for their maturation. Those

of the grass-snake take from fifty to ninety days, according to the temperature. It is curious that serpents which are obviously very nearly allied in their anatomical and physiological characteristics should often differ in this respect—the boa and python, for instance; while among colubrine snakes we often find the difference marked between different species belonging to the same genus. *Tropidonotus natrix* lays eggs; *T. leberis* and *T. fasciatus* produce their young alive.

I have not seen the retention of derived heat noticed in any previous records of this subject, but I should be glad to know if mine is an exceptional or accidental case. A Ringed Snake is said to have hatched her eggs in the Jardin des Plantes, in Paris, on three successive occasions; I am not aware whether any elevation of the bodily temperature was discovered or not; but with artificially heated surroundings, minute differences would be difficult to obtain confidently. Possibly, too, the storing of heat from the floor among the eggs may have influenced some of the results which have been gathered from incubating pythons and other large serpents; and it may be that in some cases the incubation is confined to a mere defensive shielding of the eggs, unattended by any further phenomena. I believe that this is the first instance in which thermometrical observations have been made under ordinary atmospheric conditions.

OCCASIONAL NOTES.

Variety of the Mole.—Early in June last I examined a somewhat similar variety of the Mole to that mentioned at p. 263. It had been trapped a few days previously near Souldern, in this county. At first sight the colour of the specimen appeared to be a dusky cream, but, on raising the fur, I found that it was of a bright, though pale, apricot colour, each hair having a dusky tip. The colours were warmer and deeper on the lower than on the upper parts.—Oliver V. Aplin (Banbury, Oxon).

Bottle-nosed Dolphin in the Colne.—On July 25th, after considerable chasing, a specimen of this Dolphin, *Delphinus tursio*, was shot in the Colne, near Rowhedge. It was a female, nine feet long; the teeth were sharp, and not at all truncated. It was, therefore, probably not a very aged

example. All the specimens I have seen captured near here have been females, but I hear that another had been seen accompanying the captured specimen, and this may have been a male.—Henry Laver (Colchester).

Common Buzzard in the Lake District.—Whilst in the Lake District I was shown a very fine young *Buteo vulgaris*, which was taken from a nest in the Wythburn district this spring. Buzzards breed annually in Westmoreland or Cumberland, though they are getting much scarcer.—J. Backhouse, Jun. (West Bank, York).

Variety of the Wheatear.—A few days ago I received a young Wheatear from a friend who had shot it, on August 12th, on a hill in Kells, in this county. It is of a very pale gall-blue on the back and wings, and it has also some faint dusky vermiculations principally on the coverts. The under surface was beautifully suffused with rose-colour, which has now almost disappeared. The usual white markings on the tail are of perfect purity.—Robert Service (Maxwelltown, Kirkcudbrightshire).

Snipe perching.—Mr. J. Whitaker reports (p. 267) having seen a Snipe settle on a rail. This puts me in mind of a similar occurrence which I witnessed myself last year in the county of Durham. Whilst busily engaged in extracting an old Wheatear's nest from a bank near to a peat bog of considerable size I was attracted by a Snipe "drumming" not far off, and my surprise was great at seeing the bird suddenly fly straight down on to a rough stone wall, where it sat calling for several minutes. The game-watcher, who was with me at the time, said that he had seen one or two similar cases before, but that it was by no means a usual habit.—J. Backhouse, Jun. (West Bank, York).

Kestrel breeding on the Ground.—On the 24th of last month I found a Kestrel's nest upon the ground near the middle of Wicken Fen, in Cambridgeshire. It was built among the long sedge, and there was no shrub which by the greatest stretch of courtesy could be called a tree growing within a mile at least, though within two miles a considerable number of poplars existed. I did not see any vestige of the old birds, but the two young ones which the nest contained showed by their cry and their colour that they were Kestrels without the possibility of a doubt. They were about three-quarters grown, but one was a day or two at least older than the other. In the nest also were the remains of a third young one, which had apparently been just devoured by his brethren. No attempt had been made at constructing a nest, but about two square feet of sedge had been trampled down and used as a nest, though the young birds had considerably extended this by burrowing tunnels under the sedge around for

eighteen inches or two feet, which they ran up as we approached. It seems to me a most extraordinary freak for a bird which usually builds on trees or ledges of rock to construct a nest on the ground in the middle of the fen, when a flight of less than two miles (which would be as nothing to it) would have taken it to abundance of trees. Rather curiously this nest was within a few yards of where, last year, I discovered a young Short-eared Owl, and of course I set it down as an Owl's nest at the moment of finding it.—R. M. Christy (Saffron Walden).

Curious Nesting-place of a Great Tit.—A few yards from the house my brother deposited a dead Rat and also a Hedgehog to skeletonise, and placed over them a large inverted flower-pot. Through the drainage-hole at the top a Great Tit found its way, and formed a perfect platform of wool, hair, &c., over the carcasses of the two beasts, whilst at one side she made her nest, and actually lined it with the hair of the defunct Hedgehog.—J. Backhouse, Jun. (West Bank, York).

Pintail breeding in Westmoreland.—On July the 29th, while visiting the beautiful garden belonging to Miss Meyer, at Low Wood, near Ambleside, I was much gratified by seeing a pair of young Pintail Ducks (*Dafila acuta*), which had been reared upon the pond last year. The brood numbered six in all, I think, and got off successfully. At first, from Miss Meyer's account, the young birds left the grounds where they were reared, and joined some Wild Ducks on Windermere, but after a while they all returned to the pond with the parent bird. This is the first and only time that Miss Meyer has had them breeding, I believe, though other commoner kinds have nested there, notwithstanding that it is close to the main coach-road between Windermere and Ambleside.—J. Backhouse, Jun. (West Bank, York).

[We have received gratifying intelligence of the successful nesting in various counties of several of the less common ducks during the past breeding season, the result, it may be assumed, of the strict observance of the close-time.—Ed.]

Phycis blennoides (*Günther*) off the Manx Coast.—On the 8th July last I received a specimen of this fish, for which I am indebted to Mr. Bragg, of Ramsey, in one of whose boats it was caught. It had been taken on a "long line" baited for Conger, some miles to the north-west of Peel, and in about eighty fathoms of water. I had heard of some caught during the last two weeks of June, and had seen a dried specimen on the 26th. From all I can learn it appears never before to have been seen in these waters, and is unknown alike to the fishermen and fish-dealers, who have as yet no name for it. One man, however, tells me that about the same season and place last year four were taken in his boat. Throughout July it has

been frequently taken and sent off with other fish to Liverpool. I have received in all three specimens, the general appearance and measurements of which are very similar, and answer closely to the figure and description given in Couch's 'Fishes of the British Islands.' All three were females, and each had a small roe. The livers were very large and white; the air-bladder very tough and strong. Inside, the fish has a thin lining, almost black, which, near the gills, runs into a steel-blue. The outward appearance is as given in Couch. Scales large; colour grey, darker above the lateral line, going into brown, with a tinge of violet on the back and fins. Length about 24½ in. Weight, 5½ lbs., 5 lbs. 11 oz., and 5¾ lbs. The length of the long and short rays of the ventrals of the three specimens, measured from the root on the under side, are respectively 7 in. and 5¼ in., 7¼ in. and 5⅜ in., and 7½ in. and 5¼ in. (Couch gives 8 in. and 5½ in. for a fish two feet in length). One I had boiled; it was white and flaky, and tasted something like cod, but not so good. It was better cold and soused in vinegar. The fishermen like it split and dried. I could not find anything to show what they had been feeding on; the stomachs were all empty and turned inside out. After reading Couch's description I thought the circumstances of its capture at this season and in these waters worthy of record. To-day I hear that it is still being caught, and seems plentiful.—P. M. C. Kermode (Ramsey, Isle of Man).

Unusual abundance of Dog-fish on the Coasts of Scotland.—With reference to Mr. Warren's notes on the unusual numbers of Dog-fish on the coasts of Sligo and Mayo (p. 269), it may interest him and others to learn that the same abundance all along the west coasts of Scotland, and especially in the N.W., has been observed. Can nothing be done to destroy these useless (?) voracious fish. Query: are they really useless, or cannot the carcasses be used as manure, or sold by the cartloadf or some other purpose? On the N.W. coast of Scotland and elsewhere they are knocked on the head and thrown back into the sea. In Lewis, I believe, they are used as manure. The utilisation of our sea produce and improvement in our fisheries is one of the subjects of the prize essays of the coming International Fisheries Exhibition in London. Can no one treat of the utilisation of Dog-fish; development of the Conger Eel fishery; or utilisation of waste fish. At Strome Ferry many Congers are caught and sent up to London market. Congers swarm in every sea-loch in the west of Scotland, and Lobsters can be bought for 6*d*. each, or less, at lots of unfished places, where the supply is greater than the demand. There are miles and miles of coast unfished for want of steam communication with the markets. I may instance forty miles of the N.W. coast of Sutherlandshire, including Cape Wrath. Surely it is the duty of a paternal Government to develop such industries and cheaper food.—J. A. Harvie Brown (Dunipace House, Larbert).

THE LATE PROFESSOR BALFOUR.—The very sad fate of the late Francis Maitland Balfour, M.A., F.R.S., who lost his life by a fatal slip on the glacier of Fresney, above Courmayeur, in July last, is now widely known; and but for the fact that the intelligence only reached us when too late to be noticed in our last number, we should ere this have joined in paying that tribute of respect to his memory which has been so universally and so deservedly accorded. The services which have been rendered to zoological science by Mr. Balfour during his brief but brilliant career are too important to be passed over in silence in the pages of a journal which is especially devoted to that branch of the science which is advanced by outdoor work—the observation in the field of the habits of animals. We owe it, therefore, to our readers to place before them some record, however brief and imperfect, of his life and labours. Born in Haddingtonshire in 1852, Mr. Balfour, at the time of his death, had but just attained the age of thirty, and was thus cut off in the very prime of life, in the height of a brilliant career, and while honours were being showered fast upon him. Educated at Harrow, and at Trinity College, Cambridge, where he entered in October, 1870, he early displayed that aptitude for original research, which, happily directed by his friend and professor Dr. Michael Foster, led him through a course of study resulting eventually in the publication of several important memoirs. So early as 1873, in which year he obtained his B.A. degree, we find him contributing valuable papers on morphology to the 'Quarterly Journal of Microscopical Science,' and in that same year, as one of the two representatives of the University of Cambridge, he proceeded with Mr. Dew-Smith to the zoological station at Naples, then recently established. Here he worked assiduously in investigating the development of the Elasmobranch Fishes, the results of which study were eventually maturely considered and succinctly stated in his 'Monograph' on that subject, published in 1878, after being first foreshadowed in separate papers in the 'Philosophical Transactions' for 1876, and in the 'Journal of Anatomy and Physiology' from 1876 to 1878. Of the value and importance of this work, Dr. Michael Forster has observed, in the pages of our contemporary 'Nature,' that "from the very beginning to the very end of the investigation, almost every step serves to throw light on important biological problems. Every chapter from the first, which deals with the ovarian ovum, to the last, which treats of the urogenital organs, contains a record of inquiries which have left their stamp on morphological doctrines." His elevation to a Natural Science Fellowship at Trinity College stimulated him to further efforts, and he commenced to give lectures upon Animal-Morphology, which were largely attended. Carrying on at the same time investigations into various problems of morphology and embryology, he accumulated material for his great work on 'Comparative Embryology,' which has since been published, and translated into other languages, and has come to

be regarded as the text-book *par excellence* on the subject of which it treats. By the publication of these two important works Mr. Balfour's fame was established, and honours on all sides were bestowed upon him. In 1878 he was elected a Fellow of the Royal Society, and in 1881 was not only placed on the Council, but received the high distinction of a Royal Medal. In the same year the University of Glasgow conferred on him the degree of LL.D., and in December last he was elected President of the Cambridge Philosophical Society. He was invited to succeed the late Professor Rolleston in the Linacre Professorship at Oxford, and was also pressed to take the chair of Natural History at Edinburgh, but declined both these honours, preferring to wait until some occasion might arise which would enable him to accept office in his own University. Fortunately he had not long to wait; for his merits were so fully and generally recognised that in the spring of the present year a chair of Animal Morphology was specially created for him, and he was unanimously elected to occupy it. It was during a temporary absence from Cambridge, for the enjoyment of that change of air and scene, which is periodically so essential to all brain-workers, that Mr. Balfour lost his life. By some untoward accident, the details of which can never be known (since his guide and only companion perished with him), the work of Science was suddenly and painfully deprived of one of its brightest ornaments. It has fallen to the lot of but few to attain, at such an early period of life, so eminent a position in the world of Science, and although fellow-workers in the same field will be for ever grateful for the valuable works which he fortunately lived to publish, they will for ever regret that he was not spared to accomplish more, and to give to the world still further proofs of that extraordinary ability which he possessed as an original investigator in one of the most important branches of biological science.

The late Professor Leith Adams. — We regret to have to add another name to the death-roll of working zoologists—that of Andrew Leith Adams, M.D., F.R.S, late Professor of Natural History at Queen's College, Cork. His name will be familiar to most of our readers as author of many pleasantly written works of travel, in which records of sport and natural history are agreeably combined. We have before us his 'Wanderings of a Naturalist in India,' 'Field and Forest Rambles in Canada,' and 'Notes of a Naturalist in the Nile Valley and Malta,' the last named perhaps being the most noteworthy from the zoologist's point of view. All these books were written by Dr. Adams in the hours of leisure from duty as Army Surgeon, in which capacity he was attached first to the 94th Regiment, which he joined in 1848, and subsequently to the 22nd Regiment. It was with the latter regiment that he served in the war of the North-west Frontier in 1854-55, and earned the medal given for that service. His travels in various parts of the world enabled him to cultivate a taste for outdoor

observation of animals and plants, and to lay up a store of facts which his professional knowledge of anatomy and physiology enabled him subsequently to turn to good account. He retired from the Army in 1873 with the rank of Deputy Surgeon-General, and in the following year became a successful candidate for the Professorship of Zoology in the Royal College of Science at Dublin; whence in 1878 he was elected to fill the chair of Zoology and Anatomy at Queen's College, Cork. His residence in Ireland caused him to pay somewhat particular attention to Irish Mammals, more especially the fossil and extinct species. The results of his investigations on this subject will be found embodied in his "Report on the History of Irish Fossil Mammals," read before the Royal Irish Academy, 10th June, 1877, and published in the 'Proceedings' of the Academy, 2nd series, vol. iii., and a further paper "On recent and Extinct Irish Mammals," published in the 'Scientific Proceedings of the Royal Dublin Society' for 1878. His remarks on the Ursine remains, which he examined from all parts of Ireland, wherever they were procurable, are valuable as having been based on the examination and comparison of an extensive series, and his observations on other species now extinct in Ireland are, many of them, of much interest to zoologists. His most important scientific work perhaps is a "Monograph of the Fossil Elephants of the Maltese Islands," the materials for which were collected chiefly while he was quartered at Malta, and which was published in the 'Transactions of the Zoological Society' for 1875. In a previously published Report on this subject (Rep. Brit. Assoc, 1873, pp. 185—187), Dr. Adams had recognised as distinct species *Elephas melitensis*, Falconer, *E. mnaidriensis*, Adams, and (more doubtfully) *E. falconeri*, Busk. The remains of all three species are figured in his monograph, with a map showing the localities in which they were found. He was elected a Fellow of the Royal Society in 1872, and LL.D. of Aberdeen in 1881.

NOTICES OF NEW BOOKS.

The Compleat Angler, or the Contemplative Man's Recreation. Being a Discourse of Fish and Fishing, not unworthy the perusal of most Anglers. London: printed by T. Maxey for Rich. Marriot in S. Dunstan's Churchyard, Fleet Street, 1653. [Facsimile. London, 1882. Quaritch.]

The popularity of Izaak Walton's 'Compleat Angler' may be estimated from the fact that according to the most recent authority (Mr. Thomas Satchell, who has been long engaged in preparing for the press a new edition of Westwood's 'Bibliotheca

Piscatoria') there have been published no less than eighty-seven editions of this book! Here is his list of them, the result of much labour and research:—

Date.	Place.	Publishers.	Editors.
1653	London	Marriot	Author (?)
1655	,,	,,	Author.
1661	,,	,,	,,
1664	,,	Marriot; Gape	,,
1668	,,	Marriot; Harper	,,
1676	,,	Marriot	,,
1750	,,	H. Kent	Moses Browne.
1759	,,	,,	,,
1760	,,	T. Hope, &c.	Hawkins.
1766	,,	J. Rivington, &c.	,,
1772	,,	R. & H. Causton	Moses Browne.
1775	,,	J. & F. Rivington	Hawkins.
1784	,,	J. F. & C. Rivington	,,
*1791	,,	,,	,,
1792	,,	Rivington and others	,,
1797	,,	,,	,,
1808	,,	S. Bagster.	,,
1810	,,	,,	——
1815	,,	,,	Hawkins & Ellis.
1822	,,	J. Smith	Hawkins.
1823	,,	John Major	R. Thompson.
*1824 (?)	London (?)	Maunder (?)	——
1824	,,	John Major	Thomson & Major.
1824	,,	Tegg	Hawkins.
1825	,,	Printed by Dove	,,
1825	,,	Pickering	——
1826	,,	,,	——
1826	,,	Tegg	Hawkins.
1828 (?)	,,	W. Cole	——
1833	Edinburgh, &c.	Chambers and others	Hawkins & Rennie.
1834	London, &c.	A. Bell and others	,,
*1834	London	A. Bell & Simpson & Co.	,,
*1834	Edinburgh, &c.	Fraser and others	,,
1835	London	John Major	Thomson & Major.
1835	London, &c.	Tegg and others	Hawkins & Rennie.
1836	London	Pickering	Nicholas.
1836	,,	A. Bell	Hawkins & Rennie.
*1836	Edinburgh, &c.	Fraser and another	,,
1837	London, &c.	C. Tilt and others	——
1839	London	Lewis	Major.
*1841	,,	Chidley	——
1842	,,	Washbourne	Major.
*1844	,,	Sherwood & Bowyer	——
1844	,,	Bogue; Wix	Major.
*1844	Manchester	S. Johnson	Hawkins & Rennie.
*1846	,,	,,	,,
*1847	Dublin	W. Curry	,,
*1847	Manchester	T. Johnson	,,
1847	New York	Wiley & Putnam	Bethune.
1848	,,	,,	,,
*1848	Liverpool	T. Johnson	Hawkins & Rennie.

Date.	Place.	Publishers.	Editors.
*1849	London, &c.	T. Johnson and another	Hawkins & Rennie.
1849 (?)	Manchester	T. Johnson	,,
1851	London	H. Kent Causton	Moses Browne.
*1851	Manchester	T. Johnson	Hawkins & Rennie.
1852	New York	Wiley & Putnam	Bethune.
1853	London	Ingram, Cooke & Co.	"Ephemera."
1854	,,	N. Cooke	,,
1856	,,	Bohn	Jesse
*1857	Manchester	Johnson	Hawkins & Rennie.
1857	Halifax	Milner & Sowerby	,,
1858	London	Groombridge	——
1859	,,	Routledge	"Ephemera."
*1859	New York	Wiley & Putnam	Bethune.
1859	Hamburg	Solomon	"Ephemera."
1860	London	Nattalie & Bond	Nicholas.
1861	,,	Bohn	Jesse.
1863	,,	Bell & Daldy & S. Low	——
1864	,,	Bell & Daldy	——
1866	Boston	Tieknor & Field	——
1866	,,	Little, Brown & Co,	Major.
1866	New York	Wiley & Sons	Bethune.
1867	Boston	Little, Brown & Co.	Major.
1869	London	A. Murray	——
1872	,,	,,	——
1875	,,	Chatto & Windus	Nicholas.
1876	,,	G. Bell & Sons	Jesse.
1876	,,	E. Stock	——
[1878]	,,	Routledge	"Ephemera."
[1878]	,,	F. Warne	G. C. Davies.
1878	,,	Ward, Lock & Co.	——
1878	,,	G. Bell & Sons	——
1879	,,	Fishing Gazette	——
1880	New York	Wiley & Sons	Bethune.
1881	London, &c.	Routledge	"Ephemera."
[1881]	Philadelphia	Lippincott	Major.
[1881]	London	Strahan & Co.	,,

Mr. Satchell, in a note on the subject to a contemporary, says:—"I have satisfied myself of the existence of these eighty-seven reprints, with one exception, by personal examination. There are others, but my attempts to obtain copies of them have failed. Many differ only in the name of the publishers or in the date. Those marked with a star have escaped the notice of Ellis, Pickering, Russell Smith, Bohn, and Westwood (1864), and are here recorded for the first time. The most important of them is the Hawkins of 1791; the others are chiefly issues of the Hawkins-Rennie series."

To this long list another edition has just been added in the shape of a facsimile of the first edition of 1653, issued by Mr. Quaritch.

The merit of this facsimile lies in the fact of its having been produced by Mr. W. Griggs, whose name is well known in connection with his labours as photo-lithographer to the India Office. The very careful way in which all his facsimiles have been prepared have met with the approbation of competent critics, and we may therefore assume, without actually making a comparison, that the little volume before us is really what it purports to be—a perfect copy of the original.

If we have one fault to find it is that the paper is too stout, causing the volume to be about twice as thick as the original. It may of course be urged that the original paper was poor stuff, as no doubt it was; nevertheless we cannot help thinking that something less substantial than that which has been selected in the present instance would have answered the purpose, and would, moreover, have enabled the printer to obtain brighter impressions of the cuts, which strike us as being a little faint.

Still, it must be borne in mind that copies of the first edition of 'Walton's Angler' do not turn up every day, and, when they do occur, realise high prices. We have just had the pleasure of looking over a very perfect copy of the first edition, priced £25; but for all practical purposes we feel quite happy in the possession of Mr. Griggs' facsimile, published at the very moderate cost of seven shillings and sixpence.

Unlike a great many previous editions, the present one is of the exact size of the original, the type measuring something less than five inches by two and a half. Hence it is a veritable pocket volume.

At this season of the year what can be pleasanter than with such a book in hand—

> "To lie amid some sylvan scene
> Where, the long drooping boughs between,
> Shadows dark and sunlight sheen
> Alternate come and go,"

conjuring up fancies of that quaint, genial, tender-hearted old fisherman and pleasant companion, the perusal of whose book causes one to exclaim, "How I should like to have known him, and to have gone a fishing with him!"

THE ZOOLOGIST.

THIRD SERIES.

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THE ZOOLOGY OF THE VOYAGE OF 'THE EIRA.'

ON the 14th June, 1881, Mr. Leigh Smith, emulating the exploits of previous arctic explorers, sailed from Peterhead in his steam yacht 'Eira,' a vessel of 260 tons, 125 feet long, with a beam of 25 feet, and driven by engines of 50 horse-power. Two months later, when made fast to a land-floe off Cape Flora, the ice pressed so heavily around as to cause a leakage. With such rapidity did the water find ingress that the pumps could not work fast enough. The owner and crew, twenty-three in number, were compelled to abandon the yacht and take to the boats, and shortly afterwards the vessel foundered.

That night they camped out upon the ice, rigging up a tent with oars and sails, and the next day reached the mainland. Here they were compelled to pass the winter, in a hut of stones and turf, which they roofed with sail-cloth. The weather they experienced is described as terrible. A succession of heavy gales compelled them to keep watch night after night, holding on to their house lest it should be blown away, while floods of freezing rain at times completely swamped them.

For nearly twelve months did they endure these hardships, buoyed up with the hope that the ice would break up, and enable them to undertake a boat voyage towards the south. Being unable to procure fuel, they were compelled to feed their fire with blubber and old rope, and had to choose between

suffocation for want of an outlet for smoke, or intense cold for want of a fire.

Fortunately there was no want of fresh meat—twenty-nine Walruses and thirty-six Bears were killed and eaten. A dog which they had with them proved most useful in giving notice by growls of the presence of a Bear or Walrus, and on one occasion saved the lives of the whole crew, who were starving, by leading them to where three Walruses were lying on the ice.

Thus the months passed wearily until, in the month of June last, a gale cleared away the ice, and enabled four boats to start from Cape Flora, provisioned for sixty days. Pushing southward they occasionally met with water, but sometimes had to rest for days upon a floe, until after six weeks' hardship they reached open water, and were then enabled to shape their course for Nova Zembla, where, on August 2nd, in Matotchkin Straits, they met the relief expedition which had gone in search of them.

Thus, after being ice-bound for twelve months, they arrived safely in port, without the loss of a single life, and with no worse a result of the undertaking than the loss of the yacht, and the serious anxieties and fears experienced for a whole year by relatives and friends at home.

Owing to the wreck of the vessel, the owner states that the scientific results of the voyage are almost *nil*. The following extract, however, from the journal written at Cape Flora will be read with interest, as containing an account of the principal mammals and birds observed during the period of imprisonment on that ice-bound Cape :—

"On July 25th, 1881, we reached Gray Bay, at Cape Grant and Cape Crowther. There are large loomeries a short distance up the bay on the water side. Many Rotches (Little Auks) had their young among the basaltic columns of the lofty cliffs. Other birds were also seen, including the Snow-bird (Ivory Gull), the Molly, the Boatswain (Common Skua), the Arctic Tern, Dovekies (Black Guillemots), the Eider Ducks, the Burgomaster (Glaucous Gull), and the Kittiwake. At the east side, near the head of Gray Bay, there were a good number of Snow-birds and Dovekies building, but too high up for one to obtain the eggs. At Cape Stephen there was a large loomery, and at Cape Forbes a few Looms (Guillemots), a number of Rotches and Dove-

kies, and some Snow-birds. At Bell Island the same species of birds were seen, and on the south side there was a large loomery, and nests of Kittiwakes, Dovekies, Rotches, Snow-birds, and Burgomasters. Rain Geese (Red-throated Divers?) and Brent Geese were seen and shot on the cliffs 700 feet high, but no nests were seen. At Cape Flora there was a very large loomery, and also many Rotches, Dovekies, Kittiwakes, and Snow-birds. On the lowlands several Snow Buntings and Sanderlings were seen, but no nests were found. The Looms lay their eggs on the bare rock, and the Dovekies and Rotches lay them in the crevices of the rocks. The Kittiwake makes a nest of mud and moss. The Snow-bird makes a rudimentary nest of moss and feathers, but of no definite shape. Each species seems to occupy a separate part of the cliff.

"The Rotches and Dovekies left about the first week in September. Looms were very scarce after September 10th. On September 22nd a few Burgomasters, Snow-birds, Mollies, Kittiwakes, Eider Ducks, and Brent Geese were seen, but were getting very scarce. One or two Snow Buntings still remained on the land on October 13th. Three or four Snow-birds, and occasionally a Burgomaster or Molly, were seen hovering around outside the hut which had been erected, and on October 28th, whilst we were killing some Walruses, two Snow-birds and two or three Mollies and Burgomasters were seen, and remained for two or three days eating the refuse of the carcases.

"On February 8th a Snowy Owl was seen: this was the first bird to arrive. On February 18th two or three flocks of Dovekies were noticed following to the north-west, and on the 20th there were a great number seen in the water. On March 2nd a lane of water was made close to the land-floe, and it was filled with Rotches and Dovekies. On March 9th the first Loom was seen, but it was not until the end of March that they began to settle on the rocks, and then they would only stop on the cliffs for a few hours, and go away for four or five days. We were not able to get up the hill to shoot any until April 16th. On the 20th the first Snow-bird was seen. A Falcon appeared on April 22nd, on which day two Burgomasters were also seen. On April 24th the Molly was seen, and on May 6th the Kittiwakes came. It was not until about June 10th that the Looms remained on the rocks for more than two or three days at a time, but after that date the

females began to take their places ready for laying their eggs, and on June 20th three eggs were obtained.

"Foxes were constantly troubling us during the winter, coming right up to the door after blubber, and would only run a few yards when anybody went out to drive them off; we were obliged to shoot some at last, as they became almost tame. Bears were more numerous whilst we had the water close outside the land-ice; they would come walking along the edge of the land-ice, and when they got scent of the house would walk right up to it. During the dark we killed four or five every month, except November; but we saw on an average two a week. One moonlight night, in November, there were five or six Bears within four hundred yards of the house, but we could not get a shot at any of them, unless we kept very still until the Bear came up to the house. We never shot a female Bear from October to March 13th. This is an important fact. They were always very large males. Several times, on examining the contents of the stomachs, we found them full of nothing but grass, but in spring they generally had been feeding on Seals, and more than once we obtained a good bucketful of oil for cooking purposes out of a Bear's stomach. Once a Bear had eaten a large piece of greasy canvas which had been thrown away, and had been blown some two or three hundred yards from the house; he then came up to the house and commenced to eat our blubber, but was immediately shot. On February 20th a Bear was seen about 350 feet above the hill at the back of the house. Some hands went up with a rifle, and found that it had a hole there, out of which they could not get it, fortunately for them, as they had only one rifle with them, and that would not go off, the lock having been frozen: we saw no young one with it. The last time this Bear was seen at its hole was on March 1st. No track could be traced up the hill, but the footmarks of an old Bear and a cub were seen on the low land, about 300 yards to the eastward of the house. No old she Bears with young cubs were seen before we left the land in June.

"In July, 1881, on nearing Cape Crowther, Walruses were seen lying on loose pieces of ice in great numbers. Sometimes twenty or more were counted, huddled up in a heap on a small piece of ice. By going quietly in a boat you could get within twenty or thirty yards of them before they took much notice of

you; but after the first shot was fired they tumbled into the water, and would go swimming about and barking round the boat, but never attacked us. In September they were very numerous on the loose ice round Bell Island, and also in the water round Cape Flora. On October 28th five were shot lying on the edge of the ground-ice close to the house, and there were great numbers in the water at that time of the year. On January 24th, 1882, three were shot lying on the ice-edge. When the daylight returned in February Walruses were constantly seen swimming about in the water. A land-floe began to form in March, and no water remained within seven or eight miles of the land, but frequently on looking with the glass from the hill Walruses could be seen in the water. On June 13th the land-ice broke away, and on the 15th five Walruses were shot. A boat that went over to Bell Island reported Walruses lying in scores on the loose ice round about. It is probable that they leave the country during the winter, but seem to remain in the water, especially if it is shallow. We never saw any signs of their taking the land and lying up for the winter.

"White Whales and Narwhals were seen in great numbers in September and October travelling to the south-east, and in June one or two large shoals were seen travelling west and west-north-west."

