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EDITED BY

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P R E F A C E .

THE number of subscribers to 'The Naturalist' still continues by its steady increase to show that the journal, as a medium for inter-communication among naturalists in the North of England, is still appreciated by those for whose benefit it is carried on ; and the Editors have to thank their contributors for the great value and considerable interest of their communications.

Reference to the preface of the last volume will show that hopes were entertained of a sufficiently large increase of circulation to enable illustrations to be regularly and systematically given. These hopes have not however been realized, much to the regret of the Editors, who would venture to ask the active influence of their subscribers towards this end.

For the future, the sole Editorship devolves upon Mr. Roebuck, his colleague, Mr. Edgar R. Waite, having just been appointed by the Government of New South Wales to an important post in the Australian Museum at Sydney, upon the duties of which he is to enter in the spring of next year. He will carry with him into his new field of work the best wishes of all who had the privilege of knowing him, largely mingled with sincere regret for the loss which is sustained by natural history in his native land.

THE NATURALIST

For 1892.

OCCURRENCE OF THE SNOW GOOSE IN NORTHUMBERLAND DURING THE WINTER OF 1890-1891.

GEORGE BOLAM,

Berwick-on-Tweed.

WILD-FOWL generally were very abundant all over the country during the hard weather of last winter, and upon the coast of Northumberland many of the species were present in greater numbers than since the memorable year of 1879-80. Scaups appeared in large flocks, and many flights of Wild Swans were seen, while a Smew in adult plumage (a bird almost as symbolical of severe weather as the Storm Petrel) was shot near the mouth of the Tweed; and notices of its occurrence on the Solway and from many other parts of the kingdom appeared in the newspapers. Amongst other rarities reported to have been met with was the Snow Goose (*Chen hyperboreus* Pallas), a Nearctic species which has only once or twice previously been noticed in the British Islands; and the object of the present paper is to put upon record what there can be no doubt was a veritable occurrence of this bird upon the Northumberland coast.

On Friday, 2nd January, 1891, my brother, Mr. W. J. Bolam, and a friend were upon the sands to the north of Holy Island, when they came upon a flock of some twenty large white birds, which at first sight they thought must be swans. The birds were sitting upon one of the sand ridges, and in close proximity to them sat several large Gulls (Herring and Great Black-backed) and a single Cormorant. After allowing my brother to approach to within about 400 yards of them, the whole flock rose together, and the supposed swans, forming themselves into one long line, flew right round about him, passing him at a distance of perhaps a couple of hundred yards. The day was quite clear, and he had then no difficulty in seeing that the whole plumage of the birds was snowy white, with the exception of the

outer half of their wings, which appeared to be black, and which, by contrast with the white feathers, showed up very dark and distinct.

The birds rose at first rather heavily from the ground, their flight afterwards closely resembling that of Bean Geese; in size they appeared to be rather larger than that species, and the neck, carried, of course, straight out in front, seemed to be somewhat longer.

My brother was at this time ignorant of the existence of the Snow Goose, or of its being an occasional visitor to this country; and when he told me next morning of what he had seen, was still rather under the impression that the birds might have been some kind of swans with which he was not acquainted. From his clear description, however, I had little doubt that they could have been anything else than Snow Geese, and a glance at the plates and the letterpress of Yarrell and Bree quickly convinced him that the birds he had seen were really of this species.

Being myself unable to leave home at the time, it was arranged that my brother should revisit Holy Island, and endeavour, if possible, to put the matter beyond dispute by shooting one of the birds; and accordingly, on the morning of the 6th January, he was again upon the sands. The greater part of the day was spent in keeping a sharp look-out, but though many flocks of ducks and grey geese were upon the move, it was not until rather late in the afternoon that a single suspiciously white-looking individual appeared. The weather had now, however, become rather dull, and as the bird merely flew past at a considerable distance out to sea, no very satisfactory view of it could be obtained, and except that the plumage showed distinctly white, nothing positive could be noted.

On the 9th January he was again down upon the sand ridges, when although nothing more was seen of the flock, another single bird appeared, and this time fortunately passed so close to where he lay concealed that both with the naked eye and by the help of his glass my brother had a most capital view of it, and was able to make himself quite certain that the bird was really a Snow Goose. The plumage, except the broad black tips to the wings, was again pure white, and the flight as before bore a strong resemblance to that of a Bean Goose.

Though at intervals of a few days several other visits were paid to Holy Island, nothing further was seen of the birds, nor were we able to hear that they had been met with by any of the local shooters. Actual proof of the visit of the Snow Goose to Northumberland by the production of a specimen is therefore wanting, but my brother is so well acquainted with the birds usually met with upon our shores, and his description of the goose seen was so clear, that I should have

had little hesitation in recording from his observation alone a visit of *Chen hyperboreus* to this country. Confirmation, however, to a certain extent at any rate, was forthcoming in the course of the next few days in the shape of letters to the 'Field' from people who had seen similar birds in other parts of the country. Thus in that journal of the 24th January, Mr. Henry Sharp wrote that on the 16th he had seen near Beverley, in Yorkshire, three large white birds with black tips to their wings, which he strongly suspected were Snow Geese; and in the same paper of 31st January there appeared a letter from the Rev. H. A. Macpherson, of Carlisle, giving particulars of four birds which he and a friend had met with upon the Solway, and which they had quite satisfied themselves were of this species. These latter birds, wrote Mr. Macpherson, had been first observed near Allonby on 3rd January, and appeared to have remained in the neighbourhood for nearly a month.

The close similarity between the dates of arrival at Holy Island and upon the western shores of Great Britain is very interesting, and so far as I am aware there is no previous record of the species in this, the most northern county of England.

NOTES—ORNITHOLOGY.

Large Raptorial Birds in the Humber District.—In the latter half of November there was a distinct immigration of some of the larger birds of prey. A Rough-legged Buzzard (*Archibuteo lagopus*), presumably a young bird, was shot near Grimsby about the 18th. I saw it a few days later in Mr. Jefferies' shop at that place. A second was obtained at Easington in Holderness on the 18th, and about the same time a Buzzard Eagle was seen at Grainsby by one of Mr. Haigh's keepers. On the 19th, when shooting here, I saw a Buzzard, probably *A. lagopus*, soaring in circles, and baited by Rooks. Mr. Hewetson also noticed a Buzzard passing over Hull. On November 22nd Mr. Philip Loten, of Easington, saw close to him an adult female Hen Harrier (*Circus cyaneus*), with rich brown upper plumage and a white rump. It was beating across a turnip field, flying very close to the ground. On November 26th, Mr. Craggs Clubley had the good fortune to see at dusk a larger Eagle come in from seaward, and alight on some railings near Kilnsea Warren House. He says it looked a rather lighter coloured bird than the one he shot in 1889, but was quite as large, and would be fully seven feet across the wings. Perhaps this was one of the pair recorded by Mr. M. Bailey (Nat., 1891, p. 372) as recently seen at Flamborough Head.—JOHN CORDEAUX, Eaton Hall, Retford, Dec. 4th, 1891.

Albino Starling in the Isle of Man.—On the 3rd of October last an albino Starling (*Sturnus vulgaris*) was shot near Colby in this island. It was of a uniform creamy white, the only colour being a few extremely minute spots on the top of the skull. Later in the same month a Stormy Petrel (*Procellaria pelagica*), was found dead on the shore at Port Erin; it was a fine specimen, in good plumage, and perfectly fresh. Both birds were preserved by G. Adams, bird-stuffer, of Douglas.—J. C. BACON, Seafield, St. Anne, Isle of Man, Nov. 26th.

Ortolan Bunting near Bedale.—On cataloguing the birds in my museum, I find I have a skin (male) of this species (*Emberiza hortulana*), ticketed 'Bedale, Yorks, July 9, 1882.' This was in a lot which I bought from the executors of the late James Varley, of Almondbury Bank, Huddersfield.—S. L. MOSLEY Huddersfield, December 2nd, 1891.

NOTES—MAMMALIA.

Long-Eared Bat in Swaledale.—Some little time ago Mr. John Shillito, of Halifax, showed me a fine example of *Plecotus auritus*, which was caught at Richmond, Yorkshire, on the 16th September. Although the species is one of our common ones, it is nevertheless interesting to have definite records for fresh districts.—W. DENISON ROEBUCK, Leeds, Oct. 1891.

Unusual Nests of Water Voles.—It is, I suppose, generally known that the young of the Water Vole (*Arvicola amphibia*) are born in a nest placed at the end of a burrow in the bank of some stream or pond, but this is not invariably the case. When searching for Grebes' eggs, in the reed-beds at Pickmere Mere near Northwich, one day at the latter end of June, four or five years ago, I found three ball-shaped nests, made of gnawed reeds and flags, and placed on a platform of the same materials, which raised them above the water. Two of the nests were empty, but the third contained three young Voles. The fur was reddish brown above, inclining to black in the dorsal line, and fawn colour below. In one example the fur was very dark, almost black all over. The largest of the three measured 4 ins. 6 lines from nose to tip of tail; length of head, 1 in. 1 line; length of tail, 1 in. 2 lines.—CHAS. OLDHAM, Ashton-on-Mersey, Dec. 1891.

NOTE—FUNGI.

Distribution of *Strobilomyces strobilaceus*.—Among the earlier Scottish botanists *Strobilomyces strobilaceus* Berk. was known by the generic name of *Boletus*. It is described in Vahl's 'Flora Danica' as *Boletus floccopus*, and is figured by Scopoli as *B. strobilaceus*. It was retained in that genus until separated by Berkeley, who formed it into the new genus *Strobilomyces*. He retained at first Vahl's specific name, but afterwards substituted that of Scopoli.

The plant is rare, but by no means confined in this country to a few localities in the Midland Counties of England, as stated by Mr. Soppitt in the 'Naturalist' of December last. It has been met with inter alia loca at Craigie Hall, Linlithgowshire, Duthie Forest, Inverness-shire, and was found near Crieff, in Perthshire, by members of the Scottish Cryptogamic Society, at their annual excursion in 1889.—A. B. STEELE, Museum of Science and Art, Edinburgh, Dec. 10th, 1891.

NOTE—BOTANY.

Are *Crocus vernus* and *Crocus nudiflorus* natives of England?—Mr. Cornelius Brown, in his 'History of Nottinghamshire,' 1891, gives his opinion in these words: 'The abundance of these two crocuses is very interesting, for they are natives of Southern Europe, and were certainly introduced in some way to the Nottingham Meadows, as Deering shrewdly suspected.' Deering, the botanist, writing about 1738, says: 'It seemed to me that some roots might have been carried to that place (the Meadows) among the dung from a garden, but when I considered they were very numerous, and spread very much, and a friend assured me he had for nearly ten years before observed them there, I began to doubt whether they might not be of spontaneous growth.' Nowadays, dung is not carted from a garden, but to it. But how is it that out of the hundred sorts of crocuses cultivated in gardens since 1620, two sorts are found wild? There are several other habitats for these two crocuses, one at Stoke, where the battle was fought. In one modern handbook of English botany, there are so many rejections from the list of our *wild* plants as to be rather bewildering, and raises a wonder in the mind of the student that the author, knowing them to be introduced, though he adduces no evidence, should present them at all to the reader as British plants. I entirely hold to the opinion of their growth in England being spontaneous, and that it has not been *e rejectamentis hortorum*.—HENRY PAYNE, M.D., Newhill Hall, West Melton, Rotherham, Dec. 10th, 1891.

Crocus vernus is indigenous in the Alps of Central Europe, and through Italy southward to Sicily; *C. nudiflorus* in the Pyrenees. Full particulars of their distribution will be found in Maw's magnificent monograph of the genus *Crocus*, published by Dulau in 1886.—J. G. BAKER.

NOTES ON
POLYZOA FOUND AT CLEETHORPES

In 1875, 1879, and 1882.

GEORGE ROBERT VINE.

AT the present time, when the Yorkshire coast is being mapped out for the study of natural history, as well as for dredging operations, I feel sure that Lincolnshire, if properly searched, would yield a fair proportion of interesting objects for study. No place, however, could have justice done to it unless local residents would help in the furnishing of material from the beach which is not of every-day occurrence. I am not a frequent visitor to seaside resorts, and, since the few days' rest in 1875, I have only been at Cleethorpes for a day's outing on the two other dates given above. On these three occasions, however, I gathered Zoophytes and Polyzoa in abundance, and I am convinced that if a good search was made amongst the débris which old ocean is constantly throwing upon the beach, much good material could be obtained. I nevertheless believe that the fact of certain species being common on one occasion by no means involves a guarantee that the same species will be found in the beach débris on a second or third visit to the same place. My best examples of Polyzoa were gathered in September 1875, and although I have added to them from time to time, I have very rarely been able to excel the first collection; and some species which were obtained then I have rarely met with since. This year, however, I found, while examining the dead shells which had been gathered by my children in their rambles along the beach, two or three species which I had not previously met with, whilst other encrusting forms—such as the *Membraniporæ*—are much finer and far more abundant than in my first collection.

One of the reasons for delaying the publication of any remarks on the Polyzoan fauna of Cleethorpes has been the paucity of knowledge as to how many or how few species could be found there. I have thought, over and over again, that perhaps some resident in the neighbourhood would be better qualified to do the work than I was, but seeing that nothing, in all these years of waiting, has been forthcoming, I willingly commit myself to the task, in the hope that someone else, with fuller knowledge of the locality, will be able to add considerably to my initial list.

When one looks over the admirable 'Report on the Polyzoa' (Proc. Lit. Phil. Soc. Liverpool, vol. xi, pp. 161-200), by my friend Mr. Joseph Lomas—from the Liverpool district—and compares his list with the present one, I can anticipate before-hand what the result of their criticism would be. It must, however, be remembered that the advantages possessed by Mr. Lomas are denied to me. He had the advantageous help of the Liverpool Marine Biological Committee, and the débris, etc., from various dredgings placed at his disposal; whilst I give the record only of the species found—under favourable circumstances I will admit—in the beach débris. I do hope, however, that before long the dredgings off the eastern coasts will be as fruitful of results, in a biological sense, as the dredgings of the Liverpool Committee have been. Most important additions to our previous knowledge may be found when studying the migratory habits of the Ctenostomata. Of this group alone nineteen species are recorded from the Liverpool district by Mr. Lomas, whilst as yet I can only record one species from Cleethorpes. I hope, therefore, that special attention will be given to this group by future biological students.

I have not thought it wise to load the present paper with a long list of synonyms and references, but I deem it most important to give brief notes on the species recorded, and in every case I have given the pages of Vol. I. of the Rev. T. Hincks' work on British Marine Polyzoa (John Van Voorst, London, 1880) on which descriptions may be found. I have also given references to the plates and figures (Vol. II.) by the same author. These I shall merely quote as follows: B.M.P. pp. —, pl.—, figs. etc. If, however, the student of British Marine Polyzoa desires a more accurate knowledge of the 'synonymy' of species, he cannot do better than place side by side with Hincks', Miss E. C. Jelly's admirable 'Synonymic Catalogue of the Recent Marine Bryozoa' (Dulau & Co., Soho Square, London, 1889).

Class POLYZOA = BRYOZOA.

Sub-Order CHEILOSTOMATA Busk.

Genus AETEA Lamouroux.

1. ? *Aetea truncata* Landsborough.

B.M.P., p. 8, pl. i, fig. 11.

I am rather doubtful about the small fragment which I place here, but it appears to be the stoloniferous portion of the dwarf variety of this species. On Algæ.

Genus EUCRATEA Lamouroux.

2. **Eucratea chelata** L. var. *a repens*.

B.M.P., p. 14, pl. i., fig. 3. See pls. ii. and iii.

I have found only a small fragment of this species at Cleethorpes. Bean says that it is rare at Scarborough, but I have some fairly good examples from Filey.

Genus GEMELLARIA Savigny.

3. **Gemellaria loricata** L.

B.M.P., p. 18, pl. iii., figs. 1-4.

In 1875, and also in 1879, there was no species more abundant than this in the beach débris. On the night of the 19th of September, 1875, a terrific storm set in from the east, and on the morning of the 20th the beach was literally covered with Northern and deep-sea forms of Algæ, Zoophytes, and Polyzoa. I have at the present time some of the finest tufts of *Gemellaria loricata* that I have ever seen. Mr. Hincks, on the authority of Hassall (p. 19), gives the extreme height of the species as 8 or 9 inches, but he says 'more usually 2 to 4.' Some of the examples that I gathered were fully seven inches in height, and of proportionate breadth.

Genus SCRUPOCELLARIA Van Beneden.

4. **Scrupocellaria scruposa** L.

B.M.P., p. 45, pl. vii., figs. 8-10.

I found several fair examples of this species at Cleethorpes, chiefly on the roots of Algæ.

5. ? **Scrupocellaria elliptica** Reuss.

B.M.P., pp. 46-47.

The small fragment that I place here—the only one that I have—may certainly claim relationship with Reuss' beautiful little species so far as the general character is given by both Hincks and Reuss, but it will not fit in exactly with the figures of either author. Taking Hincks' fig. 5, pl. vi., as a guide, I would advise that a careful search be made at Cleethorpes for examples of the species. On Algæ.

6. **Scrupocellaria reptans** L.

B.M.P., p. 52, pl. vii., figs. 1-7.

This species is fairly abundant at Bridlington and the Yorkshire coast generally, but so far as I have knowledge it is apparently rare at Cleethorpes. I have only one fragment from this locality.

Genus BICELLARIA Blainville.

7. **Bicellaria ciliata** Linnæus.

B.M.P., p. 68, pl. viii., figs. 1-5.

Since the paper was written I have found a fragment of this beautiful species, adherent to *Plocamium*.

Genus CELLARIA Lamouroux (part).

= SALICORNARIA Cuvier.

8. **Cellaria fistulosa** L.

B.M.P., p. 106, pl. xiii., figs. 1-4.

A small but very perfect *Zoarium* of this species I found in my 1879 gathering. It was nestling in the bulky rootlets of *Flustra foliacea*, in company with *Scrupocellaria scruposa*. Hincks does not give Scarborough as a locality for this species, yet I have had sent to me a few forms from that neighbourhood as *Salicornaria farciminoïdes* Johnst.

Genus FLUSTRA L.

9. **Flustra foliacea** L.

B.M.P., p. 115, pl. xvi., figs. 1 to 1 b.

In my 1875 gathering this form was rather stunted in growth, and the segments were very narrow; but in 1879 the normal form was abundant in the débris. To what causes may we ascribe the tendency to decay in examples of this species? Examples gathered in 1875 are well preserved and firm to the touch, whilst those gathered at the later date crumble to pieces if indelicately handled.

10. **Flustra securifrons** Pallas.

B.M.P., p. 120, pl. xvi., figs. 2-3.

I was fortunate in securing a few really good tufts of this species in 1875. It may be common at Cleethorpes, but I have not gathered examples since.

Genus MEMBRANIPORA Blainville.

11. **Membranipora reticulum** L. (Jelly, p. 162).

= *Millepora reticulum* L., Syst. Nat., ed. 12, 1284.

= *Membranipora lacroixii* Hincks.

B.M.P., p. 129, pl. xvii., figs. 5-8.

Generally I have followed Hincks, but in the present case perhaps it is best to break the rule in favour of priority. Those who wish to investigate the case further will be able to do so even when accepting the decision of Miss Jelly (Synon. Cata-

logue, No. 1,047), by tracing back for themselves the long list of synonyms and references given in the catalogue. The best examples of the species that I have from Cleethorpes were only obtained in the early part of August this year. The finest colonial growths were on the inside of *Solen ensis*—the other on *Buccinum undatum*.

12. **Membranipora membranacea** L.

B.M.P., p. 146, pl. xviii., figs. 5-6.

Common on *Laminaria digitata*.

13. **Membranipora** sp.

A small fragment, the zoëciæ of which are hexagonal in outline, but I could not place it definitely under Busk's name. See Hincks' B.M.P., p. 143.

14. **Membranipora pilosa** L.

= *Electra pilosa* Busk, Chal. Rep., p. 78.

B.M.P., p. 137, pl. xxiii., figs. 1-4.

Common everywhere on the British coast. The best examples obtained at Cleethorpes were on *Plocamium coccineum*. Fragments of the algæ, encrusted by *M. pilosa*, when mounted in balsam show important details of the structure of the polyzoon.

Genus MICROPORELLA Hincks (p. 204).

15. **Microporella ciliata** Pallas.

B.M.P., p. 206, pl. xxviii., figs. 1-8.

I am not able to say whether the species is common. I only obtained two examples, both on *Plocamium coccineum*.

16. **Microporella malusii** Aud.

B.M.P., p. 211, pl. xxviii. and pl. xxix.

Two colonies only on the outer portion of dead oyster shell, but beautifully preserved; the Zoëcia of the colony are scarcely abraded. These examples I got this year, 1891. I have no record of the species in my earlier collections.

Genus SCHIZOPORELLA Hincks (p. 237).

17. **Schizoporella hyalina** L. var. γ (**tuberculata**) Hincks.

B.M.P., pp. 271-273.

This beautiful little species is rather abundant on Algæ, and to the naked eye the delicate colonial growths appear as mere white specks on the dark green Algæ. Notwithstanding that the species is so very common, the forms puzzled me more than all the others put together. From the form of the cell, and

the 'strongly-developed umbo below the orifice,' it had the appearance of a *Cellepora*; and it was not till after I had sent a slide for identification to Miss E. C. Jelly that I satisfied myself that the small species was none other than a variety of the common *S. hyalina*, but I was nevertheless glad to receive Miss Jelly's prompt decision respecting it.

Genus UMBONULA Hincks (p. 316).

18. **Umbonula verrucosa** Esper.

B.M.P., p. 317, pl. xxxix., figs. 1-2.

The only British species, and all that I found at Cleethorpes, was a small but very distinct fragment. Hincks gives Scarborough as another locality on the East Coast.

Genus CELLEPORA (part) Fab.

19. **Cellepora pumicosa** L.

B.M.P., p. 398, pl. liv., figs. 1-3.