"The object of Mr. Leigh Smith's expedition," to quote the words of Mr. Clements Markham ('Nature,' Aug. 31st), "was a reconnaisance to accumulate evidence respecting the advantages offered by Franz Josef Land as a base of operations for future exploration. He did not intend to winter; but the accident which forced him to do so had the useful result of enabling him to extend his observations over two seasons. The knowledge he thus acquired of the movements of ice, of its character along the shores and in the fiords for sledging purposes, of the prevailing winds and currents, of the amount of animal life to be obtained in the different months, will be very useful. This knowledge will be welcomed by the geographical student, and will also be of value to future explorers. The loss of the natural history collections is to be regretted, but the main object of Arctic exploration is geographical, and that object has been fully secured."

ORNITHOLOGICAL NOTES FROM NORFOLK FOR 1880.

By Henry Stevenson, F.L.S.

I much regret that, through ill health and other causes, my Ornithological Notes for 1880 have been so long delayed; but I send them, even thus late, for publication, rather than break the series which for so many years has found a place in the annual volumes of 'The Zoologist.' I hope shortly to complete those for 1881.

January.

Bernicle Goose.—On the 6th five out of a flock of seven of this by no means common species were shot at Horsey. The weather was exceptionally mild at the time, but they had, no doubt, like those recorded in February, 1879, been driven to our coast during the severe frost earlier in the season.

Little Grebe.—During the frost a Little Grebe was taken alive on the shore at Blakeney, and another at Mr. Buxton's residence at Fritton was found consorting with the domestic fowls, evidently "hard up" and frozen out from the Broad. One Norwich birdstuffer had five.

Great Spotted Woodpecker.—An adult male was killed at Holkham about the 30th, and during the month Mr. F. E. Bird shot a female at Winterton decoy.

White-fronted Goose.—A female bird of this species, somewhat small in size but well barred on the under parts, was shot on Breydon on the 5th.

Brent Goose.—Mr. F. Norgate thus describes a singular variety of the Brent Goose (a male bird, killed by Mr. Gapps, at Blakeney, about the end of January), which he first saw on April 27th, in the hands of Mr. Dack, a birdstuffer, at Holt:—"The plumage of the upper and under tail-coverts, vent, and cervical ring are white; the breast, head and quills are greyish brown; the rest of the plumage is very pale brownish grey, almost the colour of *Columba risoria;* the irides (glass) are blackish brown; legs, toes, claws, webs, beak and nail are just painted pinkish red." Dack assured him he had taken pains to colour these parts exactly as they were naturally, and believed he had succeeded as near as he possibly could with paint.

February.

Glaucous Gull.—An immature female of this species was killed at Yarmouth, on the 8th.

Grey Crows.—These pests to the game preservers, both here and in Scotland, are, according to Mr. J. H. Gurney, jun., rendering themselves additionally objectionable by devouring the barley thrown down for Pheasants. He has himself driven them off the grain at one or two feeding spots at Northrepps, and the keeper at Hempstead killed six, at one shot, that he had watched this month committing similar depredations.

White-fronted Goose.—About the middle of the month another bird of this species was sent up to Norwich, killed on Breydon.

Bewick's Swan.—Mr. J. H. Gurney, jun., recorded in 'The Zoologist' for 1880 (p. 139) the capture of two specimens at Hempstead on the 18th. These birds had frequented one of the ponds for some days, and were supposed by the keeper to be tame Swans escaped from other preserved waters. On this occasion, however, their musical notes attracted Mr. Gurney's attention, and on approaching them, they rose slowly on the wing from the shallow water where they had been standing. Owing to the closely surrounding timber one in its flight struck its head against a tree and fell, and on being run down and secured, was found to have destroyed one eye; the other bird was lost sight of for a time, but later on was found and shot on an adjoining pond. They proved to be male and female, and weighed exactly the same, only $9\frac{3}{4}$ lbs., though fully adult in plumage. The disposition of colour, on the bill, also marked maturity, and a sexual distinction was remarked in that feature. "In the female the yellow did not extend over the ridge of the upper mandible, which ridge was black, slightly mottled with yellow; the same part in the cock bird being entirely yellow." In the gizzard of the latter, besides small stones, "silt," and pond-grass, were found legs of water insects and the *tail of a small fish*. They measured 5 ft. 10 in. from tip to tip of wing. Of four Bewick's Swans that appeared on Breydon about the 14th of February, three, as I was informed, were shot, and Mr. Gurney heard of one killed about the same time near Saxmundham, in Suffolk. On the 28th I also purchased, in the flesh, an adult male, one of four that made their appearance on Rockland Broad a few

days before. In this bird there was a slight trace of black on the ridge of the base of the upper mandible, but in Mr. Gurney's male, as before stated, the yellow colour extended to the extreme base of the bill.

March.

Yellowhammer.—A curious variety, just netted, was shown me on the 1st, the prevailing tints of the plumage being very light and, in parts, white, with scarcely a trace of yellow.

Kittiwake.—A straggler from the coast, in full adult plumage, was picked up dead (but in a perfectly fresh state), in a marsh at Surlingham, on the 6th.

Sparrowhawk.—A beautiful adult red male of this species was brought to me by a birdcatcher on the 27th, who had secured it in his nets after it had struck at, and killed, two of his "call" birds. Mrs. Helmer, of Wacton, near Long Stratton, also sent me, on the 20th, a young male which had killed itself by contact with a plate-glass window, but not, I believe, attracted by any cage-bird in the room.

Lesser Spotted Woodpecker.—An adult male was killed near Letton, about the 20th of this month.

April and May.

Siskin.—In 'Land and Water' for April 3rd, 1880, Mr. Gunn records the recent capture, by a birdcatcher at Eaton, near Norwich, of a cock Siskin with a white instead of black cap to its head.

Hoopoe.—One of these rarities, now-a-days, was, I learn from Mr. Gurney, shot at Martham on April 26th.

Ring Ouzel.—An adult male, with a conspicuous white crescent on the breast, was seen on the 11th of May, by Mr. B. C. Silcock, in the parish of Brumstead.

Avocet.—On April 12th a specimen was shot at Yarmouth, and in the second week of May I was informed that a second narrowly escaped the Yarmouth gunners, having to thank its own wary instincts, and not the "New Act," for its safety.

Whooper.—About the 10th of May a single Swan of this species, having put in a late appearance, was killed at Yarmouth.

Woodcock's Nest.—Mr. F. Norgate informs me that on the 3rd of May a Woodcock flew from her nest of dried leaves, which

was placed in a bed of *Mercurialis perennis*, in a plantation at Weston. The four eggs were just chipped when he saw them.

Hybrid Dove.—On the 14th of May, 1865, a hybrid Dove—a cross between *Columba turtur* and *C. risoria*—was caught in my garden in the Newmarket Road, and as no owner could be found for it at the time, was kept in my house as a cage-pet till its death, on the 14th of May, 1880, just fifteen years to a day from the date of its capture. How old this bird was when I first had it, I have no means of judging, as it was then in fully adult plumage, and continued in perfect health till within a week of its death, which was caused by a severe cold affecting the lungs, but without showing the slightest indication of failing powers from advanced age. This bird exhibited many characteristics of both parents in its plumage, but inclining more particularly to *C. turtur* in the usual patch of black and white feathers on either side of the neck. Its note was peculiar, having a loud and resonant "coo," differing from that of either the domestic or migratory Dove; it was said by some people to resemble the note of the Cuckoo.

Tufted Duck and Pochard.—Mr. W. E. Clarke communicated to me the fact that both these species, with Shovellers, were found nesting on the various meres of the Wretham estate, between the 16th and 19th of May. Two pairs of Tufted Ducks were seen, and, on the 17th, a nest of six eggs was found, the old bird rising close by. The nest itself was composed of grass, but without down, and was placed in a tuft of herbage within six yards of the water's edge. Of Pochards, fifteen cock birds were counted on two of the meres, and two nests of six and seven eggs, respectively, were found on a small island on one of them on the 19th. Shovellers were numerous, and a nest of six eggs was discovered on the same island, and another on the heath, half a mile from the water, which contained eight eggs.

Great Crested Grebe.—Many pairs of these birds were met with on the different pieces of water, especially on the Decoy mere, affording sheltering reeds, but only one nest was found, with three eggs partly incubated.

Common Sandpiper.—The same informant states that he saw a pair of these birds on the 17th, and another pair on the 19th, on the margins of two of the meres on the open heath, which, from so late an appearance, seemed to suggest their remaining to breed. This species, however, has never been known to nest in Norfolk.

Heron nesting at Hempstead.—Mr. J. H. Gurney, jun., records in 'The Zoologist' for this year (p. 366) the fact of a single pair of Herons having nested for the first time at Hempstead, near Holt. The nest was discovered in a medium-sized Scotch fir, in the heart of a considerable plantation of similar trees. Attention was drawn to the nest from one of the old birds being, unfortunately, found dead at the foot of the tree, with broken egg-shells. The young were not seen.

Norfolk Plover.—I was glad to hear that this species was in some numbers about Thetford this summer (1880), and that several nests were found on the 16th of May, both on the heath and the cultivated lands adjoining.

Bee-eater.—The Rev. Kirby Trimmer, of Norwich, was informed by his brother, who resides at Billingford, near North Elmham, that, on the morning of the 19th of May, he saw an undoubted specimen of *Merops apiaster* alight, apparently in an exhausted state, on some iron railings in his garden. After resting for some little time, it flew to a shrub that was in flower, passing from blossom to blossom, as if seeking for insects, and then took wing, flying off in an easterly direction, and was not seen again. I know of no occurrence of this species in Norfolk since June, 1854; but it is worth notice, in connection with the above occurrence, that in 'The Field' of July 3rd, 1880, a male Bee-eater is said to have been taken at Beverley, East Yorkshire, on the 5th of June, and that, on the 16th of August, another was shot at Tetney Lock, near Grimsby, Lincolnshire, as recorded in the same journal for September 11th, 1880.

Cormorant.—From Mr. J. H. Gurney, jun., I learn that no less than three of these former residents in Norfolk appeared on the Broads, in the neighbourhood of Yarmouth, about the middle of this month.

Snow Bunting.—In 'The Zoologist' for 1880 (p. 301) is a notice of a single bird of this species having been seen on Cromer beach as late as the 10th of May, flying about, at the time, in company with a common Sparrow.

June and July.

Spoonbill.—Three of these conspicuous, and of course persecuted, birds were seen on Breydon about the 12th of last month, and one appeared as late as the first week in July. All these,

apparently, escaped the gunners, and some six or eight, altogether, are said to have visited that neighbourhood at different times in the spring and summer.

Jack Snipe in June.—Mr. C. H. Bird, of Somerton, near Yarmouth, informed me that Mr. G. Boult, jun., saw a Jack Snipe this year (1880) at Winterton, on the 26th of June; and that he and Mr. Boult together saw three Jack Snipes, and shot one, in the Potter Heigham marshes on the 16th of July, 1879. I know of more than one instance of single birds having been met with in Norfolk in June.

Starling and Sky Lark.—On the 7th of July, Mr. J. H. Gurney, jun., saw a cream-coloured Starling at Hethersett, near Norwich, with a flock of some five or six others in the usual plumage; and on the previous day, at Northrepps, an exceedingly light-coloured Sky Lark, almost isabelline in tint.

Pochard.—Mr. A. Patterson, of Yarmouth, states, in the 'Eastern Daily Express' of July 16th, that he had seen, that day, in a poulterer's shop, a Pochard in quite an immature state of plumage which had been killed at Martham.

Short-eared Owl.—As an evidence of this species still nesting in Norfolk, I can record that an immature bird, with young feathers on the head, was shot at Dilham about the 16th of July. Mr. M. C. H. Bird, of Somerton, also informs me that a pair bred at Winterton in 1879, and another pair, at Somerton, in the summer of 1880.

Hawfinch.—A young bird in its nestling plumage was killed at Forncett on the 9th, and an old one was shot from a cherry-tree, at Fundenhall, on the 14th.

Roseate Tern.—An adult male of this rare Tern, now in Lord Lilford's collection, was shot by Mr. G. Hunt, near Hunstanton, on the 12th of July. Colonel Irby, who identified the species, informs me that another was seen at the same time, and their peculiar note attracted attention. Hitherto this species has been included in the Norfolk list, on the authority, only, of the late Mr. Youell, of Yarmouth, as cited by the Messrs. Paget, but no specimen is forthcoming to verify that statement.

Night Heron.—An immature specimen in the possession of Mr. Gurney Buxton was shot by Major Upcher at Ranworth, and was taken to Mr. Cole to be stuffed, on the 22nd of July, but, being then in a "forward" condition, had been killed, no doubt, some days before.

Hooded Crow in Summer.—Mr. G. Cresswell, jun., informed Mr. Southwell that a pair of these birds were constantly seen, this summer, in the neighbourhood of Wolferton Wood, on the Prince of Wales' estate. A gamekeeper tried to shoot one at the time the young Pheasants were leaving the coops.

Sheldrake.—Mr. Cremer informs me that two good broods were reared at Blakeney this year, but fears that all were killed off, and the old duck, of the largest brood, shot in July.

August.

Arctic Tern.—On the 11th Mr. T. W. Cremer shot two Terns of this species at Blakeney, and as the colony of Terns had much increased there this summer, and had not been molested, it was supposed that both Arctic and Common Terns had remained to breed.

Spoonbill.—A male Spoonbill was shot on the 22nd of August, by Mr. G. Cresswell, in Terrington Marsh, one of two that had been seen in that neighbourhood for some time previously.

September.

Sandwich Tern.—A female, one of a pair seen on Breydon, was shot on the 8th.

Spoonbill.—A single bird was seen for several days about Breydon, during the first week in this month.

Cormorant.—An immature bird was killed about the second week in this month, near Yarmouth.

Hoopoe.—A male was shot out of a turnip field, near Holt, on the 22nd. I also heard of one killed about the same time in the neighbourhood of Maldon, Essex.

White Swallow.—Mr. Dack, of Holt, received a white Swallow on the 18th, killed near that town. A very pretty variety of this species was also seen at Beeston, near Cromer, in August, by Mr. T. W. Cremer. This bird was white, with the exception of the brown gorget on the throat, and the back, which seemed to be of a light buffy tint.

Gannet.—Early in this month an adult Gannet was caught, at sea, off Blakeney, apparently asleep at the time, and being in poor condition was probably ill.

Manx Shearwater.—Two or three were seen on different occasions this month, by Mr. Power, from half a mile to two miles off the coast at Cley.

Solitary Snipe.—Between the 3rd and 20th of September a rather unusual number of Snipes of this species appeared in the neighbourhood of Yarmouth and Lowestoft, of which I heard of some seven or eight examples. One was also killed at Beeston, near Cromer, on the 18th, and another at Cley, about the same time. Mr. A. Patterson, of Yarmouth, found two of these to weigh 7 ozs. and 7¼ ozs. respectively, and a third reached 7½ ozs.; but one recorded in 'The Field' of September 25th, as shot at Carlton Colville on the 17th, was said to have weighed 11 ozs., which being one ounce more than the heaviest bird that ever came under Mr. Lubbock's notice, I should consider extremely doubtful.

Grey Phalarope.—A solitary specimen was shot at Cley on the 20th.

Pomatorhine Skua.—Not more than two or three of these birds, and in more or less immature plumage, were, I understand, brought into Yarmouth by smacks this autumn. Mr. J. H. Gurney, jun., shot one near Cromer on September 16th.

October.

Great Grey Shrike.—This irregular migrant has occurred in unusual numbers this autumn. I have notes of five or six, shot or seen between the 8th and 27th of this month. Two at Yarmouth, one at Gorleston, one at Fundenhall, near Wymondham, and one seen at Trimingham on the 20th.

Shore Lark.—Between the 12th and 31st of this month I heard of about fifteen shot at and near Yarmouth. One man is said to have found a flock of six, on the sands, near the Rifle Butts, which he shot one after another, the survivors rising and alighting again at a short distance till the last was killed.

Little Gull.—An immature bird was shot on Breydon on the 2nd.

Great Crested and Sclavonian Grebes.—Five Great Crested and an immature Sclavonian Grebe were killed at Yarmouth about the second week in October.

Spoonbill.—Col. Coke informed me, on the 29th, that he had seen, that morning, a single bird of this species which had taken up its quarters on an island in the lake at Holkham. One had also been seen on Breydon, on the 27th.

Shag.—An immature specimen of this bird, scarce on the

Norfolk coast, was caught off Beeston, on the 7th of October, and is now in the collection of Mr. J. H. Gurney, jun.

November.

Storm Petrel.—Two of these wanderers from the sea coast were brought to Mr. Cole, birdstuffer, of Norwich, having been taken at Harford Bridges, near this city, on November 1st, after a smart gale from the N.W. on the previous night.

Great Grey Shrike.—Two more specimens, one from Rockland and one from Brancaster, were sent up to Norwich on the 12th, and, near Yarmouth, one was killed at Burgh on the 5th, and another at Ormesby on the 9th. I saw also two others, killed during this month near Norwich. Both of these had fed on mice. The bird from Brancaster, on the 12th, is probably the one recorded in 'The Field,' of November 20th, as having a dead sparrow in its mouth. The same correspondent (from Titchwell) also states, in 'The Field' of November 27th, that he had since seen two others perched on a high fence on the road between Docking and Brancaster, about half a mile from the spot where the first was shot. Mr. Dack, of Holt, had one picked up dead in a chalk-pit there, on the 4th. Mr. Fountaine, of Easton, near Norwich, had also one brought to him alive, near the end of the month.

Little Crake.—Mr. B. C. Silcock informs me that, in the second week of this month, he received a bird of this species which had been shot in the marshes adjoining Hickling Broad.

Common Snipe.—About the middle of this month a fine example of the so-called Russet Snipe, the *Scolopax russata* of Gould, was shot at East Ruston, and was sent to Mr. Roberts, of Norwich, for preservation. From the bright, ruddy tint of the plumage it was, I should say, a bird of the year, with the beak measuring $2\frac{7}{8}$ in., a marked feature in this large variety of the Common Snipe, for I cannot credit it with specific rank.

December.

Shore Lark.—On the 2nd Mr. G. Smith, of Yarmouth, sent me a pair of these birds alive which had been caught in a clap-net that morning at Yarmouth. They were fine, healthy birds, and, on being turned into my aviary, consorted at once with the Snow Buntings. Mr. Power shot two out of four seen on Salthouse

beach between the 7th and 9th, and on the 17th Capt. Feilden found a flock of seventeen, of which he shot two. An old gunner of that district, who accompanied him, assured him "he had known that kind of bird to appear there every year, as long as he could remember, and they always called them Buntings, same as the white-winged sort." This flock was very tame and allowed him to come close up to them as they ran about, searching for food, just inland of the Marram hills, on the east side of the mouth of the harbour. On the 21st two were shot at Holkham, and on the 19th and 20th four more on Yarmouth beach.

Hawfinch.—A pair were killed at Filby on the 3rd, and two males and a female somewhere near Yarmouth on the 27th of the previous month.

Pink-footed Goose.—About the 10th of this month two geese of this species were shot at Hickling and seven at Martham. There were said to have been ten in the former flock and thirteen in the latter.

Spoonbill.—A single bird, a female, was shot at Wells on the 13th.

Glaucous Gull.—A young bird was shot on Breydon on the 20th of December, and a fully adult specimen at Knapton late in October.

Great Grey Shrike.—The Rev. E. T. Frere informs me of, probably, the latest specimen obtained this year, which was shot at Diss on the 18th.

Ducks and Divers.—Amongst the few records of hard-weather fowl in my notes for 1880 may be mentioned—an immature Long-tailed Duck, January 12th, at Yarmouth. On the 31st of July, Mr. J. H. Gurney, jun., purchased in the Norwich fish-market a female Golden-eye, an unusually early date for this marine species. It had been brought in that morning by a countryman, but the fishmonger did not know where from; it was supposed, from certain portions of the plumage, to be a late bird of last year, and, possibly, a wounded bird unable to migrate. It was moulting, but in good condition. A good many Scaups and Wigeon were at Yarmouth about the middle of September, and I saw a young male Garganey on the 29th. In the second week of November a pair of Velvet Scoters were shot at Welney Wash, and an adult female Golden-eye, on Breydon, December 19th. Of Divers I saw but two or three specimens, this year, of the

Red- and Black-throated species, all immature; but I would draw special attention to the record of Mr. F. D. Power, in his notes from Cley (Trans. Norf. & Norw. Nat. Soc. 1881-82), of an extraordinary migration of Red-throated Divers, witnessed by himself and his brother, on the 1st of October; the only bird secured having a perfect red throat.

Raptorial Migrants.—An Eagle was seen at Billingford about the 26th of January, and on the 28th a young female Rough-legged Buzzard was shot at Stiffkey. A Peregrine was seen at Northrepps early in February, and, on the 14th, five large birds, supposed to be Buzzards, were observed at Thorpe, in the same neighbourhood. A Rough-legged Buzzard was also trapped at Bawburgh on the 12th. A Hobby was seen at Northrepps on the 17th of May, and an Osprey was shot at Yarmouth on the 29th, probably the same seen on several occasions at Burgh. Early in August several large Raptores, supposed to be Buzzards, were seen about Northrepps and Sherringham, and a young male Marsh Harrier was shot in that neighbourhood about the same time. On the 14th of September a Marsh Harrier was sent to Norwich from the neighbourhood of Cromer; a Merlin was seen at Blakeney on the 17th; and on the 21st Mr. F. D. Power shot a female Peregrine, on the beach, at Wells, and saw another on the 1st of October. On the 8th of October I purchased a finely marked, but immature, Rough-legged Buzzard, which had just been shot at Mousehold, near the city, and I heard of another killed in the same locality somewhat later. At the latter part of the month, also, this species appeared numerously on the coast about Northrepps, and up to the 30th Mr. J. H. Gurney, jun., had seen or heard of about sixteen in various parts of East Norfolk. Mr. A. Patterson, of Yarmouth, in the 'Eastern Daily Press' of October 19th, states that he had seen lately several Short-eared Owls obtained in that neighbourhood, and, on that morning, had watched "a Barn Owl come from seaward." A Tawny Owl was also shot at Stiffkey on the 1st. On the 25th a Peregrine was shot at Filby, near Yarmouth, and another was seen on the 30th between Eccles and Diss. November and December were also remarkable for the occurrence of Rough-legged Buzzards on the coast from Wells and Blakeney to Yarmouth and its neighbourhood. Some five or six were killed near Holt, where three and four were seen at a time; and Mr. G. Smith informed me that many large hawks

were observed about Yarmouth, and four shot, between the 3rd and 19th of November, were Rough-legged Buzzards. One also at Welney Wash, near Lynn, and three or four at Northrepps, were seen between the 1st and 22nd of the month. In December I have notes of two at Wells, two near Yarmouth, and one at Burnham Broom between the 3rd and 25th of that month. I am not aware that a single adult bird appeared amongst them, though varying much in plumage. On the 30th of November a Hen Harrier, much decomposed, was picked up at Northrepps; another was shot at Hickling on the 3rd; and a third at St. Olaves on the 8th—all I believe immature specimens. An Osprey also frequented the Hempstead ponds, near Holt, for nearly a fortnight in November.

Migratory Waders.—These migrants began to assemble on Breydon on the 12th of May, or "Godwit day," as it is called by the gunners, including Grey Plover, Turnstones, Oystercatchers, Knots, Godwits, and some Black Terns, remaining till about the 22nd. Three Whimbrel were also seen at Northrepps on the 3rd. A few Turnstones were killed at Yarmouth early in June, with Redshanks and Dunlins. By the 28th Pigmy Curlews, in red plumage were shot on Breydon, and a stray Whimbrel at Rockland, on the Yare. On the 19th of July, Mr. J. H. Gurney, jun., made a lengthened search, but in vain, for the nest of the Green Sandpiper, a pair having been seen repeatedly during the summer, on the margin of a pond at Cawston, near Aylsham (see 'Zoologist,' 1880, p. 404). A further search on the 4th of August was equally unsuccessful, and he is inclined to believe that the birds did not nest there after all. A bird of this species was brought to a Norwich birdstuffer about the first week in August, and several appeared at Yarmouth about the same time, with Turnstones and Little Stints (one obtained in full summer plumage), and Pigmy Curlews. Mr. G. Smith, of Yarmouth, states that, according to his observation, the last-named species retains its summer dress later than either the Knot or Godwits. On the 19th of August four small Sandpipers, supposed to be *Totanus hypoleucus*, were seen flying to and fro over the Antingham ponds, near Cromer. Early in September, Greenshanks, Bar-tailed Godwits, and Knots appeared on Breydon. About the middle of the month, also, a Ruff, two Oystercatchers, a Greenshank, Sanderlings and Knots (both reddish and grey), were obtained in the same locality. A Little

Stint, in full winter dress, was shot at Blakeney on the 17th. On the 27th of October a Green Sandpiper and some Sanderlings were seen at Cley, and about the second week in November two Purple Sandpipers were shot at the same place. Another example of this Sandpiper was killed on Yarmouth beach on the 3rd of December.

NOTES OF A NATURALIST ON THE WEST COAST OF SPITZBERGEN.

By Alfred Heneage Cocks, M.A., F.Z.S.

(Continued from p. 332.)

July 31st. The two "Fangst-baad,"* which had started soon after the 'Pallas' anchored yesterday afternoon with a shooting-party, returned early this morning, with three Ringed Seals, sixteen Brent Geese, some Eiders, &c. Chapman and I, with others (in all four Englishmen and four Norwegians), started at 5 a.m. in a ship's boat, and rowed north, intending to land on the north coast of Van Mijen's Bay (somewhere in the direction of Coal Mountain), for reindeer hunting, but found the north shore lined for a depth of perhaps five miles with compact ice, in front of which huge detached pieces were rushing out of the bay with a strong ebb tide, grinding and crushing against each other in a way that rendered it impossible for us to penetrate the struggling masses in a small boat. On the way we pushed through much loose ice, and on one piece we found a Ringed Seal sleeping, which allowed of our approach within one hundred yards without moving, when it was shot by one of the party clean through the head, so that it died instantaneously, without having

* A "Fangst-baad," literally hunting-boat, and usually translated Walrus-boat, or Sealing-boat, is a build of boat peculiar, I believe, to the Tromsö and Hammerfest walrus-hunters, and is a very different affair to an ordinary ship's boat, but is more like a whale-boat, and sharp at both ends. It is propelled by two or three pairs of sculls (not oars as used in most sea-boats), and steered by stroke, who sits facing forwards when accuracy of steering is desirable, but where pace rather than exact direction is required, turns himself round and sculls in the ordinary position, face to the stern. The harpooner, as in whaling, rows bow. The sculls are very short, and the whole boat is, for a sea-boat, very light. It carries a mast, with sprit-sail and foresail.

time to roll off the ice. We found birds of the usual species especially abundant off the south shore of the bay. We landed on Axel Island to reconnoitre, and from there obtained a splendid view of the seething masses of ice, as they ground their way out through the gut; it was a wonderfully beautiful and grand sight. We waited here for about two hours until the tide was slack, when the worst of the commotion in the ice was over and we were able to proceed. Over a great part of these islands the strata of the rocks crop out to the surface in a nearly vertical direction, and are full of fossils, and I filled my pockets with the best specimens that I could obtain without a hammer.* When we had rowed on for some time after leaving Axel Island, we found it impossible—at least during a day's expedition—to arrive at the north shore, in consequence of the compact barrier of ice; we therefore turned round, and again landed on the islands, on one of which we had a great, though unsuccessful, hunt after some Pink-footed Geese. The corner of the island on which we found the Geese was low-lying and almost entirely covered with moss, partially overgrown by which were numerous ribs and other bones of large Whales—probably the remains of *Balæna mysticetus*, killed during the old whaling days. On an island to the south of the principal island (and to the best of my recollection on its westerly or south-westerly shore, just where one would most naturally have expected it to be) I picked up a dead Whimbrel—the first and only specimen, I believe, recorded from Spitzbergen. It is little more than the mummy, or dried skin, of the bird, in the state one so often finds birds on the sea-coast,—all the flesh picked off the breast by Gulls or other birds,—and one is naturally inclined to explain its presence by inventing a theory of its having wandered northwards from Lapland or some part of the coast further to the east, or from Iceland further west and south,—perhaps blown off by a southerly gale, and dropping from exhaustion into the sea, a short distance from land, was washed up at the spot where I found it. It might also be suggested that it was killed at some point on the N.W. coast of Scandinavia, and falling at once into the sea was carried all the way to the Gulf-stream; but a strong objection to this is the question whether so small and delicate an object as a

* Such fossils as I brought home from Spitzbergen are now in the hands of my friend Mr. E. B. Poulton. F.G.S., who will, I hope, be able shortly to report upon them.

middling-sized bird could be carried so far by the sea,* and landed in so good condition. On this island we found many Eider Ducks nesting; we shot a few before we discovered they were so engaged, but the discovery did not deter the Norwegian sailors from bagging all they could for the salted-bird casks, the contents of which were to come in for their winter use at home, besides taking all the eggs and down they could find, and which amounted to a good lot. Intermixed with a sample of down I took hence there is a small amount of vegetable matter, chiefly lichen, and a few of the outside layer of barred feathers (as opposed to down). When not disturbed too suddenly the old ducks, before leaving their nests, cover up the eggs with down—I suppose not only to help to "keep the cold out," but more especially to hide them from the ever-watchful egg-stealing members of the bird community. I do not know whether all kinds of ducks do the same, but the common Wild Duck, *Anas boschas*, certainly does so. This habit of the Eider is mentioned by Nordenskiöld ('Voyage of the Vega,' vol. i., p. 124), but the other habit mentioned by him (*loc. cit.*) of their squirting over the eggs "a very stinking fluid, whose disgusting smell adheres to eggs and down," was not observed by us. It was a very pretty sight, on this island, to see a pair of Arctic Terns attacking, in the most plucky way, a Richardson's Skua, and driving him away from their nest. In this they succeeded so well that they brought him well up within range of me, and the next moment he was "grassed," with the tip (*i. e.* carpus) of one wing broken, but otherwise none the worse. Here was a good opportunity for bringing home a specimen for the Zoological Society, so I bound up with some string, not only his injured wing, but the other one as well, so as to preclude all bating, and then tethered him to a stone with another string fastened to his legs, until I was ready to take him to the boat. I may as well here finish this bird's history. I got him safely on board on our return to the 'Pallas,' and tethered him securely to a ring-bolt in the waist of the ship, in a nice retired spot between the foremast and a meat-safe, so that there might be no excuse for his going overboard when a gangway was opened, after the example of the Fulmars. On going to see after him the following morning, I found the piece of string neatly coiled down, with one end still

* A distance of about 500 miles, according to the point of the coast whence it came.

attached to the ring-bolt, but no Skua at the other end. After some enquiry, the Stewardess confessed that she had seen a drop of blood on the bird, and thought it very cruel to keep it alive, and had therefore incited some one else to wring its neck and throw it overboard, though more probably it found its way into one of the salted-bird casks. Not far from the spot where I picked up the Whimbrel were a pair of (probably) Gray Geese. On the main island Chapman saw a brood of young Snow Buntings. On the way back to the ship I obtained a Northern Puffin, and although I shot four or five others afterwards, and most of the sportsmen likewise obtained a few, yet the total was quite a small number, and included shooting at nearly every individual that gave one a chance, in marked distinction to the Guillemots, Kittiwakes, Eiders, Little Auks, &c., in about that order. As we passed, in the evening, what appeared from the boat to be the mouth of a small river (not marked on the chart), near the north point of the Middle Hook, a school of White Whales rushed past us, heading northwards, in the muddy water between us and the shore. The other boats this day secured two more Ringed Seals; others were killed, but sunk and were lost. We brought back with us in the boat a quantity of Eider Ducks, Brünnich's Guillemots, &c., shot by the Norwegian sailors during the day for the salted-bird casks.