Common on stems of Zoophytes and Algæ.

Sub-Order CYCLOSTOMATA Busk.

I was not very successful in the gathering of species belonging to this sub-order. I searched in vain amongst the dead shells for species of *Stomatopora* and *Diastopora*. Perhaps others have been, or may be, more fortunate in their findings.

Genus CRISIA (part) Lamouroux.

20. **Crisia cornuta** L.

B.M.P., p. 419, pl. lvi.

My best examples were found on *Plocamium*. The normal form only.

21. **Crisia eburnea** L.

B.M.P., p. 420, pl. lvi.

Common on Algæ, and the roots and stems of Zoophytes.

22. **Crisia denticulata** Lamk.

B.M.P., p. 422, pl. lvi.

Not frequent, so far as I am aware. On Algæ.

This interesting group has formed the subject of a very elaborate paper by Sidney F. Harmer, in which details of a special character, as to the mode of branching and formation of ovicels, are dealt with by a masterly hand, and in a most novel way (Quart. Jour. Microscopical Science, March 1891, pp. 127-181). A second paper on the embryology of the species is in preparation, and promised at an early date.

Genus *IDMONEA* Lamx.23. *Idmonea serpens* L.

B.M.P., p. 453, pl. lxi.

Only one very poor example found.

Genus *LICHENOPORA* Defrance.24. *Lichenopora verrucaria* Fab.

B.M.P., p. 478, pl. lxiv.

Not common. My examples were found on *Plocamium coccineum*.Sub-Order *CTENOSTOMATA* Busk.Genus *AMATHIA* Lamx.25. *Amathia lendigera* L.

B.M.P., p. 516, pl. lxxiv.

This is the end of my list of Cleethorpes Polyzoa so far as my experience may be relied on. Local residents, or others better acquainted with the place, may now be able to add to the list: if so, I shall be glad to have a copy of the additions made.

Cheilostomata	...	...	...	19 species.
Cyclostomata	...	...	...	5 "
Ctenostomata	...	...	...	1 "

The Hydrozoa have not been specifically investigated, but I feel assured that a good collection of these could be obtained.

The Foraminifera are not abundant so far as I am aware, yet I have found a few forms, both in the débris and also on some of the Algæ. *Planorbulina lobatula* is the form most frequently met with.

NOTES AND NEWS.

As will be seen by the advertisement which appears on the cover of the present number, an old Leeds naturalist, Mr. Walter Raine, announces a new book on 'Bird-Nesting in North-West Canada,' which is to be finely illustrated with Photo-engravings and Coloured Plates. The book will give an account of a collecting trip to the North-West, and will describe the experiences of the author and his collectors in a region which stretches from Winnipeg to within sight of the Rocky Mountains, a distance of nearly one thousand miles, and in which, as might be expected in such a wide tract of country, many rare birds were found breeding. It will give a full account of the nesting habits of numerous birds which occur in Europe as occasional visitors, and will contain plates of nests and eggs; and also gives coloured plates of eggs of Yellowlegs, Wilson's Phalarope, Knot, those of the last named species having never previously been figured in any ornithological work; so that the work will be found interesting reading to British as well as American ornithologists. Mr. Raine has our best wishes for the success of his work.

TESTACELLA SCUTULUM AT HEADINGLEY, LEEDS.

EDGAR R. WAITE, F.L.S.,

The Museum, Leeds.

ON the 1st November, 1886, whilst digging worms for my birds at Headingley, I turned up a *Testacella*, which was exhibited at a meeting of the Leeds Naturalists' Club on the Monday following, under the name of *T. haliotideae*. Since that time I frequently sought for further specimens, but without success until the 18th of September last, when I found five or six examples of the same species, together with several eggs and three or four young ones just hatched. These I exhibited at a meeting of the Conchological Society on the 7th of October, when the Society's referees determined them as *Testacella scutulium*. This exhibit was stated to be the more important inasmuch as so few Yorkshire examples have had their specific identification accurately placed on record. The referees have never been able to obtain examples of those known to occur at Boston Spa: at all events since the developed knowledge of the specific differences of the animals of this genus has made it possible to determine for certain whether they are to be called *T. scutulium* or *T. haliotideae*, which are now known to be specifically and anatomically distinct species, although down to within a few years ago considered as mere varieties. It is not, however, the first occasion on which *Testacellæ* from the West Riding have been accurately determined, for at the meeting of the Conchological Society last December (1890), Mr. H. T. Soppitt exhibited an example of *T. haliotideae* from Ferniehurst, Shipley, where it had been found by Mr. E. Self, who up to the present time has obtained about a score specimens, and who supposed that they were introduced with plants from Backhouse's Nurseries at York; but, in reply to 'a letter which I wrote to Mr. James Backhouse on this subject,' I am informed that *Testacella* is unknown in the gardens.

In the 'Journal of Conchology,' 1888, p. 320, Mr. Quilter records having found this species at a depth of eighteen inches, and in 'The Naturalist,' 1891, p. 76, Mr. W. E. Collinge states that he has found *T. haliotideae* at a depth of from four to five feet. I may mention that none of my specimens were obtained at a depth exceeding eight or nine inches.

SUPPLEMENTARY
LIST OF THE PLANTS OF LANGSTROTHDALE,
MID-WEST YORKSHIRE.

REV. TREVOR BASIL WOODD, B.A., LL.B.,
Oughtershaw Hall.

IN 'The Naturalist' for September 1889, I published a list of Langstrothdale Plants. The following will render the list more complete. Not a few of these are plants recorded in the 'Flora of West Yorkshire' which I have not personally verified.

Ranunculus acris.

Ranunculus repens. Oughtershaw.

Berberis vulgaris. Buckden Woods. Probably introduced.

Sisymbrium Alliaria. Hubberholme.

Cardamine hirsuta. Oughtershaw. A garden weed.

Draba incana. Buckden (W. Y. Flora).

Draba verna. Oughtershaw. Common.

Hutchinsia petræa. Lime scars about Cam and Oughtershaw
(W. Y. Flora).

Cerastium triviale.

Alsine verna. Oughtershaw Crag (W. Y. Flora).

Arenaria serpyllifolia.

Sagina procumbens.

Anthyllis Vulneraria.

Trifolium minus.

Prunus insititia. A variety with purple fruit at 750 feet, at
Hubberholme. Also at Raisghyll, about 1,000 feet (Rev. W.
A. Shuffrey).

Potentilla reptans. Kettlewell.

Rubus fruticosus. Prof. Babington, having noticed the record of
R. fruticosus at the most unusual elevation of 1,200 feet, at
Oughtershaw, examined some specimens which I sent from
there: and pronounced them to be *deltoideus* Müll. Hence
the statement (W. Y. Flora) that no station in West Yorkshire
above 800 feet is known, requires modification.

Epilobium montanum. Oughtershaw.

Hippuris vulgaris.

Ribes petræum. Buckden (W. Y. Flora).

Sedum Telephium. By the side of Deepdale Beck.

NOTE.—*Saxifraga aizoides*. I have found it still growing by the 'rill above Hunt Pot, West side of Penyghent' (W. Y. Flora), but is almost beyond our area.

Chrysosplenium alternifolium. Oughtershaw Ghyll.

Chrysosplenium oppositifolium. Pot-holes, etc., by Oughtershaw Tarn.

Peucedanum Ostruthium. Oughtershaw (W. Y. Flora).

Torilis Anthriscus.

Cornus sanguinea.

Galium palustre. Not *uliginosum* probably, as previously stated.

Carduus lanceolatus. Oughtershaw.

Carduus palustris.

Artemisia vulgaris. Buckden.

Gnaphalium sylvaticum. Buckden (W. Y. Flora).

Senecio saracenicus. Beckermonds, at 1,100 feet, by farm house (450 feet is given as limit in W. Y. Flora). Also by farm house at Hubberholme.

Leontodon hispidus.

Crepis paludosa. Buckden Woods. Oughtershaw.

Hieracium murorum. Buckden Scars (W. Y. Flora).

Hieracium cæsium. Lower Limestone Scars, Buckden (W. Y. Flora).

Hieracium tridentatum. Buckden (W. Y. Flora).

Hieracium boreale. Buckden (W. Y. Flora).

Fraxinus excelsior.

[**Mimulus luteus.** Rill-side, Swathghyll. Garden escape.]

Melampyrum sylvaticum. Wood by road near Kettlewell; and Buckden (W. Y. Flora).

[**Lamium maculatum.** By a farm house near Buckden].

Myosotis palustris.

Trientalis europæa. Buckden (W. Y. Flora).

[**Anagallis arvensis.** One plant. Imported. Oughtershaw].

Chenopodium Bonus-Henricus. Hubberholme and Oughtershaw, at 1,200 feet.

Rumex aquaticus. Langstrothdale (W. Y. Flora).

Empetrum nigrum. Near Oughtershaw Tarn.

Salix nigricans. Sparingly above Buckden, by the stream in Lower Langstrothdale (W. Y. Flora).

- Salix phylicifolia*. Langstrothdale (W. Y. Flora).
Salix repens. Langstrothdale (W. Y. Flora).
Arum maculatum. Oughtershaw. 12,000 ft.
Orchis mascula.
Orchis incarnata.
Gymnadenia conopsea. Common.
Gymnadenia albida. Oughtershaw, one plant (W. Y. Flora).
Cypripedium Calceolus. I am informed that the schoolmaster at Kettlewell has found it this year in the neighbourhood of that village. The plant has shared the same fate as the one last found there in 1883 (see W. Y. Flora), and has been 'carried off.'
Luzula pilosa. Common, from Buckden downwards (W. Y. Flora).
Luzula sylvatica. Mountain pastures: Buckden (W. Y. Flora).
Scirpus palustris. Stream near Buckden.
Scirpus setaceus. Langstrothdale (W. Y. Flora).
Eriophorum angustifolium.
Juncus squarrosus.
Juncus communis.
Carex pallescens. Buckden Woods (W. Y. Flora).
Carex fulva. Langstrothdale Moors (W. Y. Flora).
Poa nemoralis. Woods near Buckden (W. Y. Flora).
Lycopodium Selago. Rocks of Cam Fell (W. Y. Flora).
Selaginella selaginoides. Oughtershaw (W. Y. Flora).
Equisetum arvense. Oughtershaw.
Equisetum maximum. Buckden (W. Y. Flora).
Equisetum palustre. Oughtershaw.

NOTE—HYMENOPTERA.

Sirex juvencus at Adel.—In 'The Naturalist,' 1891, page 124, Mr. C. F. George draws attention to the 'preponderance of the female in *Sirex*.' I have received many specimens of *S. gigas* from the Leeds district; in fact, scarcely a year passes without one or more being captured, but all these have been females. *Sirex juvencus* appears to be a much rarer species in Britain than *S. gigas*, but of recent years has been recorded for Yorkshire from near Northallerton, at Harrogate, Huddersfield, and Hull. I am now able to record it for the Leeds district. On the 30th September last I obtained a female at Adel; it was flying up and down a window pane, much after the manner of a wasp. In Cameron's 'Monograph of the British Phytophagous Hymenoptera,' Vol. III., p. 136 (Ray Society), there appears to be a little confusion in the statement of distribution, the note under *S. gigas* being evidently intended for *S. juvencus*, and that under the latter species for *S. melanocerus*.—EDGAR R. WAITE, The Museum, Leeds, Nov. 5th, 1891.

NOTE—FUNGI.

A Mycological Ramble in Mid-November.—A number of members who attended the Annual Meeting of the Yorkshire Naturalists' Union at Scarborough stayed overnight, and spent several days in the district. On Nov. 15th, a small party, comprising Messrs. C. Crossland, of Halifax, W. D. Roebuck, F.L.S., J. A. Hargreaves, of Scarborough, and the writer, indulged in a ramble to Ringing Keld bog and back. One of the company had been so impressed with the neighbourhood of Cloughton as a mycological locality on the occasion of the Union's excursion to Hayburn Wyke in July, that for some time he had been seized with a morbid desire to again visit that district; hence this excursion, which was no sooner mooted than the above-mentioned at once fell in with the arrangements. An early start was made and in fine weather, but Falsgrave was scarcely left behind before a sharp shower of hail and rain compelled the party to seek the refuge of a hedge-bank; but this deterred them not from proceeding, although it continued to be dampish both above and below for the greater part of the day. Scalby and Burniston were soon passed, and many interesting objects were noted on the way, the lichens being particularly fine, and the numerous roses, chrysanthemums, and other flowers in cottage gardens, indicated a milder climate than ours in the West Riding. Ascending the hill above Cloughton, a woodman's hut near the roadside was taken advantage of to shelter from the driving rain. Here *Phragmidium violaceum* Schl. was abundant on the leaves of the brambles, a species generally common, but singularly absent from the Bradford and Halifax districts. On the grassy roadside *Geoglossum glabrum* Pers. was somewhat common, its black 'clubs' forming conspicuous objects on the greensward. Then several specimens were picked up of *Agaricus* (*Clitocybe*) *fragrans* Sow., with its strong anise odour, and *Tremella albida* Huds. was not uncommon on fallen logs. By this time a pine wood on the right was reached, which proved a mycological paradise. Here fungi were in profusion and variety, which, if not reckoned rare, were of a different character to what we are accustomed to. The mere mention of a few names will indicate the nature of the ground we were on. *Agaricus* (*Amanita*) *muscarius* L., *A.* (*Mycena*) *lacteus* Pers., *A.* (*M.*) *atrocyanus* Batsch, *A.* (*Flammula*) *flavidus* Schæff., *A.* (*Hypholoma*) *capnoides* Fr., *Cortinarius* (*Dermocybe*) *cinnamomeus* Fr., *Hygrophorus hypothejus* Fr., *Lactarius rufus* Fr., *Russula expallens* Gillet, *Marasmius foetidus* Fr., *Polyporus chioneus* Fr., and a fine specimen of *Hydnum auriscalpium* L. which was growing on a fir cone. Amongst common species were the following:—*A.* (*Amanitopsis*) *vaginatus* Bull., *A.* (*Clitocybe*) *brumalis* Fr., *A.* (*Collybia*) *butyraceus* Bull., *A.* (*Collybia*) *velutipes* Curt., *A.* (*Mycena*) *galopus* Pers., *A.* (*Mycena*) *epipterygius* Scop., *A.* (*Pluteus*) *cervinus* Schæff., *A.* (*Hypholoma*) *sublateritius* Schæff., *Marasmius androsaceus* Fr., *Clavaria rugosa* Bull., and *Lachnella calycina* Schum., was extremely common on smaller branches of Scotch fir. Two interesting moulds on decaying fungi were collected, which on examination proved—thanks to Mr. Masee's recent book on British Phycomycetes, &c.—to be *Spinellus fusiger* Van Tiegh., which was flourishing on *Mycena epipterygius* and *Sporodinia aspergillus* Schrot., a species of great interest. It still continued to rain, and it was thought advisable to steer due N.W. to a house marked on the ordnance map as 'The Falcon Inn,' near Cloughton Moor. But after nearly a mile had been traversed with no signs of habitation for at least a mile ahead, the object was abandoned, and steps were retraced at full speed, one of the party calling at Ringing Keld Bog, which was found to be unworkable. The rest of the story can be briefly told—a prolonged halt before a comfortable fire at Cloughton, and a hour and a half's trudge along the miry roads, the mud-stained party duly arrived at Scarborough, and the ramble will not soon be forgotten. Next day the writer accompanied Messrs. Chapman and Crossland on a ramble along the north shore, where a choice variety of marine algæ were collected. On Castle Hill the *Æcidium* condition of *Puccinia smyrnii* Corda was observed to be in abundance on seedlings of *Smyrniium olusatrum*. It is evident that many of the *teleutospores* of this species (unlike most *Uredineæ*) will germinate in autumn, a fact we noticed last year. A similar circumstance has been observed in the case of *P. tragopogi* Pers., by Dr. Plowright (*British Uredineæ and Ustilagineæ*, p. 199), and quite recently we met with *Puccinia menthæ* Pers., on *Mentha vividis*, the *teleutospores* of which germinated vigorously when placed in water.—H. T. SOPPITT, Bradford, 20th Nov. 1891.

NEW BRITISH LICHENS.

ABRAHAM SHACKLETON AND THOMAS HEBDEN,

Keighley.

WE are glad to record the following new British Lichens, as described in manuscript by Dr. Wm. Nylander, of Paris, of which the following is a translation.

Verrucaria malhamensis Nyl., nov. spec. Thallus, albido-cinerascent, thin, continuous; apothecia, black, prominent (0.3 mm. diam.), impressed, interior uncoloured (occasionally slightly smoky); spores, 8 in each ascus, oblong, simple, long 0.14-16 mm., broad 0.05-6 mm.

Similar in facies to *Verrucaria dufourii* D.C., with affinities to *Verrucaria pulicari* Mass.

Damp shady rocks near the ground; Malham, Gordale, Sep. 1891.

Verrucaria spurcella Nyl., nov. spec. Very similar to *Verrucaria intercedentis* Nyl., except thallus thinner, obscurely smoky, spores uncoloured, murali locular, long 0.22-25 mm., broad 0.11-14 mm.

Limestone walls; Malham, Gordale, Sep. 1891.

Verrucaria cataleptoides, f. ferruginosa Nyl. Pyrenoc, p. 26, Lamy, Catal., p. 160. Spores, long 0.19-23 mm., broad 0.09-11 mm.

Limestone crags, Malham, Sep. 1891.

Verrucaria limitata Kphb. Nyl. Scan., p. 275; Koerber parerga, p. 374. Spores, long 0.14-16 mm., broad 0.07 mm.

Limestone crags, Malham, Sep. 1891.

Verrucaria macrostoma Duf. **f. aphanostoma.** Ostioli minoribus. Spores, long 0.26-36 mm., broad 0.16-20 mm.

On mortar, and wall-tops, sandstone, Cullingworth; Malsis, Crosshills.

Verrucaria hydrela Ach. Schær. Enum., p. 209. Obscurior; spores, long 0.18-27 mm., broad 0.06-8 mm.

On stones, submersed; Braithwaite, Keighley.

Verrucaria peloclita Nyl. **f. continuella** Nyl. Thallus, white, continuous.

Damp rocks, Malham, Sep. 1891.

Lecidea (Biatora) rubidula Nyl. Nyl. in Flora, 1884, p. 214, and Lichens Freti Behring, p. 33.

Limestone crags. Malham, Gordale, May 1891.

SOME NOTES ON THE LONG-EARED BAT IN CAPTIVITY.

M. LAWSON THOMPSON,

Saltburn-by-the-Sea.

FOR some days previous, a Long-eared Bat (*Plecotus auritus*) had been in the habit of flying in the entrance-hall, apparently in pursuit of the moths which congregated in the space between the two doors, doubtless attracted by the light shining through the inner door from the passage. During one of these indoor flights it was caught and placed in a cage, remaining in captivity for nearly a fortnight. The following summary of observations on its movements and appearance is from notes carefully taken at the time (July 1889).

The appearance of this species of bat when at rest is singularly striking. The enormous ears then droop obliquely backwards, by a graceful doubling of the outer margin of the membrane. When in this position, the head appears to bear a somewhat fanciful resemblance to that of certain horned sheep (I allude to the kind with massive horns of a single semi-circular curve). When sleeping, it hangs head-downwards, suspended by the hind feet. The long ears are folded against the side of the neck, and covered by the wings, which are laid along the sides of the body. The tragus, or membrane within the ear, hangs down perpendicularly, and might be mistaken by the uninitiated observer for the real ears. This bat's mode of progression on the ground, though certainly awkward, is more active than one might have anticipated from an examination of its structure. It 'shuffles' along with the head well off the ground, and the hind feet spread out. Being bold and fearless, even from the first, my bat was accustomed to climb about the sides of its cage by means of the hind feet and the curved claw of the rudimentary thumb. Its cry, emitted when disturbed, was short and shrill, uttered in a high tone. The bat's cry is said, in fact, to be inaudible to some persons owing to its high pitch. It is also uttered on the wing. This cry was uttered in quick repetition when any attempt was made to touch the little creature—a familiarity which was savagely resented by opening its mouth and showing a set of minute sharp teeth. It did not even hesitate to attempt to bite on such occasions. The hind feet are important limbs in the bat tribe, and it was amusing to see how my captive managed to clean itself by rubbing the fur with them.

The food of the Long-eared Bat consists of insects; moths and flies appearing to be favourite morsels. Mine was fed upon moths,

bluebottles, and house-flies. It was extremely fond of bluebottle flies, and manifested much activity in catching them. When caught, the insect was retained under the wings until killed, when the head resumed its ordinary position and the fly was eaten. When first caught, the prey struggled to escape, when it required the combined action of the wings and mouth to retain it, which was done by keeping it as much as possible under the body and wings. As night drew on, the bat became more and more active, watching with ears erect its opportunity for catching the insects put into the cage, and when a moth or fly came within reach, it was speedily seized and devoured. Sometimes it would run along the floor of the cage and literally pounce upon its prey, and even fly from one end of its prison to the other in pursuit. When once within its grasp escape was out of the question, and moderate sized moths, like the Yellow Underwing and Cabbage Moth, were equally helpless. The wings of moths were universally rejected, and, generally, those of flies.