August 1st. Chapman and I started early in the morning with Kjeldsen (one of our ice-pilots) and his boat's crew, in his "Fangstbaad," up Van Keulen Bay; stormy all day, half-gale from west, making a lumpy sea; snow showers during first few hours; temperature of sea-water at surface, about 8 a.m., 32° Fahr. At about a short hour's row from the ship we saw four old Pink-footed Geese, which Kjeldsen, who was ashore, put up before we could land in pursuit. A little farther on we saw a pair of Brent Geese, accompanied by two or three goslings, running along shore, and rather farther inland were a good many more, perhaps twenty or thirty, adults and young, of the same species. We landed and gave chase at once; not one of them could fly, the goslings being too young, while the geese had all moulted their quills; but we might just as well have tried to run down hares, without dogs, as Brent Geese on this rough ground. They easily distanced us, goslings and all, and a long run taking them over a brow, they apparently squatted down somewhere among the stones, for when we arrived at the top of the brow not a bird

was to be seen, and though we devoted a good time to the search we could not again find them. Further up the bay we landed for a Reindeer hunt up a valley running at right angles to the long axis of the bay. We walked a good way inland, but saw no deer, nor did we even find any recent traces of them. On a gentle slope, which was pretty well covered with various plants, and some distance from the coast, we found four little Purple Sandpipers, hatched, I imagine, within the last three or four days. Chapman and I gave chase and soon captured one each, which we examined and then set at liberty again. We turned eastwards, and returned to the coast by the next valley to the one we had gone inland by, on the way collecting some fossils and round ball-like nodules of iron-pyrites (?). Hereabouts also one of our boat's crew began collecting scurvy-grass (*Cochlearia*), which the Norwegian walrus-hunters call "Sur-græs"—a name unknown to the dictionary. The supply being plentiful, it afforded an excellent salad with our *al fresco* dinner. At the place where we landed for Reindeer, from one to two hundred yards inland, we found a pair of Arctic Skuas, which had a nest hatched out; after a search I found one of the egg-shells, but we did not succeed in finding the young birds. The performance gone through by the old birds was most amusing and pretty, being the best bit of acting by old birds, in drawing one away from their young, that I have seen. The usual business—broken wing, broken leg, broken everything—were all enacted in turn, in the intervals flying close round us, with a cry just like the bark of a somewhat wheezy toy-terrier; then down they would go on the ground again, close by us, and every variety and state of helplessness would be again acted to the life. Nordenskiöld refers to the acting powers of this species in the 'Voyage of the Vega' (vol. i., p. 122), and Saxby, in his 'Birds of Shetland' (p. 357), describes it. With regard to the foot-note by the Editor of the latter work (p. 356), to the effect that the local name for this species, to be spelt "bosun," was a "term used in Norway," I suspect that his friend who told him so had simply heard it used by a seaman who had learnt English. The regular Norwegian name for this bird, and the only one I have heard used,* is "Tyvjo": Swedish, "Tjufjo"

* The dictionary gives "Kjove" and "Strand-hög," but I have not heard either of these names used in Norway, and they are very possibly restricted to Denmark.

(as given by Nordenskiöld). On again reaching the boat we proceeded up the bay, which was quite free from ice right up to its head; it terminates, in true Spitzbergen fashion, in a large glacier. We presently found ourselves among some White Whales, one of which came up quite close ahead of us. We saw several Ringed Seals swimming during the day, at most of which Kjeldsen and I, who had rifles, fired one or more shots, but so violent and constant were the movements of the boat, in consequence of the roughness of the sea, that we could not contrive, despite our frantic efforts, to hold our rifles straight enough to kill one. During the afternoon, however, one finding itself perfectly safe amid the ineffectual hail of Kjeldsen and myself, made bold to swim up within fifty yards of us, whereupon Chapman slipped a ball-cartridge into his shot-gun, and a shot-gun being adapted for snap-shooting, which a rifle is not, he put a bullet into its head, killing it, of course, instantaneously. We also had shots at an enormous Seal, which Kjeldsen pronounced a "Stor-kobbe," and which was doubtless that species (*P. barbata*). About half-way along the north shore of the bay, somewhere near "Breakfast Point," we found a good deal of driftwood. Chapman and I this afternoon each procured a good Eider drake. As a rule we found them exceedingly wary, keeping well out of harm's way, while the ducks could be easily shot in large numbers.

August 2nd. On the way back, near Eders Island, I caught a glimpse of a bird flying behind me, which I believe to have been a Long-tailed Duck, but sitting as I was, rowing and rather cramped up, I could not screw round in time to get a better look at it. On an island near Point Ahlstrand, on the south side of the bay, about an hour and a half's row from the anchorage near Separation Point, where the ship was lying, we found a pair of Brent Geese. Eiders and Arctic Terns were breeding here, and I picked up some tufts of feathers which had belonged to immature Glaucous Gulls, which had apparently been eaten by other birds, which tufts Kjeldsen believed to have belonged to Snowy Owls—indirect evidence, I think, that this was a bird he had previously met with in Spitzbergen, though I do not remember whether he said he had ever done so, or not. When near the Pallas (about 3 a.m.) we saw a few Brünnich's Guillemots, accompanied by their young ones, about which they were very anxious: the young could dive well. Two of the sportsmen of our party, who had been away

for a long day with Johaunesen, another of our ice-pilots, in his "Fangst-baad," had succeeded—the ice having dispersed—in reaching the Reindeer valley on the north side of Van Mijen's Bay, which we had been unable to reach on the 30th, and had killed five deer out of seven seen. Johannesen shot the only good head, which he cut off and left behind, to save the additional labour in porterage. I was offered either of the other heads, but the horns being still in the velvet, and not fully hardened, I did not think them worth preserving. We arrived off the entrance of Is Fjord about 6.30 p.m., and charged through ice about a foot thick for a quarter of an hour or twenty minutes, and soon afterwards anchored in Green Harbour, not so far up as on our previous visit.

August 3rd. Chapman and Faussett, with Kjeldsen, landed, and proceeded up "the big valley," an old friend, to the eastwards, and had "a laborious stalk" after Reindeer, "worked hard all day, but to no purpose." They "saw no deer, nor even any birds at all, save a few Snowflecks with newly-hatched young, and a Glaucous Gull or two seeking what he might devour." On their way back they met another party of sportsmen from the 'Pallas,' returning also empty-handed. They had been nearly twenty miles up the valley, and only seen five deer, which were too wild to give a good shot. As we had heard last night, much to our surprise and chagrin, that this was to be our last day in Spitzbergen, I wished to utilise it, as far as possible, in making up deficiencies in my collection of birds, but only got away with Johannesen in his "Fangst-baad," about the middle of the day. Found the usual birds about, but in very much reduced numbers, and instead of the large flocks to which we were accustomed, nearly all the birds were now flying singly, with a few pairs among the Little Auks, Mandt's Guillemots, and Puffins. The Puffins being in about their usual numbers, were comparatively much commoner than hitherto. I secured some specimens during the afternoon, but was obliged to call for several of the party who were ashore, and bring them on board in time for dinner. From 10 till midnight I again went out in the "Fangst-baad," and obtained specimens of seven species of birds, *viz.*, Brünnich's and Mandt's Guillemots, Little Auk, Puffin, Eider Duck, Purple Sandpiper, and an immature example of the Glaucous Gull, of which only three others were seen during the voyage, while adult birds were quite common;

this individual was with both parents,—at least two old birds,—one of which I could easily have shot. As we were passing the site of the old Russian hut, on the S.W. shore of the harbour, I saw a Turnstone flying quietly, or rather flitting, close along the shore edge. I landed as quickly as possible, and was lucky enough to secure it, as it is the first specimen recorded as obtained in Spitzbergen. I only saw one Skua all day, and that was wheeling about, as we rowed back at midnight, among some fishing-vessels which were anchored close astern of the 'Pallas.' A Little Auk which I shot this afternoon had the pouch beneath the lower mandible greatly distended with a large quantity of small transparent shrimps, apparently young ones, of which I have brought home specimens. I went on board a Bergen fishing-sloop, the 'Eyvind,' and found lying on deck about five Brent Geese, which had been shot in Bell Sound the day before, also a live gosling and a dead one in down. Johannesen made bids for the live gosling, but the captain of the 'Eyvind' did not want to part. The goslings were very different from those of the Pink-footed species, which we had had on the 'Pallas.'

August 4th. Weighed anchor for the south at 0.30 midnight—so that our rascally *entrepreneur* might say we had left on the 4th. During the day, as we coasted along, we saw Fulmars, Brünnich's and Mandt's Guillemots, Little Auks, Puffins, &c. We left South Cape behind us early in the afternoon, and at 9.30 p.m. came to heavy pack-ice, which obliged us frequently to stop, and for the remainder of the evening and through the night we steered to every point of the compass, a very thick fog not facilitating matters, while the combination of ice and fog made it extremely cold.

August 6th. Thick fog all day. Passed the latitude of Bear Island during the forenoon without getting a glimpse of it. I was busy below bird-stuffing nearly the whole day, and have no note of so much as a single bird; but so thick was the fog that even had I remained on deck the whole time I should probably have had equally little to report.

August 6th. Fresh east breeze in morning, rising to gale a few hours later, ship rolling heavily all day. The fog lifted this morning before a rapidly freshening breeze. Sighted Norway shortly before 2 p.m.; about 4 made the land, and found that instead of being opposite the North Cape, for which we were

bound, we were about straight for Tromsö, or somewhere about 150 miles out of our course! Fulmars still seen every now and then, also Kittiwakes and Guillemots (? Brünnich's or Common) occasionally. In the afternoon saw some small dark Petrels (perhaps Fork-tailed Petrels, *Thalassidroma Leachii?*). We saw a splendid mirage in the evening; two vessels on the horizon were reproduced, inverted, in the sky; of one, which was hull down, the reflection was continuous with the top of the masts, and slightly distorted; of the other, whose hull was clear of the horizon, the reflection was separated by a short interval from the trucks, and was almost a perfect reproduction of the original: both reflections were a good deal larger than the originals. The sun set straight for the first time since leaving the European continent.

August 7th. Anchored off the North Cape about 6.15 a.m.. the gale continuing in full force. Ashore the wild flowers were beautiful, and—after Spitzbergen—appeared to be in great profusion. In a small pool of water, close down to the sea, I caught some fresh-water shrimps, which I brought home in alcohol, We reached Hammerfest in the afternoon, and after a stay of three hours continued southwards.

August 8th. We arrived at Tromsö, and the next day I went ashore, leaving my fellow-passengers on board the 'Pallas' to continue the voyage back to Trondhjem and Bergen.

(To be continued.)

NOTES AND OBSERVATIONS ON BRITISH STALK-EYED CRUSTACEA.

By John T. Carrington, F.L.S., and Edward Lovett.

(Continued from p. 263.)

Paguridæ.

This family is without doubt the most singular as well as the most interesting, especially when considered in relation to other forms, of the whole of the Stalk-eyed Crustacea; the remarkable abdomen, an almost simple membranous sac, would seem to favour the idea that the true position of the *Anomoura*, of which this family are the characteristic forms, is really at the foot of the

series, and that the crab-shaped forms were developed through the *Lithodes* or *Dromia* types, whilst the lobster-shaped forms obtained through that of *Galathea* or *Munida;* at any rate, the need of an artificial protection, such as the *Paguridæ* absolutely require for their very existence, implies a condition of existence so hazardous and precarious, that a state of things in which a naturally protected abdomen replaced one of so delicate and unguarded a nature would be far more conducive to the development of the species, or rather of allied species generally.

Another remarkable feature in connection with the *Paguridæ* is that, so far as is known, almost their sole protection has been the dead shells of Univalve molluscs. These molluscs would therefore have been in existence prior to the period when the defenceless condition of the *Paguridæ* required such protection. From this it would seem as if this group were really a degenerate form of the Crustacea, considering that the latter are older geologically, and therefore also in point of development, than the Gastropods, the highest forms of the Testaceous Mollusca.

In describing the *Paguridæ* we shall only enumerate the generic features when treating of *Pagurus Bernhardus*, and refer to the specific characteristics only of the rest of the species, and the points of identification.

Pagurus Bernhardus, Linne.

This is the largest, commonest, and therefore the best known species of this genus; in fact, it is the only one known, even to many observing individuals, and is therefore called "*The* Hermit Crab." The species is also known by the name of "Farmers" in Essex, and on the south coast are called "Soldiers."

The carapace is smooth, divided behind the cephalo-thoracic portion into two lobe-like portions; it has a short stunted rostrum. The eyes are fixed on stout short peduncles, and the antennæ are long and well developed. The anterior pair of legs are massive, unequal, and very roughly granulated; the next two pairs are also granulated and tapering to a sharp-pointed terminal joint, and the last two pairs are rudimentary. There are also pseudo-swimmerets, which, in the case of the female, are the processes to which the ova are attached. The abdomen is, as we have said, a membranous sac, but it is furnished with a small set of tail-plates, armed with powerful hooks, which serve as anchors

to its artificial dwelling. The protection in the adult form of this species is almost invariably the shell of the whelk, *Buccinum undatum;* but from observation we can say that this covering is by no means the safeguard that it is generally supposed to be. We have noticed a number of these animals in a large aquarium tank, where they throve fairly well, but although well fed they they were always ready to devour each other whenever an opportunity occurred. A large and powerful Hermit Crab would, by placing its smaller claw on the shell-abode and seizing its opponent—or rather, unsuspecting prey—with the large forceps, drag it out, transfer itself to the coveted shell, and seize its defenceless victim all in apparently one movement, so rapid was the robbery and murder carried out. Again, whenever a crab was robbed of its shell, without being eaten also, it exhibited a most pitiful terror, endeavouring to keep its head and forceps towards its enemies, and seeking some corner or rock-crevice for its temporary protection, but as soon as it saw an empty shell within a safe distance it seized it and transferred its soft abdominal segments to its friendly shelter with the rapidity of thought. If, however, these animals have sufficient warning to enable them to withdraw into their shelter, it is simply impossible to extract them by force. When used for bait, for which purpose it is largely taken, the whelk-shell is broken, and it is extracted in that way.

The colour of *P. Bernhardus* is a yellowish or brownish red.

The ova are of a pale greenish yellow, somewhat oval in shape, and are attached in groups to the pseudo-swimmerets of the female by rather strong viscid ligatures.

It is a common species and widely distributed, but varies much in size in different localities, those from the deeper parts of the North Sea being very large.

Pagurus Prideauxii, Leach.

As Prof. Bell remarks, in his work, this species resembles the foregoing in many respects; still there are points of strong specific difference, as well as other easy means of identification, to which we shall refer. Its chief specific characteristics are as follows:—Anterior portion of carapace more level than that of *P. Bernhardus;* superior as well as ambulatory feet less tuberculated, the latter being nearly smooth; eyes rather more

globular, and the size of the mature animal less than that of the the former species.

The very remarkable means by which this species may be identified when taken, and to which we alluded above, is one mentioned prominently by Bell as having been noted by Mr. Thompson—namely, that the shell in which this species lives is generally also the "locus" of an *Actinia, Adamsia palliata*. It appears, however, that Dr. Leach and Prof. E. Forbes do not seem to have been able to endorse this experience, although of the many hundreds of specimens that we have examined, from our southern waters only, it certainly was a remarkably constant rule. Another somewhat curious fact is that the shell in which this species lives is only large enough to protect the lower portion of the abdomen, and this shell is almost invariably *Trochus magus*.

The colour of *P. Prideauxii* is a pale reddish brown, with blue bars upon the legs.

The ova are of a rich burnt-sienna tint, and more globular than those of *P. Bernhardus*.

This species has been recorded from Loch Fyne, Strangford and Belfast Loughs, off Dundrum, and from Plymouth Sound. We have obtained it by dredging from near Guernsey and from the English Channel off the Sussex, Dorset, and Devon coasts.

Pagurus tricarinatus, Norman.

This species was described by Dr. Norman in the British Association Report, 1868, from three specimens obtained from deep water off Shetland. We have not seen it.

Pagurus cuanensis, Thompson.

This species, discovered by Mr. W. Thompson off the Irish coast, may be recognised by its having the anterior pair of legs shorter, more massive and hairy than the two first species of this genus. The eye-stalks are very long in comparison with those of *P. Bernhardus* or *P. Prideauxii*. It chiefly selects the shells of *Murex erinaceus* for its habitation, but is occasionally found in those of other molluscs.

This is by no means a widely distributed species, but has been recorded from Portaferry, Bangor Bay, Belfast Bay, Shetland (rare), Dublin (rare), Plymouth, Northumberland and Durham

coasts (rare), Cornwall, and Milford Haven. We have obtained it also from Guernsey, Jersey, and Devon.

Pagurus cuanensis is with ova in April.

Pagurus pubescens, Kroyer (= *Thompsoni*, Bell).

The general character of this species is allied to both *P. Prideauxii* and *P. cuanensis*, its limbs being spiny and hairy; the antennæ are long, and the eye-stalks cylindrical.

It is a rare species, and has been taken at Belfast, Shetland (where a variety occurs having the claws free from hairs), Dublin, Plymouth, Hebrides, and Berwick.

It is with ova in March.

Pagurus ulidianus, Thompson.

This species so closely resembles the young of *P. Bernhardus* that it is considered actually to be so by some; but Bell says that the head in the present species is more elongate, its sides more parallel, and the granulations on its surface more even.

It has been recorded from Portaferry, Galway, Belfast, Dublin, and Cornwall.

Pagurus fasciatus, Bell.

This species, though described as new by Prof. Bell, is considered by Spence Bate as "evidently *Hyndmanni*"; and as it was only described from a drawing, and has not, so far as we know, been again taken, it is difficult to form an opinion regarding it.

Pagurus Hyndmanni, Thompson.

This species has the carapace smooth, and rounded anteriorly; the forceps are also somewhat smooth and club-shaped; ambulatory legs slender and tapering, and eye-stalks stout. The colour of this species is pale dull red; and it is barely an inch in length.

According to Prof. Bell, *Pagurus Hyndmanni* has been recorded from Portaferry and Belfast Bay. It is also recorded from Shetland, Dublin, Galway, Northumberland, and Plymouth. We have obtained it from S. Devon, generally inhabiting the shells of a species of *Turritella*, to which characteristic Bell also bears testimony; also from the Channel Islands.

The ova are of a beautiful silvery green, and are exuded in February.

Pagurus lævis, Thompson.

This small Hermit Crab may be distinguished by its shining carapace, the anterior margin of which is waved; the peduncles are stout; and the superior legs are as usual unequal, slightly granulated, and armed with small serrations on the inner margin of the forceps.

The colour of the animal is dull yellow, with markings of a bright brick-red on the forceps.

Pagurus lævis has been recorded from Shetland, Galway, Moray Firth, Northumberland, Portaferry, and Falmouth. We have obtained it from Guernsey, where it was found to inhabit the shells of *Natica*, *Murex*, *Dentalium*, &c., and also from Torbay.

"Its ova is black" (no doubt when mature, as is generally the case in Crustacea).

(To be continued.)

OCCASIONAL NOTES.

Otters taken in a Bow-net.—It occasionally happens that Otters enter the bow-nets set for Tench, in pursuit of the captive fish, and being unable to extricate themselves are drowned. Two full-grown Otters, male and female, were thus found dead in a bow-net on one of the Norfolk Broads, on the 29th August last.—T. Southwell (Norwich).

Nesting of the Woodcock.—Two nests of this bird have come under my observation—one at Glengarriff, Co. Cork, in 1878; the other found by me in the Curraghmore Woods in May last, as mentioned by Mr. Ussher (*anteà*, p. 307). In the former nest there were, I believe, four eggs; two of these hatched, and the other two were given to me for my collection; both were addled. The second nest contained three eggs, all of which, as previously recorded, were found to be addled when blown. Is it not strange that two out of four in one case, and the entire batch of eggs in the other, should have proved addled? Although collecting birds' eggs for some years, I may say that I have very seldom come across addled eggs. The only instance I can remember at present was in a nest of the Hooded Crow, in which—out of a clutch of five eggs—one was addled. Perhaps other observers would give their experience on this point. — William W. Flemyng (Portlaw, Co. Waterford).

Red-breasted Snipe in North-east Lincolnshire. — I recently obtained in the flesh an example of this North American Snipe, *Macrorhamphus griseus*, shot on the sea-coast between Cleethorpes and Tetney Haven on August 15th, and sent in by carrier to Grimsby for sale. It is an adult, changing from the Knot-like plumage of summer to the grey of winter, and was in an advanced state of moult. Mr. J. J. Dalgleish, in his 'List of Occurrences of North American Birds in Europe' ('Bulletin of the Nuttall Ornithological Club,' vol. v., April, 1880), has registered twenty-six supposed occurrences of the Red-breasted Snipe during the present century in Europe, sixteen of which, however, are marked as doubtful. In the ten undoubted occurrences the date of appearance has been either late in September or in October. — John Cordeaux (Great Cotes, Ulceby).

Ornithological Notes from North Northamptonshire. — Three instances of the Hobby, *Falco subbuteo*, breeding in our neighbourhood this summer have come to my knowledge. The first nest, apparently that of a Carrion Crow, was found about the third week in June, and contained three eggs, one of which was taken some few days after discovery, and is, with the two young birds subsequently taken from the said nest, now in my possession. The second nest, about which I have no particulars, was found some days after that above-mentioned, and contained one egg only; the young bird from this nest is also here. In the third instance the nest was not discovered, but two young birds just able to fly from tree to tree were closely observed by a friend and neighbour who is perfectly well acquainted with this little Falcon. In all three instances I am glad to say that the parent birds have, as far as I know, hitherto escaped destruction. A Manx Shearwater, *Puffinus anglorum*, was picked up in a field of mangold-wurzel near Cranford, Kettering, on the morning of August 24th, and sent off at once alive to me. It is needless to say that it was in a very weak and exhausted condition, and in spite of all our efforts to feed it, died a few days after its arrival. I observed nine Whimbrels, *Numenius phæopus*, flying up the valley of the Nen, near this house, calling loudly, on August 31st.—Lilford (Lilford Hall, Oundle, Northamptonshire, September 4th).

Snipe Perching.—Referring to the notes of Messrs. Whitaker and Backhouse on the perching of the Common Snipe, I beg to offer a few remarks on this somewhat vexed question. Though I have been well acquainted with this bird for fifty years or more, I never found one perching, —a pretty good proof that it is not its habit,—though I have heard of its doing so; and was informed some years since by the late Dr. Saxby that he had once seen a Snipe perch on a stone in Shetland. That the American Snipe perches I had ocular proof ere I had been many hours landed at St.

John's, Newfoundland; though the fact of my having found and shot four on the 23rd of July, 1857, when perched on snake-fences, was omitted from my notes published in 'The Zoologist' in 1858, because the editor (Mr. Newman) thought that I might have mistaken the species! Subsequently, however, when reminded that Buffon about one hundred and fifty years before had remarked on this habit, my note was inserted. That the American Snipe is a distinct species, though doubted by Buffon, Wilson, and other writers, is a fact, seeing that it has sixteen tail-feathers, and the Common Snipe of Europe but fourteen: it also varies somewhat in colour, and has the second quill margined with white on the outer web, which is not the case in the European species. A full and minute description of the American Snipe and its plumage will be found in the notes referred to.—Henry Hadfield (High Cliff, Ventnor, I. of W.).

Notes from Hunstanton, Norfolk.—On August 2nd Sanderlings were plentiful along the shore between Hunstanton and Holme. I shot five out of one flock, all mature birds in nearly full summer plumage, and, had I required them, could have obtained many more. Oystercatchers were very plentiful, frequenting the sands and mussel-banks: three specimens which I shot were all mature. I saw two Turnstones in full plumage, and observed Swifts frequenting the chalk-cliffs near the lighthouse, where they breed in considerable numbers (see 'Birds of Norfolk,' vol. i., p. 345). I got an adult female Turnstone near Holme Point on August 4th, and the same day noticed three or four Knots with red breasts. On August 10th I saw two large Waders, and dropped one to a long shot; it proved to be a male Bar-tailed Godwit, in quite as perfect summer plumage as any I ever obtained in May, in the days when that month used to afford such a rich harvest of migratory waders. The following day I got a mature Arctic Tern, and two young Turnstones out of a flock on the 12th. These latter birds became quite common about this time, and for several mornings I much enjoyed watching two which frequented the beach a little way beyond Hunstanton Station. They were very tame, and it was most interesting to see the business-like way in which they turned over the sea-weed. A more appropriate name than this local name of "tangle-picker" could not be found for these birds. On August 22nd I got a Sanderling (bird of the year) and two Dunlins in summer plumage. Besides the birds mentioned above, I clearly identified the Heron, Curlew, Whimbrel, Redshank, Common Gull, Lesser Black-backed Gull, and Little Tern. A specimen of the White-tailed Eagle, which I have not seen recorded in 'The Zoologist,' was shot near Hunstanton last winter. He frequented the neighbourhood for some time, especially the grounds of Hunstanton Hall, where orders were given for his protection, but he left this safe retreat for the bleak sand-hills or "meals" between Hunstanton and Holme; here he was unsuccessfully shot at again and again, on one occasion leaving behind him (to quote my

informant's words) "enough down to fill a peck-basket." However, he was at last stalked by an old gunner, who got a sitting shot at close range, aimed at the Eagle's head, and knocked him over—a most inglorious ending for so noble a bird!—Julian Tuck (Bucknall, near Stoke-on-Trent).

Adders Swallowing their Young. — The following incident was observed (as well as I can remember, in September, 1874) by myself, my brother Mr. B. Lancaster Rose, and Mr. George C. L. Lenox:—When shooting on Mr. Lenox's moor, near Newton Stewart, in Wigtonshire, one of us discovered an Adder coiled up on a sunny bank on the moor. Upon his calling to the others of us, we all gathered round, and we then saw the Adder, which by this time had been disturbed, with several young Adders round her. We then distinctly saw her open her mouth and allow the young to crawl down her throat, after which she was killed by having her head crushed with the heel of a shooting-boot. Having seen the young go down her throat, and being still able to see the movements of them inside her, one of us cut off her head, and some of the young thereupon crawled out of that end of the body. We then laid her body open through its entire length and found more young Adders, which were quite able to strike at the point of a stick when irritated by it. We all distinctly remember the above circumstances, and are quite certain that not only did the young Adders first crawl down their mother's throat, but also came out again from the head end of the body after the head itself had been cut off. We are quite certain that they were in the stomach, and not *in utero*. Until quite recently we were not aware that it was otherwise than an admitted fact that Adders swallow their young in a moment of apparent danger, or we should certainly have taken the necessary steps at the time for preserving the bodies of the Adder and her young. — George A. St. Croix Rose; corroborated, B. Lancaster Rose, Geo. Lennox Lenox (Rayners, Penn, Bucks, Sept. 1882).

Grants in aid of Zoological Science. — Amongst the various monetary grants for next year, made by the British Association at its recent meeting at Southampton in aid of scientific research, we observe in the department of Biology the following:—General Pitt-Rivers, for Photographs of the Races and principal Crosses in the British Isles, £10; Mr. Stainton, Record of Zoological Literature, £100; Mr. J. Cordeaux, Researches on the Migration of Birds, £20; Prof. Ray Lankester, Table at the Zoological Station at Naples, £80; Dr. Pye-Smith, Scottish Zoological Stations, £25; Sir J. Hooker, Exploring Kilimandjaro and the adjoining Mountains of Eastern Equatorial Africa, £500; Mr. R. Meldola, Investigation of Loughton Camp, Essex, £10; Mr. P. L. Sclater, Natural History of Timor-Laut, £50.

NOTICES OF NEW BOOKS.

The Coues' Check List of North American Birds. Second edition, revised to date and entirely rewritten under direction of the Author, with a Dictionary of the Etymology, Orthography, and Orthoëpy of the Scientific Names, the concordance of previous Lists, and a Catalogue of his Ornithological Publications. (Boston: Estes & Lauriat, 1882, 8vo, pp. 165).

This long title fully indicates the contents of Dr. Coues' latest contribution to ornithological literature, without the two other names with which the binder has ornamented the cover. Work in a fresh field from such an accomplished author is one which all who know Dr. Coues' previous writings cannot hesitate to welcome. The fertility of the writer's pen really seems amazing, when we observe in his Appendix here printed that during the last twenty years he has actually written three hundred articles and separate books on birds alone. Yet few writers have done more out-door work than Dr. Coues, and it is marvellous how he has found time for so much in the midst of his labours as an army surgeon, and a lecturer on human anatomy in a medical college besides.

The first edition of the 'Check List' was published in December, 1873, and it obtained wide currency on its re-issue a month afterwards in connection with the author's well-known 'Field Ornithology.' There, however, it was but a bare catalogue of scientific and vernacular titles, while here the list, revised with the utmost care and raised to include 888 species, is enhanced in value by the addition of explanations of the pronunciation and derivation of all the generic and specific names, together with much subsidiary information. We welcome such an addition by an American hand none the less because we know that a somewhat similar treatment of the names of our British birds has been undertaken by Mr. Henry T. Wharton for publication in the anxiously-expected 'Ibis' List to be issued by the British Ornithologists' Union. It is strange that a work of such interest and utility has never been comprehensively undertaken before, one which will now soon have appeared from both the Old World and the New.

Dr. Coues here enumerates all the birds hitherto found on the entire continent of North America, north of Mexico, and including Greenland. The original edition comprised 778 species, as against 888 in the present. This number is made up by the subtraction of six names, which are mere synonyms, and of four which do not actually occur within the prescribed limits, together with the addition of 120, most of the latter being newly-described species, discovered in Texas, Arizona, and Alaska since the publication of the 'Key.' Some of these Dr. Coues is inclined to regard as scarcely worthy of the rank of full species, but he includes them on account of their being generally received as such. The advance of Ornithology in North America is pretty clearly indicated by a table which Dr. Coues gives on p. 9, from which we see that the total of the birds of that country. given by Wilson in 1814, was only 283.

Perhaps there is nothing in this work of Dr. Coues which will grate so harshly on our Old World notions as his continued use of a trinomial nomenclature. We who strive, even if not always successfully, to follow the Stricklandian Code, and who believe that a binomial nomenclature is at once the simplest and the most useful, cannot but feel that any other system is both retrograde and misleading. For instance, to take the first example in the 'Check List,' if *Turdus migratorius propinquus*, is not *Turdus migratorius*, why not let it stand as *Turdus propinquus*? If it is only a variety of *Turdus migratorius*, why let it stand as a species, on the same footing as the type from which apparently it so slightly differs? Nomenclature is at best arbitrary; many a Thrush might be aptly described as *fuscescens*, "somewhat dark," but when we speak of *Turdus fuscescens*, and know the species to which that name was first applied, it is a matter of no real moment whether the name is apt or not. A Scotchman's name may be Black, but we do not consequently think of him as other than fair. Directly we cease to use names as nothing but tokens, in the strict sense, we introduce confusion. Trinomialism is simply an attempt to return to the old method that Linnæus is celebrated for having—as we hoped—caused his followers to discard naming a bird by a diagnostic sentence. If we use three names, there is nothing to prevent us from using a dozen, save, fortunately, the obvious confusion that would result. It is only to be hoped that the evil example of the

Americans will never be followed by European ornithologists. Nomenclature is sufficiently complicated already, without letting go of the principle of simplicity that has served so well zoologists and botanists alike for more than a century. There are many who think that the addition of one author's name infringes the principles of binomialism; what are we to do when two specific names are followed by the names of two authors?

Dr. Coues' preliminary remarks on "Orthography or Spelling" are clear and useful, but when he treats of "Orthoëpy or Pronunciation" we fear he is needlessly pedantic. Englishmen have so long, however erroneously, pronounced Latin words as nearly as possible as if they were English, that it is futile to expect reform in a matter where even scholars are undecided. Teach ornithologists uniformity by showing them where a vowel is long and where it is short, so that their pronunciation may not grate upon educated ears; but we can see no advantage to be gained by pronouncing *fuscescens* "foosaysaynce," or *virens* "wirraynce," or *amœna* "ahmwaynah," or *chen* "cane." Those who follow Dr. Coues' suggestions in this direction may *in* the end prove to be more or less correct, but they will certainly *to* the end be misunderstood. Even if it were possible to make every ornithologist a scholar on the modern lines, it is very doubtful if much would be gained. But false quantities are no more allowable than provincialisms or dropping h's; guard against these, and you cannot much farther go. However, for all his learning, Dr. Coues seems to think it sometimes allowable to make false quantities himself; he knows that *Lophophănes* is correct, but he "instinctively inclines" to *Lophophānes*. Instinct here seems to be the child of other people's ignorance; a somewhat novel definition! In speaking of *Troglodȳtes* he apparently would forsake the obvious pronunciation of the "dead" Greek poets, and adopt that of the modern Greeks, laying the stress on the vowel where the accent—by well-known laws—falls; chiefly, be it observed, because it is a trifle easier.

These remarks might seem ungenerous were it not for the unbounded gratitude with which we would fain greet Dr. Coues for his excellent researches into the origin and meaning of all the birds' names he has occasion to use. These form the great peculiarity and value of the present publication, and we most heartily commend them to the serious study of

every ornithologist, whether his work lie mainly in the field or in the despised "closet." Every explanation Dr. Coues gives ought henceforth to become the common property of every lover of birds; in them seems to lie the poetry of the application of the names.

In a review like the present it would be unprofitable to go through all Dr. Coues' remarks *seriatim*, but we may notice some instances where we think revision needful. His excellent index, in which the reader should observe that some corrections are made, renders references to the numbers of the names unnecessary. Yet even here the corrections are not always sufficient; for instance, the name *Atthis* seems to puzzle him, although it is simply taken from that of the beautiful maiden who was the beloved of the poetess Sappho—an apt idea to apply to a Humming-bird: to say, "it is also a proper name," does not convey much information.

Under *Regulus calendula* it is scarcely correct to say that *Calendula* "was apparently coined by Brisson, 1760." The word probably comes from *calere*, to glow; but it was used in botany centuries ago. Old Gerard, in his 'Herball,' 1597, says:—"The Marigold is called *Calendula*: it is to be seene in floure in the Calends almost of every moneth."

Motacilla, and words with a similar termination, have long presented difficulties, and Dr. Coues rather adds to the confusion. We have *motare*, to keep moving, as a frequentative of *moveo*, I move; the frequentative adjective from this would have been *motax*, of which the diminutive would be *motacula*, and the double diminutive *motacilla*. There is no reason to make a barbarous compound of a real Latin word and an invented Greek one. *Albicilla*, *atricilla*, &c., can all be similarly explained; our theory is not overturned by *albicilla* having been applied to an Eagle, as if it were not a diminutive; guessing is as old a practice as etymology itself.

Of *Ægiothus hornemanni*—which, by the way, is named after Jens Wilken Hornemann, who lived 1770—1841—it is not quite right to say "it is absolutely confined" to Greenland, seeing that a specimen was killed near Whitburn so long ago as 1855, and figured by Mr. Hancock in his 'Catalogue of the Birds of Northumberland and Durham'; and it is said to have occurred as far south as Abbeville.

Dr. Coues does not seem clear about the origin of the name Oriole, although it has been elaborately traced by Littré directly, along with the French form of the same word Loriot, from the Latin *aureolus*, golden. But under this bird, *Icterus galbula*, Dr. Coues gives a most interesting origin for the vernacular name "Baltimore."

No doubt *Perisoreus* does look very like a crux, and we could understand Dr. Coues indulging in a little imagination about it. But if he had looked it up in Agassiz's 'Nomenclature,' and seen that it was there derived from περισωρεύω, *accumulo*, I heap up all round, and that the inventor of the name, Bonaparte, was Agassiz's coadjutor in compiling that work, he would have saved himself a few lines. What the application of the name may be we are not sufficiently acquainted with the bird's habits to disclose, but it clearly has to do with the bird's affinity to the Magpie, and the well-known tendency to hoarding which that bird has.

The idea of Gyrfalcon being a corruption of Hierofalco is ingenious, and may very probably be true, but it lacks the historical basis upon which alone etymology can be sure. The German *Gerfalk* seems to point neither to "gyrate" nor to ἱέραξ, and it is quite certain that ἱέραξ, a hawk, has no etymological kinship with ἱερός, sacred. Prof. Skeat, in his lately published dictionary, is content to take Gyrfalcon to be "a falcon that flies in gyres;" though he gives a third alternative, the German *Geier*, a vulture, but, as that is probably cognate with *gyrare*, it does not complicate the question any further.

We can help Dr. Coues to an explanation of *hiaticula*. Charleton, at p. 109 of his 'Onomasticon Zoicon' (1668), says the name is given to the Ring Plover *quia circa fluminum alveos et rivorum hiatus versetur*, because it haunts the mouths (*hiatus*) of rivers.

There is a carelessness about deriving *Vanellus* from *vanus*, vain, that surprises us in the midst of so much erudition. The old spelling, *Vannellus*, and the French *vanneau*, leave no doubt as to the origin of the word being from the Latin *vannus*, a fan. Charleton (*l. c.*, p. 108) clearly says the name is given *quod alis, instar vanni seu ventilabri, commotis concussisque strepitum edat.*

Dr. Coues' corrections of obvious misspellings are among the most important of the changes he introduces in the present work.

But in his zeal to be right he sometimes guesses unnecessarily. For instance, the Godwit was known as far back as the time of Gesner as *Fedoa;* it is hardly right to alter this to *fœda* at the present day. Surely the application of *fœda* is as obscure as the derivation of *fedoa*. Alterations in spelling should never be made without the clearest evidence, and here the only evidence is ignorance.

Again, imagination carries our author away when he attempts to explain *Numenius arquata*. The "crescent-moon" suggestion is no doubt the correct explanation of the generic name, but we believe Mr. Wharton will show us a new meaning for *arquata* when at last the 'Ibis' List appears.

It is easy to say that *Harelda* is "a nonsense-word, invented by Leach" (1816), but it involves our endowing Willughby with an almost prophetic power. In his 'Ornithologia,' p. 290 (1676), he has a section describing, to use his own words, "*Anas caudacuta Islandica* Harelda *ipsis dicta*." Leach did not invent the name, but merely latinised an Icelandic form.

How far astray an etymologist may be led by guessing is comically illustrated by Dr. Coues' derivation of *perspicillata*. The true meaning of the word must be "covered with looking-glasses," from *speculum*, a mirror, in reference to the white patches on the head. For this idea, in common with many other of our emendations, we are indebted to Mr. Wharton, who has courteously allowed us a sight of some of his proof-sheets.

Notwithstanding the deficiencies we have found in Dr. Coues' book, it must be remembered that there are in it more than a thousand remarks concerning names which it would be mere flattery to commend. The book teems with information which it would take years of research to find elsewhere. Future ornithologists will be grateful for the knowledge of the persons from whom such names as *graciae*, *luciae*, &c., were taken, and Dr. Coues gives an interesting note on the pronunciation of his own name, together with a little genealogy, under *Arquatella couesi*. Any author might be proud of such a crown to his literary labours as the present 'Ornithological Dictionary' undoubtedly is to those of Dr. Coues.

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REMARKS ON THE GROUSE DISEASE.

BY J. A. HARVIE BROWN, F.R.S.E., F.Z.S.

As to the causes and gradual development of the Grouse disease, I could write at some length as a naturalist, although the historical aspect should also be considered and fully treated of, and parallel statistics collected contemporaneously, of heather-burning, estate management, &c.

If all sportsmen were naturalists, believing in the sound theory and practical work of Darwin, I cannot conceive that they would fail to recognise the true causes and trace even the development. Of the *actual positive* nature of the disease I might also write at some length, but when I state that Dr. Cobbold has already investigated this and treated pretty fully of it, it will be perhaps more practical to refer to the causes and consequent means of prevention.

I believe, in common with many other naturalists, that Grouse disease is caused mainly by over-stocking, over-preservation, and the *complete* and indiscriminate slaughter of certain species of vermin (or so-called vermin), notably the Peregrine Falcon, and by the state of the young and old heather after severe late frosts, which now affect the degenerate stock more easily than in former years when birds, though less numerous, were healthier, stronger, and had a larger area of feeding-ground. The much larger number of sportsmen now coming to Scottish moors does not adequately make up for the increased number of birds, as the latter on Perthshire moors and highly-stocked grounds soon

become very wild. Many more indifferent shots, and indifferent sportsmen too, now come north for a short outing on the moors. Long ago the lairds and their friends alone shot the moors, and were content with smaller bags. Now people who pay high rents want larger bags, and cram into a week's shooting what used to be a whole season's sport. As a consequence many more birds are wounded, if not in the vital organs, in other parts, which wounds affect their constitutions, and if they live till another year they probably breed weaker-constitutioned birds. Before Peregrines were shot down and trapped and destroyed, these weakly birds were picked off, being usually the easiest captured, and the last of the covey or pack in flight. How many instances can be given—authentic instances—of Grouse disease appearing to any alarming extent, or at all, in deer-forests? This, I believe, would be well worth working out. My belief is—but I do not speak with data at my side—that if this part of the subject be investigated very few authentic records will be found of Grouse disease in the deer-forests of Scotland. And why? Because Peregrines, Martens, Wild Cats, and "vermin" are *not* slain indiscriminately in deer-forests, and the Grouse there leads a more natural and less artificial life. If reference be made to my essay on the Capercaillie of Scotland (published by David Douglas, Edinburgh), it will be seen that some natural laws as to range, distribution, and "spread" of species, have a direct and powerful bearing also upon Grouse (*op. cit.*, chap. xix., p. 107). Formerly Grouse had great and extensive areas to feed over; now owing to overstocking and perfectly reckless and ignorant interference with Nature's laws, they are "cabin'd, cribb'd, confin'd." Formerly one bird had perhaps acres and acres to itself—or, shall we say, one covey had; now every acre, we may say, has its covey or coveys. Formerly birds were less plentiful, more healthy, and men were less greedy; now Grouse are swarming, and a most unnatural state of things exists; not satisfied with this even, men want more and more, and grudge a single bird to feed the Falcon's young. As long as they do so, so long will Grouse disease recur. A direct cause of rapid increase of Grouse is the regular system now of burning heather, a better succession of young fresh food being supplied. But the natural outcome of this is that when *late* and severe frosts do come, as

they so often do in this country, a much larger area of good feeding-ground is damaged. If there were less young heather there would be fewer birds, I believe; but should late frosts come they would be less likely to do damage on a large scale. If we must have birds at the rate of fifty or a hundred to the acre on our moors (I do not speak from statistics), we must burn our heather judiciously and well; but if we have this unnatural stock one year, we must not be surprised if the following spring a severe late frost damages, or destroys, all our fine stretches of tender young heather, and our Grouse consequently become diseased. Formerly, I believe, when heather-burning was not so common, the young heather came up to a limited and natural extent beneath the old heather, which latter, to some considerable extent, protected the former from the frosts of spring. Now the young heather is *forced up* by the burning, and it has no protection at all, as formerly. Much more might be said in support of what I have already stated, but to me so self-evident seem the causes, and the whole sequence of the facts connected with the Grouse disease, and so certain am I that in the main issues I shall be supported in what I say by those naturalists whose opinion is most worth having, that I do not think it necessary here to bring forward further proofs and statistics; but simply to repeat that the first causes of Grouse disease are to be found in over-stocking, over-preservation, ignorant and reckless slaughter of so-called vermin, greed, unnatural and too rapid burning of heather, and a wholly artificial state of Grouse-farming.

In different districts these causes may vary to some extent. In the west, for instance, if too large areas of heather are destroyed (*i.e.*, burned), where young heather takes three or four years to reappear, or is entirely supplanted by ling and grasses, and where the hill-sides get "pitted" and worn into cup-shaped holes by the naturally wet climate and great rainfall, holding thus much moisture, then Grouse do not increase in numbers, but become extinct or scarce, owing to the scarcity of natural food and then perhaps the outcry is made, not against the interference with Nature's laws in this direction, but against the super-abundance of "vermin."

Again, in Perthshire or Banffshire, or other districts where young heather rushes up as if in a hot-bed after the old heather

is burned in a single year, or at most two, and remains good for several years, the results are different, and a large stock of birds appear. But if the whole heather were burned at once and severe late spring frosts came, so would the whole young heather, some fine day, be destroyed, and probably the Grouse become extinct on larger areas.

In a country where Grouse are scarce the evil may arise from interbreeding; and indeed this evil may even be a factor on densely-stocked moors, strange as the assertion may at first blush appear, because on densely-stocked moors the interbreeding may only be less in degree, as this large stock has been produced to an unnatural extent upon an area calculated by Nature to contain a far less number of birds. In a sparsely-populated district judicious introduction of fresh blood is necessary, and even on densely-populated moors exchange of a few hundred netted brace for others from a distance would decrease the chances of disease, though I doubt if it would cure or entirely prevent it.

I have had no experience of mowing heather, and do not think I ever saw any treated in this way, so cannot speak on this point practically, though I could of course do so theoretically and draw conclusions from parallel circumstances. Thus, I know if old whin or furze be cut, it is less likely to sprout again than if holed out, at least in some districts. The atmosphere and rainfall rots and destroys the stumps of cut furze, but the loose earth turned up in holing out furze throws up to the surface old dormant seeds and fibres to the vivifying action of the air and sun.

NOTES OF A NATURALIST ON THE WEST COAST OF SPITZBERGEN.

By Alfred Heneage Cocks, M.A., F.Z.S.

(Concluded from p. 386.)

The following mammals were met with by us in Spitzbergen —

Arctic Fox (*Vulpes lagopus*, L.).—The short bark of this animal was often heard above the screechings of the innumerable birds high up on the cliffs comprising the "loomeries," and where it was scrambling along in quest of such eggs or young birds as it might be able to reach. One or two were seen and one picked

up dead at Bel Sound. This specimen, which had been dead some time when we found him (July 30th), was of a light slaty-blue colour.

Polar Bear (*Ursus maritimus*, L.).—Our acquaintance with this species in Spitzbergen was limited to meeting with two cubs in captivity on board a sloop off Danes' Island on July 29th, and to finding some joints of Bear-meat hanging over the side of a schooner in Magdalina Bay. On board were the skins and skulls belonging to two Bears which the crew had killed on their first arrival at Bel Sound in May.

Ringed Seal (*Phoca hispida*, Schreber; *Pagomys fœtidus*, Gray, P. Z. S., 1864).—Was seen tolerably commonly all along the coast, and up to our most northerly point (about lat. 79° 55′). Norwegian names, Ringsœl, or Grundsœl.

Great Seal (*Phoca barbata*, Fabr.). — Norwegian names,* Stor-Kobbe, Havert, or Blaa-Kobbe. Several seen in Bel Sound (both forks), and at Green Harbour, Is Fjord, on our second visit. Only one was shot, and it (after the manner of its kind) rolled off the piece of ice on which it had been sleeping, and sank.

Walrus (*Trichechus rosmarus*, L.).—A young one was seen by some shipwrecked sailors whom we picked up at Is Fjord and brought home to Tromsö, at Green Harbour, on August 3rd, not far from where we were actually at anchor at the time; but nothing was seen of this curious monster by any of the original members of our "ship's company."

Whales.—A good many Whales were seen by us between the Lofotens and Bear Island, as mentioned at p. 2, and, though I am not able to identify the species with any certainty, they were probably all "Finners," and may perhaps have been referable to four different species there enumerated; but it would only be misleading to attempt to insist more particularly on those attempted

* The Norwegian names for the other species of Northern Seals, chiefly as given in the Bergen Museum, are as follows:—*P. grœnlandica*, Sufryg, Svartside, or Jan Mayen Sœl; *P. vitulina*, Steen-Kobbe, Fjordsœl; *Cystophora cristata*, Klapmydse, Klakkekal; *Halichœrus grypus*, Krumsnudet-Sœl, Graa-Sœl. Most of the Swedish names, as given in the 'Voyage of the Vega,' vol. i., for the different species of Seals are similar to the Norwegian names, but the word "Kobbe," the ordinary word for Seal in Norwegian, is not used in Swedish.

identifications, which are merely guess-work. After we had arrived in Spitzbergen waters, with the exception of various bones partly overgrown with moss, on one of the Axel Islands at the entrance to Van Mijen's Bay, which had evidently been lying there for a considerable number of years, and which were possibly those of *Balæna mysticetus*, a species we did not observe alive, but which, as is well known, was formerly very plentiful in those waters, the only cetacean I have any note of is—

The White Whale (*Beluga catodon*, Newton, P. Z. S., 1864; *Delphinapterus leucas*, Pallas. — Decidedly common round the west coast of Spitzbergen. They appear to keep, as a rule, close to the shore, and especially to frequent the heads of fjords, or other places where fresh water is discharged into the sea (as from glaciers or rivers). They are very quick, active animals, their movements being more fish-like than those of such other cetaceans as I have seen, which all have a more dignified or measured way of moving than the *Beluga*, which even applies to the small Porpoise, a species, by the way, which Professor Newton ("Notes on the Zoology of Spitzbergen," P. Z. S., 1864) is confident he saw "more than once," but which I have no recollection of seeing up in the far-north; but it is just possible that amid the greater rarities, or at least novelties, I may have omitted to notice it. Some idea of the numbers of the White Whale on the Spitzbergen coast may be gathered from the fact of a schooner, to which we paid a visit in Magdalena Bay, having on board (we were told) 250 skins, the produce of a little over two months' "fishing."

Reindeer (*Rangifer tarandus*, L.). — The fleet of sloops, schooners, &c., which arrive at Spitzbergen every spring from Hammerfest, Tromsö, and other parts of Norway in pursuit of White Whales, Walrus, and other "game," send a large contingent of hunters ashore after Reindeer, so that by the time we reached the country (towards the end of July) we found the deer driven away from the coast, and only to be met with in small numbers a long way inland. The Reindeer of Spitzbergen, judging by my extremely limited experience, are decidedly smaller than in Norway. The form of their horns in Norway is so extremely variable that I am not able to detect any difference in type between those from that country and those from Spitzbergen. The horns of all the animals killed by our party were still in the velvet, but we picked up several cast antlers, especially at Green Harbour. So

far as I can judge, I think the Spitzbergen horns correspond with the smaller size of the deer that carry them, and are perhaps rather less erratic than they so frequently are in Norway.

The other mammals mentioned by Prof. Newton are *Phoca grœnlandica* (Fab.), and *Mustela erminea*, which latter, however, has not been actually obtained.

The following species of birds were obtained by us in Spitzbergen :—

1. Snow Bunting (*Plectrophanes nivalis*, L.).—Tolerably common at all the localities visited by us. Breeding inland in a valley running about eastwards from Green Harbour, Is Fjord (July 27th). A brood of fledged young seen by Chapman in Magdalena Bay (July 29th) on the talus at the foot of the cliffs, and another brood on Axel Island (July 31st). Several shot by various sportsmen in the southern fork of Bel Sound on July 30th. The specimens I brought home are in the black and white summer plumage.

2. Ptarmigan (*Lagopus hemileucurus*, Gould). — We fell in with three Ptarmigan soon after landing in Green Harbour, Is Fjord (July 27th). Chapman went after them and killed them all, and also a fourth which he found a short distance beyond the others. They were all old cock birds. Two, however, fell on to a crag which he could not manage to scale; the other two he kindly gave to me. They are incomparably the dirtiest and most ragged wild birds I have ever seen, and look more as if they had been prisoners among the stock of some Seven Dials bird-fancier than birds killed in full possession of their native freedom, in the wilds of Spitzbergen. The only other examples of this species met with by any of our party were an old hen and her young brood, just able to fly, on August 4th, also at Green Harbour; the party were in pursuit of Reindeer at the time, and were armed with rifles only, so that they were unable to secure any specimens. Prof. Newton, in his paper on the birds of Spitzbergen in the 'Ibis,' April, 1865, was then inclined to believe that the present species is identical with the Ptarmigans of Iceland, Greenland, and Arctic America, which three, he then thought, were probably identical. As to this I am unable to offer any opinion,* but can only corroborate his remark as to "the larger size of the hyperborean bird," my two specimens being far larger than my recol-

* Consult Dresser's 'Birds of Europe.'—Ed.

lection of the Iceland Ptarmigan, and even than the Scandinavian "Rype" or Willow Grouse (*L. subalpina*), and measure, even in their much-worn state of plumage, about $9\frac{1}{2}$ in. in the wing, against 8 in. of a male Scandinavian or Scotch Ptarmigan (*L. mutus*). Moreover, my specimens agree with the male seen by Professor Newton, and with the figure given by Herr von Wright in the Atlas of the French Expedition of 1838, in not having "any of the entirely black feathers (on the breast) which are so distinctive of the real *L. mutus*." Nordenskiöld, in the 'Voyage of the Vega,' i., 130, says that on Spitzbergen, previous to 1872, the Ptarmigan had only been found "in single specimens," but in that year they discovered "an actual ptarmigan-fell in the neighbourhood of our winter colony, immediately south of the 80th degree of latitude. It formed the haunt of probably a thousand birds; at least a couple of hundred were shot there in the course of the winter." Messrs. Evans and Sturge ("The Birds of Western Spitzbergen," 'Ibis,' 1859, p. 169) found these birds "very abundant," which is different to the common experience.

3. Turnstone (*Strepsilas interpres*, L.). — I shot a single specimen in Is Fjord on August 3rd. Professor Newton (*loc. cit.*) mentions that both he and Dr. Malmgren respectively saw what they believed to be examples of this species in different parts of Is Fjord, in 1864, but my specimen is, I believe, the first of the species recorded as obtained in Spitzbergen, though this is by no means the northern limit of its range, being described by Major H. W. Feilden in an Appendix by him* to the 'Narrative of a Voyage to the Polar Sea during 1875-6,' by Capt. Sir G. S. Nares, p. 210, as "tolerably abundant in Smith Sound and the region north of it visited by the Expedition," and as breeding in the neighbourhood of the winter-quarters of the 'Alert.' In a note by the same author, in 'A Polar Reconnaissance,' by Capt. A. H. Markham, p. 334, it is described as "Apparently rather rare in Novaya Zemlya. Markham observed these, and obtained one, in Matyushin Skav." It is not mentioned in the 'Voyage of the Vega.' My Spitzbergen example is in the dark immature plumage, and was moulting.

4. Whimbrel (*Numenius phæopus*, Linn.). — I picked up a dead Whimbrel on one of the Axel Islands, at the entrance to Van Mijen's Bay, on July 31st, this being, I believe, like the last

* Condensed from the 'Ibis,' 1877, pp. 401—412.

species, the first of its kind recorded from Spitzbergen; and in all probability this one had never been alive in that country. Its beak measures $3\frac{1}{2}$ in. to the commencement of the feathers on the top, and therefore, if the measurements given by Yarrell (3rd edit., vol. ii., p. 618) are trustworthy sexual distinctions, it is a female.

5. Purple Sandpiper (*Tringa maritima*, L.). — Rather numerous. Several pairs evidently breeding some miles inland up a valley east of Green Harbour, July 27th. On this day a nest containing four highly-incubated eggs was found on the opposite side of the Haven. The place where we perhaps saw most within a short time was a short way up Van Keulen Bay, on its north coast, on July 30th; and a few miles further on, and some distance inland, we discovered, on August 1st, four little Purple Sandpipers not many days old; their upper parts were covered with a purple-black down, beautifully spotted with yellow.

6. Arctic Tern (*Sterna macrura*, Naum.).—Fairly common; and we found a good many of its eggs on small islands in Bell Sound, &c. On one of the Axel Islands, at the entrance to the northern fork of this Sound, I watched a pair of Terns successfully drive an Arctic Skua away from their nest.

7. Ivory Gull (*Pagophila eburnea*, Phipps).—Only seen by us at Green Harbour and Magdalena Bay. At the former place we saw Ivory Gulls several miles inland, when we were Reindeer-hunting, and Faussett observed during the day, while cutting up a Reindeer fifteen miles or more from the coast, that Ivory Gulls speedily found it out, and congregated where none had previously been in sight. At Magdalena Bay, on July 29th, we saw a good many of this species, and secured several specimens. I fancy they were mainly attracted there by a quantity of carcasses of White Whales the "krang" left after the skins and blubber had been removed by the crew of a vessel engaged in this "fishery," which we found lying at anchor in the Bay. Chapman found a pair nesting this day at Rotges Hill, but in an utterly inaccessible place.

8. Kittiwake (*Rissa tridactyla*, Linn.).—Within one or two of being the commonest bird on the west coast of Spitzbergen. A large flock followed the ship all day on July 24th, when at sea well clear of the north coast of Norway (lat. at noon 72° 8′). Much less plentiful the next day off Bear Island, and there were

not many off the South Cape and Horn Sound on the 26th; but on our way up to Green Harbour, in Is Fjord, that evening they were very abundant, and were constantly to be seen in large numbers during the whole time we were off the coast, until we arrived off Vogelsang, about lat. 79° 55′, where our progress was stopped by an impenetrable field of ice, and where their numbers were small. They were breeding in most of the large "loomeries" of mixed species. The only specimen I took has hind toes.*

9. Glaucous Gull (*Larus glaucus*, Gm.).—We first saw two individuals of this species a short distance north of Bear Island, but as we passed Bear Island in a thick fog on the way north, and in a still thicker one on our way south, few or no birds were observed thereabouts. A few seen off South Cape, and one or two off Horn Sound: some in Is Fjord; but they could hardly be considered otherwise than scarce until we reached Magdalena Bay, where they were numerous. None observed off Vogelsang, our highest point north, but rather numerous in some parts of Bell Sound, especially in a "loomery" between Separation Point and Eden Island. They are chiefly to be seen (when undisturbed) sitting on a pinnacle of rock or ice, whence they have a good view of the surrounding scene. They appear to breed for the most part very high up the cliffs, as remarked by Professor Newton (*loc. cit.*) on the authority of Dr. Malmgren. Individuals of this species vary considerably in size. All the Glaucous Gulls that we saw were mature birds, with the exception of two seen by me in Green Harbour on August 3rd (one shot); one seen by Kjeldsen (I believe the same day, and therefore the same locality); and one seen by Chapman on the following day as we steamed along the coast on our way south. On a small low-lying island in Van Keulen Bay (near Point Ahlstrand) I picked up, on August 2nd, some tufts of feathers which had belonged to immature Glaucous Gulls, which had apparently been eaten by other birds. The young bird I shot is in the plumage of one year old and upwards—that is, it has lost most of the brown mottling; the secondaries are white, the primaries nearly so.

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† *Vide* Mr. H. Saunders on the *Larinæ*, P. Z. S., 1878, p. 164. He has since found, I believe I am at liberty to state, that this is much more common than he was aware of at the time of writing.

10. Richardson's Skua (*Stercorarius crepidatus*, Vieillot; H. Saunders, P. Z. S., 1876, p. 326).—A large flock of Kittiwakes, which followed the ship all day on July 24th, when we were to the north of the Norwegian coast, were continually waited on by Richardson's Skuas, of which there were usually from three to six, or more, in sight at once; the next day, in the neighbourhood of Bear Island, we only saw a single individual, sitting, looking rather unhappy, on a detached piece of ice. This species is common and seems generally distributed along the coast, and we saw a few as much as half a dozen miles or more inland, east of Green Harbour, on July 27th. None observed off Vogelsang, our highest point north. On our return to Green Harbour, August 3rd, I only saw one individual, and by the date of our return to Tromsö (August 9th) there was only an occasional straggler to be seen about the Fjord. We found a pair in Van Keulen Bay on August 1st with young hatched out. The efforts of the old birds to draw us away from their young were most amusing. Though we devoted a considerable time to the search, we did not discover the young, though I found one of the egg-shells. All the specimens observed by us were of the white-breasted variety.