So far I have only described the habits of the bat as observed when confined in the cage. In order to watch the animal under more natural circumstances, it was on the fourth evening allowed to fly round a small room. Then the flight was observed to be light, buoyant, and performed by quick strokes or vibrations of the flying membrane. The ears are held erect and the body nearly horizontal. The concave structure of the wings materially aids the animal in its flight, and the dexterity with which this specimen averted repeated attempts at recapture was surprising. When hovering over an object (as in examining parts of a room) the body assumes a nearly vertical position. When wishing to rest after a continued flight, it seeks a suitable place, and, by a quick turning movement, fastens upon it with its feet, hanging head downwards. From this position it can readily drop into flight again—a wonderful provision of nature for an animal so strangely constructed as the bat. Not that it cannot rise from a plane surface, as was formerly popularly supposed. On the contrary, when placed on the table, this bat would readily fly off with a light spring like a bird. It soon learnt to appreciate this period of exercise, and, when the door of the cage was opened, would speedily climb out and fly about the room. But its tameness was even to exceed this. The bluebottles which crawled up the window attracted the creature's attention, and, hovering over the flies, it would pick them off the glass. After catching its prey the bat invariably flew to a resting-place, and there devoured the insect at leisure. Small house-flies were eaten on the wing. The 'buzz' of a bluebottle's wings was sufficient to attract the bat's attention, and when they hid

behind the curtains and blinds it was interesting to watch it searching about the spot, hovering over it, and occasionally alighting at a convenient place. By the twelfth day the little captive had grown so tame that when let out for its evening flight it took flies from my hand, 'pitching' upon it, and seizing the insects from between the fingers. As, however, I was going to be away for some days, it was released after being in captivity for nearly a fortnight. Thus were some, at least, of the habits of a bat revealed to me, and I have little doubt but that many of the ways and movements I have described will apply with equal truth to some of the other British species. The observation of animals when in captivity, however, can only be conducted so far as the altered circumstances by which they are then surrounded tend to modify their habits as witnessed in their native haunts. But the crepuscular habits of bats render an insight into their life-history a matter of some difficulty. In the dim twilight which prevails when they are abroad, even the distinguishing of the species when flying in close proximity is fraught with uncertainty. In such cases a short period of captivity will often dispel many doubts, and, in the present instance, I was fortunate in meeting with a specimen so tame and healthy. In fact, when I found that the bat would take flies itself in the room, the remaining obstacle was removed, as then I could observe it under the most favourable conditions captivity would allow.

NOTE—MAMMALIA.

Otters not found in the Caldew.—In the September number of 'The Naturalist,' at page 258, under the heading 'Bibliography: Mammalia, 1888,' apparently on the authority of Mr. C. Parkinson, appears the assertion that Otters (*Lutra lutra* (L.)) are never found in the River Caldew, though abounding in the Eden, to which it is a tributary. This is a mistaken idea. I was born and brought up on the banks of the Caldew, where, as a lad, between 50 and 60 years ago, I have frequently seen them hunted; and on one memorable occasion, I remember seeing three otters captured in a covered watercourse on Brackenhowe farm, part of the estate of Colonel Salkeld, of Holm Hill, some six miles above the junction of the two rivers. One of the number, being hotly pressed by the hounds, sought refuge in the drain; and after fruitless efforts to dislodge him by the dogs, digging was resorted to, and on an opening being effected, not *one*, but *three* animals were secured. Many years afterwards I saw one of the number stuffed, in possession of the late Mr. Daniel Jackson, of Arkleby Mill, near Aspatria, to whose father it had been presented by the master of the hounds when it was killed. I believe that other otters were trapped at the mouth of the same drain both before and after the capture alluded to. About fourteen miles above Carlisle, the Caldew in summer, when the water is low, disappears among the limestone rocks which form its bed at a point near Haltcliffe Bridge; and, after a subterranean course of about two miles, re-appears above the surface, where a pool known as Spouts Dub was, and probably still remains, a favourite haunt of these animals. In several of the Cumberland rivers otters have been very plentiful during the past summer. I believe it is a fact that the Caldew is not often the rendezvous of otter-hunters now-a-days, but the facts I have stated can be vouched for by other eye-witnesses besides myself.—WM. HODGSON, A.L.S.

BIRD-NOTES FROM WHITBY,

Sept. 1890—Oct. 1891.

THOMAS STEPHENSON,

Whitby.

- Larus minutus.** **Little Gull.** Sept. 5th, 1890. Shot by John H. Wilson in Runswick Bay, near Whitby.
- Pernis apivorus (L.).** **Honey Buzzard.** Sept. 19th, 1890. Shot by Wm. Harland Raw, at Littlebeck, near Whitby.
- Botaurus stellaris (L.).** **Common Bittern.** Dec. 1st, 1890. Splendid specimen (female) captured alive by —. Cowens, at Saltwick near Whitby; it took refuge amongst some large stones or rocks on the beach, and being unable to expand its wings for flight was easily taken. It was purchased and preserved by J. H. Wilson, Baxtergate, in whose possession it still remains.
- Fuligula cristata.** **Tufted Duck.** Dec. 16th, 1890. Female, shot up the River Esk between Whitby and Ruswarp; purchased and preserved by J. H. Wilson.
- Fuligula marila.** **Scaup Drake.** Jan. 1st, 1891. Shot in the Esk, near Whitehall Shipyards, by J. Kitching.
- Fuligula marila.** **Scaup Duck.** Jan. 2nd, 1891. Female, shot by A. English above Sleights, near Whitby.
- Picus major.** **Greater Spotted Woodpecker.** Jan. 3rd, 1891. Shot by —. Porritt at Ruswarp.
- Clangula glaucion.** **Golden-eye Duck (young).** Jan. 3rd, 1891. Shot in Sleights dam by Thos. Hill.
- Fuligula cristata.** **Tufted Duck.** Jan. 10th, 1891. Male, shot by H. K. Williamson at Ruswarp.
- Bernicla brenta.** **Brent Goose.** Feb. 25th, 1891. Female, shot by —. Sunley off Whitby High Lights.
- Limosa lapponica.** **Bar-tailed Godwit.** Aug. 1891. Shot by —. Kitching in Whitby Harbour.
- Lanius collurio.** **Red-backed Shrike.** Sept. 10th, 1891. Female, shot near the cricket-field, West Cliff, Whitby, by F. Russell Roberts.
- Hæmatopus ostralegus.** **Oyster-catcher.** Oct. 15th, 1891. One shot at Saltwick, near Whitby, by J. Kitching, out of a flock of eight. Oct. 17th.—Another shot by the same person

at the same place, out of a flock of about sixteen. Oct. 29th, 1891. Three more shot at Saltwick, near Whitby. In the crop of one of these birds were 77 limpets (locally known as 'Flithers'), beautifully scooped out or extracted from the shell, not a particle of which (shell) was discernible. Another was shot at the same place on the 31st October.

NOTES—BIRDS.

Food of the Tree Sparrow.—In the Spring of the present year I had occasion to shoot a Tree Sparrow (*P. montanus*). On examining the contents of the crop I found three small beetles, two yellow flies, and a grain or two of oats. This collection had evidently been made from the horse-droppings lying on the tow-path of the canal, where my bird was shot. I think at other times of the year the Tree Sparrow will be found to take his toll of grain, fruit, or sprouting seeds, like his more abundant relative.—F. B. WHITLOCK, Beeston, Notts.

Curious Death of a Young Blackbird.—The young bird came to an untimely end in a most peculiar manner. The nest was built in a rose-bush; one long thin shoot, plentifully furnished with large pricks, fell over the nest, forming an archway about three inches above it. The bird had evidently been craning its neck in the manner of young birds to receive the food brought by its parents, when it was caught in the soft part under the lower mandible with one of the large pricks, and, unable to extricate itself, had perished miserably. It was fully feathered, and would probably have flown in a day or so, as the others had done.—RILEY FORTUNE, Harrogate, Nov. 8th, 1891.

NOTES—GEOLOGY.

Forest-bed at Hull.—I notice that in the 'Geological Survey Memoir' (explanation of sheet 86), published last year, it is stated that the only sections of the 'Submerged Forests' which accompany the estuarine warp of the Humber were seen during the excavation of the docks. It may therefore be useful to put on record a memorandum of the occurrence of this horizon in the northern part of the town, which I find in my note-book under the date June 1883. At that time a large tank was in course of construction for a new gas-holder at the Sculcoates Gas-Works. The excavations were cut through the silt, etc., reaching the Boulder-Clay at about 25 feet from the surface, and the Chalk at 50 feet. Immediately upon the Boulder-Clay a bed of peat was exposed, in which were numerous fallen trunks of oak. The wood was quite black, but perfectly sound (I have a walking-stick made from it). In, and just above, the peat were abundant shells of *Cardium edule*, *Tellina baltica* (rather dwarfed), *Scrobicularia*, and a few *Littorina littorea*.—ALFRED HARKER, Cambridge, November 10th, 1891.

Derbyshire Fossils.—Allow me to call attention to the following extraordinary statement on page 325 of this month's 'Naturalist':—

F. MARSHALL.

Derbyshire.

Penketh School Field Club [in Monsal, Miller's and Cressbrook Dales; *Terebratula hastata*, *Pentamerus knightii*, and *Orthis elegantula* recorded]. Surely this must be a mistake. The two last-mentioned fossils are Silurian—the first of them occurring only in Upper Ludlow, the latter in the Cambrian and Silurian. I think the author of the paragraph in question must have mixed up other records with the one he wished to perpetuate. The strata in these Dales belong to the Mountain Limestone, and I have never seen any other therein.—W. HUNT PAINTER, Knypersley, Congleton, Nov. 3rd, 1891.

[The statement to which attention is thus drawn occurs in the 'Bibliography,' which merely gives a faithful transcript or summary of what authors state, whether they be right or wrong. Beyond this our responsibility does not extend.—EDS. NAT.]

FISHES CAPTURED NEAR WHITBY IN OCTOBER, 1891.

THOMAS STEPHENSON,

Whitby.

Orthogoriscus mola. Short Sunfish. I have to record the capture of this rare fish at Whitby. During the afternoon of Wednesday, Oct. 21st, 1891, some persons observed what at first sight appeared, from its rolling or turning motion in the water, to be a porpoise, not far from and coming towards the beach, opposite the Saloon; when it got into sufficiently shallow water, a lad waded in and got hold of one of its fins, and, with the assistance of some youths who were playing at football on the sands, soon hauled it clear of the sea. It proved to be a very large Sunfish, of the following dimensions:—

	Ft.	ins.
Depth from tip to tip of fins - - - - -	6	0
Length of body, viz., snout to outer edge of caudal fin -	4	5
,, of dorsal fin - - - - -	1	10½
Width of ,, - - - - -	1	0
Length of anal fin - - - - -	1	6
Width of ,, - - - - -	0	10
Length of pectoral fin - - - - -	0	7
Width of ,, - - - - -	0	7
,, caudal fin from body to outer edge - - - - -	0	10½
Circumference of body at thickest part - - - - -	6	4
Depth of mouth - - - - -	0	2
Width of ,, - - - - -	0	3½

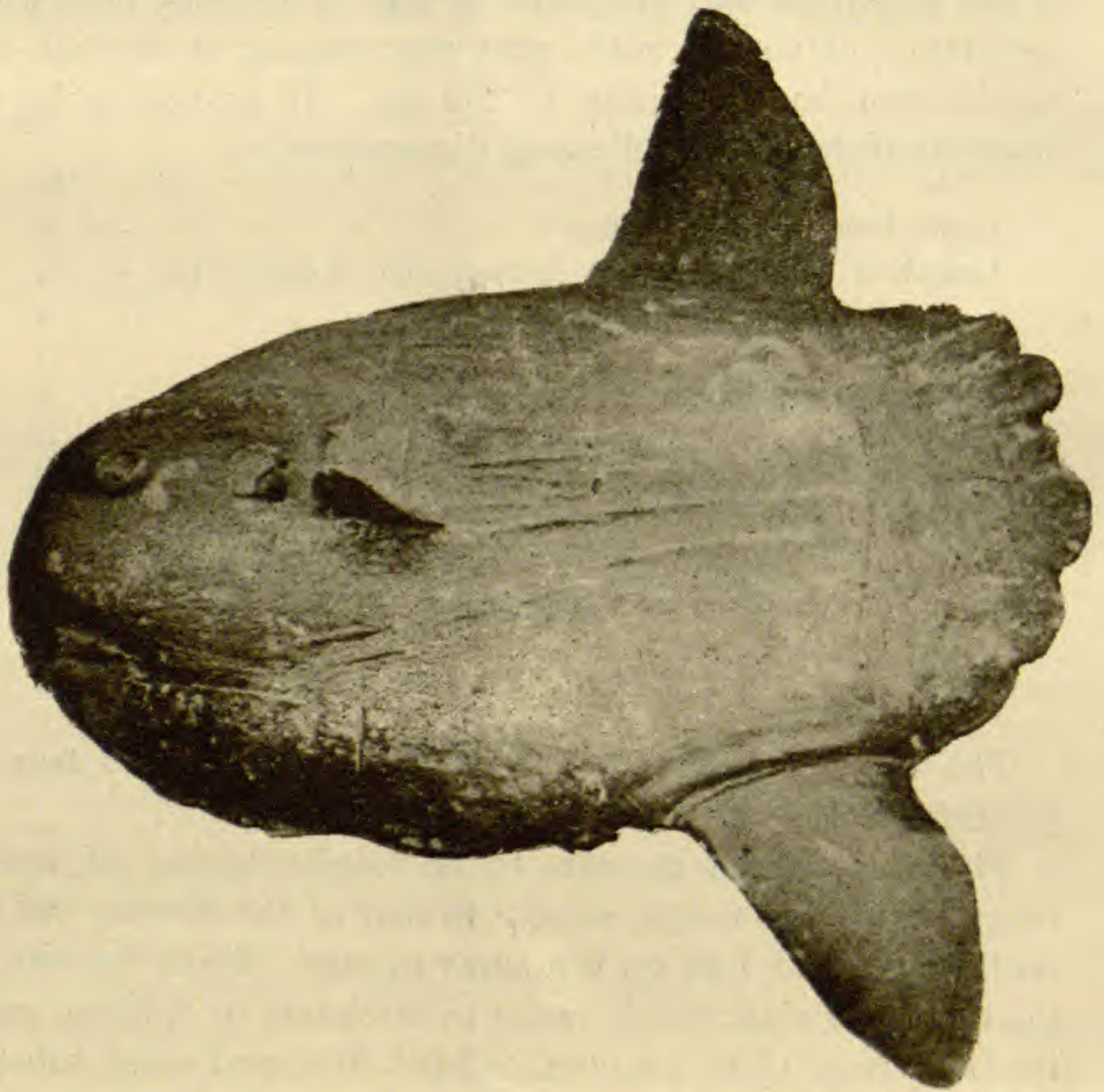
The upper and lower jaws had in front of each two large, powerful teeth, with small elongated teeth behind.

The skin, which appears to be totally devoid of scales, is rough, hard, and tough, similar to that of the Sharks, but rough both ways; and had on it a slimy matter. Next the skin is a thick coat, or rind, which varies in thickness in different parts of the body from 1½ to 4 inches, of hard, firm, and tough substance, white in colour, and in appearance mostly resembling the kernel of the cocoa-nut, or, nearer still, blanc-mange, but hard and firm as india-rubber; under this coat or rind is flesh of a soft character and flakey, much resembling that of other fishes, but of a pale brownish-yellow colour. Next comes the frame, or skeleton, which is cartilaginous, similar to that of the Rays, but, if anything, of a softer nature.

It had no stomach or bag, but simply one large gut or tube about 18 feet in length, which contained nothing but a brown, slimy mucus.

The liver I did not see, but am informed it consisted of two large lobes or flaps, weighing about 28 lbs., and were of a chrome yellow colour.

The weight of the fish has not been ascertained, but (from the weight of the frame, flesh, etc., taken from it when being skinned for preservation, exclusive of the liver, gut, and skin) is estimated to have been at least 5 cwt. I regret to add that the lads slashed and hacked the fish in such a manner that it is doubtful whether it can be preserved.



From the description given by Yarrell a doubt exists in my mind as to whether this is the Oblong Sunfish (*Orthogoriscus truncatus*) or a very large specimen of the Short Sunfish (*O. mola*). The caudal fin of this example differs much from that of the *O. mola* captured here on the 22nd September, 1887, now in our

Museum, but the pectoral fins of each closely resemble each other in shape and formation.

If it is an Oblong Sunfish (which I am rather inclined to doubt) it is the first specimen that has been seen here since 1867, when one measuring 5 feet from tip to tip of fins and 5 feet in length from snout to tail, is recorded in the 'Whitby Repository' for December 1867, to have been taken here in November of that year near the same place.

A photograph of the fish was taken, but, unfortunately, from the position of the fish when it was photographed it does not give a clear idea of the magnitude and formation of this example. The dorsal fin in the photo. appears to be shorter than the anal, but is in fact $4\frac{1}{2}$ inches longer; the pectoral fin also appears edgewise, and gives a very imperfect idea of its formation.

[Mr. Stephenson forwarded a photograph and sketch of this fish, which is reproduced on the opposite page, and from which we have no hesitation in pronouncing it to be the Short Sunfish (*O. mola*), and in confirming Mr. Stephenson's doubt as to its being the Oblong species.—EDS. NAT.]

Labrus maculatus. Ballan Wrasse. Oct. 31st. Caught off and brought into Whitby.

Raniceps trifurcus. Tadpole Hake. October 31st. Caught on Uppang Rock, near Whitby, on a hook baited with Cuttle-fish (here called Squid). This example of this rare fish is the first I have heard of being caught here. The following measurements I took of it:—

	Inches.
Length, snout to exterior of caudal fin	$11\frac{4}{8}$
Width of head	$2\frac{1}{8}$
Length of pectoral fin	$1\frac{1}{8}$
„ of ventral „	$0\frac{3}{4}$
„ of filament attached to ventral fin	1
„ of dorsal fin	$6\frac{1}{8}$
„ from snout to dorsal fin	4
„ from dorsal to exterior edge of caudal fin	$1\frac{3}{8}$
„ from front of lower jaw to commencement of anal fin	$4\frac{4}{8}$
„ of anal fin	$5\frac{5}{8}$
„ from anal to exterior edge of caudal fin	$1\frac{3}{8}$
„ from nose to pectoral fin	$2\frac{1}{8}$
„ from front of lower jaw to ventral fin	$1\frac{7}{8}$
Distance of eyes from each other	1

Near the front edge of the lower jaw or chin was a small barb or beard. The colour was very deep brown-black; in fact, nearly black.

In the 'Handbook of Yorkshire Vertebrata' I find but two captures of this fish recorded, namely, at Redcar.

Scombresox saurus. Saury or Skipper. In my fish notes published in the 'Naturalist' for November (p. 337), please substitute Saury Pike or Skipper (*Scombresox saurus*) for Garfish, brought into Whitby, October 2nd, by Waller, caught in the herring-nets.

I saw the fish, but did not examine it minutely; I have since had the opportunity, and have it now in my possession. It has five finlets between the dorsal and caudal fins, and seven between the anal and caudal fins; this leaves no doubt as to its identity. I purchased it to-day (3rd Nov., 1891).

NOTE—ORNITHOLOGY.

Ruff in North Lincolnshire.—On October 7th, 1891, I shot a fine specimen of the Ruff (*Machetes pugnax*) in this parish. It proved to be a bird of the year. The neck and upper breast are buff; lower breast and belly, dull white; feathers of the back, dark brown, with buff margins, the latter being very conspicuous. It was feeding, in company with several Dunlins and Ringed Plovers, on a piece of wet grass land adjoining the Humber embankment. The Ruff was once common on the Humber marshes of Lincolnshire, but is now only known as a bird of double passage. In an excellent account of the former abundance of the Ruff and Reeve in Lincolnshire, by Mr. J. Cordeaux, in 'The Zoologist' for June 1890, a nest with two eggs and the female is recorded as having been taken as late as 1882.—
JOHN W. HARRISON, Goxhill, Lincolnshire, November 16th, 1891.

NOTES AND NEWS.

An interesting note by Mr. Arnold T. Watson, of Sheffield, is published in 'Nature' for Sept. 24th, 1891, p. 507, upon 'The Protective Device of an Annelid,' and well illustrated by means of a woodcut. The peculiarity is that upon the retreat of the animal—which came from the Channel Islands, but the name of which is not given—the mouth of its tube not only instantly closes flatly and tightly by collapse of the sides, but the tube itself, when so flattened, coils up from the tip spirally, so as to assume much the appearance of a young fern-frond.

At the Fifth International Congress of Geologists, which met at Washington during the last week of August, North of England geology was represented by Professor T. McKenny Hughes and Mrs. Hughes, and Messrs. Alfred Harker and Bernard Hobson. These members took part in the five weeks' excursion to the West, which visited the Bad Lands of Dakota, the Yellowstone Park, the silver mines of Montana, the Great Salt Lake, the Wasatch Range, the High Plateaux of Utah, the Royal Gorge of the Arkansas, Pike's Peak, the Painted Desert of Arizona, the Grand Cañon of the Colorado, the Falls of Niagara, the Hudson Valley, and other objects of geological interest.

The official report of the Fourth Congress (London), which has recently appeared, contains the guide-books prepared for the excursions in 1888, including those to East and West Yorkshire.

At the session of the Geological Society of America, held at Washington immediately preceding the Congress, Mr. Alfred Harker read a paper on 'Thermometamorphism in Igneous Rocks,' dealing especially with the modifications of the volcanic rocks of the English Lake District. One portion of that district is treated in detail in a recently published memoir by the same writer in conjunction with Mr. J. E. Marr ('The Shap Granite, and Associated Rocks,' Q. J. G. S.).

THE NIGHTINGALE IN NOTTINGHAMSHIRE.

F. B. WHITLOCK,

Beeston.

GENERALLY speaking, it is only very few localities north of the Trent that are favoured with the regular presence of the Nightingale (*Daulias luscinia*). Perhaps the most important exception to this rule is Sherwood Forest. In his book on 'The Birds of Sherwood Forest,' published in 1869, Mr. Sterland states that this bird, though very local, is met with every year in some numbers, and for anything I know to the contrary such is the case at the present time.

To that portion of Nottinghamshire with which I am most familiar, viz., the Trent and Soar Valleys, the Nightingale may be said to be a regular spring visitor in variable numbers, as a rule breeding rather sparingly. Preferring small copses and spinneys to the larger woods, and by no means shunning the neighbourhood of towns and villages, it is a bird that is not likely to pass unnoticed, owing to the richness and peculiarity of its song. The same cause makes it a favourite with landowners and others, and a pair of Nightingales are always welcomed and protected during their stay as far as possible. The Nightingale reaches us about the middle of April, a little earlier or later, according to the season, and though the male is a very inconspicuous bird, he soon makes his presence known by the unique character of his song. Readers of 'The Naturalist' will be probably aware that the Nightingale sings quite as freely in the day time as during the night, but as he only forms a unit in the concert during the day his notes are heard to far greater advantage when the voices of other birds are hushed.