11. Fulmar Petrel (*Procellaria glacialis*, L.).—First observed on July 24th in the open sea, to the north of Norway, one or more being in sight nearly constantly all day, and getting more numerous as we proceeded northwards, and by the time we entered Is Fjord we found them very abundant. They were rather numerous for several miles inland east of Green Harbour. At Magdalena Bay we found a "white-whaler" lying, with skins of this cetacean floating in the sea all round her, preparatory to being stowed away in her hold. Swarms of Fulmars were swimming close round the vessel's sides, elbowing and jostling each other, gorging on the scraps of blubber they obtained from the skins, and as tame as domestic poultry. We found we could catch them with a hook and line, baiting with a small scrap of "spek," literally almost as fast as we could haul them on board. On shooting some Ivory Gulls at this place, which dropped into the water, it was only by keeping up an unremitting cannonade of stones that I could keep the Fulmars off them until I could secure my specimens. They were common as far north as we went, and were among the few species of birds observed among the ice we

met with about the latitude of Bear Island on our way south (August 4th). There were still a few every now and then after we were in sight of the Norwegian coast on the 6th, and the last I saw of this species was near the head of Lyngen Fjord (east of Tromsö) on August 25th. To the collector, the Fulmar Petrel is by far the most troublesome bird I have yet made the acquaintance of, from its habit, when shot, of ejecting an oily fluid from its mouth, which stains the plumage. I selected my specimens, and then took the utmost care in handling them, but one is never safe until the skin has been actually removed. In marked contrast to the general state of the case, as far as our observations went in Spitzbergen, out of the thousands of Fulmars that we saw, we did not observe one adult, all I believe, without exception, being in a state of plumage intermediate between that of the adult and young in its second summer, described by Yarrell (3rd edit. iii., 642). The curved point of the bill is yellow, the sides buff-yellow, those of the upper mandibles being more or less streaked with dark brown; the sheath investing the nostrils almost black; the back and sides of the head a light ash-grey, getting darker on the back and wings and tail; a little brown on some of the wing-coverts; chin white in most specimens, all the rest of the under side light grey, more or less approaching to white in some specimens; the primaries a dull blue-grey, hardly slate-colour; feet and legs bluish horn-colour.

12. Brent Goose (*Bernicla brenta*, Steph.).—Rather plentiful in Van Keulen Bay, Bel Sound, but not seen by us elsewhere. The geese had all moulted their quill-feathers, and could not fly, but this deficiency was in great measure made up for in their extraordinary pedestrian powers; not only the old birds, but the goslings, some of which were, at the time of our visit (July 30th to August 2nd) still in down, others half-feathered, easily outran us on rough ground. Professor Newton (*loc. cit.*) has referred to the confusion in the names for this species, which he supposes led Professor Nordenskiöld to believe that he had shot the Bernicle Goose in Bell Sound in 1858, a species which has not been met with in Spitzbergen by any other observer. Mr. Leslie, the English translator of the 'Voyage of the Vega,' has "made confusion worse confounded" by literally translating the trivial names, so that the Bernicle Goose, *Anser leucopsis* (Jenyns) appears as the "White-fronted Goose," and the Brent, to which

Baron Nordenskiöld gives Temminck's name, *Anser bernicla*, as the "Barnacle Goose," a confusion which I have not seen noticed in any of the reviews of this most interesting book. The plumage of this species in summer appears slightly ruddier than in winter, owing to their upper coverts being fringed with rusty brown.

13. Pink-footed Goose (*Anser brachyrhynchus*, Baillon).—We met with this species at each of the localities we landed at; at least on the beach at Green Harbour, July 27th, we saw a pair of "Grey" Geese, which we were unable more particularly to identify, but as this is the only "grey" species known to occur in Spitzbergen, there is no reason to doubt that they were referable to this species. Chapman found about three pairs with goslings at Magdalena Bay (July 29th); he found their droppings and a quantity of their long quill-feathers strewn thickly about at the top of the *débris* under the precipitous cliff, and which doubtless indicated the site of their nests. Some of the goslings, in the yellow downy state, were caught and brought on board alive, where, however, they did not long survive. We were told that the Pink-footed Goose is capable of defending its young from the Arctic foxes.* The birds of this species were more advanced in the moult than the Brent, and had recovered the use of their wings.

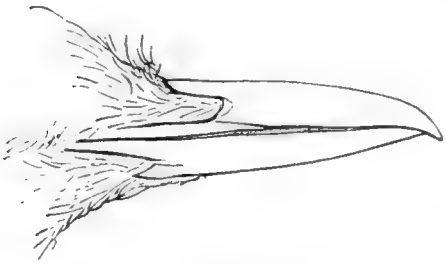
14. Eider Duck (*Somateria mollissima*, Fleming). — Very numerous, though very possibly, as suggested by Prof. Newton (*loc. cit.*, p. 516), "decreasing in numbers, owing to the persecution it undergoes." Chapman believed them to be "somewhat smaller and paler in colour than our home-birds."† I have no adult British specimen with which to make a comparison; two birds of the year which I have, killed in Shetland in September, are decidedly darker than my Spitzbergen ducks, but the latter appear to be absolutely similar to a Norwegian specimen. The two forks of Bell Sound were, I think, the only localities where we actually found them nesting. On the Axel Islands, in the north fork, their eggs were plentiful (July 31st). Ducks were numerous several miles inland to the east of Green Harbour (July 27th). The ducks—even when they were not, so far as we were aware, engaged in the duties of nesting—were, as a rule, very tame, and easy to shoot, but the drakes, which generally were

* Nordenskiöld believes this to be the case. 'Voyage of the Vega,' i., 126.

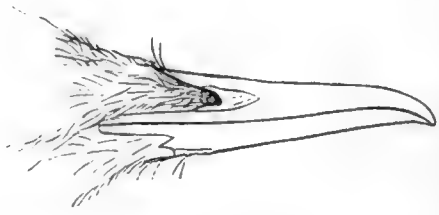
† On this and some other slight differences Professor Malmgren founded his *Somateria thulensis*.—Ed.

seen in flocks composed of that sex only, were much fewer in numbers, and extremely wary, so much so that I believe three specimens made up our total bag!

15. Mandt's Guillemot (*Cepphus mandti*, Newton, 'Ibis,' 1865, p. 517).—Very plentiful. Chapman observed a single Black Guillemot, early on the morning of July 24th, a short distance south of Bear Island; this would in all probability be referable to *Cepphus grylle*. No others were observed until we were some way up the Spitzbergen coast, but on entering Is Fjord they became common; and from that time some were nearly always in sight, floating tamely round the ship, resting on pieces of ice, or, less commonly on the wing. There were quantities at the edge of the ice off Vogelsang. Chapman observed a few breeding at Rotges Hill, Magdalena Bay. On our second visit to Is Fjord, August 3rd, amid the general decrease in bird-life, a few of this species were still to be seen in pairs. We saw some of them the following day on our way south, and the last of them (or they may have been *C. grylle*) among the ice to the north of Bear Island that evening. Professor Newton, in his paper in 'The Ibis' on the "Birds of Spitzbergen," to which I have so frequently referred, particularises the differences between this species and *C. grylle*, so I will here merely add a sketch of the bills of the two species.



C. grylle, male.



C. mandti, male.

16. Brünnich's Guillemot (*Uria bruennichi*, Sabine).—If I had not read in Professor Newton's paper that he considers the Little Auk the most abundant species in the Spitzbergen Ornis, I should have unhesitatingly pronounced the present species to be so, which is also Chapman's opinion (of course only as far as regards the west coast, which side alone we visited); and we have the high authority of Dr. Malmgren on our side, though it is just

possible (speaking for myself) that I may have been deceived by the greater conspicuousness of the large bird into supposing it more numerous than the tiny one. Any way, it exists all along the west coast in millions. Guillemots were rather numerous at sea (July 24th) to the north of Norway, but as the common species was the only one actually found breeding on Bear Island by Dr. Malmgren, these probably belonged to the latter species. The next day, after clearing the fog and ice, to the north of Bear Island, Guillemots became very common, and were probably Brunnich's species, to which doubtless all that we saw, without exception after we actually arrived in Spitzbergen waters, belonged; *Uria troile* not having been reported, I believe, from Spitzbergen since Parry's fourth voyage, when Sir James C. Ross met with it as high as lat. 81°.* There were quantities off Vogelsang. The "loomeries" where they breed are numerous; at Green Harbour they were probably breeding, in company with Little Auks, at an estimated height of 1400 or 1500 feet above the sea, and at Rotges Hill, Magdalena Bay, nearly or quite up to the top of that precipice, which is 2000 feet high. In the early morning of August 2nd we saw two or three Guillemots, accompanied by their young ones, about which they were very anxious, swimming a little way to the east of Separation Point, Van Keulen Bay: the young could dive well. On August 6th, when at sea to the north of Norway, we occasionally saw Guillemots, which may either have been of the common species or Brunnich's, on their way southwards for the winter; but as we did not observe any young birds with them, they probably were of the common species.

17. Little Auk (*Mergulus alle*, L.).—As above remarked, one of the commonest birds in Spitzbergen. Chapman saw two while we were steaming down Tromsö Fjord on July 23rd; several seen during the day (July 25th), in the neighhbournood of Bear Island; many flocks off Horn Sound on the 26th, and after that they swarmed everywhere along the coast up to Vogelsang, where we observed quantities. Breeding at an estimated height of 1400 or 1500 feet above the sea, on a cliff-face a little way inland, at Green Harbour (July 27th); and in great quantities at

* 'Yarrell,' 3rd edit., iii., p. 456. I have not had an opportunity of referring to the original.

Rotges Hill, Magdalena Bay (29th), probably up hill-top (2000 feet). A few pairs still in Green Harbour on our second visit (August 3rd).

18. Northern Puffin (*Fratercula glacialis*, Leach).—In comparison with the last four species, and especially the two latter of these, the Northern Puffin must be considered scarce; still one or two could generally be detected among the swarming masses of other sea-fowl, the bright red colour on the bill rendering them very conspicuous. Prof. Newton gives careful measurements of this and the ordinary species. The apparently much greater size of the northern bird particularly struck all of us on board the 'Pallas' who had any acquaintance with the common species. On our second visit to Green Harbour (August 3rd), while other species had diminished in numbers from thousands to scores, the Puffins were about in their usual numbers, and were, therefore, comparatively much commoner. Besides these species actually obtained by us (and one or more specimens of each of which I brought home, with the accidental exception of the Pink-footed Goose), the following birds were seen, with more or less certainty:—

19. Falcon (*Falco* sp.?).—"A large, long-winged Falcon" was observed by Chapman soaring high over the water at Van Keulen Bay on the evening of July 30th. He is sure he was not mistaken as to the genus; two other members of our party were with him, and were equally convinced as to its identification. No diurnal bird of prey has been obtained in Spitzbergen, and only two other instances are on record where one has been seen. The only raptorial bird hitherto obtained in Spitzbergen is the Snowy Owl (*Nyctea scandiaca*, Newt. ed. Yarr. Brit. B. i., p. 187; Dresser, B. Europe), of which a specimen is recorded by Dr. Malmgren as having been shot between Verlegen Hook and Shoal Point, 10th July, 1861 (Newton, 'Ibis,' 1865). Nordenskiöld ('Voyage of the Vega' i., 131) mentions an example obtained at Wijde Bay, in the autumn of 1872; he says "it evidently breeds and winters at the Ptarmigan Fell." Lamont obtained a specimen in Stor Fjord, but I am unable to give the reference. Professor Newton (*loc. cit.*) says his pilot had known of its occurrence in Spitzbergen previously, and Kjeldsen, one of our ice-pilots, was evidently aware of the same fact.

20. Long-tailed Duck (*Harelda glacialis*, Selby).—I believe I

saw a single bird of this species early on the morning of August 2nd near Eden Island, Van Keulen Bay, but sitting, as I was rowing and rather cramped up, I was unable to twist round in time to get a better view of it as it flew past some distance off. Chapman doubtfully thinks this species was seen on one or two other occasions, but I have no note on the subject.

21. Red-throated Diver (*Colymbus septentrionalis*, Linn).—An adult bird in Green Harbour on the night of July 27th.

This completes our bird-list. The following additional species are mentioned by Prof. Newton:—*Ægialitis hiaticula*, *Phalaropus fulicarius*, *Stercorarius pomatorhinus*, *S. longicaudus* (at least one pair of Buffon's Skua, and probably one example of the Pomatorhine, were seen by us at sea to the south of Bear Island, July 24th, but none in Spitzbergen itself), *Cygnus*? sp., and *Somateria spectabilis*.

The species of fish we met with in Spitzbergen were only three in number:—

1. Cod (*Gadus* sp. ?).—Large Cod appear to occur plentifully all along the west coast.

2. Lumpsucker (*Cyclopterus*, sp. ?).—I found a good many examples of a small species of Lumpsucker in the stomachs of Cod obtained in Spitzbergen, and in so fresh and perfect condition as to afford no reason to doubt that they had been obtained by the cod not far from the spot where they in turn were captured.

3. Skate (*Raia*, sp. ?).—I picked up a dead Skate, which had been pecked by birds, but was in a perfectly fresh state, in Bel Sound.

Salmon were not met with by us in Spitzbergen, though they are said by Dunér and Nordenskiöld to occur there in "rather considerable quantities" (*vide* explanatory remarks in illustration of a map of Spitzbergen, translated from the 'Transactions of the Royal Swedish Academy of Sciences,' Stockholm, 1865, p. 20). We did not met with any vessels that I am aware of in pursuit of *Scynnus borealis* (Flem.) alluded to by Professor Newton; but I have seen plenty so engaged off the north coast of Iceland.

Lieutenant Viebroock, of the German Imperial Navy and I, with the good-natured practical assistance of the chief engineer of the 'Pallas,' constructed a dredge for the purpose of collecting marine invertebrates, but it unfortunately fouled hopelessly on a rocky bottom the first time it was put overboard, and was lost;

and as there was no more spare iron, &c., on board to make a second dredge with, I was only able to collect such few invertebrates as chanced to come my way. I found the stomachs of Cod the most prolific hunting-ground.

I was unable, from their size, to preserve a specimen of Cod, but the Lumpsuckers and Skate, together with such invertebrates as I obtained, are now in the hands of Messrs. W. Hatchett Jackson and E. B. Poulton, who will shortly, I hope, report upon them.

ROUGH NOTES IN SKYE AND EIGG.

By Hugh Macpherson.

Durinish, the north-west parish in Skye, was reached on May 3rd. Walking over the Fatach Hill ground on May 4th we saw several brace of Golden Plover; they were very tame, and never rose, though they ran swiftly. Later in the season we were much entertained by their frequent flights, taken to draw us from the vicinity of their young The Common Sandpipers, so abundant on the banks of all the small burns, became almost equally solicitous later on. Several pairs haunted the Glendale River, as did also the Dipper; and the Black-headed Reed Bunting (although scarce) nested both on the Glendale River and on the extreme west of the property near Loch Mor. On May 6th we walked over the varied and broken ground of Waterstein, but only found some Mallard on Loch Mor. On May 7th, during a heavy evening shower, a Manx Shearwater flew up Loch Pooltiel until it reached the mouth of the Glendale, when it passed over Hamara in a westerly direction. On May 10th we saw a Blue Hare on Gearey More; subsequently we saw a blue leveret, as well as more adults, for this species, though introduced into Skye more recently than the common species, promises to thrive well on the hills, though as yet far from numerous in Durinish. On May 11th, as I was walking over to Ramasaig, a fine Merlin flew past me, as did a single Raven. During a heavy shower, May 12th, a Black-headed Gull flew into Meanish Bay; the men, who were rowing me out to their long lines, remarked on the local scarcity of this species, which they know so well from their fishing on the east coast.

Once outside Meanish Point we saw plenty of Razorbills, scattered about in parties of seven or eight. Many Puffins paddled or "whirred" past the boat, only in pairs. Cormorants, of course, flew by, and both Common and Black Guillemots were there, the latter preponderating. Two Kittiwakes followed us, looking out eagerly for scraps.

May 12th was the first day on which we heard the Corn Crake; it was not until May 30th that we had a really good opportunity of studying the method by which the Crake ventriloquises, twisting his neck rapidly from side to side. On June 1st the herd-boy, cutting grass in the garden, mowed within a few inches of a Crake's nest; at that time the female was shy, and readily deserted her nine eggs, taking flight over the very high garden-wall into the little patch of firs behind the house; gradually she became more loth to leave her precious charge, and only scuttled off a few yards into a bed of nettles when disturbed.

The Cuckoo appeared on May 3rd, and sat for two days on a stake, as if exhausted, only shifting its position to fly down and pick up some grubs, always returning to one of the stakes. Two males appeared to be all the escort that wooed that fair Cuckoo, whose crepuscular "whittling" brought down such imprecations from the Song Thrushes. The Cuckoos spent most of their leisure in flirting about the only trees in the district, the above-mentioned firs; sometimes I saw one—the hen as I thought—on the hill-side, hunting perchance for the nest of a Meadow Pipit; or was she roving in search of the eggs of other birds?

Upon May 16th the head shepherd reported that a brood of *Corvus corax* were on the point of flying; the nest was built on an inaccessible cliff, in Dibydale, so far away that our other engagements, which prevented any but incidental observation of birds, forced us to forego the pleasure of making their acquaintance. Next day I learnt that a brood of four had been destroyed at Greshornish; the bird of darkness has few friends in Skye.

On May 17th we enjoyed a long view of a fine Sea Eagle; when first espied from the top of our drag he was flying quite low over the heath, but before I got within sixty yards of him he rose to a considerable elevation; he soared over the hill-side for a minute or two, and then departed in an easterly direction. As we touched at Arisaig, May 18th, previous to being landed by the

steamer on the Isle of Eigg, some male Sheldrakes came in view. Early on May 19th a fine chick of *F. cœlebs* called me to himself; he was strong on the wing, and so independent withal that it seemed that he must be a very early bird for the West of Scotland. It was not until June 12th that an old cock Chaffinch fed one of our Skye nestlings under my bed-room window; and it was only on June 16th that two broods began to pick up the grain of the poultry.

On May 21st and subsequently I searched to no purpose for an example of my favourite *T. torquatus*, which had been seen near the house a few days earlier. I also tried in vain to find the nest of a pair of Sheldrakes, which had found some "eligible" cairn near J. S.'s cottage. Mr. John Macpherson, of Sandavore, described a nest which he had taken on the adjacent Castle Island, and kindly offered to show me a Heron's nest on a cliff at the north-west of Eigg. When I visited Eigg some ten or eleven years since the Herons from the mainland habitually patronised the Eigg fishing; but I believe that the species has not nested in Eigg, of recent years at any rate, until the present summer. On May 21st the first brood of *E. rubecula* flew; I found a nest of *R. cristatus* to-day, and, as Mr. Arthur Joss found a nest in 1881, there is every hope that it may increase. I saw this day the deserted eyrie of the Sea Eagles that until late years bred in Eigg.

On May 22nd, climbing Scuir, we broke the slumbers of five Meadow Pipits, all of which incontinently gaped their yellow-bordered red throats at the strangers. Five or six Mallards were reposing on the Scuir lochs; Teal were absent. On May 23rd we felt fairly satisfied that a pair of noisy Terns, hovering about low water, were to be referred to *S. macrura*, though their lively movements made it difficult to scrutinise their beaks as minutely as I desired to do.

May 24th being a diluvian day I walked alone to Laig, and found a cheerful little band of Oystercatchers, Gulls, and Sandpipers feeding on the shore, chiefly about the Laig burn's mouth. "Xit-xit" announced the gay little Dipper that came speeding down a rivulet to meet me, and flitted for a hundred yards out to sea. Among the rocks near the musical sands a brace of plump Ringed Plover ran; a third, surprisingly fearless, since I approached within ten yards of it at one time without alarming it, joined company with the first two.

Mr. Joss and Mr. A. Joss, the contractors, who are keen ornithologists, and have lived a good deal on the island, mentioned two localities for *Æ. hiaticula* breeding there in June.

After leaving the Plover I strolled south, counting six Cormorants and two Black Guillemots. As I turned the corner of the cliff, suddenly up rose a large Black-backed Gull, who had been gorging on a dead lamb; as the eyes and tongue of the mammal had long departed, it seemed likely that a Raven, which I saw a few minutes later, had also shared the feast. The ground-officer had expressed his disappointment to find, on his return from Skye, that two broods of Ravens had flown in his absence from Eigg, and vowed a campaign of extermination. I was talking to him at his own door when a pair of Yellowhammers flew up. The cock was a little shy of the stranger; his mate fearlessly descended and gathered crumbs at our feet. Though a wild bird, she often enters the cottage freely, and feeds from her mistress' hand. As we left Eigg, May 26th, I saw this little hen feeding one of her young ones. Both were nesting on the threshold of the cottage, the little one fluttering its wings hungrily. The Yellowhammer is as numerous in Eigg as *E. miliaria* is in the west of Skye. But all the Eigg land birds are very tame. Corn Crakes three times ran past me in open places, and of their own will; the Twites were still tamer, two or three pairs feeding on dandelion seed every morning under the drawing-room windows, and settling on the skylights of the attics and on the roof almost as familiarly as the Mealy Redpoles perch on the soetars of the Dovre Field.

As the 'Dunara Castle' steamed away from Eigg, in the gloaming of May 26th, six or seven Manx Shearwaters appeared, skimming over the slight swell at the north end of the island. Before 4 p.m. on the 27th we saw several other Shearwaters skimming over the surf off Waterstein; I searched subsequently for a breeding-station, but found none, and, though there may well be a breeding-place in Durinish, those we saw might as easily have been nesting in either Rum or Eigg; for the distance to a bird is nothing.

On May 30th we saw a Merlin, and the next day a Kestrel. After spending the forenoon on business at Dunvegan we landed, on our way home, upon one of the Skinidin Isles, which yielded some Common Gulls' eggs, and the nest of one of the three pairs

of Red-breasted Mergansers that we noticed so frequently. The Merganser's nest was placed in a dark grey cairn, the entrance to which was "curtained" by a fine clump of lady-fern. We rather rashly took one of the seven eggs, but the old hen sat on, and no doubt her six little ones have long since haunted Dunvegan Loch. I thought I saw a single Dunlin at the end of this isle, but did not feel absolutely sure of its identification. Curlews often visited the loch, though we could not ascertain that they bred on our own hills.

June 1st being my first and last free day, I determined to work up all the Skinidin Isles; but, though the Terns, Gulls, and Ducks were fairly represented, the whelk-gatherers and their hungry dogs had forestalled us, as the remains of nests sadly proved. The ground-officer pointed out a ledge on which a pair of Peregrines built a few years since. Unhappily one of the pair was shot. A clump of white campion now grows in the Falcon's nest, as if in mockery of former glory. We found a Rock Pipit's nest with four eggs, and then I landed, and, walking back to Loch Pooltiel, took another boat to the west side of the isle.

At a place called the "kilt," in Gaelic, owing to the pattern of the basaltic columns, a number of Rock Doves and Starlings were nesting, in company with *Uria grylle*. We fancied the latter had young in the crevices, and, as I longed to procure one or two for the Zoological, to keep company with *L. troile*, which I heard described in its youth at the Zoo as a "young Vulture," I sent one of the gillies up an oar, but to no purpose. He could not even reach *C. livia*, of which the young were hatched. Egg-shells of *C. livia* and of the Starling were strewed on the rocks below the nests. But the Guillemots sat sedately on the ledges outside their nests; now and again away one went, its vermilion feet lighting up the black body colour and white epaulettes.

On June 17th we returned, but the Doves could now fly fairly, and our ladder proved too short to reach the holes of *U. grylle*. Young Gulls had been out some days, and we felt that the Guillemots should be fit to take; but the rock below their nests was sheer and smooth, and we reluctantly deferred our violation of the Birds' Act to the season of 1883. As we stood below the cliff, admiring the old birds that "gulled" us so successfully, an

old Raven and a young one passed; as we backed out of the creek we saw three Hooded Crows, three more young Ravens, and not many minutes later we saw the only couple of Jackdaws that I chanced to see in Skye.

I left for the south on the 28th, regretfully enough, as the Sea Eagle, Falcon, Chough, and Storm Petrel were all breeding, unvisited, in the district.

ORNITHOLOGICAL NOTES FROM NATAL.

By Majors E. A. Butler and H W. Feilden, and Capt. S. G. Reid

(Concluded from p. 335.)

Ciconia alba, Bechst., White Stork.—Commonly met with searching for food in the shallow or muddy parts of the larger vleys, in the winter months. Not often seen in any numbers, but Reid came across a flock of about thirty, on the open veldt near Colenso, on the 22nd November; these were probably on the move to their breeding quarters, wherever they may be. Butler was informed on very good authority that a few pairs bred in Natal; and a cousin of his in the Natal Mounted Police, who knew the bird well, told him that he had seen a nest himself, with eggs in it, in that year (1881), in a tree near Estcourt, at no great height from the ground.

Anastomus lamelligerus, Temm.—"An example of this curious bird was shot near Ladysmith, in a swamp, on the 8th March, 1881, by Capt. Thackeray, 6th (Inniskilling) Dragoons. Much to my regret, I was unable to preserve the specimen, as we were marching from 'reveillez' to sunset, and lying three in a tent at night wet through and starving! The head I gave to my waggon-driver, and begged him to carry it; but he told me afterwards that it smelt so abominably he had to throw it away. I think, however, the few feathers I saved would at any time be sufficient for the identification of the species" (F).

Ibis æthiopica (Lath.), Sacred Ibis. — A flock of eight seen flying over Bennett's Drift Camp, about three miles from Newcastle, on the 16th September (F).

Geronticus hagedash (Lath.), Hadadah. — Very numerous at the Ingagane (="Black Ibis" in Kaffir) River; there is a favourite roosting-place on a precipitous range of low cliffs

overhanging the river, about a mile above the drift, on the main Newcastle road. Here Reid obtained specimens, and had a good opportunity of observing their habits; but he was unable, unfortunately, to ascertain if they bred there. As many as 100 made use of these cliffs at roosting-time, leaving in small bands long before sunrise for their feeding grounds in the marshy tracts on the veldt, and returning in the same order about sundown, uttering their loud and weird cries the while. There were smaller roosting-places lower down the river, but the species was certainly not common elsewhere in the Newcastle district. We are informed on the very best authority that these birds are most delicious eating,—"fit for the Prince of Wales," as one man described them; and Butler also pronounces them to be excellent birds for the table, in fact better than the "Knorhaan," being more tender and highly flavoured. Butler adds the following note on its nidification:—"Found a nest at Colenso, on the 13th November. It was an ordinary stick nest, well lined with dry grass, and placed in the fork of a low bough overhanging a well-wooded stream running out of the Tugela River, and about seven feet from the ground. It contained three incubated eggs of a light dingy olive-green colour, smudged over with dark brown, and very unlike the ordinary type of Ibis eggs. The nest was solitary, and the hen bird flew off close to me as I approached it, uttering its peculiar call. I saw no other birds of that species near the spot, but they may notwithstanding sometimes build in groups" (B).

Geronticus calvus (Bodd.), "Wild Turkey."—We were somewhat astonished to hear that Wild *Turkeys* were to be found in the country, on our first arrival, and equally astonished to find out what was intended by the name. They are not uncommon near Newcastle, several specimens being obtained in the winter. Reid shot a lovely one at the Ingagane on the 7th July, and saw others there; he also observed them, paired, at Rorke's Drift on the 3rd October. They breed on the steep banks of the Buffalo or its tributaries in this neighbourhood, as Butler heard of several nests, some with eggs and others containing young birds; but we had no opportunity of examining the nests ourselves. Butler adds that he found them very good eating.

Numenius arquatus (Linn.), Curlew.—Single examples occasionally met with on the vleys in September and October, as shy

as usual. Five or six seen together at the mouth of the Umgeni, near Durban, on the 26th December (R).

Totanus canescens (Gmel.), Greenshank.—Frequently seen, singly, in the "vleys" in the Newcastle district in September and October, but no specimen obtained. Its well-known note was quite familiar to our ears.

Totanus calidris (Linn.), Redshank.—Seen at the mouth of the Umgeni River, near Durban, on the 26th December (R).

Totanus glareola (Linn.), Wood Sandpiper.— Common in the "vleys" and on the banks of streams near Newcastle in September and October, and several specimens obtained. Also obtained on the bed of a small stream near Pietermaritzburg on the 7th December by Reid.

Actitis hypoleucus (Linn.), Common Sandpiper.— Met with sparingly on all the streams and rivers in the neighbourhood of Newcastle in the winter and spring.

Recurvirostra avocetta, Linn., Avocet. — One shot near Newcastle early in October by Lieut. Stokes, R. A. (F).

Machetes pugnax (Linn.), The Ruff.—First observed by Butler, and a specimen obtained by him in the "vleys" to the east of Newcastle on the 18th September. Afterwards common, usually noticed in small flocks.

Tringa subarquata (Güldenst.), Curlew Sandpiper.—A male obtained by Reid at the mouth of the Umgeni, near Durban, on the 26th December. Several others seen.

Tringa minuta, Leisl., Little Stint.—Not uncommon about the "vleys" in October and November. Lieut. Giffard obtained three on the 12th October near Newcastle, and kindly presented one to Reid.

Gallinago æquatorialis, Rüpp.—Not numerous in the "vleys" till the middle of June, when they came in abundantly, ten couple being several times bagged by a single gun. They must breed from about December to March, for Butler heard of a nest containing fresh eggs taken at Mount Prospect in February, and of young birds being seen in the same locality in April. They are not difficult birds to shoot, lying much closer, as a rule, than the northern species, and flying more slowly and heavily.

Rhynchæa capensis (Linn.), South African Painted Snipe.—Not met with till July 20th; afterwards common in the thick sedge and grass in the "vleys." No nest was found, though

the birds were in pairs in November, and evidently going to breed.

Porzana bailloni (Vieil.), Baillon's Crake.—Frequently met with in the "vleys" to the east of Newcastle, and several specimens obtained in September and October, but no nest could be found, although a male shot by Butler on the 1st October, the measurements of which are given below, was largely developed for breeding. They breed later probably. Length, $7\frac{1}{2}$ in.; wing, $3\frac{1}{4}$ in.; tarsus, $1\frac{3}{4}$ in.; bill, from front, $\frac{11}{16}$ in., from gape, $\frac{3}{4}$ in.; expanse, $10\frac{3}{4}$ in. Iris orange-red; bill green, dusky on the culmen; legs and feet pale olive or drab; orbital skin buff (B).