I first met with the Nightingale in the leafy lanes of Warwickshire, where it may be said to be a fairly common bird. I was walking by the side of a wood when I noticed what I at first took to be some very plump Redbreasts hopping about in a shallow ditch, but on catching sight of the rich brownish red of the tail I saw that my supposed Redbreasts were Nightingales. When standing with its back towards the observer the Nightingale has a very Robin-like appearance, the general colour of the upper parts being very similar, if we except the tail. Mr. Seebohm classes the Nightingale, Redbreast, and the Bluethroats together under the genus *Erithacus*, which, as far as my poor knowledge goes, appears to be a very natural arrangement.

When singing, the Nightingale may be easily approached, though at other times he is rather a shy bird. Unless the site of the nest is known, it is rather more difficult to get a view of the female, but this is of not much importance, as the two sexes are hardly to be distinguished in the field. When uttering his song the male chooses a well-sheltered spot, but if one is careful to approach him only when he is actually singing, keeping under cover as much as possible, one may get within a very few feet of him. The peculiar liquid and metallic notes are then heard to great advantage. Not being of a poetic temperament, I fear I cannot do justice to the Nightingale's song. I will simply say that, as a whole, it is quite unlike that of any other bird with which I am acquainted. Though the Sedge Warbler, Blackbird, Thrush, Skylark, and Reed Warbler sing freely during the short summer nights, when it is never really dark, it is impossible to mistake the song of the Nightingale for that of any of the other species. The only time I heard the Marsh Warbler, however, I thought at first I was listening to a Nightingale, but after listening a little longer I came to the conclusion that my Nightingale had got a very bad cold, until at length I was fully convinced that he was nothing more or less than a Marsh Warbler (*Acrocephalus palustris*), a bird whose presence I had more than once suspected in Notts.

Breeding operations are in full swing early in May. The nest of the Nightingale is always placed very low down, either on the ground itself or else in a crevice of some old stump or weed-grown ditch side. Outwardly it is a rather untidy structure of dried leaves, moss, and grasses. The cup of the nest, however, is neatly finished off and lined with fine grasses and a few dry oak leaves. The eggs, four or five in number, are, as a rule, rather smaller than those of the Redbreast, and of a deep greenish brown in ground colour sometimes flecked with still browner speckles at the broader end. Occasionally Nightingale's eggs resemble those of the Whinchat, that is, the spotted varieties of the latter, but such cases are rare. The young, when newly hatched, are covered with very fine black down. They are assiduously fed by the parents with green caterpillars and winged insects. When the nest contains young the parent birds lose their timidity, and the intruder is assailed with cries of 'Tink, Tink,' uttered without intermission, the cry of 'Pink, Pink' uttered by the Chaffinch being very similar. The young hatched, the male ceases his song, and after they have flown it is only flitting glimpses that one catches of the Nightingale. Apparently they leave us about the first week in September, or a little later.

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THE present instalment has been compiled and edited by
WM. DENISON ROEBUCK, F.L.S.

The only previous instalment of the Bibliography of Coleoptera covered the years 1884 to 1887 inclusive, and appeared in 'The Naturalist' for July 1888, pp. 203-210.

ANON. [not signed]. York S.W.

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Naturalist,

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W. W. FOWLER.

Cumberland, Yorkshire.

Haplocnemus impressus, Marsh. [has been recorded for Carlisle; *H. nigricornis* for Yorkshire, in which county (but where?) it has been taken by beating birches in woods in July]. Ent. Mo. Mag., Feb. 1888, xxiv. 214.

W. W. FOWLER.

Derbyshire.

Quedius longicornis, Er. [very rare; one 'under the trunk of a tree lying on the ground in Bretby Wood, near Burton-on-Trent, while searching for *Boletobius inclinans*, which occurred very sparingly in the same locality']. Ent. Mo. Mag., March 1888, xxiv. 232.

W. W. FOWLER.

York, Northumberland, Durham, Notts.

The Worm (?) that devoureth [an account of French researches into beetles feasting on buried human bodies; one of these was *Rhizophagus parallelo-collis*, of which Archd. Hey once took a large number in York Cemetery with *Atomaria fimetarii*, and which Mr. Bold recorded as not rare on walls and tombstones of graveyards in Durham and Northumberland; the *Rhizophagus* also occurs in Sherwood Forest]. Ent. Mo. Mag., May 1888, xxiv. 276-277.

W. W. FOWLER.

All the Counties.

The Coleoptera of the British Isles. A Descriptive Account of the Families, Genera, and Species Indigenous to Great Britain and Ireland, with Notes as to Localities, Habitats, etc. . . . Vol. II. Staphylinidæ. . . London: L. Reeve & Co., . . . 1888 [8vo. pp. ii. + 444; includes numerous North of England records]. Vol. III. Clavicornia (Leptinidæ-Heteroceridæ). . . . 1889 [8vo. pp. iv. + 399]. Reviewed by W. C. Hey in Nat., May 1887, pp. 148-149. [Remainder of Work not seen].

Durham, Northumberland S., Derbyshire, Cheshire,

W. W. FOWLER.

Lincolnshire, York N.E.

On the British Species of the Genus Anaspis, Geoffroy, with description of a New Species [*A. pulicaria* Costa, Repton; Northumberland district, Wallington; *A. rufilabris* Gyll., Repton, Bretby Wood (on wild cherry blossom); Dunham Park, Manchester; Northumberland district, Wallington, etc.; *A. geoffroyi* Müll., Lincoln; Whitby; Manchester; Northumberland and Durham, rare but widely distributed; *A. flava* L., Repton; Northumberland and Durham district, apparently rare; *A. subtestacea* Steph., Repton; Dunham Park, Manchester; Northumberland and Durham district, rather uncommon]. Ent. Mo. Mag., July and Aug. 1889, xxv. 331-338.

[W. W.] FOWLER.

Derbyshire, Lanc. S.

Notes on the British Species of the Genus Anthonomus, Germar, with a description of a species new to Britain [*A. rosinae* DesGozis, from Repton, Burton-on-Trent, etc.; casual mention also of *A. conspersus* from Chat Moss]. Ent. Mo. Mag., Dec. 1890, xxvi. 309-313; Bibl. notice in Ent. Rec., Dec. 15th, 1890, i. 235.

W. W. FOWLER.

Linc. N.

Bruchus lentis, Boh. [bred in Lincoln from lentils recently imported from Egypt; not an indigenous species]. Ent. Mo. Mag., June 1891, xxvii. 171.

W. W. F[OWLER].

Derbyshire.

Omius mollinus, Boh. [used to be found by W. Garneys and writer on the banks of the Old Trent at Repton; it probably occurs throughout the Trent Valley]. Ent. Mo. Mag., Nov. 1891, xxvii. 304.

W. W. F[OWLER].

York Mid W.

Hydroporus granularis, L. [a local species, very common in Askham Bog, York]. Ent. Mo. Mag., Dec. 1891, xxvii. 332.

- HILDERIC FRIEND. Cumberland.
Solway Dunes [at Silloth] in April [larva of *Cillemum laterale* occurs]. Sci. Goss., June 1889, p. 126.
- HILDERIC FRIEND. Cumberland.
A Mud-capped Dyke [in Cumberland; *Apion ulicis* noted]. Sci. Goss., June 1890, p. 135.
- HILDERIC FRIEND. Cumberland.
The Pine Destroyer (*Hylurgus piniperda*) [with note as to its ravages in different parts of Cumberland]. Journal of Microsc., July 1890, p. 214.
- R. J. FRYER. York Mid W. or S.W.
Oil Beetles [(*Meloe violaceus*) March 27th, 1889; also *Loricera pilicornis*, by river Aire]. Nat. Hist. Journ., April 15th, 1889, p. 51.
- J. GARDNER. Durham.
[Buzzing Noise as noted in *Dyticus marginalis* near Hartlepool]. Proc. Ent. Soc. Lond., May 4th, 1887, p. xxiv.
- J. GARDNER. Durham.
***Quedius longicornis* at Hartlepool** [on the sand-hills, three taken in 1887; new to Northumberland and Durham list; named by W. G. Blatch]. Nat., April 1888, p. 119; and Ent. Mo. Mag., May 1888, xxiv. 275.
- JOHN GARDNER. Durham.
Bryoporus Hardyii [one, April 27th, 1889, on the sand-hills, Hartlepool]. Young Nat., June 1889, p. 133.
- JOHN GARDNER. Durham.
***Dianous cærulescens* [at Eggleston, Teesdale, somewhat abundantly at Easter].** Young Nat., June 1889, p. 133.
- J. GARDNER. Durham.
Megacronus inclinans [on the sand-hills between Hartlepool and Hesleden Dene mouth, three taken 12th October, 1890]. Young Nat., Nov. 1890, p. 215.
- J. GARDNER. Durham.
***Megacronus inclinans* and *Agabus guttatus* near Hartlepool** [three of the former on sand-hills near Hesleden Dene mouth, one of the latter in company with numerous *A. nitidus* in flood-refuse near the same place; details given]. Ent. Mo. Mag., Jan. 1891, p. 24.
- C. F. GEORGE. York S.E.
The Yorkshire Naturalists' Union at Spurn Point [3rd Sept., 1884; *Broscus cephalotes* and *Ægalia arenaria* noted]. Nat., Nov. 1884, p. 92.
- C. S. GREGSON. Cheshire.
[Glow-worm (*Lampyris noctiluca*) from New Ferry, two sent to Lanc. and Chesh. Ent. Soc., May 12th]. Young Nat., June 1890, p. 108; Research, June 1890, p. 285.
- JAMES HARDY. Cheviotland.
Report of the Meetings of the Berwickshire Naturalists' Club for the year 1889 [with mention of *Acanthocinus ædilis* sent by Mr. E. Morton, of Dunstan, Lesbury]. Proc. Berw. Nat. Club for 1889, Vol. 12, No. 3 (pub. 1890), p. 496.
- A. HEATH. York S.W.
[Report on Ackworth Beetles; three fresh ones found this year, *Carabus granulatus* at Ferrybridge, *Necrophorus vespillo* and *N. mortuorum* near Wakefield Quarry; others observed were *Niptus hololeucus*, *Dyticus*, and a large Dor beetle]. Nat. Hist. Journ., Dec. 15th, 1890, xiv. 164.
- W. C. HEY. York Mid W.
The Yorkshire Naturalists' Union at Blubberhouses [26th Sep. 1885; *Pterostichus nigrita*, *Anchomenus albipes*, and *Bembidium littorale* noted]. Nat., Nov. 1885, p. 380.

- W. C. HEY. York S.E.
The Yorkshire Naturalists' Union at Market Weighton [6th Aug. 1888; *Quedius molochinus*, *Philonthus varians*, *P. marginatus*, *Tachinus marginellus*, *Cercyon hæmorrhoidalis*, *C. melanocephalus* and *Telephorus fuscus* noted]. *Nat.*, Sep. 1888, p. 279.
- T. C. HEYSHAM. Cumberland.
[Carabus hortensis, Phosphuga atrata and several species of Agonum fed on by *Lanius excubitor* (Great Shrike) in Cumberland in 1831]. *Macpherson & Duckworth's Birds of Cumberland*, 1886, p. 27.
- J. F. HILLS, Sec. 'York.'
York, Bootham. Natural History Club [great numbers of *Rhizotrogus solstitialis* reported]. *Nat. Hist. Journ.*, June 15th, 1889, xiii. 86.
- A. C. HORNER. Notts.
Beetles at Sherwood Forest [*Rhizophagus* sp. nov., and *Holopedina polypori* Forst., parasitic on *Cis vestitus*]. *Proc. Ent. Soc. Lond.*, July 1887, p. xxxii.; *Nat.*, Sep. 1887, p. 288.
- RICHARD HOWSE. Northumberland S.
On the Occurrence of Carabus glabratus, Fab., in the County of Northumberland [one in 1860 in the bed of the Blackburn, and one in 1887 near the head of the Wansbeck; details given]. *Nat. Hist. Trans. Northumb. Durh. and Newc.*, vol. 8, part 3, 1889, p. 325.
- PETER INCHBALD. ? York Mid W.
Life History of the Cionus-Weevil [(*Cionus scrophulariæ*); locality not stated, presumably Fulwith Grange near Harrogate]. *Field*, August 6th, 1887, pp. 213-214.
- P. M. C. KERMODE. Isle of Man.
Our Insect Enemies: Wireworm [(*Agriotes lineatus*) and the damage caused by it to crops in the Isle of Man in 1882; with detailed particulars and statistics of damage done]. *Vannin Lioar*, Jan. and April 1889, i. 19-26 of 'Back Transactions.'
- P. M. C. KERMODE. Isle of Man.
Address by the Retiring President . . . delivered . . . March 11, 1886 [gives titles of papers dealing with the Manx fauna, including a list of 504 species of Beetles]. *Back Trans. I. of Man N.H.S.*, i. 72; publ. with *Yn Lioar Manninagh*, No. 4, Oct. 1889.
- H. WALLIS KEW. Linc. N.
Field Notes. No. 1. In the Woods in Spring [near Louth; *Necrophorus humator*, *N. mortuorum*, *Cassida viridis*, *Chilocorus renipustulatus*, *Coccinella 14-punctata*, *Phyllobius argentatus*, *Nitidula bipunctata*, and *Cercus bipustulatus* in Muckton Wood; and *Dermestes murinus* (very common), *Silpha rugosa*, and *Nitidula bipunctata* in Burwell Wood, 25th May, 1885]. *Nat. World*, Jan. 1886, iii. 2-3.
- H. WALLIS KEW. Linc. N.
A Half-Day's Ramble on the Lincolnshire Coast [at Mablethorpe, April 3rd, 1886; *Dromius melanocephalus*, *Calathus melanocephalus*, *Tachyporus solutus*, *Cneorhinus geminatus*, *Rhizobius litura*, *Lagria hirta*, *Agelastica halensis*, *Coccinella 22-punctata*, *Cleonus sulcirostris*, *Hypera punctata*, *Cryptorhynchus lapathi*, *Helophorus aquaticus*, *Gyrinus natator*, and *Ilybius fuliginosus* noted]. *Nat.*, June 1886, pp. 171-173.
- H. WALLIS KEW. Lincolnshire.
[Exhibition of Larvæ of Adimonia tanaceti (Fab.), found in Lincolnshire, feeding on Scabious]. *Proc. Ent. Soc. Lond.*, July 4th, 1888, part 3, p. xxii; *Ent.*, August 1888, xxi. 214; *Ent. Mo. Mag.*, August 1888, xxv. 72; *Young Nat.*, August 1888, ix. 159.
- E. P. K[NUBLEY]. York S.E.
The Yorkshire Naturalists' Union at Kirkham Abbey and Acklam Brow [on Sept. 4th, 1889; *Dytiscus marginalis* noted]. *Nat.*, Nov. 1889, p. 342.

E. P. KNUBLEY.

York Mid W.

[Beetles observed by] the Yorkshire Naturalists' Union at Malham and Gordale [on Sept. 11th, 1890: one *Necrophorus ruspator*]. Nat., June 1891, p. 177.

York S.E. and S.W., Lanc. S. and W., Cheshire,

G. A. LEWCOCK.

Durham, Cumberland.

Gossiping Notes on British Coleoptera. . . IV.—Cicindelidæ

[with Cheshire and Durham records for *Cicindela campestris*, Cheshire for *C. hybrida* and *C. maritima*]. Young Nat., Jan. 1890, xi. 4-6.

V.—Carabidæ [with notes on *Notiophilus aquaticus* L. in Cheshire, at Wallasey, at Hartlepool, *N. biguttatus* Fab. at Liverpool and Chester]. Young Nat., Feb. 1890, xi. 40.

V.—Carabidæ. *Notiophilus*—*Leistus*—continued [*Nebria livida* F. at Bridlington, *N. brevicollis* F. in Cheshire,

N. gyllenhalli Sch. near Burscough Bridge, Crimdon Dene near Hartlepool, at Bolton, *Leistus spinibarbis* F. in several Cheshire localities, *L. fulvibarbis* Dj. on the Mersey shore, *L. ferrugineus* L. at Crosby and Aigburth, Eastham, and *L. rufescens* F. at Eastham, Aigburth, etc., with details]. Young Nat., April 1890, xi. 77-78.

[*Clivina collaris* Hbst. under flood refuse, Preston (R. Wilding); banks of Alt at West Derby and banks of Birket (Dr. Ellis); *Dyschirius thoracicus* Ross., Lancashire and Cheshire localities given, also for *D. impunctipennis* Daws., and *D. nitidus* Dj.; *D. angustatus* Putz. banks of Irthing (T. J. Bold); *D. politus* Dj. Wallasey; *D. salignus* Sch., Lancashire and Cheshire localities given; Northumberland for *D. æneus* Dj. Lancashire and Cheshire for *D. globosus* Hbst.]. Young Nat., June 1890, 110-114.

[*Brachinus exfoliens* Duft., its claim as British rests upon a record for Wastdale by Mr. Murton of Silverdale (Dr. Power), of 1863, which is very doubtful]. Young Nat., July and August 1890, pp. 140-141. [Repetition of W. E. Sharp's record of Gregson's capture of *Demetrius monostigma* on Wallasey sand-hills].

Brit. Nat., Jan. 1891, i. 3. [*Demetrius atricapillus*, Liverpool (Wilding) and Chester (Sharp); *Dromius meridionalis*, Liverpool (Ellis), Ledsham (Sharp), West Derby (Wilding); *D. agilis*, near Crosby (Ellis), West Derby (Wilding), Crosby (Sharp), Huddersfield (Gillo); *D. quadrimaculatus*, Eastham, etc. (Ellis), Liverpool (Wilding), Ledsham (Sharp); detailed particulars being usually given].

Brit. Nat., March 1891, i. 51-54. [*Dromius quadrinotatus* Pz., Liverpool (Wilding), Bidston (Sharp), Eastham (Ellis); *D. nigriiventris* Thoms., Heswall, Thurstaston and Bidston (Sharp), Bidston (Ellis), Liverpool (Wilding), Hartlepool, in numbers (J. E. Robson); *Blechnus maurus* Sturm, Ledsham (Sharp), Wallasey (Ellis), and Hartlepool (Robson); details given].

Brit. Nat., June 1891, i. 111-113. [*Metabletus foveola* Gyll., at Heswall and Bidston (Wilding), Flaybrick Hill, etc. (Ellis), Noctorum, Haswell, Burton, etc. (Sharp), and *Sphodrus leucophthalmus* L., at Bolton and Warrington].

Brit. Nat., Sept. 1891, i. 195-199.

G. A. LEWCOCK.

Durham.

Monochammus Sartor [received living, 13th Aug., 1890, from J. E. Robson, Hartlepool, where it often occurs in foreign timber; authorship of note not clear in text, and needs a reference to the cover of the part]. Young Nat., Sept. 1890, p. 172.

G. A. LEWCOCK.

Cheshire.

The Genus *Donacia*, Fab. [and its species treated in detail; *D. obscura* Gyll., Maberley, Cheshire (Chappell)]. Ent. Rec., Feb. 16th, 1891, i. 301.

G. A. L[EWCOCK].

Lanc. S.

Hydroporus ferrugineus, Stephens [has but three English localities assigned to it by Fowler, of which Whalley is one]. Brit. Nat., June 1891, i. 116.

WM. MCKAY.

Cheshire.

Hybernated specimen of *Geotrupes typhaeus* near Manchester [in Dunham Park, Bowdon, 27th March, 1891]. Ent., May 1891, xxiv. 124.

- W. A. MAW. York N.E.
York, Bootham. Natural History, &c., Club [*Dyticus marginalis* attacked by fungus; *Necrophorus humator* in Nova Scotia Wood]. Nat. Hist. Journ., May 1890, xiv. 75.
- W. A. M[AW]. York N.E.
[Oil Beetle (Meloë, sp. not stated) near Scarborough on June 12th; *Blaps mortisaga* outside the library door, presumably at 20, Bootham, York]. Nat. Hist. Journ., Oct. 15th, 1890, xiv. 132.
- W. A. MAW. York N.E.
[Gastrophysa viridula, 5th June, *Carabus monilis*, 15th June, *Necrophorus mortuorum* and *N. vespillo*, 16th June, *Carabus nemoralis*, 24th June, *Creophilus maxillosus*, 25th June, all at Clifton; *Blaps mortisaga* and *Mezium sulcatum*, 22nd June, from Sessions' shop, Low Ousegate, York]. Nat. Hist. Journ., Nov. 15th, 1890, xiv. 151.
- J. COSMO MELVILL. Lanc. S., Cheshire, York S.W.
Insecta [of Manchester District]. . . . I. Coleoptera [enumerated, with remarks, in systematic order, only omitting ubiquitous species; *Odontæus mobilicornis* recorded as at Huddersfield]. Handbook of Manchester.—Prepared by the Local Committee for the Members of the British Association at the Manchester Meeting, 1887, pp. 50-61.
- J. COSMO MELVILL. Lanc. S.
[Saperda scalaris at Mere and Prestwich Cloughs, recorded in a note on] *Chærocampa nerii*. Ent., Aug. 1891, xxiv. 195.
- FLORENCE MOSLEY. York S.W.
Aphodius tessulatus at Huddersfield [in some numbers, but very local]. Nat., Feb. 1889, p. 60.
- S. L. MOSLEY. York S.W.
Annual Report, 1884 . . . Entomology [records, with localities, for *Carabus nemoralis*, *Sphodrus leucophthalmus*, *Pristonychus subcyaneus*, *Tachypus flavipes*, and *Meloe* (prob. *violaceus*) given]. Trans. Huddersfield Nat. Soc., Part 2 (pub. 1885?), p. 8.
- S. MOSLEY. 'North of England.'
Rose Pests . . . Coleoptera [the lesser May-bug (*Phyllopertha horticola*) is spoken of as more frequently present in the North of England]. Sci. Goss., May 1889, p. 102.
- S. L. MOSLEY. York S.W.
Observations at Anston Stones, May 1889 [*Phyllobius alneti*, *P. oblongus*, *Barynotus obscurus*, all abundant, *Otiorhynchus ovatus*, *O. sulcatus*, *Pyrochroa serraticornis*, and *Chrysomela polita* noted]. Nat., Aug. 1889, pp. 225-226.
- S. L. MOSLEY. York S.W.
The Yorkshire Naturalists' Union at Holmfirth [10th June, 1889; *Notiophilus biguttatus*, *Carabus catenulatus*, *Nebria brevicollis*, *Calathus melanocephalus* and var. *nubigena* on Harden Moss, *Pterostichus madidus*, *P. nigrita*, *Harpalus latus*, *Patrobus excavatus*, *Bembidium littorale*, *Ocyopus olens*, *Xantholinus linearis*, *Aphodius fimetarius*, *Phyllobius argentatus*, *P. alneti*, *Hylurgus piniperda* (Harden fir-wood), *Byrrhus pilula* (Bilberry Mill), and *Leistus ferrugineus* (Harden Moss)]. Nat., July 1889, p. 203.
- S. L. MOSLEY. York S.W.
The Yorkshire Naturalists' Union at Bretton Park [14th June, 1890; *Donacia bidens* and *Cychrus rostratus* noted]. Nat., Aug. 1890, p. 226.
- R. NEWSTEAD, SEN. Cheshire.
Coccinellidæ [not specifically determined] eaten by Black-headed Gulls [and probably Starlings, flying over a small plantation near the Mersey; note written from Ince]. Ent., May 1891, xxiv. 122.

- R. NEWSTEAD. Cheshire.
Insects, &c., taken in the Nests of British Vespidae [in Cheshire; localities, dates, hosts, and other details given for *Pterostichus vulgaris* L., *Choleva tristis* Pz., *Cryptophagus pubescens* Sturm, *C. setulosus* Sturm, and *Metacus paradoxus* L.]. Ent. Mo. Mag., Feb. 1891, p. 40.
- R. NEWSTEAD. Cheshire
Another Nauseous Insect [*Hippodamia variegata* Goez = *mutabilis* Schrib.] eaten by a Woodpecker [a female *Picus major* shot in Jan. 1891, near Broxton Old Hall, containing four of the *Hippodamia*, as well as specimens of *Rhagium bifasciatum*, its favourite food]. Ent., April 1891, xxiv. 100.
- R. NEWSTEAD. Cheshire.
Sphodrus leucophthalmus, L., emitting strong Acid-like Fumes [observed in specimens from Mr. Kendrick, of Warrington; note also that *Blaps mucronata* occurs pretty freely with us (at Chester)]. Ent., Aug. 1891, xxiv. 193.
- J. E. NOWERS [Sec.]. Derbyshire.
Comparative Calendar of Nature [for 1878 and 1879, near Burton-on-Trent; June 2nd and May 24th given as dates for *Lampyrus noctiluca*]. 4th Ann. Rep. Burton-on-Trent Nat. Hist. and Arch. Soc., 1880, p. 71.
- F. W. PAPLE. Lanc. S.
Curious Visitors at Sugar [Sept. 6, 1889, *Carabus violaceus*, *Pterostichus madidus*, and *Anchomenus junceus*, presumably near Bolton, Lanc.]. Young Nat., May 1890, p. 92.
- JNO. PHILIPSON. Cheviotland.
Address to the . . . Tyneside Naturalists' Field Club, read . . . May 15th, 1889 [with note of *Cicindela campestris* caught at Whittingham, 6th Aug. 1888]. Nat. Hist. Trans. Northumb. Durh. and Newc., Vol. 10, part 2, 1890, p. 404.
- G. PULLEN. Derbyshire.
Curious Visitors at Sugar [presumably at or near Derby; *Pterostichus striola*]. Young Nat., Feb. 1890, xi. 36.
- G. PULLEN. Derbyshire.
Variety of *Carabus granulatus* [near Derby, where the species is very common; variety described]. Young Nat., April 1890, xi. 75.
- G. PULLEN. Derbyshire.
Ramble after *Geotrupes Typhæus* [at Breadsall Moor near Derby, where it is abundant]. Young Nat., June 1890, p. 115.
- C. REDMAN. Lanc. S.
Miscodera arctica and *Pterostichus æthiops* in Lancashire [particulars given of their occurrence at Longridge Fell, 1884, and near Stonyhurst College, 1890, respectively]. Nat., April 1891, p. 118.
- CHARLES ROBSON. Northumberland S.
Astynomus ædilis [at Elswick near Newcastle-on-Tyne, a male on Sept. 2nd, 1870, and a female on Aug. 30th, 1871]. Sci. Goss., Nov. 1886, p. 262.
- CHARLES ROBSON. ? Northumberland or Durham.
Natural History Jottings. The Green Tortoise Beetle (*Cassida viridis*) [elaborate notes on life-history and habits; locality not stated, but note dated 'Elswick, Newcastle-upon-Tyne']. Sci. Goss., May 1888, pp. 106-107; June 1888, pp. 137-138; and July 1888, pp. 150-151.
- JOHN E. ROBSON. Durham.
Nebria Gyllenhalii [occurs in Crimdon Dene, near Hartlepool, very little above sea-level; habitat stated]. Young Nat., Sept. 1889, p. 181.

- JOHN E. ROBSON. Durham.
Cionus scrophulariæ on **Canterbury Bell** [in Hezleden Dene, June 15th, 1890; also a week later]. *Young Nat.*, July 1890, p. 135.
- W. DENISON ROEBUCK. Linc. S.
Slugs, etc. [Beetles, *Calathus melanocephalus* and *Tachyporus chrysomelinus*] in South Lincolnshire [at Fulbeck Grange, Dec. 1888]. *Nat.*, May 1889, p. 130.
- THOS. ROGERS. ? Lanc. S.
[Niptus hololeucus appearing in large numbers in some dried peppermint, presumably at Manchester]. *Mem. and Proc. Manch. Lit. and Phil. Soc.*, March 12th, 1888, Series 4, vol. i. 1888, p. 134.
- RUDOLPH ROSENSTOCK. York Mid W.
The Yorkshire Naturalists' Union at Boroughbridge [25th May, 1885 : *Leistus ferrugineus, Anchomenus angusticollis, Pterostichus striola, P. melanarius, Amara communis, Harpalus ruficornis, Haliphus lineatocollis, Agabus maculatus, Tachyporus chrysomelinus, Quedius tristis, Helophorus intermedius, Hydrobius fuscipes, Sphæridium scarabæoides, Cercyon hæmorrhoidum, C. melanocephalum, Aphodius fossor, A. ater, A. nitidulus, A. luridus, A. contaminatus, A. testudinarius, Pyrochroa rubens, and Coccinella variabilis* noted]. *Nat.*, July 1885, p. 280.
- RUDOLPH ROSENSTOCK. York Mid W.
[Coleoptera captured about Lindley Wood Reservoir, Washburndale, July 5th, 1885 ; *Leistus fulvibarbis, Calathus melanocephalus, Stenus canaliculatus, Anobium castaneum, Liosomus ovatulus, Telephorus testaceus, T. bicolor, T. rufus, T. pallidus, Cryptohypnus riparius, and Meligethes æneus*]. *Nat.*, Nov. 1885, p. 380.
- JAMES H. ROWNTREE. York N.W. or Durham.
The Yorkshire Naturalists' Union in Upper Teesdale [in Aug. 1889 ; '*Carabus nitens* (?)' noted]. *Nat.*, Sept. 1889, p. 283.
- EDWARD SAUNDERS. Derbyshire.
Homalota crassicornis at Buxton [found June 1889, under dead leaves in the Corbar Woods, Buxton, and referred at the time to *H. pagana*]. *Ent. Mo. Mag.*, June 1891, xxvii. 171.
- RICHARD SOUTH. Cheshire.
President's Address [referring to J. H. Smedley's capture of a single example of *Tachys parvulus* (new to Britain), at Wallasey, Sept. 1884]. *Proc. South Lond. Ent. and Nat. Hist. Soc. for 1885* (pub. 1886), p. 18.
- C. E. STOTT. Lanc. S.
Nebria Gyllenhalii [found near Bolton at below 300 feet alt.]. *Young Nat.*, Sept. 1889, p. 181.
- M. L. SYKES. Lanc. S.
Rambles during the Year 1887.—Worsley [Aug. 27th ; larvæ of *Dyticus marginalis* noted]. *Ann. Rep. Manch. Micr. Soc. for 1887* (pub. 1888), p. 68.
- JOHN TATHAM. Cheshire.
The President's Address [with note of *Dyticus marginalis* larvæ at Hale Moss, 15th May, 1880]. *Ann. Rep. Manch. Microsc. Soc. for 1884-85* (pub. 1885), p. xvi.
- C. K. TERO. Linc. N.
Lucanus cervus in Lincolnshire [a few, females, near Grimsby ; one *Scaphidium quadrimaculatum* also taken]. *Ent.*, Aug. 1888, xxi. 213.
- M. LAWSON THOMPSON. York N.E.
The Yorkshire Naturalists' Union at Kildale-in-Cleveland [12th July, 1890 ; *Bradycellus similis, Calathus melanocephalus, C. flavipes, Olisthopus rotundatus, Nebria gyllenhalii, Quedius molochinus, Notiophilus biguttatus, N. aquaticus, and Otiorrhynchus ovatus, taken upon Roseberry Topping*]. *Nat.*, Sept. 1890, p. 273.

- M. L. THOMPSON and WILLIAM HEWETT. York N.W.
[Beetles observed by] the Yorkshire Naturalists' Union at Leckby Carr
 [18th May, 1891; *Carabus nemoralis*, *Notiophilus biguttatus*, *Elaphrus cupreus*, *Loricera pilicornis*, *Harpalus ruficornis*, *Pterostichus madidus*, *P. diligens*, *Calathus cisteloides*, *Anchomenus dorsalis*, *Hydroporus lituratus*, *Agabus bipustulatus*, *Anacæna variabilis*, *A. limbata*, *Choleva fumata*, *Philonthus decorus*, *Acidota crenata*, *Anatis ocellata*, *Coccinella 10-punctata*, *Halyzia 14-guttata*, *Elater balteatus*, *Melanotus rufipes*, *Rhagium bifasciatum*, *Lochmæa capreæ*, *L. suturalis*, *Deporaiis betulæ*, *Apion hæmatodes*, *Polydrusus cervinus*, and *Ceuthorrhynchus pollinarius*, with notes on a few of them].
 Nat., Aug. 1891, pp. 238-239.
- M. L. THOMPSON. York N.E.
[Beetles observed by] the Yorkshire Naturalists' Union at Hayburn Wyke
 [11th July, 1891: *Cicindela campestris*, *Notiophilus biguttatus*, *N. aquaticus*, *Bradycellus similis*, *Harpalus proteus*, *H. ruficornis*, *H. rufibarbis*, *Pterostichus madidus*, *P. vulgaris*, *P. niger*, *P. diligens*, *Calathus cisteloides*, *C. melanocephalus*, *Trechus minutus*, *Cercyon flavipes*, *Choleva fumata*, *Tachyporus chrsomelinus*, *Tachinus rufipes*, *Adalia oblitterata*, *Coccinella 10-punctata*, *Brachypterus urticæ*, *Antherophagus pallens*, *Athous niger*, *A. hæmorrhoidalis*, *Agriotes pallidulus*, *Dolopius marginatus*, *Helodes minutus*, *Campylus linearis*, *Cyphon nitidulus*, *C. variabilis*, *Telephorus bicolor*, *T. flavilabris*, *Rhagonycha pallida*, *R. limbata*, *Malthodes marginatus*, *M. minimus*, *Strangalia armata*, *Adimonia suturalis*, *Crepidodera ferruginea*, *Phyllotreta undata*, *Sphæroderma cardui*, *Pyrochroa serraticornis*, *Apion apricans*, *A. pisi*, *A. violaceum*, *A. humile*, *Otiorrhynchus picipes*, *O. ovatus*, *Strophosomus coryli*, *Polydrusus cervinus*, *Phyllobius urticæ*, *P. pyri*, *P. argentatus*, *P. viridicollis*, *Ceuthorrhynchus pollinarius*, and *C. ericæ*; localities and notes given in every case]. Nat., Sept. 1891, pp. 287-288.
- A. THORNLEY. Linc. N. or Notts.
***Omius mollinus*, Boh.** [several taken by writer near the Trent, on the borders of Lincolnshire and Notts]. Ent. Mo. Mag., Nov. 1891, xxvii. 304.
- ALFRED THORNLEY. York Mid W.
Coleoptera at . . . Ilkley [in Sept. 1891; *Bradycellus cognatus*, *B. similis*, and *Olisthopus rotundatus* in abundance under stones on Rumbold's Moor; also a pair of *Acidota crenata*, and single specimens of *Carabus nitens*, *Miscodera arctica*, and *Necrophorus ruspator* (flying)]. Ent. Mo. Mag., Dec. 1891, xxvii. 332.
- C. U. T[RIPP]. Derbyshire.
Calendar of Nature, 1879 [near Burton-on-Trent; *Lampyrus noctiluca* seen 24th May, 1879]. 4th Ann. Rep. Burton-on-Trent Nat. Hist. and Arch. Soc., 1880, p. 69.
- CHAS. H. H. WALKER. Cheshire.
Microscopical Notes [on Cheshire side of Mersey, 25th May; larvæ of *Dyticus marginalis* noted]. Young Nat., Sept. 1889, p. 188.
- WALTER A. WARNE. York N.E.
Ayton.—May 1st [*Meloë violaceus* and *Carabus violaceus* in large numbers at Captain Cook's, viâ Easby]. Nat. Hist. Journ., June 15th, 1888, p. 112.
- W. A. W[ARNE, Secretary]. York N.E.
[*Cicindela campestris* found at Eston Nab, Sept. 18th, 1888]. Nat. Hist. Journ., October 15th, 1888, xii. 161.
- JOHN WATSON. Westmorland.
Westmorland Heronries [with a reference to presence of legs and wing coverts of *Dyticus marginalis* in stomach of a fortnight-old Heron, at Dallam Tower]. Field, Jan. 22nd, 1889, p. 109; Westm. Note Book and Nat. Hist. Record, vol. 1, part 6, June 1889, p. 126.
- E. B. WRIGGLESWORTH. York S.W., Durham.
***Astynomus ædilis* at Wakefield** [and Hartlepool; occurrences cited]. Nat., April 1885, p. 206.

LIST OF ADDITIONS MADE DURING 1891 TO
THE REGISTER OF PHÆNOGAMS AND
VASCULAR CRYPTOGAMS OF THE ALFORD
DISTRICT OF NORTH LINCOLNSHIRE.

J. BURTT DAVY,

*Trafalgar House, Kew, Surrey; Assistant in the Royal Botanical Gardens, Kew;
late Hon. Sec. Alford (Lincs.) Naturalists' Society.*

ONLY thirty plants previously unrecorded for the district, and two confirmations of old, but doubtful, records, have been added to the Alford Naturalists' Society's Register of Phænogams and Vascular Cryptogams during the year 1891.

Considering how imperfectly the flora of the district has been investigated as yet, this is a very meagre result of a summer's work. A much longer list was contemplated at the beginning of the season, but unavoidable circumstances made it necessary to abandon much of the work planned out. It is a great pity that so few members of the local Natural History Societies—and, indeed, other intelligent persons in the county—appear to understand the pleasure to be derived from a study of the works of Nature. If they could be persuaded that no profound knowledge of natural history, botany, or geology is required for this purpose, but only careful observation of facts and a precise and methodical recording of what is observed (to which might be added the preservation of specimens, when practicable, as vouchers for the records), probably we should soon be able to complete the very imperfect records of the plant and animal life of Lincolnshire. The information thus collected, with similar information from other counties, would supply ample material for studying the causes of effects with regard to the variation, habits, distribution, and economy of species. At present this work of collecting information—which might so pleasurably and profitably form part of the recreation of almost all intelligent persons in the county—is left chiefly to a few more or less energetic individuals, some of whom, being non-resident in Lincolnshire, can only visit it for the purpose at distant intervals.

In the following list of the thirty-two plants, W.F. stands for the Rev. W. Fowler, M.A., of Liversedge Vicarage, and F.A.L. for Mr. F. Arnold Lees, M.R.C.S., etc., of Leeds, who have kindly verified the names of many of my specimens.

[**Clematis Vitalba** L. Hedge separating allotment gardens from road, Well village, April 19th (J.B.D.). Probably an escape from cultivation: there is a house with flower-garden on the opposite side of the road.]

- Thalictrum flavum** L. Shady hedge-bank, Alford, on Boulder Clay, June 28th (J.B.D., fide W.F.).
- Nuphar luteum** Sm. In fruit in a 'drain' at Withern, October 8th (Miss S. Allett, fide J.B.D.).
- Viola Reichenbachiana** Bor. Hedge-bank outside Welton Wood, on the Chalk, April 28th (J.B.D., fide F.A.L.). I am informed that Mr. Fowler and Mr. Jas. Eardley Mason have seen this plant previously at Well, but it was not entered in the Register.
- Trifolium ochroleucum** L. Plentiful in a meadow on Boulder Clay at foot of the Chalk Wolds, Rigsby-cum-Ailby, July 12th (J.B.D., fide W.F.). An uncommon plant in Lincolnshire.
- Poterium officinale** Hook. f. Willoughby, August 11th (Edward Woodthorpe, fide J.B.D.). Grows in several parishes in the district, but not previously registered.
- Callitriche platycarpa** Kuetz. Well, July 5th (J.B.D., fide W.F.).
- Hydrocotyle vulgaris** L. Tothill, October 8th (Miss S. Allett, fide J.B.D.). In fruit.
- Ægopodium Podagraria** L. Hedge-bottom, allotment gardens, Well village, April 19th (J.B.D.).
- Chærophyllum temulum** L. Alford, July 3rd (J.B.D., fide W.F.).
- Anthriscus sylvestris** Hoffm. Alford, July 3rd (J.B.D., fide W.F.). This very common weed had somehow previously missed registration.
- Œnanthe Phellandrium** Lam. Pond in a clearing, Mother Wood, Aby, July 3rd (J.B.D., fide W.F.).
- Valeriana dioica** L. Alford, on Boulder Clay, June 28th (J.B.D., fide W.F.). Previously recorded, but some doubt existed as to identification.
- Bidens cernua** L. Tothill, October 5th (Miss S. Allett, fide J.B.D.).
- Carduus crispus** L. By the road-side, Willoughby, along with *Cnicus arvensis* Hoffm., August 9th (J. E. Mason, fide J. G. Baker, Kew).
- Serratula tinctoria** L. var. **monticola** (Boreau). Damp and shady disused brick-pit, Well, on Boulder Clay, July 5th, (J.B.D., fide W.F.).
- Cichorium Intybus** L. Stubble-field, Saleby, on Boulder Clay, October 4th (E. Woodthorpe, fide J.B.D.). Confirmation of record. This plant seems only doubtfully wild in the Alford district, and may have been introduced with farm seeds.

- Pedicularis sylvatica** L. Wet meadow on the Boulder Clay, Rigsby-cum-Ailby, June 7th (J.B.D.). Along with *Listera ovata* R.Br., *Orchis Morio* L., *Orchis maculata* L., *Habenaria conopsea* Benth., and *Habenaria viridis* R.Br.
- Salix aurita** L. Welton Wood, April 25th (J.B.D.); Greenfield Wood, April 30th (J.B.D., fide F.A.L.).
- Salix Caprea** L. Road-side hedge, Mother Wood, Aby, March 22nd (J.B.D., fide F.A.L.).
- Lemna trisulca** L. Pond, Alford, March 29th (J.B.D.).
- Lemna minor** L. Pond, Ailby, March 22nd (J.B.D.).
- Lemna polyrrhiza** L. Pond, Well Park, July 5th (J.B.D., fide J. E. Mason).
- Zannichellia brachystemon** J. Gay. Guy's pond, Ailby, June 28th (J.B.D., fide W.F.). In fruit.
- Scirpus palustris** R.Br. Saleby, June 22nd (J.B.D., fide W.F.).
- Carex remota** L. Saleby, June 27th (J.B.D., fide W.F.).
- Carex ovalis** Good. **C. sylvatica** Huds. **C. vesicaria** L. Marshy ground in a clearing, Mother Wood, Aby, July 3rd (J.B.D., fide W.F.).
- Briza media** L. Alford, June 28th (J.B.D., fide W.F.).
- Equisetum maximum** Lam. Driby, March 14th (J.B.D.); South Ormsby, March 30th (J.B.D.); in both places this plant occurs where the Carstone and Calcareous Ironstone crop out from beneath the chalk.
- Equisetum palustre** L. Saleby, June 27th (J.B.D., fide W.F.).

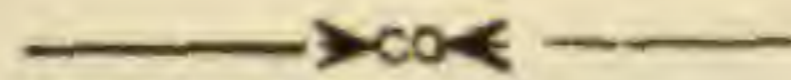
It may seem absurd to require common weeds like *Anthriscus sylvestris* and *Briza media* to be verified, but seeing that much trouble is often caused by imperfectly vouched records, I have made it a rule to have all plants newly recorded for a district, properly verified whenever practicable. It may be interesting to note that *Parnassia palustris* still lingers at Tothill, Miss S. Allett having sent me specimens in fruit which she gathered there on October 8th. It appears to have been quite exterminated from its old station in Alford parish.

NOTES AND NEWS.