Porphyrio smaragnotus, Temm., Purple Gallinule. — This handsome bird was not uncommon in the "vleys" round Newcastle, and examples were obtained, in September and following months.

Limnocorax niger (Gm.).—One seen by Butler and Reid in a small "vley" near the junction of the Ingagane and Buffalo on the 16th October, but all their efforts to dislodge it from the thick rushes proved unavailing. Butler flushed a Rail on another occasion in a "vley" near Newcastle, which he believes to have also belonged to the present species.

Fulica cristata, Gmel., Crested Coot.—Abundant in all the "vleys" in the Newcastle district throughout the year. Many nests were found and eggs taken in September and October. Butler's notes contain the following:—"18th Sept., numerous nests building near Newcastle; one contained five eggs, chipped, another seven fresh eggs, and another five fresh eggs. The nests were of the ordinary Coot type, consisting of large sedge structures floating on the water, and built in thin or thick rushes by the side of "vleys." The eggs appeared to me to have the markings larger and bolder than those of *F. atra*. The chicks are very pretty, being covered with sulphur-yellow, and black down inclining to rich orange-red round the base of the bill. Bills bright red."

Podiceps minor, (Gm.), Little Grebe.—Common on all the larger "vleys" in October and November. A larger Grebe, which we imagine to have been *P. auritus*, was also frequently seen, but we did not obtain a specimen.

Plectropterus gambensis (Linn.), Spur-winged Goose.—Abundant in the Newcastle district all through the winter, and up to

the time of our departure in November. Numbers were shot and eaten, the young birds especially being excellent. They breed, according to trustworthy informants, in the long grass at some distance from water. We were too early for nests.

Chenalopex ægyptiacus (Linn.), Egyptian Goose.—Not seen in our district till the 6th October, when Butler observed several in "Spoonbill Vley." Specimens were obtained by some officers near this "vley" about ten days afterwards. It is reported to be extremely abundant in a large "vley" just over the Free State side of the Drakensberg to the west of Newcastle, called "Seekoe Vley."

N.B. *Nettapus auritus* (Bodd.).—We were rather disappointed at not meeting with this species. It appears to be irregular in its visits to Natal.

Anas sparsa, Smith, Black Duck.—Though not obtained in the immediate vicinity of Newcastle, it was rather common at the Ingagane River, about twelve miles away, where Reid shot several in June and July. They were very shy, and generally found singly or in pairs in the river, not in the "vleys." Iris dark brown; legs and toes orange, webs blackish; bill, upper mandible lead-colour, with rail and large saddle-shaped patch on culmen (including nostrils) black; under mandible pale flesh-colour, blackish towards the base between the rami (R).

Pœcilonetta erythrorhyncha (Gm.), Red-billed Teal.—Not so numerous as the next species, *A. xanthorhyncha*, but a well-known duck, frequently met with in small flocks in all the "vleys," and excellent eating. The sexes differ so conspicuously in size that we were inclined at first to think that these were two species, but we have come to the conclusion that there is only one.

Anas xanthorhyncha, Forst., Yellow-billed Teal.—Abundant in all the "vleys," sometimes seen in flocks of considerable size. Most excellent eating, and a decidedly pleasant change from our impracticable rations of "trek ox!" Though we found no nests, they appeared to be breeding in October. Broods of young ducks of various ages and unknown species were seen in the "vleys," but we were as fairly puzzled by the nidification of the *Anatidæ* as by that of numerous other families, and could make nothing of them.

Querquedula hottentotta, Smith, Hottentot Teal.—Obtained by Lieut. Giffard near Newcastle in November.

Spatula capensis (Smith), Cape Shoveller.—A pair seen on a "vley" east of Newcastle on the 18th September (B).

Aythia capensis (Cuv.).—First noted by Butler in the "vley" east of Newcastle, near the Ingagane, early in September. He saw a brood of five or six young ones about ten days old on the 18th of that month. We obtained several specimens in October. Reid observed three pairs of these ducks on a small open "vley" close to the main "drift" and Fort Amiel, at Newcastle, on the 7th November.

Thalassornis leuconota (Smith).— Feilden obtained the first specimen met with near the Buffalo River early in September. It was common on the "vleys" near this river and the Ingagane in October, and Butler had the good luck to find a nest and secure four eggs in one of these "vleys." His note is added below:— "Found a nest of this species on the 18th September. It was built of sedge, and very similar to a Coot's nest, but smaller, and placed in thin rushes just above the surface of the water, which was about two feet deep, and about ten yards from an island in the centre of a good-sized tank. It contained a single large greenish white egg, quite fresh, and the surrounding rushes were broken across (no doubt by the old bird) and bent down over the nest so as to conceal its contents. On revisiting the 'vley' on the 25th inst. I found another nest, precisely similar, about twenty yards off, containing three fresh eggs. This nest was probably built by the same pair of birds. The eggs were warm all day, and a small flock, consisting of three or four pairs of birds, remained close by constantly; still we never saw the hen bird go to the nest, although there were feathers in it and scattered about on the water all round. I fancy they slip off the nest and dive like the Grebes the moment they see any one approaching. Legs and feet bluish plumbeous; iris dark brown; bill dark brown, inconspicuously spotted on the sides of the upper mandible; lower mandible pale brownish yellow, with base and tip dusky brown" (B).

Procellaria macroptera, Smith. — "Seen near the shore in Durban Roads, and all along the coast, on my homeward voyage in December" (R).

Sterna macrura, Naum. — Obtained by Lieut. Giffard near Newcastle at the end of November (R).

Sterna bergii, Licht.—Several observed by Butler in the harbour at Durban, flying about among the ships lying at anchor.

Plotus levaillanti, Licht.—"One seen near the mouth of the Umgeni on the 24th, and one (doubtless the same bird or its mate) at the same place, flying close past me, on the 26th December" (R).

Sula capensis (Licht.), South-African Gannet.—Numerous outside, and one or two seen inside, the harbour at Durban at the beginning of August (R). Very abundant all along the coast between Durban and the Cape, frequently seen in hundreds together, diving into a shoal of fish.

Graculus capensis (Sparrm.), Cape Cormorant.—Observed at the entrance of the harbour at Durban on the 14th August (R). Very numerous along the coast, and at Cape Town and Simons Bay.

Graculus africanus (Gm.).—A pair seen by Butler and Reid at a small "vley," a few miles east of Newcastle, on the 25th September. When swimming their appearance was most singular, the body being submerged, with the head and long tail alone showing above water.

ORNITHOLOGICAL NOTES FROM LOWESTOFT, SUFFOLK, FOR 1880—81.

By Henry Stevenson, F.L.S.

(Continued from p. 335.)

Wild Swans.—Mr. Barton states that one Sunday, just before Christmas, 1880, some Wild Swans were observed off Kessingland, which flew in the direction of Lowestoft, and tried to settle on the pool of brackish water to the north of the fishing-pier. Here, however, they were soon disturbed by boys on the beach, and took wing once more for Kessingland, where, as a gunner told him afterwards, they settled out at sea, and were joined by a single bird which had remained behind; probably one that had been previously wounded.

Siskins.—About the middle of December, 1880, a flock of ten Siskins frequented for two or three days the trees surrounding St. John's Church, close inland.

Common Skua.—On the 18th of January, 1881, Mr. Barton sent me a Common Skua, a female, in good condition, but with

the stomach perfectly empty, which had been killed on the shore at Lowestoft, that day, during a heavy gale from the north-east. The frost had been intensely severe for some days past, with much snow on the ground, and that morning the frozen snow was driven in sheets before the wind, baring the trees and house-tops, and filling every crevice in its course. The old gunner who shot it, and who for some hours had pluckily weathered the storm, secured a fine Goosander as well. Swarms of wildfowl were said to have been "whirling past" all day, with some Sheldrakes and Brent Geese in abundance. Dunlins and Snipe were also killed along the coast in considerable numbers. I had long wanted a specimen of this, by no means common, Skua on our eastern coast, and even during the great influx of Pomatorhine and smaller Skuas in 1879 I neither saw nor heard of an example of this species.

Long-tailed Duck.—On the 7th of February, 1881, Barton shot a young female, which was swimming about in the harbour, and, from its wasted condition and weather-beaten plumage, had been either wounded, previously, or was a victim of "hard times" in the preceding month.

Pied Wagtails and Wheatears.—A somewhat late arrival of both these species seems indicated by the following note, received from Mr. Barton on the 23rd of May, 1881 :—"Yesterday, in walking to Benacre, and when close to Covehithe, I saw several Pied Wagtails arriving in threes and fours, and on the 21st, along the coast-line between Lowestoft and Yarmouth, Wheatears were extremely numerous."

Sanderlings.—During the same week, on the 22nd of May, Mr. Barton also met with a flock of eight Sanderlings near Covehithe, running about on the sands, and, by creeping on his hands and knees, was able to watch them within fifteen or twenty yards. Some were very red on the throat and breast, others as conspicuously white. In following them up, after a short flight, he was surprised at the pace they could run, fast enough to keep a man at a good trot to get anywhere near them.

Shore Lark.—One shot at Lowestoft on the 10th of October, 1881.

OCCASIONAL NOTES.

Choughs breeding in Domestication.—For years when I lived at Dangstein I kept Choughs (*P. graculus*), able to fly where they liked. They once attempted to make a nest in a stoke-hole, but were disturbed, and never did so again. On my removal to East Sussex I brought the Choughs (two pairs) with me, and the next year one pair made their nest in a tower attached to the house, and laid three eggs; but they did not sit well, and the eggs were not hatched; two of them were pulled out of the nest. The one pair drove the others away, for when they first came they all roosted in the tower. I hope next spring we may be more fortunate. I believe this is the first instance of Choughs breeding under domestic conditions. We feed them on raw meat and Huntley and Palmer's biscuits.—Dorothy Nevill (Stillyans, Horeham Road, Sussex).

The Gadwall in Radnorshire.—In Mr. E. Cambridge Phillips's account of the "Birds of Breconshire," recently published in 'The Zoologist,' I find no mention of the occurrence of the Gadwall, *Anas strepera*. In August, 1880, I was fortunate enough to come upon half-a-dozen of these birds on a little pool on Llandeilo Hill, near Aberedw. As there was no cover in which they could hide, they rose on seeing me and flew round the pond, on which they resettled; eventually I was enabled to approach within a few yards, when they rose again and flew off in the direction of the Wye. I have little doubt but that they had come from the large pool of Llanbyellyn, which I was unable from lack of time to visit, since the piece of water on which they were was far too small to afford them food, it being only a few feet in extent and very shallow. I may here add a few remarks which Mr. Phillips's notes have suggested to me. He mentions the Hawfinch as very rare in Breconshire. This is somewhat surprising to me, as it is abundant in the neighbouring county of Hereford. At Bishopstowe one was so bold as to come for some time, almost regularly, to eat the berries fallen from a holly tree, not a dozen yards from the windows of the house. Perhaps the reason for its rarity in Breconshire is due to the more open and bleak character of the country, as it prefers a well-wooded district, and suffers much from cold in the winter. With respect to the Tufted Duck, *Fuligula cristata*, a small flock appeared on the Wye at Bridge Sollers, in Herefordshire, a few winters ago. I expect that it is more abundant lower down the river, but it is everywhere, except near the sea, a very irregular visitant.—H. N. Ridley (British Museum).

Alpine Chough in Oxfordshire.—I purchased last month a specimen of this bird, which was shot by a keeper at Broughton Castle, Banbury, Oxon, on the 8th April, 1881. It was seen in the flesh by Mr. Aplin, of

Banbury, who also saw it skinned. It was to all appearance a wild bird, the wing and tail-feathers being perfect, and the bird in good condition. The stomach contained several coleopterous insects and one caterpillar. Mr. Aplin states, in a letter to me, that he himself is perfectly satisfied that the bird is a wild one, and, from its plumage and contents of stomach, I should think the same. It has previously occurred in a wild state in Heligoland, and there is no reason it should not do so in Britain.—J. Whitaker (Rainworth Lodge, near Mansfield, Notts).

[This is the specimen which has been already noticed in 'The Zoologist' (1881, pp. 422, 471). We are sorry to disabuse our correspondent of the idea that he possesses a British-killed specimen of the Alpine Chough, in the sense in which he would understand it. "British-killed," in one sense, it is; but we have no doubt that it had previously escaped from confinement. The Alpine Chough is not migratory, and not at all likely to occur here in a wild state. Neither is our own Cornish Chough migratory, and is almost as unlikely to occur in Oxfordshire as the other.—Ed.]

Ring Ouzel in Northamptonshire.—In the last week of August a Ring Ouzel was shot at Hazelbeech, in this county. As the few specimens of this bird that annually pass through this county in their autumnal migration generally arrive here during the first week in October, the appearance of this specimen at so early a date is remarkable. The bird was a male in mature plumage.—H. F. Tomalin (24, York Parade, Northampton).

Totanus solitarius at Scilly.—I have to record the occurrence at Scilly, on the 21st September last, of the American Solitary Sandpiper, *Totanus solitarius*, Wilson (*Chloropygius*, Vieillot). It is about the size of our Wood Sandpiper, which it much resembles, but is at once distinguishable by not having the upper tail-coverts white as in our bird. It was identified by Mr. Dorrien Smith, of Tresco, Scilly, for whose collection it has been preserved by Mr. W. H. Vingoe, of Penzance, and by an American gentleman who happened to be in Penzance at the time of its arrival here. I believe this is the first recorded occurrence of this species in the British Islands.—Thomas Cornish (Penzance).

[Some years ago a bird of this species was shot on the Clyde in Lanarkshire, as recorded by Mr. Robert Gray, 'Ibis,' 1870, p. 292, and 'Birds of Scotland,' p. 295.—Ed.]

Rose-coloured Pastor in Jersey.—A fine specimen of the Rose-coloured Pastor, *Pastor roseus*, was shot here in the parish of St. Martin, on the 13th June last. It is a male in full plumage, and has been secured for the local museum. I think the species has been killed here once before, though not recorded.—J. Sinel (Bagot, Jersey).

Manx Shearwater in Somerset.—As this is the first time I have been able to record the appearance of the Manx Shearwater, *Puffinus anglorum*, in this county, I think it worth while to send you a note of its occurrence at Milverton, quite inland,—a good fourteen miles from the Bristol Channel,—during the last week in September. It was a full-plumaged adult bird, with pure white under parts. It was most probably crossing from the Bristol to the English Channel, and pitching on the ground was unable to rise, as it was found running under a hayrick to hide itself, and was immediately slaughtered by the person who found it. Seeing that it breeds at the Scilly Islands, and, according to Mr. A. G. More, at Lundy Island also, it seems odd that the Manx Shearwater does not more frequently occur as a straggler on our coast; but, as already observed, this is the first I have seen or heard of either inland or on the coast of Somerset, though it is by no means uncommon on both coasts of Devon, especially in autumn.—Cecil Smith (Bishop's Lydeard, Taunton).

Fire-crested Regulus in Jersey.—In Ansted's 'Channel Islands' a very fair list is given of the birds of Guernsey, which applies well to Jersey, but the Fire-crested Regulus is omitted, which is quite as common here, I find, as the Goldcrest.—J. Sinel (Bagot, Jersey).

Martins breeding in Bayswater.—During the last three or four years I have observed a colony of House Martins, *H. urbica*, breeding in the neighbourhood of Westbourne Terrace. Two years ago I counted over a dozen nests in that Terrace. They returned to the same spot last year, but their nesting operations were disturbed by the house-painters. It is probably on this account that they have now entirely deserted the place, and have established themselves close by in Sussex Square, where, on the west side, in July, I counted ten nests. During the daytime they might generally be seen hawking for flies over the Serpentine. — J. Young (64, Hereford Road, Bayswater).

Early Arrival of the Jack Snipe.—A Jack Snipe was shot on the banks of the Cherwell, near here, and brought to us on the 15th September. This is the earliest date for its arrival in North Oxon that I am aware of; the only other example, to my knowledge, procured in September, was shot by one of our party in 1879, on the 24th of the month, and recorded in 'The Field' for that year. Since then I have heard of another specimen. It was picked up on the 23rd, having flown against the telegraph-wires.—Oliver V. Aplin (Banbury, Oxon).

The Smooth Snake in Surrey.—I was much pleased during the past summer to find a snake of this species (*Coronella lævis*) by a roadside near Chobham Bridges. As I have never seen any record of its occurrence in Surrey, I think this fact may be worthy of note. It was of quiet

disposition, and allowed me to handle it without showing the least inclination to bite, and when released glided slowly away, in this respect being very dissimilar to both the Viper and the Common Snake. The situation in which I found it was very similar to its well-known haunts in the New Forest, the soil around being sandy and covered with heather. I expect it will be found to be more widely distributed than it is generally supposed.—H. N. Ridley (British Museum).

The Smooth Snake at Bournemouth.—In October, 1879, I received from a Bournemouth birdstuffer an adult specimen of the Smooth Snake, *Coronella lævis*, of which the under parts were of a beautiful salmon-colour. It died when on loan to a friend in December, 1879, and I placed it in the Oxford Museum, but its colour faded after death. I mention this because Dr. Stradling recently described, in 'The Field,' a similar variety from Germany.—H. A. Macpherson (Oxford).

Thresher Shark off the Coast of Devon.—A Thresher (*Squalus vulpes*), fourteen feet in length, its tail measuring six feet three inches, was captured by a Brixham fishing-smack on September 15th. It was purchased by Mr. Brookes, fish merchant, Kingskerswell.—John Gatcombe (Durnford Street, Stonehouse, Devon).

Spinous Shark on the Coast of Dublin.—On the 25th September last I saw, lying in the shop of a fishmonger in William Street, Dublin, a fine specimen of the Spinous Shark (*Echinorhinus spinosus*, Blainv.), which I was informed had been captured near Skerries, about fifteen miles to the north of Dublin. This is, I believe, the first record of the occurrence of this rare fish in Ireland.—A. G. More (Dublin).

Large Sword-fish off Plymouth.—On September 21st a Sword-fish was taken in a mackerel-net, near the Eddystone, eleven feet in length. The sword measured three feet and a half: depth of body proportionately small, being only one foot one inch, as reported by the person who measured it.—John Gatcombe (Stonehouse, Devon).

NOTICES OF NEW BOOKS.

Cameos from the Silver-land; or, the Experiences of a Young Naturalist in the Argentine Republic. By Ernest William White, F.Z.S. Vol. II. London: Van Voorst. 1882.

The first part of this work was noticed in 'The Zoologist' for January last (pp. 37—40), and the author's narrative ended for the time with his return from a visit to the extreme north-

western provinces. The first expedition now chronicled is in a nearly opposite direction, the present volume opening with the description of a trip up the great River Uruguay, which divides the Republic of that name from the Argentine provinces of Entre Rios and Corrientes. The scenery on this water-highway is more picturesque than on the lower Paraná; but this variety, which is not without its charms, is accompanied by greater dangers in navigation, at the same time that, owing largely to foreign colonisation and energy, there is far greater industrial development on the banks of the Uruguay than on those of the sister-tributary to the estuary of the La Plata. Fray Bentos, of Liebig's *extractum carnis* celebrity: Paysandu, famous for ox-tongues, and the process of slaughtering cattle at the "Saladeros," are successively described; the first main halting being at Concordia, where, owing to rapids higher up, the regular navigation of the Uruguay practically ends. A railway continues about a hundred miles further to Monte Caseros, and a great future is predicted for its extension. Concordia was a good base for excursions, and we select the following from the author's description of a visit to an island in the river, as conveying information upon a variety of subjects :—

"The *Helicidæ*, or land-snails, are very widely distributed in genera and species over most of the eminences throughout the Republic, and one genus, the Caracol, is eaten in large quantity in Buenos Aires: indeed I knew one respectable young man whose custom it was to visit the chief cemetery of the town to gather and devour them raw: nor is it wonderful that these gasteropod mollusks, seeing that they are phytiphagous [*sic*], should in the ancient 'cochlearia,' as in the modern 'escargatoire,' be for fattened the table."

This is indeed an improvement upon economic funerals, or cremation, when a descendant can derive second-hand nourishment from his ancestors without even the trouble or expense of cooking. But to continue :—

"A splash attracts our attention, and, looking round, I half expected to see the gambols of the elegant porpesse (*sic*), but instead thereof appeared the rolling gait of the unweildy Carpincho (*Hydrochærus capybara*), who, however, is a splendid diver, and swims remarkably well; and then just skimming the waters a most lovely pair of dark green Kingfishers with snowy ruffs (*Megaceryle torquata*) dart by, unrivalled as pescadores, whilst

aloft sails majestically the Jote (*Cathartes fœtens*); thus employed, up glides silently the home-made canoe, with a shaggy, hoary ancient, paddling from the stern. . . . These ropes [the *Lianæ*], for such they resemble, suggest one use for *which they are probably intended* (?), and instinctively our eye wanders in search of a cousin of man. Here, however, he is not, although the *Stentor caraya*, as well as the *Hapale penicillata*, is found on the shores of the Upper Uruguay, but in his place are the Puma, Jaguar, Cayman, Carpincho, Gato del Monte (*Felis Geoffroyi*), the more peaceful and elegant Curassow, the Pavo del Monte (*Crax alector*), various species of Carpinteros (*Picidæ*), amongst which the hoary-headed *Leuconerpes candidus* is conspicuous: *Rhopalocera* of brilliant hues, including the sedate-sailing *Euryades*, and beetles innumerable, especially of the families Lamellicornia and Longicornia."

There is much more in the same style, but we hasten to leave this menagerie, and get to some place where there is a less fearful assemblage of beasts and fowl. The next trip is to the western districts of Rioja, Catamarca, and Tucuman, now rendered accessible by lines of railway which unite in Córdova; a tract of country in which water is the chief desideratum, except in a few valleys like that of Catamarca, where Mr. White obtained the splendid Fire-tailed Humming-bird, *Sparganura sappho*, and two of the more sober-coloured genus *Chlorostilbon*. The descriptions of these districts are very interesting, and are not entirely disfigured by an unintelligible luxuriance of words—that tropical overgrowth which so often chokes the author's meaning. Explorations were pushed to Andagala, and to Aconciqua, where some vast ruins of an Indian town and fortress exist; thence by Salta to Injuy where, on the frontier of Bolivia, the author found himself once more in the tropical primæval forests. At Oran, where he remained fourteen days, he obtained a new member of the *Dendrocolaptidæ*, which has been named after him by Mr. P. L. Sclater as *Synallaxis whitei*, and on the Sierras of Totoral, near Catamarca, he had already procured a finch which was distinguished by the same high authority from *Poospiza nigrorufa*, and named *P. erythrophrys* ('Ibis,' 1881, p. 599). Thence he returned to Salta, and came down by diligence to Tucuman.

The last excursion described is one up the Uraguay again and down the Paraná. It will be news to some naturalists to learn that there are two species of Seals found in the former river, one

a large kind, with yellowish spots on the throat, the other much smaller. How far they go up it is impossible to say without a much more detailed map than we possess, the one given by the author in vol. i. being the most useless that can be imagined; so that it is by no means easy to say within a hundred miles or so where the writer is, to say nothing of his beasts and birds. So far as we can make out, these Seals (*Otariæ* no doubt) go up to one of the many places named Concepcion; this particular one being in about 28° S. lat. Thence Mr. White crossed the intervening land to Itapúa on the River Paraná. Thence he ascended the Iguazu, and endeavoured to reach the celebrated Falls, but only a distant glimpse of them could be obtained; and he was obliged to take on trust (which he does most implicitly) the assertion of his companion that they "quite rival or exceed Niagara in volume." The great unexplored marshy lake, Ibera, is spoken of in befittingly awesome terms (*Omne ignotum pro magnifico*), and the author returns to Buenos Ayres by steamer.

The second volume is an improvement upon the first; but both would have been vastly better if they had been written in plain English, and compressed into one-third of their present bulk.

Studies in Nidderdale. By Joseph Lucas, F.G.S., F.M.S. 8vo, pp. 292. London: Elliot Stock. 1882.

During the progress of the Government Survey of this Yorkshire dale (1867—1872), in which he was professionally engaged, Mr. Lucas found time to make numerous interesting notes on zoology, botany, archæology, etymology of place names, and other matters unconnected with the geology of the district, but having a bearing on its history, and these notes he has now collected in the volume before us.

We cannot say that they are well arranged, and the "Introductory Commentary," which appears to us a contradiction in terms, is an awkward mode of dealing with notes which apparently came to hand after the book had been printed, and which would have been better in an Appendix, with an indication of the pages to which the new notes belong. It is impossible to read the commentary by way of introduction, for the reader cannot appreciate the value of comments until he has perused

the particular pages to which they refer. This is so evident, that we wonder it did not strike the author as it strikes the critic.

It does not come within our province to examine the chapters on Danish and Roman remains, folk-lore, local legends, the origin of names, local customs, and so forth, with which the volume is interspersed, and we must confine our attention to the pages which deal with the fauna of the district explored.

Chapter XVI. is devoted to an account of the Fomud, which the author tells us is a local name for the Marten (*Martes sylvatica*), an animal which he saw alive in the summer of 1870, at High Ash-Head Moor, 1200 feet above the sea-level. The Fomud, or Fomard, he tells us, is not to be confounded with the Foumart, or Foulmart, which is the Polecat, but is derived "from O.N. *Foa*, a fox, and *Mörðr*, Dan. *Maard*, a marten = the Fox-marten—as we say the Marten-cat" (p. 133).

He adds:—"While *Fomard* is thus quite a different name from *Foulmart*, this latter is equally an independent name, and is simply the A.S. words *Ful*, foul, and *mærd*, or *meard*, a Marten, Weasel, Stoat, &c.. the generic name. This I gather from the old spelling of Foul without the *o*, as in King's 'Vale Royal,' 1656, p. 18, and the lines cited by Brockett from 'The Cherry and Sloe.'"

From the mention of one specimen only, we may infer that the Marten is a rare animal in Nidderdale, although it is still occasionally to be met with in other parts of Yorkshire. Messrs. Clarke and Roebuck, in their 'Handbook of Yorkshire Vertebrates,' 1881, give the following instances of its recent occurrence:—"One, Lees Head, near Whitby, fifteen or twenty years ago; another in 1877; Cannon Hall Park, Barnsley, about 1878; and Buckden, Wharfedale, winter of 1880" (p. 6).

Chapters XVII. to XXII. are devoted to an account of the Birds of Nidderdale, and herein will be found some interesting remarks on the haunts and habits of species observed by the author, as well as on the derivation of some of the provincial names noted by him.

In the absence of any recent record of the Golden Eagle in the district, the names Arna Nab (O.N. *arna*, gen. plur. of *örn*, an Eagle, and Dan. *næb*, projecting point of a hill, *i. e.* Eagle's point), Arncliff and Arngill indicate that it formerly bred on these hills. Buzzards are occasionally seen on the moors, and the

Rough-legged Buzzard is said to be commoner here than the Common Buzzard. The Merlin, too, breeds on the moors.

The Pied Flycatcher breeds in Bolton Woods, near Barden Tower, Wharfedale; at Bewerley and at Harefield Wood, Pately Bridge, Nidderdale; and at Hackfall, near Masham on the Ure. All these are deep wooded valleys. This bird rears two broods in the course of the summer, and the first brood is brought off in May (p. 140).

The Raven, which has given its name to a great many places, is now confined to the wildest and most elevated parts of the West Riding. Mr. Lucas has only seen it twice—at Otley Chevin, and on the summit of Pen-y-ghent.

The Nuthatch is rare in the district, and was only seen once, in the deep wooded gorge at Hackfall, at an elevation of 500 feet.

The pages on the Spectre Hound, and the Dog and its folk-lore (pp. 146—157) are entirely out of place in a chapter on birds.

A correspondent some time since wrote to ask if we could inform him where House Martins used to build before there were houses in Britain. The following note, by Mr. Lucas (p. 159), supplies, in some measure, an answer to the enquiry:—

"The House Martin seems to be one of those creatures whose fortunes, to a certain extent, follow those of man. I fancy that the Celt on coming to these islands must have found very few Martins, and those few only in localities where there were limestone cliffs for them to build against. Nor is it probable that the Romans found many more. The Martin could not have become the very generally distributed and the common bird it now is for centuries after the construction of stone houses with mortared walls afforded it a site for its marvellous nest."

One of these natural nesting-places of the Martin may be seen at Kilnsey Crag, Wharfedale, a magnificent beetling cliff of limestone that rises abruptly from the level of the river to a height of about 165 feet.

The Rock Dove breeds at Guy's Cliff and Brimham Rocks. "On May 13th, 1869, one flew out of a hole bored for more than a yard into the peat on the top of a crag amongst the Hare Head rocks. A yard from the nest I picked up two eggs, one broken, the other addled" (p. 172). Might not this have been a Stock

Dove? The position of the nest seems to favour this supposition, though the Stock Dove is not included by Mr. Lucas amongst the birds of Nidderdale.

We have not space to follow him through the entire list, and will therefore conclude our extracts with one relating to the Red Grouse, a bird which Mr. Lucas has had many favourable opportunities for observing in its natural haunts:—

"It has been my good fortune," he says, "to spend nine successive years on and around the moors, and to have sat among the long heather in the fresh spring evenings, listening to the melodious clamour of the piping birds.

"The Grouse is a capricious bird in its choice of residence. The fact that they do not abound everywhere on the moors is doubtless not without its influence on the leases of moors. They are most plentiful in the zone between 1000 and 1500 feet, and do not go much above 1700. Spots where bilberries ripen, kept moist by springs, and with a southerly exposure, attract them in autumn, though they may lie under a northern 'edge' in spring. For their nests they like broad shallow hollows with springs at the edges, and a flat ridge at least on one side, on to which they adjourn to crow and sun themselves. 'Cock-lades' is the name of one of these 'Riggs' on the moors, west of the river Washburn. What a flood of beauty is shed upon the word when we learn that it means 'the playing-ground' of the moor-cock! They build also in the peat in deep stream-courses. Here is a description of two nests:—No. 1, May 10, 1871. A light nest, beside a deep stream-course in sandstone. Made of round rushes, a few feathers mixed; 7½ inches across. Seven eggs; pale grey, irregularly speckled and blotched. No. 2, same date. Deep stream-course, in peat under tuft of grass; exposure N., sheltered. Made of grass; 7 inches across. Ten eggs. Many young Grouse are hatched before this; and it is astonishing how fast they grow, how soon they are able to fly, and how strong they are on the wing."

In a summary of the Ornithology of the district (pp. 175, 176), Mr. Lucas gives a table showing the distribution of the different species observed by him, and the various elevations at which they were respectively met with.