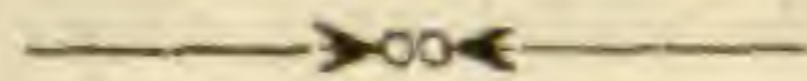
We have a note from our friend Mr. James W. Addyman, B.A., who is Vice-Consul at Leeds for Sweden and Norway, in reference to Mr. Thomasson's paper in 'The Naturalist' for December 1891, p. 370. He thinks the Norsk word 'næsten' may be more correctly translated 'almost,' as far as he can judge from the translation of the context. The word frequently bears this meaning, and the passage, to Mr. Addyman's mind, shows that the writer intended to convey the idea of doubtful superiority in favour of six eggs.

NOTES AND NEWS.

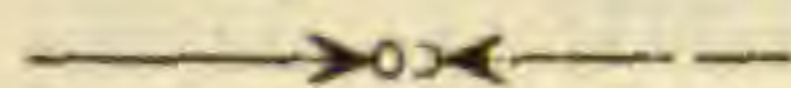
A well-merited tribute to the memory of our great northern lepidopterist, John Sang, is paid by Mr. John H. Wood, who dedicates to him a new species, *Micropteryx sangii*, which is described in the 'Entomologists' Monthly Magazine' for April last.



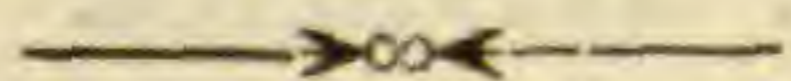
Mr. S. L. Mosley, F.E.S., continues his most interesting 'History of British Birds: their Nests and Eggs,' of which Nos. 66 and 67 are now before us. They include hand-coloured plates of the Land Rail, the Water Rail, the Spotted and Baillon's Crakes, the Coot, the Waterhen, and the Grey Phalarope, interesting varieties and the immature birds being figured, as well as the eggs and mature forms.



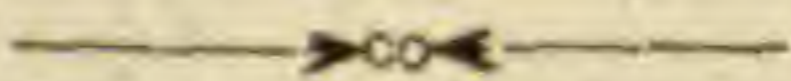
A brief obituary notice is given in the 'Entomologist' for August last (xxiv. 200) of Edward Ralph Pearson, of Wallington, Northumberland, who died on the 12th July, 1891, at the age of 56. Mention is made of his excellence as a lepidopterist, and several good local insects, including *Vanessa antiopa*, are named as among his captures made in the neighbourhood of Wallington.



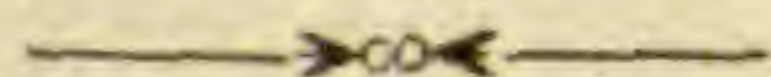
An honour is paid to our well-known entomologist of Hartlepool, Mr. J. E. Robson, F.E.S., a new variety *robsoni* being suggested for the melanic form of *Aplecta nebulosa* by Mr. J. Collins, at the October meeting of the Lancashire and Cheshire Entomological Society. The formal and technical description of this variety is published in the 'British Naturalist' for November 1891, p. 237.



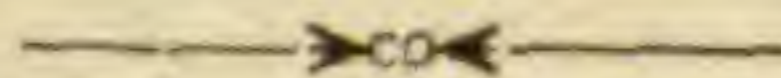
In respect of the question of the proposed abandonment of the generic name *Cyclostoma*, and the substitution for it of *Pomatias*, the Rev. Canon Norman returns to the charge in the August number of the 'Annals and Magazine of Natural History,' and defends with great vigour the position he took up in opposition to Mr. R. Bullen Newton.



The November number of the 'Entomologist' contains an article on the Diamond-Back Moth (*Plutella cruciferarum*), which has committed so much damage to turnip crops in the eastern counties of England. Mr. J. Arkle, of Chester, therein describes in some detail the life-history and ravages of this pest, and offers suggestions for remedial measures. But (may we ask) is a moth which commits great ravages in one year to be necessarily feared in succeeding seasons?



A paper on the re-development of lost limbs in the insecta, by Mr. John Watson, of Manchester, read to the Scientific Section of the Literary and Philosophical Society of that city, is printed at pages 108-110 of the 'Entomologist' for May 1891. The observations were made on *Platysamia cecropia*, *Antherea mylotta*, and on dragon-flies.



Our former editor, Mr. W. Eagle Clarke, F.L.S., is to be most warmly congratulated on the success of the new quarterly magazine, 'The Annals of Scottish Natural History,' which he has brought out in conjunction with Mr. John A. Harvie-Brown, F.R.S.E., and Prof. James W. H. Trail, M.A., M.D., and of which the first number, for January, lies before us. It takes the place of 'The Scottish Naturalist,' which now ceases to exist, after a tenure of life extending over nearly two decades of years, and the new journal is in every respect an immense improvement upon its predecessor. Typographically the 'Annals' is a work of art and affords not the slightest loophole for an adverse-minded critic, and scientifically its contents are high-class and well worthy of the natural history ability of which Scotland can boast. The present number is illustrated by two plates, one of them an excellent representation of *Anarrhichas minor*, lithographed by Mintern Brothers. The contents are well balanced among the different branches of natural history, and the whole production eminently worthy of the long and prosperous career which we venture to predict (and confidently expect) for it.

LINCOLNSHIRE NATURALISTS AT GIBRALTAR POINT.

J. BURTT DAVY,

Trafalgar House, Kew, Surrey; Assistant in the Royal Botanical Gardens, Kew, and late Hon. Sec. Alford (Lincs.) Naturalists' Society.

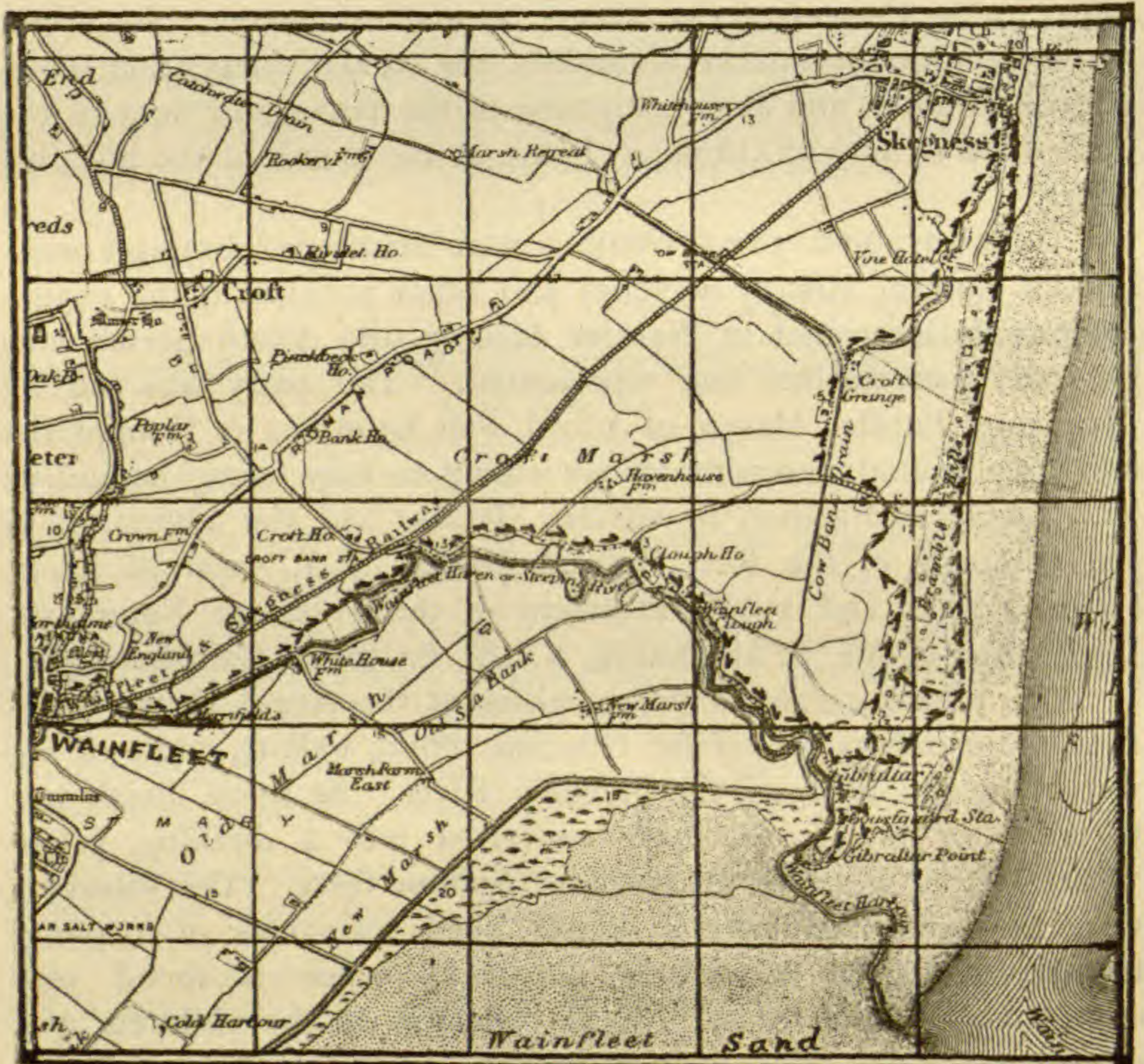
AN excursion of Lincolnshire naturalists to Gibraltar Point, North Lincolnshire, was planned and carried out on Saturday, August 15th, 1891, by the Council of the Alford Naturalists' Society. Its object was a reunion of county naturalists for mutual stimulation, comparison of notes, and an investigation of the fauna and flora of the immediate vicinity of Gibraltar Point, at the mouth of the Steeping River.

Although about 300 invitations were distributed amongst members of Natural History Societies and other persons in the county professedly interested in Natural History, the Alford Society was the only Lincolnshire one represented. The party was led by Mr. James Eardley Mason, of Alford, well known as an Hemipterist and an all-round naturalist always willing to help young naturalists with timely information or advice. It also had the advantage of the company of the Rev. William Fowler, M.A., vicar of Liversedge, Yorks., and a Vice-President of the Yorkshire Naturalists' Union, and of Mr. F. M. Burton, F.L.S., F.G.S., of Gainsborough.

After a hearty eight o'clock breakfast at the Angel Hotel, Wainfleet, the members set off for Gibraltar Point, walking most of the way along the bank of the Steeping River. At noon, lunch was partaken of in an old hulk converted into a dwelling, yclept 'Noah's Ark,' near the Coast-guard Station there. The members were here shown numerous brightly-dyed specimens of a pretty feathery Zoophyte (*Sertularia pinnata*?), which is found very abundantly on this coast. It is collected by the children, and dried after being dipped in a mixture of methylated spirit and glycerine, which acts as a preservative (the proportion being one-half of each, with different colouring matters—purple, yellow, etc.—added); it is then sold to dealers in natural history objects and to visitors. The exhibitors called it 'sea-weed,' and would hardly be convinced that it was anything else, because, as they remarked, 'it came out of the sea'! Some time was here devoted to an investigation of the fore-shore, mud-flats, and sand-hills of the Point. Mr. Mason obtained several specimens of Hemiptera, noteworthy for the large proportion which were infested by a red bag-like parasite. A few of the commoner sea-shells were obtained, but

they were all without their original owners, and have not been identified. At three p.m. the members turned northwards, exploring the sand-hills, roadsides, and 'dikes' on the way, until Skegness was reached, when there was just time for tea before the departure of the trains.

Gibraltar Point is on the seaward boundary of that district lying north of the East Fen, which is locally known as the 'Salt Marsh.' It is a low-lying, level tract of Silt and Boulder Clay, intersected by



The map is divided into square miles. The arrows mark the line and direction of the route taken.

wide drains, which forms a rich grazing district. In this marsh, 'quick' hedges only occasionally break the view over the level—so monotonous and yet so interesting from its very levelness—the fields usually being separated from each other and from the roads by 'dikes' of nearly stagnant water. Where these dikes escape the customary annual cleaning-out, they prove well suited for the growth of *Hottonia*, *Utricularia*, *Hydrocharis* and other aquatic plants; their banks, too, when not too closely mown or grazed, yield a rich

and varied flora. In few places is the 'Salt Marsh' 20 feet above Ordnance Datum level, most of it is from 10 to 15 feet and in some cases it is only 7 to 8 feet. As the highest spring tides sometimes rise to 16 feet, the whole marsh would then be flooded if not protected by a sea-bank. Mr. A. J. Jukes-Browne, B.A., F.G.S., in his 'Memoirs of the Geological Survey of England and Wales (Explanation of Sheet 84)' describes this sea-bank on p. 111, as follows: 'The whole coast-line of East Lincolnshire, from Gibraltar Point south-east of Wainfleet to Donna Nook north of Saltfleet, is bordered by a narrow range of sand-hills, the sand composing them being blown off the foreshore outside. This strip of Blown Sand is widest near the southern and northern edges of the map [Sheet 84, Geol. Survey], being about a quarter of a mile (440 yards) wide at these points, it is also about the same width near Saltfleetby, but elsewhere it is very narrow, and in some places not more than 50 or 60 yards broad. The sand is piled up into mounds and hummocks, and is held together by a growth of "Mat grass," or "Marram" (*Arundo arenaria*), with which *Hordeum maritimum* (coast barley) and *Triticum junceum* (wild wheat) are frequently associated; the Sea Buckthorn (*Hippophæe rhamnoides*) and the Blue Bramble (*Rubus cæsius*) are also abundant, and their roots assist in holding the sand together. In height the sand-hills vary from 20 to 40 feet above the level of the land inside, which they protect from the inroads of the sea.'

Mr. Mason has kindly supplied the following list of Vertebrata noted during the day, with some of their local names. All except those marked with a star (*) were seen by himself.

MAMMALIA.

Arvicola amphibia L. **Water Vole.** A young one was taken, and after careful scrutiny, and being carried in a box some hours, was finally released.

BIRDS.

Turdus musicus L. **Song Thrush.** 'Thrush.'
Turdus merula L. **Blackbird.**
Ruticilla phœnicurus L. **Redstart.**
Motacilla lugubris L. **Pied Wagtail.** 'Dishwasher.'
Anthus pratensis L. **Meadow Pipit.** 'Ground Lark.'
Hirundo rustica L. **Swallow.**
Chelidon urbica L. **Martin.**
Cotile riparia L. **Sand Martin.**

- Passer domesticus L. House Sparrow.
 Linota cannabina L. Linnet. 'Grey Linnet.'
 Emberiza miliaria L. Corn Bunting.
 Emberiza citrinella L. Yellow Bunting. 'Gooly.'
 Sturnus vulgaris L. Starling. 'Starnel.'
 Corvus frugilegus L. Rook. 'Craw'; *C. corone* being
 named the 'Cad-craw.'
 Alauda arvensis L. Skylark.
 Cypselus apus L. Swift. 'Devlin.'
 Ardea cinerea L. Heron. 'Heronsew.'
 Gallinula chloropus L. Moorhen. 'Waterhen.'
 Ægialitis hiaticula L. Ringed Plover. 'Sand Runlet.'
 Totanus hypoleucos L. Common Sandpiper.
 Totanus calidris L. Redshank.
 *Totanus canescens Gmel. Greenshank.
 Numenius arquata L. Curlew.
 *Numenius phæopus L. Whimbrel.
 Sterna fluviatilis Naum. Common Tern.
 Sterna minuta L. Little Tern.
 Larus canus L. Common Gull.

BATRACHIA.

- Rana temporaria L. Common Frog.
 Bufo vulgaris L. Common Toad.

The Natterjack (*Bufo calamita* Laur.) was not seen, although not uncommon, and in some places abundant, on the sand-hills.

The following Hemiptera-Heteroptera and Coleoptera were obtained by Mr. Mason:—

HEMIPTERA-HETEROPTERA.

- Scolopostethus adjunctus D.&S.
 Megaloceræa erratica L.
 Calocoris bipunctatus L.
 Liocoris tripustulatus Fab.
 Lygus contaminatus Fall.
 Dicyphus epilobii Reut.
 Heteroloma merioptera Scop.
 Plagiognathus arbustorum Fab.
 Anthocoris nemorum L. *A. nemoralis* L.

Nabis flavomarginatus Scholz.

Salda pilosa Fall. **S. lateralis** Fall. **S. littoralis** L.

Hydrometra stagnorum L.

Corixa striata Fieb.

A large proportion of these were infested by a red bag-like parasite.

Salda pilosa is a new record for Lincolnshire.

COLEOPTERA

(Kindly named by the Rev. Canon W. W. Fowler, M.A., F.L.S., Sec. E.S.).

Pogonus chalceus Marsh. **Adrastus limbatus** F.

Bembidium pusillum Gyll. **Phædon tumidulus** Germ.

Halplus fluviatilis Aubé. **Thyamis ochroleuca** Marsh.

Ocypus cupreus Rossi. **Cœliodes quadrimaculatus** L.

Meligethes picipes Sturm.

Pogonus chalceus and *Adrastus limbatus* are interesting, being both southern insects.

Of Phænogamous plants 144 species were noted ; some of them could not be determined, however, without reference to a 'Flora.' These were collected for after-determination, but had withered too much to be of any use, before they could receive attention. Only those species which have been authentically verified are retained in the following list, which is given in full as it may sometime prove useful in the compilation of a county 'Flora.'

The Rev. William Fowler has most kindly appended the mark ! to some of the less common species, for the occurrence of which he can personally vouch ; for the rest I must hold myself alone responsible, except where another reference is given. I was able to preserve a few specimens, since presented to the herbarium of the South Kensington Museum (Natural History). These are marked 'sp.' so that, in case of doubt, reference may be had to the specimens themselves. The nomenclature and sequence here followed are those of the 8th edition of the 'London Catalogue.'

Ranunculus Drouetii Godr. ! **R. sceleratus** L. **R. acris** L.

Papaver Rhœas L.

Sisymbrium officinale Scop.

Capsella Bursa-pastoris Moench.

Cerastium triviale Link.

Stellaria media Cyr.

Arenaria serpyllifolia L. **A. peploides** L. !

Lepigonum salinum α **genuinum** Auct. ! (syn. *Spergularia neglecta* β *salina* Syme, E.B. ; 'S. *salina* Presl. (proper)' of Hooker's Students' Flora ; and '*L. salinum* (Kindb.)' of Bab. Man.) (sp.).

Lepigonum marginatum 'Koch' ! (syn. *Spergularia marginata* Syme, E.B. ; '*S. media* Pers.' of Hooker's Students' Flora ; and '*L. marinum* "Wahl."' of Bab. Man.) (sp.).

Malva sylvestris L. We used to eat the seeds of this plant with considerable relish when we were children, and called them 'cheeses.'

Erodium cicutarium L'Hérit.

Medicago lupulina L.

Trifolium pratense L.

Trifolium arvense L. (sp.) and **T. scabrum** L. ! (sp.) growing together among shingle behind the old Roman sea-bank. Gibraltar Point appears to be a newly-recorded locality for the latter plant. Mr. James Britten, F.L.S., included it in his list of county plants in White's Lincolnshire Directory (1872), but it does not appear as a Lincolnshire plant in 'Topographical Botany,' ed. i. (1883). On p. 209 of the Botanical Record Club Report for 1881-82, the following note occurs:— '*T. scabrum* L. Flats near the sea, Cleethorpes, North Lincoln ; July 1882. *Amos Carr*. Recorded for the vice-county in 1876 Report, but Mr. Blow—the compiler for that year—did not give the station.' The locality for this 1876 record was probably Humberstone, as Mr. Fowler writes me : 'Look whether I did not record *T. scabrum* at Humberstone, in the B.R.C. Reports. I saw it there much finer than what we saw at Gibraltar ; quite large clumps on the loose sand, along with *Eryngium maritimum*,' and I cannot find any other Lincolnshire record for the plant in the B.R.C. Reports.

Trifolium repens L. **T. procumbens** L.

Lotus corniculatus L. Locally called 'Ladies' fingers.'

Vicia Cracca L.

Vicia lathyroides L. (sp.) ! growing with *Trifolium arvense* and *T. scabrum*, among shingle behind the old Roman sea-bank. The Rev. G. S. Streatfeild informs me that in June 1872 he also obtained it from Gibraltar Point, and adds, 'I was at Skegness for two days early in this month (September 1891), and walked in the direction of Gibraltar Point, but did not get to it. Even at that late date I came across a few specimens of *V. lathyroides*, of which I enclose one.' Mr. Streatfeild's 1872

specimen is in the South Kensington Museum. The specimens obtained by Mr. Fowler and myself have been verified by Mr. F. Arnold Lees, and by comparison with the specimens in the collection of the late Mr. H. C. Watson, at the Kew Herbarium, and Mr. Streatfeild's specimens above referred to.

Lathyrus pratensis L.

Spiræa Ulmaria L. Mr. Ward Robinson, of Grimsby, informs me that in some parts of the county the 'Meadow Sweet' is called 'Queen of the Meadow,' and that a small quantity of the flowers is used as one of the ingredients of herb beer.

Rubus cæsius L. On the sand-hills.

Potentilla Anserina L.

Alchemilla arvensis L.

Agrimonia Eupatoria L. Highly valued in Lincolnshire as an ingredient of herb beer.

Cratægus Oxyacantha L.

Sedum acre L. ! Locally called 'Poor-man's pepper.'

Myriophyllum spicatum L. !

Epilobium hirsutum L. *E. parviflorum* Schreb. !

Apium graveolens L. (sp.) Very abundant on drain banks.

Apium nodiflorum Reichb.

Sium latifolium L. ! (sp.). Wainfleet.

Œnanthe fistulosa L. *Œ. Lachenalii* Gmel. ! (sp.).

Æthusa Cynapium L.

Angelica sylvestris L.

Heracleum Sphondylium L. The leaves are locally used for 'rabbit-meat.'

Daucus Carota L.

Caucalis Anthriscus Huds.

Sambucus nigra L. Plentiful on the sand-hills. The berries are, of course, largely used in Lincolnshire, as elsewhere, for elder-wine, elder-syrup, etc., which are considered good remedies for coughs.

Galium verum L. *G. Aparine* L.

Dipsacus sylvestris L.

Bellis perennis L.

Aster Tripolium L.