A Glossary of some of the words used in the dialects of Nidderdale, with which the volume concludes, shows a considerable amount of research, and forms a very useful appendix to what is in many respects an interesting, although, as we have said, a not well-arranged book.

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THIRD SERIES

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THE MEANING OF ENGLISH BIRD-NAMES.*

BY H. T. WHARTON, M.A., F.Z.S.

So much has been written about the meaning of the English names of flowers, that it is strange how those of our birds have been neglected. Much information can be got scattered about in general ornithological literature, or found in various dictionaries, but it does not seem that anyone has taken up the subject in its entirety.

Of the names of British birds, as they appear in the ordinary standard books, I find there are about one hundred and sixty; of these there are certainly not much more than a dozen of which some account cannot be given. Of course, if all the known provincial names were also taken—as is, I believe, about to be done for the English Dialect Society—this number would probably be increased tenfold; and the difficulties might increase with the numbers.

At present I do not wish to rival the dictionary-maker, but merely to show the meaning—more often poetical, perhaps, than in the case of flowers—of the names we commonly apply to British birds; I shall take no account of those of which no satisfactory explanation can be found.

The names of birds seem to have originated in three different ways; some may be called onomatopœic or imitative, expressing

* A paper read before the Woolhope Naturalists' Field Club, at Hereford, October 3rd, 1882.

the characteristic notes which the birds emit; others are taken from peculiarities of colouring or appearance; and the largest class is of those names which refer to peculiar habits, and these seem to be the oldest, for they are often so modified from their original form that it is difficult to find out their hidden meaning. But there are others which are quaintly named from some human attribute or sympathy, or bear some mythological reference; one bird, the Pheasant, is named after the place whence it seems to have been first brought—from the river Phasis, in Colchis, a province of Asia east of the Black Sea, now known as Mingrelia. There is yet another category, which includes names we can trace directly to Latin or Greek, although often we can go no further.

To begin with those which are imitative, though not all strictly onomatopœic, we have some which so plainly indicate the note they describe that they require no explanation; these are, to take them in alphabetical order, Chat, such as Woodchat, Whinchat, Stonechat, &c.; Chiffchaff, Crake, Cuckoo, Curlew, Kittiwake, Peewit (in French *Dix-huit*), Pipit, Skua, and Twite. There can be no question about them, for one who knows them in their natural haunts. But it is not so obvious that Bittern comes from the bird's drumming note or "booming," though there is little doubt about the fact. The names Chough, Crow, Raven, and Rook, all seem to denote the hoarse cries emitted by the Corvine birds. Cirl Bunting has long concealed its origin, but it seems clear that it comes to us from the Italian name *zirolo*, and is connected with *zirlare*, to cry *zi-zi*. Egret and Heron, for all their dissimilarity, are really the same words; both come from the old High German *hiegro*, a heron, which Prof. Skeat thinks refers to its harsh voice. *Hiegro* became in French *aigre*, of which the diminutive is *aigrette*, our Egret; *hiegro* also became in Low Latin *aigro*, and (in the tenth century) *airo*, whence the modern French *héron*, our Heron. Heronshaw means a young Heron, being corrupted from the French *héronceau*, as is proved by the northern form Heronsew; but Heronshaw, meaning a heronry, is a "shaw" or wood where Herons build. Finch, like the provincial Pink and Spink, is probably connected with "spangle," and the Lettish *spingeti*, to glitter; it means not so much the "bright" as the "clear-voiced" bird; from the same root we have, in Greek, φέγγος, light, and φθέγγομαι, I speak. Hoopoe is cognate with the

upupa; those who have had the good fortune to hear its note say that it is even sweeter than the Cuckoo's; the French word *huppe* came to mean a tuft of feathers, from the Hoopoe's tufted head. Owl is the bird that "howls": dropping h's is a habit as old as language itself. Quail was in Dutch *quackel*, i. e. the bird that "quacks"; the present form comes from the French *caille*, in old French *quaille*, Italian *quaglia*, from the Low Latin *quaquila*. Rail is the bird that "rattles"; in old Dutch *rallen* was short for *ratelen*, to rattle; the French *râle* means a rattle as well as a rail. Shrike is the bird that "shrieks." Siskin is akin to the Dutch *sissen*, to hiss or twitter. Turtle, from the Latin *turtur*, through its French diminutive *tourterelle*, is the bird that cries *tur-tur*. Whooper is expressive of the Wild Swan's loud and trumpet-like notes.

In my next category, where names of birds are derived from their appearance, many sufficiently explain themselves, such as Blackbird, Blackcap, Bluethroat, Crossbill, Firecrest, Goldcrest, Goldfinch, Golden-eye, Greenfinch, Greenshank, Grosbeak, Pintail, Razorbill, Redbreast, Redpoll, Redshank, Redstart (where -start is the Anglo-Saxon *steort*, a tail), Redwing, Stilt, Waxwing, Whitethroat, Wryneck, and Yellowshank. In others, however, the meaning is considerably obscured, either by the successive changes through which the name has passed during its development from the primitive form, or from cognate words having dropped out of use. Avocet is in Italian *avocetta;* Prof. Skeat, to whom I am indebted for many valuable suggestions, finds that in Spanish the Wigeon is called *avucasta*, and this he connects with our word "avocet"; perhaps the delicate appearance and purely contrasted plumage of the bird may have gained it the name of *avis casta*, the "chaste bird." Avocet, Bustard, and Ostrich are thus all compounds of the Latin *avis*, a bird, notwithstanding their dissimilarity: *avis casta*, *avis tarda*, and *avis struthio* having been the original forms. Brent is probably "burnt" goose, from its generally charred appearance. Coot is the "bob-tailed hen"; it is in Welsh *cwtiar*, from *cwta*, short, bob-tailed, and *iar*, a hen; so that coot is cognate with "cut." Cormorant is from *corvus marinus*, the "sea crow"; the Portuguese call it *corvo-marinho*, but our word may be confused with the Latin *corvus*, a crow, and the Breton name for the Cormorant, *morvran*, from *mor*, the sea and *bran*, a crow. Dunlin is the "little dun bird." Falcon is

the bird with "hooked" claws, from the same stem as the Latin *falx*, a sickle. Grebe is akin to the Breton word *krib*, a comb, and *kriben*, a tuft of feathers on a bird's head. Grouse is probably akin to the French *griesche*, gray, speckled; Prof. Skeat thinks it is a false form evolved form *grice*, as if that had been taken to be the plural, like "mouse," "mice." Hemipode is obviously "half-footed," from the Greek, because the hind-toe is wanting. Jay is the "gay" bird, from its gay plumage and chattering ways; "gay" originally meant "full of go." Oriole is from the Latin *aureolus*, the "golden" bird; the French *loriot* was formerly *l'oriol*, the article having become agglutinated, just as "newt" is "an ewt" or "an eft." Phalarope means "coot-footed," from the Greek φαλᾱρίς, a coot, and πούς, a foot, on account of its feet being similarly lobed, not fully webbed. Puffin is from the "puffed out" appearance of its beak. Ruff is ordinarily said to allude to the "ruffle" of feathers round the neck of the male in the breeding-season; but as the female is called a Reeve, Prof. Skeat thinks that the name comes from some different source, indicated by the vowel-change. Serin is French, from the Latin *citrĭnus*, "citron-coloured." Shag means rough hair, probably in allusion to its crest. Sheldrake is the "variegated" or "spotted" drake, either because it is ornamented with "shields" of colour, or from its being "tortoise-shelled," marked like tortoise-shell, as it certainly is, like a "tortoise-shell cat." Stint is the little or "stunted" sandpiper. Stork is probably from its stalking on "stalks" or lengthened legs. Tit is literally "something small," and not onomatopœic. Tit-lark is consequently the "small lark." Titmouse is compounded of "tit" and the Anglo-Saxon *máse*, which means various small birds: "mouse" comes from a totally different root, and means "the stealing animal"; so that the plural of "titmouse" should be "titmouses," not "titmice."

Names descriptive of habits are very numerous. The meaning of many is sufficiently obvious, such as Brambling or Bramble-finch, Chaffinch, Courser, Creeper, Dabchick, Dipper, Diver, Fieldfare (the bird that "fares" or travels in the fields, as in "thoroughfare"), Goatsucker (from a superstition which certainly did not originate from actual observation), Hawfinch (where "haw" is a hedge, "hawthorn" being "hedgethorn"), Moorhen, Nightjar, Nutcracker, Nuthatch, Oystercatcher, Sanderling (the little dweller on the sands), Sandpiper, Sand Grouse, Shearwater,

Shoveller, Swift, Turnstone, Wagtail, Whinchat, Stonechat and Woodchat, Windhover, Woodcock and Woodpecker. Bullfinch is probably connected with the French name *bouvreuil*, which is from the Latin *bovariolus*, diminutive of *bovarius*, "the little neatherd"; just as the Wagtail is in French *bergeronette*, "the little shepherdess"; the idea of "bull" here meaning anything "big" is as unlikely as it is in "bulrush." Dotterel is the bird that "dotes," the "little stupid," from the ease with which it is deceived and caught; in Icelandic *dotta* is to nod with sleep. Dove is the bird that "dives" through the air; a strangely parallel instance is the fact that the Latin *columba*, a dove, is akin to the Greek κολυμβίς, a diver. Duck is the bird that "ducks" or dives its head under water. But Drake is an altogether different word; it is contracted from *ened-rake* or *end-rake*, a masculine form of the Anglo-Saxon *ened*, a duck. In Swedish, *and* is a duck, and *anddrake* is a drake; in German, *ente* is a duck, *enterich*, a drake; the first part of the word being from the stem of the Latin *anas* (*anat-*), a duck, and the suffix is allied to the Gothic *reiks*, ruling, mighty, and to *-ric* in "bishop-ric." So that Drake means "duck-king." Fulmar is akin to "foumart," a polecat, which is from "foul" and "marten"; in Danish the Marten is *maar*. Gadwall is the bird that "gads" or moves about "well." Godwit is "good wight" or good creature. Goshawk is the hawk that was flown at geese. Grey Lag has been explained by Prof. Skeat ('Ibis,' 1870, p. 301) as the Grey Goose that "lagged" behind to breed—as they did formerly—while the other wild species migrated northwards; "lag" meaning late, last, slow, as in "laggard," a loiterer; a "lag-clock" is one that is behind time. Gyrfalcon is probably the falcon that "flies in gyres," but the history of the name is unsatisfactory; Dr. Coues has lately connected it with *Hiero-falco*, the "sacred falcon"—though that now called the Sacer or Saker is a different species; but guessing in etymology is a fatal method, for all its fascination. Hen Harrier is the hawk that "harries" or kills hens, so that the name is no reason for calling the male the Ringtail, descriptive though it is. Hawk is probably the "seizer," and allied to "have"; the word "havoc," destruction, is derived from hawk, and to "cry havoc" merely meant "ware the hawk." Hobby is the hawk that "hops" about. Kingfisher is the "king of fishers" or the "fisher for a king"; in France it is dedicated to St. Martin,

martin-pêcheur, perhaps with a similar idea of worthiness. Kite is allied to the Breton *cud*, velocity, and *cudio*, to hover; Cowper speaks of—

> "Kites that swim sublime
> In still repeated circles, screaming loud."

The provincial name Glede means the bird that "glides." Knot is a corruption of Canute, probably in reference to the story of that king's well-known rebuke to his courtiers, from the bird's running along the beach at the edge of the waves. Lapwing has nothing to do with either "flap" or "wing"; it means "one who turns about in running," from the Anglo-Saxon *hleáp-an*, to leap or run, and *wince*, one who turns, akin to "winch" and "wag." Linnet is the bird that feeds on lin- or flax-seed, from the French *linotte*. Loon is from the same root as "lame," in allusion to the awkward gait of divers when on land. Mavis is the bird that "destroys the vine," from the French *mauvis*, formerly *malvis*, in mediæval Latin *malvitius*, from *malum vitis;* in provincial French it is *vendange*, the vintage-bird, and in German *weingartsvogel*, the vineyard-bird. Merganser is compounded of the Latin *mergus* and *anser*, the "diving goose." Merlin is the hawk that hunts "merles" or blackbirds. Missel-thrush is from its feeding on mistletoe-berries; in Anglo-Saxon *mistel* was used alone in the sense of mistletoe, so that Missel-thrush is rather a variant from, than an abbreviation of, Mistletoe-thrush, its name in many counties. Nightingale is the bird that "sings in the night"; the syllable—*in*—is a case-ending to "night," the *n* being intrusive, as "passenger" is in French *passager;* the Anglo-Saxon *galan*, to sing, is akin to "yell." Noddy means a "simpleton," one who "nods," *i. e.* goes to sleep. Ortolan is the "garden-bird," from the Latin *hortus*, a garden. Osprey is corrupted from Ossifrage, the "bone-breaker." Peregrine is the falcon that was taken on migration, "passage-hawk." Plover is from the French *pluvier*, because, it is said, it only reaches France in the "rainy" season. Pochard is the bird that "poaches," that is, treads into the mire, as cattle do. Scaup is a northern word for a bed of shell-fish, on which this duck feeds. Scoter is the "shooter" or diver. Snipe is the "snapper," allied to the old Dutch *schnebbe*, the beak, as the "nib" of a pen is allied to "snap." Sparrow is the "wanton bird," from a root meaning "to swell." Stockdove is the dove

that breeds in the "stocks" or trunks of trees, not among the branches. Swallow is the "tosser," or mover to and fro in its flight, like the "swell" of the sea; it is not from the same root as the verb "to swallow." Teal is from the root of "till," like the Dutch *telen*, to breed, cultivate; *teling* is Dutch for a generation, production, as well as for the bird; Prof. Skeat says "the original sense was merely 'a brood' or 'a flock,' and its use as a specific form was accidental; we still use 'teal' as a plural form;" similarly "bird" is "broodling." Vulture is the "tearer," from the root of the Latin *vul-si*, I plucked, tore.

Names of birds that bear some reference to man are a little hard to explain. Colin, the little quail from Virginia, is nicknamed after a French pet form of Nicholas. Guillemot is from the French Guillaume, as the provincial name Willock is from William. In Mag-pie, Mag is short for Maggie, a familiar form of Margaret, like the French *Margot*, which also means a Magpie. In France a Magpie is generally called *Jacques*, and *jacasser* is to chatter like a Magpie. We have the same in Jack-daw, and probably in Jack-snipe also. Martin is named after St. Martin. French abounds with such names; *e. g.* Sansonnet, a Starling, is a diminutive from Sanson, for Samson; Jacquot is a parrakeet; Parrot and Parrakeet (French *perroquet*) are both from Pierre, Peter, just as our Petrel is, though there it is in allusion to its walking, like St. Peter, on the waves. Sailors call petrels Mother Carey's chickens, which is said to be corrupted from the Portuguese *madre cara*, the French *oiseaux de Notre Dame*. Shakspere ('King John,' i. 231) calls the Sparrow Philip, and the name is at least as old as Chaucer; the French call it *Pierrot*, little Peter. Our Robin is the pet form of Robert; just as we talk of the Tom-tit, and the Jenny or Kitty Wren. Prof. Skeat says Lark means "worker of craft," and thinks the name points to some superstition which regarded the bird as of ill omen.

My last category contains names of birds which we have inherited from the Romans or Greeks. Buzzard comes through the French *buse*, from the Latin *buteo*. Bustard is a corruption of *avis tarda*, but it is improbable that *tarda* here means "slow," for Pliny quotes it as the Spanish name, so it is likely to be Celtic originally. Crane is a widely disseminated form of the Greek γέρανος; its Welsh name *garan* refers to its "shanks," akin to the English "garter." Eagle is the Latin *aquila*, through the French

aigle. Gannet is akin to Gander, and likewise to the root of the German *gans*, Latin *anser*, Greek χήν. Kestrel has been ingeniously traced by Prof. Skeat,* he kindly informs me in a recent letter, to the Latin for a Teal, *querquedula;* this became in old French *quercelle*, now *cercelle* or *sarcelle;* its diminutive *quercerelle* easily became contracted to *kerc'relle*, and thence became *kestrel;* the French *cresserelle* is obviously corrupted from *cercerelle*. Merle, a Blackbird, is the French form of the Latin *merula*. Partridge is from the Greek πέρδιξ, through the French *perdrix;* in middle English it was *pertriche*. Pigeon is the French *pigeon*, from the Latin *pipio*, a young chirping bird of no particular species. I have lately shown ('Zoologist,' 1882, p. 110) that Wigeon is similarly formed from *vipio*, a name used by Pliny, so that the spelling "widgeon" is clearly wrong. Thrush, and its diminutive Throstle, are allied to the Latin *turdus*.

The remaining English bird-names can most of them be traced back to Celtic or Teutonic sources, but their meaning is either unknown or uncertain, so that it is inexpedient to endeavour to explain them now. On an occasion such as this I would not willingly detract from the pleasure of anyone who may come after me, by going outside what may reasonably be regarded as ascertained etymological facts. I have only made a collection of derivations, on which I hope to see a stately structure rise that shall show to future ornithologists the depth of the meaning of English bird-names.

ON THE TREATMENT OF SNAKES IN CAPTIVITY.

By Arthur Stradling, C.M.Z.S.

The study of reptiles "at home"—of their nature, habits, peculiarities, mode of life, of everything, in fact, beyond their mere anatomical characteristics—seems to have been deferred until the entire animal creation, exclusive of the unpopular Class, should have received the attention of practical naturalists. Pet fish were recognised attractions in ornamental garden-ponds and greenhouse-tanks a hundred years ago, and until a comparatively recent date the word "aquarium" suggested the idea of crystal

* *Cf.* 'The Academy,' Oct. 7, 1882, p. 262.

prisons for gold and silver carp, adapted to the hall-table or conservatory, rather than that of mammoth music-saloons. Bees have been "kept" for pleasure and profit, saccharine and scientific, from time immemorial; the ant has been honoured with a long line of distinguished observers, from Solomon to Sir John Lubbock; while wasps, worms, spiders, beetles, and fleas have all in turn been commended to public notice by learned men. Moreover, the allusions to many of these creatures in ancient aphorisms betrays a close acquaintance with their manners and customs, such as could only be gained by watchful curiosity. But with regard to reptiles—snakes in particular—it must be confessed that all proverbial philosophy which has come down to us concerning them is nothing more or less than an epitome of the gross and common errors which still hold their ground. Even in the days when the wondrous chain of animated Nature was being patiently aud laboriously followed out, link by link, by those earnest minds who may be said to have founded our system of Zoology, for a man to have done anything with a snake except kill it would have pointed irrefragably to demoniacal possession, and the luckless conservator might very likely have incurred the penalties awarded to those who practised the black art. We do not burn ophiologists now, certainly; and a person may even have living serpents in his house without being considered mad or morbidly desirous of a reputation for eccentricity, as he would have been not long ago. And further, captive snakes are now preserved for higher purposes than to be stared at as monsters, and too often teased or tortured to death.

The study of Natural History in all its branches, from Entozoa to elephants, is increasing in popularity yearly among all classes; almost every provincial town has its "Society" or "Field Club"; the number of special publications multiply, while a great many general periodicals devote a column or page to the subject in every issue; and it is gratifying to note the prominence given to it in magazines for the young, especially boys' papers. A higher degree of intelligence than they were formerly accredited with is now acknowledged in most animals, and wins a new interest for them. We become reconciled to them, diverted by them, fond of them, amazed at them! Above all, the teaching of the present day inculcates the perception of the grand laws of order and progression in creation; that not only are all animals related to

one another by gradual yet distinctly traceable degrees, insomuch that had any tribe—even the snakes—been blotted out we should still know what it was by the shape of the blank it would leave, like a piece missing out of a child's puzzle; that not only does this connection exist between the beings themselves, smooth and harmonious from man downwards, but that their incidental and collateral conditions are analogous—their physiology and pathology, the microscopical characteristics and functions of their allied tissues, their chemical and therapeutical reactions; and this leads to the recognition of the fact that every discovery made, every new peculiarity noted, however trivial apparently, may at a future date have some important bearing upon *ourselves*.

Many people are now beginning to keep reptiles. Various popular and scientific journals have ventilated this department somewhat of late years; but it is a field little explored as yet, and perhaps presents more opportunities to the inquirer than any other. Indeed, the very superstitions which hover about the subject—as of a serpent's licking its prey, its power of "fascination," the "antipathies" between it and other animals, "charming," &c.—are scarcely dispelled; and when such a point as the allegation of a Viper swallowing its young is still in dispute among scientists, it may be imagined there is a great deal to be learnt without the pursuit of any very recondite investigations. The Viper is one of the commonest and most widely diffused of European snakes, and if the act in question be performed at all it must be big and patent enough to strike the most casual of observers; yet definite testimony on that head might make a man's mark in the annals of Herpetology.

It is extraordinary that ground so fertile of results should have been neglected as much as it has. True, these creatures cannot be studied in their wild state, as birds can, but they are far less unnaturally circumstanced in confinement than bird, beast, or fish must be. A snake's behaviour in a cage of proper size, with attention to proper details, is probably more nearly assimilated to its habits in a state of freedom than that of any other animal. Nor are these details which require attention complicated or difficult of execution, as I shall hope to show, for when once started fairly a snake is the easiest thing in the world to "keep going." And to facilities for observation must be added

the urgent *necessity* of observation in this section of Natural History. Serpents demand examination of the living specimen for accurate knowledge more than any other class of animals, yet in all probability, no other has been so little studied in this way. They change very rapidly and to a very great extent after death, and there is no known method of preserving them which will properly exhibit their characteristics. The fact of their colour fading, as it invariably does, whether the bodies be dried or embalmed in spirit—startling transformations moreover occurring in some cases, as from deep green to pale blue, and from crimson to white—is of the least importance, since coloration is taken but little into account in their classification, and is, indeed, becoming less and less a matter of consideration every day in the categorical subdivision of all creatures. The wonder is, not that ophiological tabulation should be imperfect and subject to enormous variations among different authorities, but that we should have a classification at all, and that it should be as good as it is. The difficulties in the way are immense, and works like those of Drs. Gray and Günther are simply miracles of patience. When people abroad see a live snake they rush upon it and batter it to death with sticks and stones, as though every inch of it possessed a separate and fifty-feline power of life calling for special destruction; then they pick up what is left of it, and, after an uncertain interval of time, very often in the broiling midday heat of the tropics, put it into a bottle of cachasse, canha, aguadiente, or some other coarse spirit which disintegrates its actual structure, label it with a wrong name, and send it home. Such, in the case of many species, have been the *only* materials that naturalists have had to work upon.

I met with striking illustrations of this in the South-American Thanatophidia. The snakes of India, Australia, South Africa, Europe, and the United States have all been more or less noted by competent observers in their habitat, while the descriptions of those found in South and Central America are based chiefly upon bottled specimens. In many instances they could scarcely be recognised, so hard was it to reconcile the verbal portrait with its living presentment. The number of individuals of any species, or from any country, which have been maintained alive in menageries, is comparatively so small that they cannot be taken into account in this connection.

If, then, our present acquaintance with their mere physical attributes is so far from complete, is it any marvel that we know next to nothing of their habits and propensities? And is it not justifiable to declare that we know next to nothing, when we are in ignorance with regard to hundreds of snakes as to whether they kill their prey by the grand distinctive process of constriction or by common biting; and (with a few exceptions) cannot say which species are oviparous, and which produce living young?

Practical personal observation—neither accepting nor rejecting the thousand and one items of current miscellaneous opinion concerning them until we have seen with our own eyes, in constant familiar *intercourse* with them, sufficient to form conclusions for ourselves—is the only way to gain information on these matters which can be of any value. The extent to which mere hearsay testimony has been transmitted from writer to writer on this topic is remarkable. When the venomous Lizard (*Heloderma horridum*) arrived at the Zoological Gardens and caused a great sensation among both scientists and sight-seers, I happened to meet a friend who was compiling notes for a paper on the subject in the Reading Room at the British Museum. He was almost walled-up alive by "authorities," ancient and modern; huge tomes in Latin, French, Spanish, German and English, some bound in antique boards, with yellowed leaves and old-world type, others glossy-backed and crisp from the press, were piled high about him; from these he was carefully and laboriously extracting long quotations. But how many of these writers, I asked, have been to Mexico and studied the creature on its own ground? how many, even of those who have been there, have seen a live Heloderme? Not one, as far as we could discover. Very well, then, upon what does their authority rest? upon the traditions and legends of the Indians who worship the creature as an incarnation of their evil deity, and seek to propitiate it with *tortillas* and silver beads! Possibly, of course, the evidence they might furnish might be correct in certain particulars—though it may be laid down, as a broad general rule, that for pure unadulterated superstition, utterly devoid of any groundwork of fact or reason concerning a reptile, you must go to the natives of the country which it inhabits; but, obviously, the school-boy who pays his sixpence to go to the Zoo, and stares at

the Lizard as it waddles round its cage behind a pane of glass, is better qualified to write about those details which lie beyond the pale of its anatomy.

For the subject itself I offer no apology, since no literature bearing upon it exists at present. That I have not waited for abler pens than mine to introduce it, I plead in self-excuse that I am acting in compliance with a number of letters—some from this country, some from the Continent, and some from America—which I have received during the last twelve months, requesting me to publish the results of an experience in snake-keeping which has extended over a good many years. And it has been pleasant to detect a genuine spirit of inquiry in the tone of most of these letters, an indication that the serpents are kept and watched as something more than playthings—not at all inconsistent with their being regarded as pets; the very difficulties complained of evince a degree of close observation under more or less unfavourable conditions on the part of the writers, and show that they have already gleaned much that no book can teach them. The references made to the reptiles, too, suggest that the standard works have been diligently read. Everybody in England, for instance, mentions the *Coronella lævis* with confidence—a snake which is commonly (and excusably) mistaken for the adder, and which was not recognised as belonging to the British fauna until a comparatively recent period. The frequent inquiries about these matters which appear in the correspondence columns of all sorts of journals and magazines have also weighed with me as an inducement to bring the topic forward.

I purpose to deal with practical points only, and to keep strictly within such limits as are defined by the heading—the care and management of live snakes. The object af these papers is not to teach Ophiology, but to point out the simplest and most direct methods by which the student may avail himself of that royal road to knowledge, the book of Nature. I offer him the epitomized outcome of many successes and more failures, most of which have been of necessity the result of mere experiment, that he may be spared the delay and vexation of similar experiment, and that he may commence at the stand-point which I have reached at this time of writing. I set down only the plain, dry details of my experience; but should that experience

not coincide with the conclusions at which he may arrive in the future, I would beg him to remember that I have the advantage of no observations but my own, and that I tender them simply for what they are—as records rather than rules. The great curse of science, the grasping at finite inferences on insufficient data, has been exemplified in none of its branches to a more disastrous extent than in Ophiology. When we reflect on the variable character of serpents and nearly everything connected with them, it would seem as though especial care should be taken in guarding against convictions based on anything but the most abundant evidence, where questions concerning them are involved; yet scientific men have promulgated their hypotheses as proven facts on the strength of isolated cases, and great travellers who have been famous for their erudition in other departments of Natural History have given the weight of their names to vulgar rumours which have been reported to them of things ophidian. Better, far better, to fall back upon the veriest superstition and folk-lore than to find ourselves on ground which is beset with pitfalls of error like these beneath its seeming solidity. I would counsel the student to peruse any and all books on the subject that come in his way, only warning him not to be surprised if his practical investigations compel him to unlearn many things afterwards which he may have taken for granted.

I shall avoid all technicalities, as far as possible; but in advising the amateur what snakes to keep in the different kinds of cage, which are easiest to procure, and which are most readily maintained under various conditions, I fear I must use the scientific names for them, instead of their local vernaculars—partly because I don't know the latter, in most instances, and partly because it would be of very little assistance to him in obtaining them if I did. All over the world we find such titles as "death," "night," or "fire-adder;" "rat-snakes," "chicken-snakes," "grass," "sand" and "water-snakes;" "deaf," "blind," "green," "brown" and "black" snakes; "ringed," "striped," "spotted," "tiger," "leopard," "milk," "silver," "coral," "harlequin" and "carpet" snakes—some or all of these. To attempt to reduce the popular nomenclature of reptiles to anything like systematic order is to make confusion worse confounded. Go to any country, and learn the

common name of a snake. You will find that not only may that name be purely local and confined to a certain district, so that the creature may assume half a dozen *aliases* as you proceed, but that in all probability the same word is applied to half a dozen other snakes as well. Even here, where we have practically, one may say, but two ophidians, we hear of the black adder, grey adder, deaf adder, red adder, grass snake, ringed snake, long-cripple, hedge snake, viper, common snake, water-snake, &c., and should not feel at all certain which of the two was indicated on hearing any of these names mentioned, except by those who have made snakes their study. In Wales, terrible stories are told of the malignant disposition and fearful virulence of the Neidr Ddefaid, the "sheep-snake"; one can conceive the anxious solicitude of a collector on tour in the Principality to secure a specimen, and his unmitigated disgust when his efforts are rewarded by a common Slow-worm, such being the nature of the unpronounceable impostor. Every country, too, has its pet bug-bear among serpents, which overwhelms all distinctions, and causes the Hindu to see a Naja, the Brazilian a Jarraracca, the Indian of the Isthmus a Toboba, and the American backwoodsman a Copperhead, in every creeping thing unblessed with four legs. Casual perplexities exist in addition, to further complicate matters. "Cobra," for example, will convey a well-known limited significance to the minds of most people, without the appended "di capello." But "cobra" is simply the Portuguese term for snake—any snake; and in all lands where that language is or has been spoken, it retains that meaning, to the great bewilderment of those who hear it for the first time thousands of miles away from the habitat of *Naia tripudians*.

A glance at the labels in the Reptilium at Regent's Park will render this difficulty apparent. The commoner snakes have colloquial titles it is true—boa, python (identical with the genus), rattlesnake, anaconda, moccassin (applied to both innocent and venomous species in the States), and one or two others, none of which would help the collector in the parts of the world from which they hail; but the majority are despairingly christened with the literal translation of their specific designations, "spotted-headed," "black and yellow." "seven-banded," "ornamented," "annulated," "fugitive," "Clifford's," "Dahl's," "Merrem's,"

and so forth; names not always so descriptive as one could wish. I shall therefore give the genus and species when I have to mention any snake; and since every one has even a greater number of disguises in Latin than in the vernacular, I will quote the authority for the nomenclature in each case, so that the reader may consult that authority for a picture or description of the snake, if he wishes, but I shall endeavour to select the classification under which it will most likely be found in menageries, museums, and the catalogues of dealers.

I am glad to know that many lovers of the Ophidia are pursuing their studies in the Tropics, where they will have grand opportunities of rendering important service to Science. Having lived much in tropical countries myself, I may premise that all the advice here tendered is addressed equally to them, except the items which relate to the application of artificial heat.

(To be continued.)

ORNITHOLOGICAL NOTES FROM DEVON AND CORNWALL.

By John Gatcombe.

In continuation of the series already contributed to 'The Zoologist,' I send the following notes, which I have jotted down during the present year, in the hope that they may prove of interest to ornithologists.

On January 12th an immense flock of Lapwings crossed Plymouth Sound from the direction of the harbour, and I counted more than a hundred of these birds in one of our markets. Indeed, I never knew them to be so plentiful. Many Grey Plovers were also to be seen. By the 20th Herring Gulls had assumed their full breeding plumage; and I saw a Waterhen in perfect nuptial dress, with its rich yellow and deep crimson bill and forehead as finely developed as in the height of summer.

On February 1st I examined a Great Spotted Woodpecker, shot by a gentleman at Bickleigh, near Plymouth, and found its stomach filled with a quantity of small white thread-like worms. Another Great Spotted Woodpecker had the stomach filled with kernels of some kind and the skins of a wood-boring caterpillar. On the same day a specimen of *Larus ridibundus* was brought in, having nearly two-thirds of its head already black. On February

4th I saw some Great Black-backed Gulls in perfect breeding plumage; and examined a Peregrine Falcon, killed in the neighbourhood, the stomach of which contained a piece of slate-stone and the white breast-feathers of a Sandpiper or Snipe. It was an immature bird, but had already begun to moult, several bluish grey feathers appearing on the upper parts. By the 18th many of the Black-headed Gulls had assumed the full dark head, whilst others (seemingly adult) might be seen without a trace of it.

A Purple Sandpiper was killed on March 3rd, out of a small flock on the rocks of "Drake's Island," in Plymouth Sound, and I heard from the friend who shot it that its stomach contained minute periwinkles. Although this bird remains on the coasts here until rather late in spring, I have never met with any specimens in breeding plumage, although I have received some in that state from Ireland. On March 11th my friend Mr. H. M. Harrison, who shot the Purple Sandpiper, saw an adult male Smew in the Sound. Adult Smews are rarely seen in this locality, although immature specimens are not unfrequently met with in our markets during severe weather. At this date Razor-bills were very plentiful on the coast, and appeared restless as the breeding season approached, often taking wing and flying swiftly for a short distance apparently without any fixed purpose. Lesser Black-backed Gulls in pairs were also numerous, making a great noise preparatory to leaving for their nesting stations. The first Wheatear was seen here on March 12th.

On April 4th I examined a Common Buzzard which had been trapped by a keeper, and found in the stomach a quantity of fur and a large white grub of some beetle. A brood of four young Ravens well fledged were taken in the neighbourhood of Plymouth, and kept alive. On the morning of the 13th I observed an immature Iceland Gull in the Sound; wind S.W., mild and misty; but towards night it blew a strong gale from the N.W., and the next day this Gull made its appearance in the harbour. Rock Pipits might be seen on the coast moving about with drooping wings, apparently having nests in the vicinity. The first Swallows appeared on April 15th; wind E., and rather cold. On the 18th I remarked the Iceland Gull again for the last time; the weather very bright, but the wind strong from the N.W. It was flying directly over my head, and in the bright sunshine the white flight-feathers of the wings had a very

pretty effect, looking almost transparent. In the stomach of an adult male Sheldrake sent from Cornwall I found a quantity of small shells, some fine sand, and a few fragments of *Ulva*. By the 27th most of the Lesser Black-backed Gulls had left for their breeding stations, but many non-breeding birds still remained, as do also a large number of Curlews on the banks of our estuaries. On the 29th a tremendous gale occurred, causing great destruction everywhere amongst the young Rooks.

On May 1st I heard the note of the Whimbrel; and by the 3rd of that month I observed several Swifts high in the air, hawking for insects as late as half-past seven in the evening. Visited the breeding places of the Herring Gulls at Wembury on the 8th, and found several nests with eggs in them, but none with young; and also remarked among the nesting birds a few which had not quite assumed their fully-adult dress, having some of the middle tail-feathers more or less freckled with brown. Many Cormorants and Shags, both in autumn and immature plumage, were to be seen on the rocks below, but no Peregrines nesting (as they had done for many previous years) on the cliffs. A farmer, who had killed a great many, told me that he always shot them when possible, as he and others in the neighbourhood could not afford to lose the pigeons and poultry which they killed. The bills of two Kingfishers examined were covered with earth, as if they had been excavating the river's bank instead of appropriating the hole of a Water Rat. On the 19th a Grey Plover in nearly full summer dress was brought to one of our birdstuffer's, and I found in its stomach a small crab. This bird is rarely found with us so late in spring. A female Kestrel which I examined was in somewhat remarkable plumage, having the appearance of being stained or washed with saffron-yellow. Strange to say, it had apparently been feeding on fish, judging from the quantity of scales I found in its stomach, which, indeed, smelt as strong as that of any sea-bird. The Curlew has been found breeding on Dartmoor, and eggs were taken during this month. A friend of mine—Mr. James, of Plymouth—informed me that when fishing in the Dee a short time previously he had witnessed an interesting episode. On looking up the river he observed what appeared like a bird with *four wings* flying towards him. On its nearer approach he saw that it was a Sparrowhawk which had clutched a Common Sandpiper, and both birds using their wings at the

same time produced the strange effect. Startled by his presence, the hawk on seeing him dropped the sandpiper, which, instantly recovering itself, turned and made the best of its way up stream again, closely followed by the hawk. The latter making a sudden dash, down went the sandpiper under water like a stone, leaving the disappointed hawk quite bewildered. After flying round two or three times it went straight off, when the sandpiper rose to the surface a long way above, under the opposite bank.

Whimbrels were not so plentiful as usual in this locality, although I saw some flying up the river as late as the 10th of June.

On July 26th Black-headed Gulls, young and old, were seen in the harbour, the earliest return from their breeding places I ever remember; and on the 28th I observed several Common Sandpipers on the coast, on their return after nesting on the moors.

The last Swifts were noticed on August 11th. On the 21st I visited the River Tamar, and was pleased to see so many Herons, Curlews, Dunlins, and Black-headed Gulls thus early on the mud-flats. The following day I remarked several Dippers and Grey Wagtails on stones and boulders in the River Plym, and found Yellow Wagtails very numerous in the fields and meadows near the town. Oystercatchers also were plentiful. On the 30th I watched a flock of thirteen on the "West Mud" banks of the Tamar.

On September 1st I saw a very beautiful White Wagtail (*Motacilla alba*); the dorsal plumage was very light, and of the purest grey I ever remember to have seen in a bird of this species. On the 18th I took a trip to Brent, and passing the mud-flats of the Laira found them alive with old and young Herring Gulls, and a good sprinkling of Herons and other Waders. On the River Avon, at Brent, too, Dippers and Grey Wagtails were numerous. Many Kingfishers, I am sorry to say, found their way about this date to the birdstuffer's, chiefly young birds of the year. A Water Rail was captured, which had but one wing, and yet was in capital condition. A rudiment of the bone of the missing wing was discernible close to the body, but so smooth and rounded had it become, that if ever the bird had possessed the wing at all it must have been a considerable time before its capture.

ORNITHOLOGICAL NOTES FROM NATAL.

By Majors E. A. Butler and H. W. Feilden and Capt. S. G. Reid.

ADDENDA ET CORRIGENDA.

The following notes are supplementary to those which have already appeared in 'The Zoologist' under the above heading:—

Circus macrurus (Gm.), Pallid Harrier.—This species, alluded to under the head of *Circus pygargus* (L), at p. 168, as being commoner than the last-named, was frequently observed by us, and may fairly be recorded in our list, though not actually obtained.

Aquila pennata, Booted Eagle.—A specimen of this little Eagle, not included in our original list, was brought home recently by Feilden. He obtained it near Newcastle in November, 1881. It is apparently of very rare occurrence in Natal; in fact, we are not aware that it has previously been noted from that colony.

Charadrius asiaticus, Pall.—Feilden brought home another specimen of this Plover, obtained by him at Bennett's Drift Camp, near Newcastle, towards the end of November. He describes the species as numerous at that time, in small bands of three to five or six, feeding on the bare places on the "veldt," near the camp, in company with the Pratincoles.

Euplectes oryx (L.), Red Fink.—At p. 297, the size of the egg of this bird should be ·7 in. × ·55 in.

Vidua principalis (L.), Dominican Widow-bird.—Owing to an unfortunate oversight, the notice of this bird appears twice, on pp. 297 and 299. The first of these should be erased altogether.

Falco biarmicus, Temm., South African Lanner.—At p. 170, in the sentence commencing "Butler noticed a Lanner," &c., read "Butler noticed this Lanner," &c.

OCCASIONAL NOTES.

South-African Eagle Owl in Ireland.—In 'The Zoologist' for 1881 (pp. 262, 308) I described an Owl from the collection of Dr. Burkitt, of Waterford, which I then believed to be the Virginian Horned Owl. I have since received a letter from my friend Mr. More, Curator of the Natural History Museum, Dublin, giving the result of his examination of this bird, which Dr. Burkitt, at my request, had lent him for the purpose.

Mr. More writes:—"I have carefully examined Dr. Burkitt's large Owl, and I find that it is an African species, *viz.* the Spotted Eagle Owl, *Bubo maculosus*, Vieill., a bird which Mr. Layard describes as 'the commonest Owl in South Africa,' and Mr. Sharpe, in the British Museum Catalogue of Birds, gives for its range 'The whole of South Africa, as high as the Zambesi on the east coast and to Benguela on the west.' To make quite sure of the name, I lately took the bird with me to the British Museum, and, with the kind assistance of my friend Mr. Sharpe, compared it with African specimens, so that no doubt can remain as to its correct identification. I hope you will be able to obtain from Dr. Burkitt the full particulars of its capture and history." Having returned the bird to Dr. Burkitt, with a request for some information concerning its capture, he wrote to me as follows:—"This Owl lay almost unnoticed, and consequently unrecorded, for several years in my collection of native birds, as you are aware, until brought to light by yourself; for happening, at the time it came into my possession, unfortunately, to be very fully occupied with other matters, and not being aware of its rarity, I took but scant notice of this bird, merely inserting the locality of capture, the name of donor, now several years dead, skinning, preserving, mounting, and placing it amongst my Irish birds, as you discovered it. This bird, when presented to me by the late John Dobbyn, Esq., of Woodlands, Co. Waterford, 27th January, 1851, was apparently some days dead, and struck me at the time as having been a good deal handled, but was brought to me in the flesh, and skinned, mounted, &c., by my own hands. Mr. Dobbyn informed me that he had shot it in Bellake plantations (since nearly all cut down) in the vicinity of Wood-town, Co. Waterford." We are thus indebted to Dr. Burkitt (who has collected and stuffed native birds in Waterford for over fifty years) for the addition to the British fauna of three species, the Spotted Eagle Owl, the Hawk Owl, and the Gold-vented Thrush. The two last-named, having come to the knowledge of Yarrell, found a place in his 'History of British Birds,' while the first-named, with the same claims to recognition, has until now remained unnoticed. That a straggler from so distant a region should visit Ireland is not more strange than the occurrence, in 1838, of the Gold-vented Thrush, another African species, which Dr. Burkitt also obtained in the flesh in Waterford, both these birds having, singularly enough, occurred in the month of January. Dr. Burkitt's label, affixed to the Owl in 1862, is as follows:—"*Strix Bubo*? Linn.—a nondescript, or is it Eagle Owl?—shot near Bell Lake, Co. Waterford, Jan. 1851. Presented by John Dobbyn, Esq., of Woodlands. Marked this Owl formerly as *Strix Ulula*, or Hawk Owl. R. B. 1862." An entry in Dr. Burkitt's journal, made in 1851, is to the same effect. I may remark that Mr. John Dobbyn, who shot this Owl, was Dr. Burkitt's brother-in-law.—Richard J. Ussher (Cappagh, Co. Waterford).

The Black-winged or Japanned Peafowl.—The question whether the so-called *Pavo nigripennis* is distinct from *Pavo cristatus*, or merely a variety of that species (for some time a moot point amongst ornithologists), seems to me to have been pretty well settled by a pair of ordinary Peafowl which bred here in the year 1880. These were both common Peafowl, *Pavo cristatus*, showing no variation in any way; but out of a brood of three, which they hatched in the summer of 1880, one died, or got killed somehow; the two others, one a male and the other a female, lived and are still living. Both these birds have all the characteristics of the so-called *Pavo nigripennis*, the male bird having the dark wings and thighs which distinguish *Pavo nigripennis* from *Pavo cristatus*, and the hen the white, or nearly white, plumage of the hen of *Pavo nigripennis*. Messrs. Hume and Marshall, in their 'Birds of India' (vol. i., p. 89), allude to this subject as follows:—"Dr. King showed me a skin of a white specimen (female) that had been shot in the wilds of Eastern Dún, which precisely resembled the bird that Mr. Elliot gives as the female of another variety commonly known as the Japanned Peacock, *Pavo nigripennis*, Sclater. This latter variety has never been met with except in captivity. In *P. nigripennis* the whole of the scapulars and wing-coverts (which in the common Peacock are cream-colour with blackish markings) are black with narrow green edgings, which towards the carpal joint become bluish; the metallic-green of the back is of a more golden tint, and the thighs are black instead of being pale drab, as in *Pavo cristatus*. Some people maintain that this is a distinct species, of which the habitat is yet unknown; others consider it merely a variety which has arisen in captivity in Europe." That *Pavo nigripennis* is only a variety I think there can be no doubt, but whether it is a variety that arises only in captivity in Europe seems to me much more questionable; in fact, the white hen mentioned by Messrs. Hume and Marshall in the above quotation seems to show that wild birds occasionally sport in the same way as those in domestication. If this is so it might partially account for the difficulty of fixing a locality for *Pavo nigripennis*, which seems to have been felt by Messrs. Salvin and Sclater, the editors of the 'Ibis,' for in the volume for 1878, p. 386, in an editorial note, they say, "We may even hope to ascertain before long the locality of *Pavo nigripennis*, a bird found in many of our farmyards, but of which the original *sedes* is a problem yet unsolved." Mr. Sclater, however, seems to think he has solved the problem, for in his 'List of Vertebrated Animals now or lately living in the Gardens of the Zoological Society,' edition of 1879, he fixes Cochin China as the habitat of *Pavo nigripennis*. It certainly seems to me, however, that if in domestication *Pavo nigripennis* appears as only a variety of *Pavo cristatus*, and a pair, male and female, may, as in the case of my birds, be the produce of a pair of common Peafowl, and of the same brood, that *Pavo nigripennis* may suddenly crop up anywhere throughout the whole geogra-

phical range of *Pavo cristatus;* and within these limits no exact locality could be fixed, even if it were desirable, which it does not appear to be, for if the so-called Japanned or Black-winged Peacock is only a variety, Mr. Sclater's name would become a synonym of *Pavo cristatus*, or at most it could only be spoken of, whether wild or domesticated, as *Pavo cristatus* var. *nigripennis*. I may add that the female of my *Pavo nigripennis* hatched a small brood this year, but, owing no doubt to the very damp summer, only one is now alive; this one shows no difference whatever to the young of the same age of *Pavo cristatus*, although the mother did so even at a much earlier age, in fact almost from the down; which of the two males—the common or the Black-winged Peacock—is the father of the present young one, I am unable to say. I have trespassed considerably, I am afraid, on your space, but this production of a pair of Black-winged Peafowl from a pair of Common Peafowl seems to me worthy of mention, and I should have sent you a note of it before, only I waited till the male bird had developed his fully adult plumage, which he only did (especially his train) after this last moult.—Cecil Smith (Bishop's Lydeard, Taunton).

[In reply to these observations, Mr. Sclater remarks:—"I have now reason to believe that the supposed locality of the Black-winged Pea-fowl (Cochin China), given in the 'List of Animals in the Zoological Society's Gardens,' was based upon incorrect or at all events uncertain information. Yet, in spite of the new evidence afforded by Mr. Cecil Smith, I am still of opinion that *Pavo nigripennis* does occur *somewhere* in a wild state, and that its true *patria* will yet be discovered."—Ed.]

Osprey near Worthing.—On October 20th an Osprey was shot on the sea-beach in the parish of Ferring, near Worthing. As I happened to be driving through the village, the bird was shown to me, and I bought it of the lad who had just brought it up from the coast. It appears to be an adult male. Weight, 4 lbs.; length, 22½ in.; expanse of wings, about 5 ft. 3 in.—Sextus Vernon Clark (Angmering).

Common Crane in Lincolnshire.—An immature specimen of the Common Crane, *Grus cinerea*, was shot at Herringhill, near Spalding, on the 25th of October last. It is a bird of the year, and was seen about the neighbourhood several days before it was killed.—A. Thomson.

Pomatorhine Skua in Sussex.—A young male Pomatorhine Skua was shot on the floods over Pevensey Level, on the 10th November, by Mr Marshall, of Newbridge, who has kindly presented it to me.—H. Nicholls (Hailsham).

The Gadwall in Radnorshire.—I am much obliged to Mr. H. N. Ridley for his remarks (p. 431) on the occurrence of this bird at Llandilo, Aberdw, Radnorshire. I know the locality well, and the little flock he saw

may possibly have come from the large pool referred to, this being carefully preserved and only occasionally shot over. A friend of mine who shoots round this pool every year tells me that the Tufted Duck, Scaup, and Pochard are plentiful on it from the end of October to the beginning of February; but he has never yet mentioned the Gadwall, and I have therefore come to the conclusion that the small flock seen by Mr. Ridley were accidental visitors, possibly settling there as a resting-place in their flight up the Wye, the hill here being high above the river, and the small pool alluded to being so very limited in extent, without cover of any kind, that no water-bird would be in the habit of resorting to it. Still the fact of their being there at all is most interesting. In my list of the "Birds of Breconshire," as it is the first yet published in this county, I have been particularly careful not to insert the names of any birds except those which have actually occurred in the county, or on its borders, and I have never even heard of the Gadwall here. I think, however, that its occurrence within half a mile of the edge of our county will justify my inserting it. As to the Hawfinch, I think there can be no question as to its extreme rarity here. During a residence of eighteen years I have never seen it, and its large size and bold bearing renders it so conspicuous that it would be almost impossible to overlook it. Brecon, however, is much colder and much less wooded than the adjoining county of Hereford, and in places very much cut off from the same by the Black Mountains.—E. Cambridge Phillips (The Elms, Brecon).

Greater Shearwater in Lincolnshire.—A specimen of the Greater Shearwater, *Puffinus major*, was captured near Spalding, and forwarded to the Gardens of the Zoological Society of London, where it may now be seen in the Eastern Aviary.—A. Thomson.

[Since this note was in type the bird has died.—Ed.]

Osprey in Leicestershire.—On October 13th the keeper at Saddington Reservoir noticed a large hawk circling and hovering over the pool, every now and then making a rapid stoop towards the water. He was near enough to the bird to notice its colour and markings, and on describing it to me I had no difficulty in recognising it as an Osprey. The same bird apparently has been seen since, as the following note by my friend the Rev. A. Matthews will show. Gumley is only half a mile distant from Saddington Reservoir. Mr. Matthews writes:—"On the 22nd October, at 2 p.m., a fine Osprey passed over the garden at Gumley, at a height of from thirty to forty yards, flying N.W. The bird was in full adult plumage and in fine condition, and was probably, from its large size, a female. I may also add that a bird, supposed to be an Osprey, was observed, on October 18th, soaring in circles at a great elevation over the wood and pool at Gumley, both of which join our garden."—Thomas Macaulay (Kibworth).

Errata.—The following errata occur in Mr. Cocks' notes from Spitzbergen:—p. 323, line 11, *for* ten *read* one; p. 330, line 13, *dele* ; after 'boat,' and next line *for* shot *read* shoot; p. 331, nine lines from foot, *for* He *read* We; p. 379, two lines above note, *for* way to the *read* way by the; p. 386, line 13, *for* The sun set straight *read* The sun set to-night; p. 417 seven lines from bottom, for *Scynnus* read *Scymnus*.

Natterjack at Aldeburgh.—I do not know whether the Natterjack, *Bufo calamita*, is usually partial to the coast; but I found examples in August last, in warm sunshine, quite close to the beach at Aldeburgh.—H. A. Macpherson (Oxford).

Chelifer Degeerii, *C. Koch*, a Species new to Britain.—Whilst collecting shells and mineralogical specimens on the promontory at North Berwick, Scotland, on September 13th, I procured three specimens of the above-named Pseudoscorpion. Their proximity to the sea was such that at high tide the spray was constantly thrown upon the cracked igneous rock which sheltered them, and which in stormy weather, and during neap and spring tides, is submerged; though I doubt not the Chelifers and many other minute terrestrial forms located in the innumerable cracks and crevices of these rocks will be dry, owing to the difficulty of displacement of air by water from such narrow fissures as they lodge in. Associated with them in the loose earth that sparingly filled the crevices were *Poduræ* and larval *Onisci*. I kept the Chelifers alive for above a week. Whilst seeking food they ran backwards and forwards with equal celerity, carrying the maxillary palpi or chelæ (hence the name) elevated about one-third above the head; the dactylopodite and propodite held apart. They seized almost everything they came near, especially each other's chelæ. Perhaps the most interesting feature noticed was the quick and indiscriminate use of both nipping organs in conveying food to the mouth. The position, elevation, sensitiveness, of the chelæ betokened a character homologous to antennæ. On submitting the specimens to the Rev. O. P. Cambridge, who is collecting material for a monograph on British specimens of this group,—and in which will be given figures and descriptions of this new addition to our fauna,—I learned they were *Chelifer Degeerii*, C. Koch.—Henry Crowther (Beeston Hill, Leeds).

Death of Professor Reinhardt.—We regret to have to announce the death, at the age of sixty-six years, of Prof. Reinhardt, Inspector of the Zoological Museum of the University of Copenhagen. His name is of course well known to English ornithologists through his papers in 'The Ibis' and the 'Proceedings of the Zoological Society,' but his most important contributions to Zoology are to be found in the scientific periodicals of Copenhagen.

Death of Dr. Crisp.—The death is also announced of Dr. Crisp at his residence in Chelsea. The deceased gentleman was born at Rendlesham, in Suffolk, in 1806. He studied for the medical profession at St. Thomas's Hospital and Paris, and has been a great contributor to medical literature. He was a Fellow of the Medical Society of London, a Member of the Royal College of Surgeons, and a Doctor of Medicine of St. Andrew's. At one time he was a frequent contributor to the 'Proceedings of the Zoological Society,' wherein will be found numerous original papers from his pen.

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

Linnean Society of London.

November 2, 1882.—Sir J. Lubbock, Bart., M.P., F.R.S., President, in the chair

Prof. J. C. Ewart, Mr. G. Fry, and Lord Walsingham were elected Fellows of the Society.

Mr. A. P. W. Thomas drew attention to a series of specimens under the microscope and diagrams, illustrative of the life-history of the liver-fluke (*Fasciola hepatica*). His experiments showed that the embryos of the fluke, as free *Cercariæ*, burrow into and develop within the body of *Limnæus truncatulus*, and thereafter pass with the herbage into the stomach and ultimately liver of the sheep. Salt added to the sheep's diet is found to act as a prophylactic.

Mr. F. Crisp exhibited specimens sent by Drs. Loew and Bokormy, of Munich, illustrating the discovery they claim to have made of a specific chemical difference between living and dead protoplasm, *viz.*, the power of the living organism to reduce silver salts in a very dilute alkaline solution. Thus, for instance, living *Spirogyra* placed in the solution reduces the silver salt and converts the contents of the cell into a black opaque mass, while if first killed, no such action takes place, but the spiral arrangement of the chlorophyll threads remains perfectly distinct.

Prof. E. Ray Lankester exhibited and made remarks on a fine series of marine objects dredged by him last summer in the Fjords of Norway, the Corals and Sponges being particularly interesting. Of these may be mentioned a branch of *Paragorgia arborea*, three feet across; specimens of the same in spirit, as also of *Lophohelia prolifera*, *Amphihelia ramea*, *Stylaster norvegicus*, *Primnoa lepadifera*, and *Paramuricia ramosa*, both dried and also with the polyps preserved in spirits. The collection also included some very large new forms of *Foraminifera*, specimens of *Rhizocrinus lofotensis*, of the aberrant Mollusca *Neomenia* and *Chætoderma*, and of *Rhabdopleura normani*, besides a large series of Sponges and Asteroidea.

Dr. F. Day showed examples of Trout, namely, of the American Brook Trout, reared in an Aquarium, another reared at Howiestown, near Stirling,

and a hybrid between the American and Common Trout, these being in illustration of his paper "On Variation in Form and Hybridism in *Salmo fontinalis*."

Sir John Lubbock then read his tenth communication "On the Habits of Ants, Bees, and Wasps." Two Queen Ants have lived with him since 1874, therefore are eight years old, and they laid eggs last summer. His oldest workers are seven years old. Dr. Hermann Müller's objections to the author's experiments on the colour sense of bees had been anticipated. The preference of bees for blue is strongly indicated by Müller's own observations on flowers. Sir John also now records further experiments with reference to the power of hearing. Some bees were trained to come to honey, which was placed on a musical box on the lawn close to a window. The musical box was kept going for several hours a day for a fortnight. It was then brought into the house, and placed out of sight, but at the open window, and only about seven yards from where it had been before. The bees, however, did not find the honey, though when it was once shown them they came to it readily enough. Other experiments with a microphone were without results. Bees are popularly—and have been ever since the time of Aristotle—supposed to be influenced by clanging kettles, &c. Experienced apiarists are now disposed to doubt whether the noise has really any effect; but Sir John suggests it as possible that the bees hear only the higher overtones at the verge of or beyond our range of human hearing. He timed a bee and a wasp, for each of which he provided a store of honey, and he found that the wasp began earlier in the morning, at 4 a.m., and worked on later in the evening, till 8 p.m. It might be that the wasps are less sensitive to cold. Moreover, though the bee's proboscis is admirably adapted to extract honey from tubular flowers, the wasp, on the other hand, appears able to swallow it more radidly.—J. Murie.

Zoological Society of London.

November 14, 1882.—Prof. W. H. Flower, LL.D., F.R.S., President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the months of June, July, August, September, and October, 1882, and called attention to certain interesting accessions which had been received during that period. Amongst these were specially noted examples of the New Caledonian Parrakeet, *Nymphicus uvæensis*, presented by Mr. E. L. Layard; a Heloderm Lizard, *Heloderma horridum*, presented by Sir John Lubbock, Bart.; a pair of young River Hogs, *Potamochœrus africanus*, presented by Mr. John Dunn and Col. Bowker; and an example of an apparently new species of Dog, supposed to have been received from the Upper Amazons, and proposed to be called *Canis microtis*, obtained by purchase.

A letter was read from Mr. E. L. Layard respecting a specimen of *Schœnicola platyura* received by the British Museum from the late Mr. Cuming.

Prof. F. Jeffrey Bell exhibited some examples of *Limnæus truncatulus*, lately discovered to be the chief host of the larvæ of the Sheep-fluke.

Prof. Flower exhibited and made remarks upon the skull of a young Chimpanzee from Lado, in the Soudan, sent to him by Dr. Emin Bey, which exhibited the deformity called "Acrocephaly," associated with the premature closure of the fronto-parietal structure.

Mr. H. E. Dresser exhibited and made remarks on specimens of *Melittophagus Boehmi*, Reichenow, and *Mergus Dresseri*, Shelley, which he showed to be identical.

A communication was read from Mr. W. A. Forbes containing some supplementary notes on the anatomy of the Chinese Water-deer, *Hydropotes inermis*.

A communication was read from the Rev. L. Baron, containing notes on the habits of the Aye-Aye of Madagascar in its native state.

Mr. G. E. Dobson read a paper on the natural position of the family *Dipodidæ*, which he maintained to be with the Hystricine, and not, as generally supposed, with the Murine Rodents, and to be most nearly allied to the *Chinchillidæ*.

Prof. F. Jeffrey Bell read a paper on the genus *Psolus*, relating its literary history, and giving an enumeration of the described species. Attention was directed to the extensive distribution of *P. Fabricii*, and to the variations during growth. After the description of other known forms, two new species (*P. Peronii* and *P. ambulata*) were described; for the latter a new subgenus was suggested, and the genus itself was divided into three subgeneric groups.

A second paper from Prof. Bell contained an account of a Crinoid from the Straits of Magellan, obtained by Dr. Coppinger during the voyage of H.M.S. 'Alert,' which was referred to a new variety of *Antedon Eschrichti* of the Arctic Seas.

Mr. W. H. Neale read some notes on the Natural History of Franz-Josef Land, as observed in 1881-82 during the stay of the 'Eira' expedition in that land.

Dr. Gwyn Jeffreys read the fifth part of his list of the Mollusca procured during the expeditions of H.M.S. 'Lightning' and 'Porcupine.' This part, which embraced the species from the *Solenoconchia* to the *Calyptræidæ*, comprised sixty-nine species, of which twenty-two were now for the first time described or figured. The geographical, hydrographical, and geological range of all these species was given, as in his former papers; and the author especially noticed the points of agreement between the deep-water Mollusca from the American and European expeditions.—P. L. Sclater, *Secretary*.

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Communications received from C. M. Adamson, Oliver V. Aplin, John A. Harvie Brown, S. J. H. P. Cambridge, C. Candler, W. Eagle Clarke, J. J. Folliott Darling, W. W. Flemyng, J. H. Gurney, A. S. Hutchinson, F. Kerry, Thomas Mackenzie, C. A. Marriott, Murray A. Mathew, R. H. Mitford, A. G. More, A. P. Morres, T. H. Nelson, Thomas Parkin, E. C. Phillips, J. M. Pillans, H. Pratt & Sons, J. Sinall, Cecil Smith, Thomas Southwell, Arthur Stradling, R. J. Ussher, A. Williams, Williams & Son, John H. Willmore, J. Young, together with various suggestions as to the plan of the proposed General Index, unavoidably stand over.

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The continuation of "Notes and Observations on British Stalk-eyed Crustacea," by John T. Carrington and Edward Lovett, and communications from C. Candler, G. B. Corbin, J. Cordeaux, J. Cullingford, W. W. Flemyng, Percy E. Freke, F. Kerry, R. H. Mitford, Thos. Parkin, R. Lloyd Patterson, A. Stradling, John H. Willmore, J. Young, unavoidably stand over.

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