Pulicaria dysenterica Gærtn.

Achillea Millefolium L. Mr. Ward Robinson informs me that this is another ingredient of herb beer, and adds, 'When a boy

at home (Lincolnshire) I knew Yarrow by several names as "Devil's plaything," "bad-man's plaything," &c.'

Chrysanthemum Leucanthemum L.

Matricaria inodora L.

Artemisia maritima 'Linn.' (sp.).

Senecio vulgaris L. **S. erucifolius** L. **S. Jacobæa** L.

Arctium minus Schk. ! Locally believed to possess valuable medicinal properties.

Carduus nutans L.

Cnicus lanceolatus Hoffm. **C. arvensis** Hoffm.

Centaurea nigra L.

Crepis virens L.

Hieracium Pilosella L. On the sand-hills.

Leontodon hirtus L. **L. autumnalis** L.

Taraxacum officinale Web. Mr. Robinson has given me a recipe for making 'Dandelion wine' from the flowers of this plant. My grandmother had a weakness for the fresh young leaves, which she ate as salad; I also remember being dosed with 'Dandelion tea,' made from the roots, for some childish ailment.

Sonchus oleraceus L. **S. arvensis** L.

Campanula rotundifolia L.

Glaux maritima L.

Samolus Valerandi L. (sp.). Drain-bank at Skegness.

Cynoglossum officinale L. Very abundant on the sand-hills. Its hooked-spined nutlets adhere to the clothes with provoking tenacity.

Myosotis palustris With.

Convolvulus arvensis L.

Solanum Dulcamara L.

Solanum nigrum L. (sp.) and **Hyoscyamus niger** L. ! (sp.) growing together plentifully on the shingle at the Point; one specimen of the latter was 5 ft. high. Mr. Perrin, the proprietor of 'Noah's Ark,' told us that *Hyoscyamus* had grown on that spot all the time he had lived there (21 years), some years in greater abundance than in others. Mrs. Perrin said that her grandmother used *Hyoscyamus* seeds as a remedy for toothache, and that when the mouth was held over a jar of boiling water in which these seeds were steeped, the 'maggots' (which caused the toothache!) fell out. I saw this remedy applied once by

a servant in a farmhouse at Fulbeck, near Grantham, but I do not remember with what success; in this instance the jar was covered by a funnel, which served to convey the steam more directly to the affected tooth.

Veronica Chamædryas L. *V. Anagallis* L. *V. Beccabunga* L.

Rhinanthus Crista-galli L.

Lycopus europæus L.

Prunella vulgaris L.

Lamium album L.

Ballota nigra L.

Plantago major L. *P. lanceolata* L. *P. Coronopus* L. (sp.).

Chenopodium album L. !

Atriplex Babingtonii Woods. ! (sp.). *A. portulacoides* L.

Salicornia herbacea L. This plant is locally called 'Samphire' and is highly valued for pickling; it is also eaten raw or boiled as 'greens.' We were informed that it is not nearly so plentiful in this neighbourhood as formerly, having been extensively gathered for these purposes. In the 'Phytologist,' Dec. 1857 (N. S., II., p. 302) Mr. Fowler noted these local uses, and remarked: 'I have seen people fetch it away for sale by cart-loads from the coast off Saltfleet.' Mr. H. Wallis Kew, F.E.S., also notices it in his interesting paper entitled 'Mablethorpe Natural History Notes,' in Ruscoe's 'Illustrated Guide to Mablethorpe, Sutton, Louth, Alford and District,' pp. 87 to 92 (1890).

Suæda maritima Dum. (sp.).

Salsola Kali L. (sp.).

Polygonum aviculare L. *P. amphibium* L.

Rumex crispus L. ! *R. Hydrolapatheum* Huds. !

Hippophae Rhamnoides L. ! 'Sallow-thorn' or Sea-Buckthorn; very abundant all over the sand-hills, where its prevalence, and the sharp spines with which it is armed, make walking tedious and sometimes painful.

Urtica dioica L. *U. urens* L.

Fagus sylvatica L.

Elodea canadensis Mich.

Orchis pyramidalis L. !

Juncus bufonius L. (sp.). *J. acutiflorus* Ehrh.

Sparganium ramosum Curtis, *Lemna trisulca* L., *L. minor* L. and *L. gibba* L., all in dikes at Wainfleet.

Alisma Plantago L.

- Triglochin palustre* L. (sp.). Margins of dikes at Wainfleet.
Triglochin maritimum L. (sp.)
Potamogeton perfoliatus L. Steeping River.
Potamogeton crispus L. (sp.). Wainfleet.
Eleocharis palustris R. Br.
Scirpus maritimus L. (sp.). Quite the characteristic plant of the dikes.
Carex vulpina L.
Ammophila arundinacea Host.
Phragmites communis Trin.
Dactylis glomerata L.
Agropyron junceum Beauv.
Hordeum pratense Huds.
Hordeum maritimum With.
Elymus arenarius L.

Some fine specimens of *Agaricus (Volvaria) speciosus* Fr. were seen by Mr. Fowler and Mr. Mason on a dunghill by the roadside. This was the only fungus taken note of.

NOTE—ORNITHOLOGY.

Smews at Newton Kyme near Tadcaster.—Yesterday I received a letter from the Rev. J. W. Chaloner, of Newton Kyme, in which he incidentally mentions that he has just obtained a female Smew (*Mergus albellus*) on the Wharfe near his house. In reply to my letter asking for fuller particulars, Mr. Chaloner tells me that the bird was killed on the 19th inst; and adds the interesting fact that his son, Mr. C. W. Chaloner, who shot the bird, has just secured a male Smew at the same place. It is somewhat significant that a female and a male should have been obtained on consecutive days.

This is, so far as I am aware, the third Smew obtained on the Wharfe within the 'Western Ainsty.' The former one (mentioned in my note—'Naturalist,' 1891, page 103) was a male, and it is interesting to notice that it was killed by the Rev. J. W. Chaloner 62 years ago, namely, in the winter of 1829-30.—EDGAR R. WAITE, The Museum, Leeds, 21st January, 1892.

NOTE—LEPIDOPTERA.

Sphinx convolvuli at Newton Kyme near Tadcaster.—Last autumn the entomological journals contained numerous notices of the occurrence of this insect in Britain. It may be useful to make another reference to the letter of the Rev. J. W. Chaloner, mentioned above. My old friend tells me that a *Convolvulus* Hawk Moth was flying about Newton Kyme during the first week of August last, and that another (or the same) was seen a fortnight later at the same place. Mr. Chaloner remarks that this insect seems to be very fond of Jessamine and *Phlox*, and adds: 'Some years ago I left my window open with a candle burning, and in the morning I liberated several of these moths which were in the window.'—EDGAR R. WAITE, The Museum, Leeds, 21st January, 1892.

NOTES—BOTANY.

Are *Crocus vernus* and *C. nudiflorus* natives of England?—While I should very much like to claim *C. nudiflorus* as indigenous to this country, facts must not be overlooked. To the botanists of to-day who see it put forth its leaves in spring, and its flowers in autumn, year after year in the meadows, in great profusion, at no less than seven different stations within a radius of three or four miles of the town of Halifax, there is every appearance of this interesting naked-flowering plant being indigenous, to our district at least; but if we refer back about eleven or twelve decades we find no mention whatever of its being in existence here.

In the year 1775 a 'History of the Antiquities of Halifax' by the Rev. J. Watson, was published. Included in this valuable work is 'A Catalogue of Plants growing in the Parish of Halifax,' interspersed with copious notes. Though I have no direct proof, there is every reason to believe that James Bolton, a Halifax schoolmaster, compiled this catalogue. Bolton, as is well known, was an indefatigable Halifax botanist of that period, and author of a beautifully illustrated work on Fungi, entitled 'A History of the Funguses growing in the Parish of Halifax.' From the notes accompanying the descriptions, in the catalogue above mentioned, it is evident that the compiler left no district unvisited, nor spared any pains to make his compilation as complete as possible. Had such an attractive flower as *C. nudiflorus* been growing wild in the meadows of our district in his time as we see it now, it is very unlikely that so thorough a worker would have overlooked it.

According to Lees' West Yorkshire Flora, the first record for it in the West Riding is by W. Wood (1805) in 'Pastures near Halifax.' It appears to have held its ground pretty well since first noticed. Halifax is the only district in the W. Riding, except a casual gathering near Huddersfield and another near Sheffield, where it has been found.—C. CROSSLAND, 4, Coleridge Street, Halifax, Jan. 13th.

Are *Crocus vernus* and *C. nudiflorus* natives of England?—In reply to the query, I take a directly opposite view from that of the querist. Many years ago when the physician's art was in its infancy, or at least when the perfection now exercised in the treatment of disease was unknown, the style and stigma of these plants, under the name of Saffron, were in considerable demand for various purposes, and especially as domestic remedies in measles, etc. As the price was high, the *Crocus* (in the words of one of the old herbals so much in vogue in the last century) yields a very profitable kind of produce, consequently it was cultivated, and thus introduced to its present English habitats. Saffron Walden, in Essex, obtains its prænomen from this fact. At Beverley, in the East Riding, are two grass fields, which have been known to the residents for very many years as the 'Crocus fields,' and there *C. vernus* grows in profusion. Tradition states that they were used for its cultivation for the purpose before mentioned.

With Dr. Payne, I reject the theory that they are the outcasts from gardens, and as such have become established in their present position. All the herbals that I am acquainted with, together with more modern and reliable works on *Materia Medica*, agree that the Saffron *Crocus*—and, I believe, both kinds were utilized for its production—is not indigenous. I think the balance of opinion is greatly in favour of their introduction into our flora.—J. J. MARSHALL, Pharmaceutical Chemist, Market Weighton, R.S.O., Jan. 12th, 1892.

The Crocuses in Nottingham Meadows.—As it is only a question of a few years before the final disappearance of these wild crocuses, it would perhaps be as well to place on record as much information as possible referring to them. Since I came to reside in Nottingham, fifteen years ago, I have seen their haunts gradually, but surely, encroached upon. At the present time the Midland Railway Company are filling up two small fields where they were particularly abundant, whilst on the north side of the line the marshes are gradually extending, owing to the subsidence of the ground consequent on coal mining. Another locality on the opposite side of the Trent at West Bridgford is entirely built over, and soon the only stronghold will be the field adjoining the new Forest Football Club ground, near the Trent bridge.

About fourteen years ago I was curious enough to dig up one or two bulbs for examination, and, to my surprise, I found I had to have recourse to a long table

knife to enable me to reach them ; not one that I attempted to remove was less than six inches under the surface. I think this fact is rather in favour of their being natives to the county, or, at any rate, of their being introduced at a very early date. The theory that they may have been introduced in a load of dung from a garden appears to me to be very improbable. Our local farmers at the present day manure their fields before laying out for mowing, and usually at the time when crocuses are in full bloom. The flower would then naturally attract attention, to its probable rescue. Another fact must not be forgotten. The meadows in which the crocuses grow are particularly liable to spring floods—hardly a year passes without one or two happening—and loose bulbs would consequently be floated away. Rats, I find, are very partial to crocus bulbs.

Considering the fact that our crocuses are found on *both* sides of the Trent, and also the wide area they formerly occupied in the meadows, the evidence in favour of their being natives appears to me to be much stronger than the theory put forward of artificial introduction.

Do not other imported varieties of crocuses deteriorate after the lapse of a few years, and finally cease to flower altogether? I may mention, for the benefit of those who do not know Nottingham, that our crocuses are of the violet variety.—
F. B. WHITLOCK, Beeston.

NOTES AND NEWS.

An important paper by the active Professor of Natural History in the Liverpool College, W. A. Herdman, D.Sc., F.L.S., appears in the Journal of the Linnean Society, Zoology, vol. 23, pp. 558-652, published August 12th, 1891. It is entitled 'A Revised Classification of the Tunicata, with Definitions of the Orders, Sub-orders, Families, Sub-families, and Genera, and Analytical Keys to the Species.'

The Council of the Geological Society has awarded the Murchison Medal to Prof. A. H. Green, F.R.S., of Oxford, and the Lyell Medal to Mr. G. H. Morton, of Liverpool, as having 'deserved well of the science.' Prof. Green was for some years at the Yorkshire College of Science, Leeds, and last year held the position of President of the Yorkshire Naturalists' Union. He formerly took a considerable part in the Geological Survey of the Yorkshire coal-field. Mr. Morton is well known for his 'Geology of the Country around Liverpool,' of which a second and enlarged edition was published last year.

The British Association scheme for the registration of 'type specimens' of fossils is already producing useful results. An annotated list of the figured specimens in the York Museum by Mr. H. M. Platnauer, the Curator, was published last year in the annual report of the Yorkshire Philosophical Society. It is interesting as containing many of the original specimens figured by John Phillips, besides the material of many later memoirs, such as Mr. J. W. Davis' carboniferous fishes. A similar, but longer, catalogue for the Woodwardian Museum at Cambridge, compiled by Mr. H. Woods, assistant curator, has just been issued from the University Press. Among many other special collections in this museum is the splendid series of Yorkshire coast fossils amassed by the late Mr. J. Leckenby, of Scarborough.

A note in the 'New Zealand Journal of Science' for January 1891, page 31, further justifies the fears that we entertained when weasels and stoats were being so actively collected in Lincolnshire for exportation to New Zealand, with the hope of coping with the rabbit-pest. Not only has the balance of Nature at home been disturbed by their withdrawal, but the balance of Nature at the Antipodes is more seriously interfered with, and the remarkable and characteristic ground-birds of New Zealand are fast disappearing before the new-comers, who leave the rabbits alone to feast upon the more palatable game. Mr. G. Mueller, in reporting the results of a reconnaissance survey of the head-waters of the Okuru, Acton, and Burke rivers, Westland, draws a doleful picture of the depopulation of the ground-birds of those regions ; while he points out that the increase of the rabbits meets with a natural check in the physical configuration of the country, so as not to need the introduction of additional enemies.

THE BRITISH ASSOCIATION AT CARDIFF.

REV. E. P. KNUBLEY, M.A., M.B.O.U.,

Rector of Staveley; Delegate representing the Yorkshire Naturalists' Union on the General Committee of the Association.

To the Executive Council of the Yorkshire Naturalists' Union.

GENTLEMEN,—I have much pleasure in bringing before you the following notes of the meeting of the British Association held at Cardiff, from Wednesday, August 19th, to Wednesday, August 26th, 1891, under the presidency of W. Huggins, Esq., D.C.L., LL.D., F.R.S., Hon.F.R.S.E., F.R.A.S.

Yorkshire was officially represented by three delegates, viz.: Mr. B. Holgate, F.G.S., representing the Leeds Geological Association; Mr. M. B. Slater, F.L.S., representing the Malton Field Naturalists' and Scientific Society; and your Delegate, who represented the Yorkshire Naturalists' Union. In addition to the above the following Yorkshiremen served on one or other of the Sectional Committees:—A. H. Allen, F.C.S., G. Brook, F.L.S., Prof. A. Denny, F.L.S., J. Head, M.Inst.C.E., F.C.S., Sir I. Lowthian Bell, F.R.S., Prof. L. C. Miall, F.L.S., F.G.S., Prof. W. Stroud, H. Wager, C. T. Whitmell, M.A., and J. W. Woodall, M.A.

The two evening lectures have an exceptional interest to our county in that they were delivered, the one by Prof. Miall, F.L.S., on 'Some Difficulties in the Life of Aquatic Insects,' and the other by Prof. Rücker, M.A., F.R.S., who discoursed on 'Electrical Stress.'

The handbook which was presented to every member, besides containing much valuable information in regard to the growth and present prosperity of the town of Cardiff, gave many interesting, not to say valuable, notes and lists of the geology of the neighbourhood, and of the Natural History, vertebrate and invertebrate, terrestrial and aquatic, phanerogamic and cryptogamic.

The Council nominated Mr. G. J. Symons, F.R.S., Chairman, Dr. J. G. Garson, Vice-Chairman, and Professor R. Meldola, F.R.S., Secretary, to the Conference of Delegates. These nominations were confirmed by the General Committee at the meeting held at Cardiff on Wednesday, August 19th. The meetings of the Conference were held on Thursday, August 20th, at 3.30 p.m., and on Tuesday, August 25th, at 1 p.m., in the Dumfries Street Proprietary School. Thirty-six delegates were nominated by the Corresponding Societies as their representatives at the Cardiff meeting.

In place of the annual dinner, the delegates and members of the Corresponding Societies' Committee were entertained at supper by the President and Committee of the Cardiff Naturalists' Society at the Park Hall Hotel, on Friday, August 21st, after Professor Miall's lecture. The chair was taken by the President, Dr. C. T. Vachell, who welcomed the delegates and other guests in the name of his Society. Thanks were returned by Mr. G. J. Symons on behalf of the Corresponding Societies' Committee, by your Delegate on behalf of the English Delegates, by Mr. D. Corse Glen on behalf of the Scottish Delegates, and by Mr. Wm. Gray on behalf of the Irish Delegates.

FIRST CONFERENCE, AUGUST 20TH.

The chair was taken by Mr. G. J. Symons, F.R.S., the Corresponding Societies' Committee being also represented by Sir Douglas Galton, Dr. Garson, Mr. W. Whitaker, Mr. W. Topley, and Professor R. Meldola as Secretary.

The Report of the Corresponding Societies' Committee, printed copies of which had been circulated among the Delegates, was, on the motion of the Chairman, taken as read. The subjects treated of in the Report were then dealt with in the order of the Sections.

SECTION A.

Temperature Variation in Lakes, Rivers, and Estuaries.

—Mr. Mark Stirrup stated that the Manchester Geological Society had been of some use in this inquiry. Some few years ago he had solicited the Water Committee of the Manchester Corporation to undertake observations in their large reservoirs at Woodhead, and although these were commenced, a difficulty was soon experienced in finding reliable observers, and they had consequently to be given up. Mr. Watts had, however, taken the matter up with regard to the Oldham reservoirs, and had been at great pains to make trustworthy observations, which had received the warm approval of the Temperature Committee.

Meteorological Photography.—The Chairman stated that some progress had been made during the year with the work of this Committee, and they had been fortunate in obtaining some very good photographs of clouds, lightning, frost effects, etc. He expressed the hope that the Delegates would assist the Committee by securing the co-operation of amateur photographers throughout the country. Mr. Cushing presented two photographs showing the effects of a snow-storm taken during the previous winter.

SECTION C.

Geological Photography.—Mr. O. W. Jeffs stated that the work of this Committee, of which he was Secretary, had made satisfactory progress during the year, and he expressed his thanks to the Corresponding Societies not only for the assistance which they had rendered by supplying photographs, but also for the interest which they had raised in different parts of the country. As a result of the work, an exhibition of photographs had been arranged in the meeting-room of Section C. The total number of photographs received during the year was 300. With respect to amateur photographic societies, Mr. Jeffs stated that their Committee had not yet received from them the assistance which they had hoped. Although a large number of people in England, Scotland, Ireland, and Wales, had helped them, it was necessary to point out that what was now wanted was work of a more systematic character. An excellent example had been set by the Yorkshire Naturalists' Union, which had sent in the largest number of photographs received from any one Society.

The Rev. H. H. Winwood raised a question with respect to the obtaining of copies of the photographs. The amateur photographer took the negatives, but did not wish to be troubled with multiplying prints. He thought it desirable that the name of the person holding the negative should be made known in order that copies of any particular photograph might be obtained.

Mr. Jeffs said that in order to remove any misconception which might exist with respect to the purpose of the Committee, he would state that their first object was to have a typical collection of photographs illustrating the geological features of the country, which would be deposited in some place not yet decided upon. Their next object, which was of great importance, was to enable teachers and lecturers to have copies of any of the photographs that might be desired. In furtherance of this object they had already published in their Report for 1890,* and had continued in their present Report, a list of photographs, giving particulars, and the name of the photographer from whom they could be procured. Any persons wanting copies could obtain them by writing. Of course the fixing of price was a local matter and beyond the control of the Committee; he thought that some of the photographers might be generous enough to present copies in the interests of science. Mr. Jeffs added that their Committee could not undertake to hold the negatives.

Mr. C. J. Watson suggested that copies of the photographs should

* B.A. Report, Leeds, 1890, p. 429.

be circulated among the Corresponding Societies, as they could not tell from the published list which of the photographs would be of use to a local society. He thought that this would be met by having an album of duplicate prints for circulation in the manner suggested.

Mr. A. S. Reid said that he had been engaged for some time in inciting the local societies to take up this work. He found that the amateur geologist was not inclined to add to the weight which he had to carry. The appliances for taking good photographs need not, however, be very heavy, as he had been experimenting with an ordinary hand camera, weighing five pounds, which he had carried over some of the rockiest parts of Scotland. He had contributed a short paper to the 'Photographic Quarterly' for January 1891, showing what could be done with one of these small cameras. Mr. Reid exhibited a print taken from one of these quarter-plate negatives, which he considered quite good enough for preparing larger diagrams from, for teaching and lecturing purposes.

Mr. Holgate expressed his regret that the Committee could not undertake the care of the negatives, as he was of opinion that many photographers would be willing to take two negatives of any section, one for the use of the Committee, for the purpose of supplying prints at some fixed charge to the societies or individuals requiring them.

The Chairman stated that the Meteorological Photographs Committee had never experienced any of the difficulties referred to with respect to the negatives; those who took the photographs were in all cases willing that free use should be made of them by the Committee, and he expressed the hope that in the interests of science it might be the same with kindred subjects.

Sea Coast Erosion.—Mr. Topley said that a mass of information had been accumulated by this Committee, and it had been decided to conclude their work this year. For some parts of the country the records were fairly full, but for some parts very meagre. He mentioned that the French Government had appointed a commission to do similar work, which had adopted the form of questions circulated by this Committee.

SECTION D.

Disappearance of Native Plants.—Mr. D. Corse Glen reported that two papers on this subject had been sent in to the Committee by the Perthshire Society of Natural Science, but these had apparently not been made use of.

Your Delegate, who had read the Report of the Committee in the Biological Section, explained that the Committee probably

intended to confine their Report this year entirely to Wales and the adjoining counties in the West of England. In view of the meeting being at Edinburgh next year, it was likely that the Perthshire lists would be taken for the next Report.

Destruction of Wild Birds' Eggs.—Dr. Vachell said that the Cardiff Naturalists' Society, as some of the delegates might have heard, had taken up a case in 1890 with respect to the destruction of birds and eggs on the island of Grassholme, in the Bristol Channel. A Bill had been introduced into Parliament last year by Mr. Pease, but this had unfortunately not been proceeded with. It appeared to him, and to the members of the Cardiff Society, that the protection, not only of the birds, but also of the eggs during the breeding season, was a very important matter, and he should be very glad if the delegates would give some practical aid with the object of furthering the Bill.

Mr. Kermode said that it might interest the meeting to know that in the Isle of Man they did protect the eggs as well as the birds, and he hoped that they would succeed in getting similar protection in Great Britain.

SECTION E.

Teaching of Geography in Primary Schools.—Mr. Sowerbutts distributed among the delegates a report on geographical education which had been presented to the council of the Manchester Geographical Society, and which contained evidence of very great improvement in the teaching of this subject. They had communicated with all the primary schools in Lancashire and Yorkshire, offering to conduct examinations and to give prizes. He added that if the delegates would refer to the report which he had circulated, and communicate with him, he should be in a position to give a report at the next meeting.*

Ordnance Maps.—The Chairman stated that it would be remembered that at the Leeds meeting last year a strong recommendation had been sent up to the Council as to the cost, the antiquity, and the difficulty of procuring copies, of the Ordnance Maps. The Council had communicated with Mr. Chaplin, of the Board of Agriculture, and they had heard unofficially that material alterations would be made in the desired direction, so that these maps would be made very much more accessible than heretofore. He added that, so far as his experience went, nineteen-twentieths of the people

* Communications to be addressed to Mr. Eli Sowerbutts, 44, Brown Street, Manchester.

of this country did not know how to make use of an Ordnance Map.*

Mr. Holgate said that it would be desirable to have the contours of different heights printed different colours. It would then be easy for teachers to get their pupils to trace out these contours, and cut them out in cardboard. For teaching geography in an interesting way they could not, in his opinion, have anything better than a raised map, made in this manner.

Mr. Mills said that it was only fair to state that he had never written to Stanford's for any map without receiving it by return of post. He had never experienced any difficulty in obtaining maps.

Mr. Gray was of opinion that the maps should be sent gratuitously to schools. The children often had no idea of what a map meant, and they should have the maps of their own districts on different scales, in order that they might gain a better knowledge of geography.

Mr. Whitaker said that there was no difficulty in getting one-inch maps with the contours printed on them, as the Ordnance Survey was now engaged in producing such maps. The work required time, however, as the copper plate of a one-inch map took two years to engrave. If the Government could be forced into using photozincography, the maps might be produced more rapidly. He knew that nearly all the one-inch maps were to be procured with contours, although not with hill-shading. Processes were now being tried at Southampton for printing in the hill-shading in a transparent ink, which would not obscure the lettering, the roads, rivers, or contour lines, etc. The chief delay occurred in the engraving, but the maps were always dated. With respect to the six-inch maps, Mr. Whitaker said that local surveyors or anyone who could pace accurately, could fill in new features for themselves.

Mr. Sowerbutts expressed his belief that the delay was mainly in the method of producing the maps. He had been surprised at the facility with which the Ordnance Maps were produced in Brussels, for about fourpence each, directly from the zinc plates.

* The following resolutions were referred by the General Committee to the Council for consideration and action, if desirable, at the Cardiff meeting:—

1. That the publication of the one-inch and six-inch Ordnance Survey Maps is, in the interests of science, urgently required at the earliest possible date, no less than in the interests of industry, manufacture, and technical education.

2. That steps be taken, and provision made, for keeping the Ordnance Maps up to date.

3. That the Maps should be made more accessible to the public, and should be sold at a lower price, as is the case in nearly all other official publications, such as Admiralty Charts, Blue Books, etc.

Mr. Kenward expressed his admiration for the one-inch Ordnance Map. He said that he had made forty or fifty journeys on foot through every part of North Wales, and had never found the map at fault.

SECTION H.

Aid in Anthropological Exploration.—Dr. Garson stated that at last year's Conference he had called attention to the existence of a Committee for giving advice on this subject. As an illustration of the evil arising from neglecting the assistance thus offered, he mentioned a case which had come under his notice during the year, in which a large barrow had been opened at a cost of £100. A large number of valuable skeletons had been found, but only the skulls and a few long bones of at most three of the skeletons had been sent to him to work up; the rest of the bones had not been preserved. Thus a barrow with a number of skeletons had been simply destroyed and the money wasted. The exploration had been done as a piece of local work, and if application had been made to the Committee of Aid, they could have given directions, or sent someone down to assist the Local Committee. Dr. Garson pointed out that the Committee of Aid did not propose to take the work out of the hands of, or to lay claim to the credit due to, local effort; they wished only to give assistance and advice. He, therefore, urged the delegates to bring the existence of this Committee under the notice of their Societies.

Dr. Vachell said that he could bear out the remarks made by Dr. Garson. Some Roman remains had been found at Llantwit Major, amongst them being some very fine skeletons. Permission had been obtained to carry on excavations, but they were uncertain whether they would be stopped, and ultimately they were prevented from carrying on the work. Several skulls were obtained, but not the remaining portions of the skeletons, as they had no means at hand of preserving the bones, and in a few days the latter crumbled to pieces. The skulls were sent to General Pitt-Rivers, who reported that these were of no use without the other parts of the skeletons.

Registration of Prehistoric Remains.—Dr. Garson said that the Secretary of this Committee, Mr. J. W. Davis, was not present at the Cardiff Meeting, but a report had been presented to Section H.

The Rev. J. O. Bevan stated that the Woolhope Naturalists' Field Club had decided to prepare a map similar to that which had been prepared for Kent. They were going to appoint representatives in every parish, and to request them to send particulars of any objects of interest, and to enter the positions of such objects on the Ordnance Maps. He had been empowered by his Society to ask any of the

delegates who might have seen other schemes, to furnish any hints that might be of use before they issued their own prospectus.

Dr. Garson suggested that those who were undertaking this kind of work should communicate with the Secretary of the Prehistoric Remains Committee of the British Association,* as that Committee was making a record of all ancient remains throughout the country, and they had a system which it would be desirable to adopt in order to bring all the records into harmony.

Mr. Whitaker requested the delegates to communicate any discoveries of or concerning ancient remains to the Ordnance Survey. They would often find errors of omission in the maps, or the periods of antiquities definitely stated, although still under discussion by archæologists. If errors of this kind were communicated to the Director-General of the Ordnance Survey, they would be attended to. As an instance, he mentioned that a member of the Hampshire Field Club had discovered a British earthwork which was not on the map; this omission had been made known to the Survey, and it was now being or would be surveyed and inserted.

Mr. Kenward stated that he had been able to do a similar thing in one case. He sent to Sir Charles Wilson an account, with a tracing showing the lines of an ancient camp that had been known for a century, but which had not been recorded on the map. As a result of the information which he had given, the camp had been duly entered on the map.

SECOND CONFERENCE, AUGUST 25TH.

The chair was taken by Mr. G. J. Symons, F.R.S., the Corresponding Societies Committee being further represented by Sir Douglas Galton, Mr. Whitaker, Dr. Garson, and Professor Meldola as Secretary. Twenty-four delegates were present.

SECTION A.

Temperature Variation in Lakes, Rivers, and Estuaries.
—Dr. H. R. Mill, the Secretary of this Committee, stated that last year the Committee had been recommended to draw up its fourth and final Report. The Report, which had been presented, took the form of a discussion upon the observations which had been made during the past three years. He was glad of the opportunity of making the present remarks, because the observations had been made chiefly through the agency of the various Corresponding Societies. Their Committee had been appointed just about the time when the Conference of Delegates, under the auspices of the

* Mr. J. W. Davis, Chevinedge, near Halifax.

Corresponding Societies' Committee, had taken shape, and it was one of the first pieces of work recommended to the Secretary of the Conference to be taken up. The object was to ascertain by observations, taken twice daily, the temperature of rivers, estuaries, and lakes in all parts of the kingdom. At Knaresborough, Mr. Paul had made some of the most interesting observations of all, because he had taken the readings in conjunction with the air temperature, and also the earth temperature, thereby bringing out in a very interesting way the great activity of the surface water in responding to changes in the atmosphere. This observer had also made a number of most admirable observations under the ice during the severe winter of last year. He found that in the first spell of freezing the average temperature under the ice was under 34° . There was a thaw and another frost, and it fell to 33° . Another thaw followed, and then a third frost, and it was only during the third period of freezing that the average temperature of the water came down to 32° . It was very fortunate that the work of the Committee had been extended over last year, and that the observers had met with such favourable conditions. He thanked the delegates, the observers, and the secretaries for the completeness with which the observations had been carried out. In several cases the observers had carried on the work on their own account, and he trusted that such observations would be continued and extended. Dr. Mill, in conclusion, expressed his willingness to render all possible assistance to such observers.

The Chairman said that for some reasons he regretted that the work of this Committee had come to an end, but he thought that their efforts had prepared the way for future organisation. He did not see why the Royal Meteorological Society, which dealt with the question of air and earth temperatures, should not deal with water temperature. Neither did he see why the Scottish Meteorological Society should not deal with this subject. He was inclined to hope that these two Societies might make some arrangement for conducting and co-ordinating such observations.

Meteorological Photography.—Mr. A. W. Clayden,* the Secretary of this Committee, stated that although a large number of circulars had been sent to the various local Societies asking for contributions of meteorological photographs, very few had as yet responded. The majority of the photographs which had been sent had come from isolated observers. He therefore urged the delegates to bring the subject before their Societies, with a view to securing organised co-operation.

* Arthur W. Clayden, Warleigh, Palace Road, Tulse Hill Park, London, S.W.
March 1892.

SECTION B.

Inquiry into the Condition of the Atmosphere of Manufacturing Towns.—Professor Meldola said that he had received a letter from Mr. J. R. Ashworth, the Secretary of the Rochdale Literary and Scientific Society, asking whether it would be of use for the British Association to appoint a Committee for this subject, which was attracting some attention in Manchester at the present time.

Mr. Mark Stirrup said there was a Committee in Manchester busy collecting information with respect to the exceptional atmosphere of that town, and its effect on vegetation.* The investigation was going on, and the report would be published by the Society; if any of the Delegates desired copies, he would be happy to forward them on application. He suggested that other towns might be induced to carry on similar work.

The Chairman said that the Manchester Corporation had recently started a meteorological observatory in the centre of the town, under the guidance of Dr. Tatham. He referred to the use of ozone papers, which had been shown by chemists to be coloured by several other gases besides ozone. Thirty years ago he had made some experiments in London, with identical test-papers, which had been exposed in different parts of the town. He found that, in whichever direction the wind blew, the air coming from the country always coloured the papers more or less, but air which had passed over the town always lost the power of colouring the papers. It appeared to him that some simple test of this kind was wanted, if it could only be made reliable. Mr. Symons also called attention to the fact that the Royal Horticultural Society had appointed a Committee for investigating the atmosphere of London in relation to fog and plant-life.

Dr. Mill referred to the excellent work which the late Professor Carnelley had carried out in connection with the determination of the number of micro-organisms present in the atmosphere of rooms, etc.

SECTION C.

Erratic Blocks.—The work of this Committee was not this year formally brought before the delegates, but the nineteenth Report, which contained numerous contributions from Yorkshire, was read in the Geological Section, and the Committee was re-appointed. Dr. Crosskey, in presenting the Report, said that, owing to landscape gardening, burying, blasting, and building,

* The Town Gardening Committee of the Manchester Field Naturalists' and Archæologists' Society. The Secretary is Mr. Alfred Griffiths, 16, Kennedy Street, Albert Square, Manchester. [Sec. Corres. Soc. Comm.]

boulders were rapidly disappearing, and that the Reports of the Committee would soon be the only evidence of the existence of glaciated blocks or of the direction of the ice.

Geological Photography.—Mr. A. S. Reid said that their Committee had applied for a grant for the purpose of mounting the photographs, and a systematic method had been agreed upon, so that the prints could be mounted and handled without injury. The subject of lantern slides had been mentioned, but they had decided that the collecting of these did not come within their province.

Earth Tremors.—The Chairman stated that this Committee had during the past year been collecting apparatus and diagrams of apparatus for recording earth tremors. They had not yet come to any decision as to the best form of instrument, and they would be glad of any suggestions from those interested in the subject.*

SECTION D.

Disappearance of Native Plants.—Your Delegate reported that the Committee had been reappointed. From what had been said at the last meeting of the Conference, he said that he might conclude that it was the wish of the delegates that the reports from the North of England and Scotland should be incorporated in next year's report. The Committee for investigating the Invertebrate Fauna and Cryptogamic Flora of the British Isles had not been reappointed.

Destruction of Wild Birds' Eggs.—Dr. Vachell said that it had been suggested to him by Professor Meldola, that the action of the Committee might be strengthened if the matter were again brought under the notice of the local Societies throughout the country, through the delegates at the present Conference, and he therefore detailed the facts which had led to the proposal for the formation of a Committee. In March, 1890, the Cardiff Naturalists' Society had visited the island of Grassholme, and while there observing the habits of some of the wild birds, a number of young men from one of H.M. steamships had landed and shot puffins and gulls, and wantonly destroyed a large number of the eggs. The affair had been fully reported in the 'Daily Graphic' at the time. As there seemed to be a wholesale destruction of wild birds' eggs going on, the matter had been brought forward last year in Parliament by Mr. Pease, and at the time he (Dr. Vachell) had done what he could to bring it under the notice of the local Societies. He had also called the attention of their Members of Parliament to the subject, but the latter had taken the view that it was not very serious, and that when boys were

* The Secretary of the Committee is Mr. C. Davison, 38, Charlotte Road, Birmingham.

home for their holidays they could not be prevented from taking birds' eggs. Mr. Pease's bill proposed to render the destruction of wild birds' eggs prohibitory under a penalty not exceeding 5s. each egg, and left action to county councils in England, and the magistrates and quarter sessions in Ireland. They did not wish to pin themselves to the exact text of Mr. Pease's bill, but they wanted some legislation for the better protection of wild birds' eggs. He therefore moved: 'That a Committee be appointed to take steps for furthering legislative enactment for the better protection of wild birds' eggs.' *

Mr. Mills was opposed to the resolution, because, in his opinion, there were a great many birds which did harm. He thought that it was necessary for the welfare of the country and the preservation of game that such birds should be destroyed.

Professor Leipner said it was not proposed to include all birds in the Bill; it left liberty of action to the county councils, and he was in favour of its becoming law.

Mr. Chisholm Batten expressed his belief that there would be some difficulty in getting the law efficiently carried out.

Mr. Hanbury approved of the resolution, and said that some good would be done even if the law were only partially carried out.

The Chairman pointed out that there had no doubt been an abuse, and it should, if possible, be checked. The proposal was as yet in its first stage, and all action would rest with the county councils and the justices, to whom he thought the proper administration of the law might very well be left. As it stood, the proposal did not appear to him to do harm to anybody's interests, and it did not follow that because such a law might be in existence any person who took a bird's egg would necessarily be fined 5s.

Mr. Slater remarked that gamekeepers were in the habit of destroying birds of prey because the latter destroyed the game. The balance of nature was thus upset, and the small birds allowed to increase and to destroy the crops.

Dr. Vachell said that the proposal to form a Committee had been seconded in Section D by Canon Tristram, who had strongly advocated three Bills which had passed through the House of Commons, and whose extensive practical knowledge of the subject was beyond question.

The resolution was finally put to the meeting and carried with one dissentient.

* The following is the resolution passed by the General Committee: 'That Mr. Thomas Henry Thomas (Chairman), Dr. C. T. Vachell (Secretary), Professors W. N. Parker, Newton, and Leipner, Mr. Poulton, and Canon Tristram, be a Committee to consider proposals for the Legislative Protection of Wild Birds' eggs.'

Popularising of Natural History Studies.—Prof. Merivale said that it might interest the delegates to learn what was being done in Newcastle to popularise natural history, especially among young people. They had a ‘Dicky Bird Society,’ numbering some 220,000 members, and articles were published from time to time in the ‘Newcastle Weekly Chronicle.’ One hundred and twenty species of birds had already been described and illustrated, and the whole series, when complete, would be republished in a separate form.

Mr. Sowerbutts also alluded to the useful dissemination of geographical knowledge through the same publication (‘Newcastle Weekly Chronicle’), and spoke in high terms of the illustrations, which, especially in the case of the birds, had been executed with remarkable success by some photo-mechanical process.

Botanical Demonstrations for Teachers.—Prof. Leipner called attention to this subject. He had invited all teachers in public, private, and Board Schools to attend two demonstrations at University College, Bristol. His plan was to select three or four familiar wild flowers and demonstrate their structure by means of diagrams on the blackboard. The experiment had been tried one year, and had been so successful that he had been asked to repeat it a second year.

SECTION H.

Description of Museum Specimens.—Dr. Garson said that it was very necessary for all workers in anthropology to know where specimens were preserved, especially in the case of local museums. It was sometimes impossible to visit these museums personally, and the best thing under the circumstances was to have a good description of the different specimens. This was a subject which the members of local societies might very well take up. Not only should the implements and other finds be described, but the conditions under which they were found should be carefully and completely recorded.

Registration of Prehistoric Remains.—Dr. Garson announced that this Committee, of which Mr. J. W. Davis was the Secretary, had been reappointed. He urged upon the delegates the importance of assisting in this work, and asked those who desired information as to the method of recording, to communicate with Mr. Davis.

Aid in Anthropological Exploration.—Dr. Garson made some further remarks on this subject in continuation of the observations which he had made at the last Conference. He said that there was a general notion that in the case of human remains, the skull was the only part of the skeleton worth preserving. This was a great

mistake. The skull was undoubtedly valuable, but no less valuable were the other parts of the skeleton, particularly the long bones and the pelvis. Great care should be taken to preserve all bones and to keep the bones of each skeleton separate, so that the stature and other characteristics of each individual skeleton could be ascertained. He recommended skeletons to be sent to anthropological museums in preference to being preserved by individuals.

Mr. Kenward said that, with reference to the registration of ancient remains, it would be a good thing if Mr. Davis would issue a short circular of instructions, so as to secure uniformity of results. He mentioned that the Society of Antiquaries had been working in the same direction and had appointed local secretaries in different parts of the country.

The Rev. J. O. Bevan also expressed a desire for information respecting the best forms of prospectus to issue on behalf of the Woolhope Club, which, as he had stated at the last Conference, had decided to take up the subject of the registration of ancient remains.

The Chairman remarked upon the desirability of having uniformity of method in this work, and thought that the Society of Antiquaries would be the most efficient body for organising the whole system.

Dr. Garson agreed with this, and, in reply to a question by Mr. Kenward, he stated that the simplest means of estimating the stature of a body from the remains was to measure the femur and the tibia, making the measurements with extreme care and using the metric system. The spike on the upper surface of the tibia was not to be included in the measurement, and the femur was to be measured along its greatest length, the head and inner surface of the lower end of the bone lying in the same plane.*

Interchange of Publications.—Among subjects of general interest discussed at the Conference was the importance of the Corresponding Societies freely interchanging their transactions, proceedings, and other publications. It was pointed out that, while printing, the additional cost of an extra 50 or 100 copies would be very trifling. Many of the Corresponding Societies are already in the habit of sending their publications to kindred Societies. The Hampshire Field Club deposits all such publications in the Southampton Public Library, so as to render them freely accessible.

On the motion of Mr. Holgate, a vote of thanks was passed to the Chairman for presiding at the Conferences.

* Communications for the Committee of Aid to be addressed to the Secretary of the Anthropological Institute, 3, Hanover Square, London, W.

The Report of the Committee on the migration of Birds, of which Mr. John Cordeaux is Secretary, was read by your Delegate. The Committee reported that very considerable progress had been made in the past year in the Digest of the observations of nine years, which is being prepared by Mr. W. Eagle Clarke. The Committee were re-appointed.

The Committee, of which Mr. J. W. Davis is Chairman, was appointed to complete the investigation of the cave at Elbolton, near Skipton, in order to ascertain whether remains of palæolithic man occur in the lower cave earth. They presented a Report of their explorations down to the end of December, 1890.

Dr. Garson read a paper on some human remains found on the estate of Sir Tatton Sykes, at Howe Hill, Duggleby, in Yorkshire.

In the second report of the Committee which was appointed to arrange for the collection, preservation, and systematic registration of photographs of geological interest in the United Kingdom, the Committee report that up to July 1891, they had received and registered 552 photographs. In the detailed list which is appended, Yorkshire occupies an honourable position, both on account of the number of the contributors and on account of the number and the scientific value of the photographs sent. Moreover, the Secretary of the Geological Photograph Committee of the Yorkshire Naturalists' Union cannot fail to be pleased and encouraged by the following extract from the Report:—'Special efforts have been made to induce the local Societies in each county to organise systematic surveys for the furtherance of the work. This method has been pursued with great success in Yorkshire, the members of the Geological Photographic Committee of the Yorkshire Naturalists' Union having again contributed a large and valuable series of prints. Many of these subjects refer to sections which cannot be reproduced, as, for instance, fossil trees laid bare in quarrying and excavations for the foundations of buildings now covered over.'

In conclusion, it is hoped that in the variety of subjects which have been touched upon, some, at any rate, may have awakened interest, or renewed enthusiasm, and that the members of the Union having seen in what channels their energies may be most usefully directed, may be encouraged to take their full share in working for the advancement of science.

NOTES AND NEWS.

We observe that after a year's trial of a monthly issue, the Editor of the 'International Journal of Microscopy and Natural Science' has returned to the old quarterly form; and in doing so has in many respects improved the journal, which now appeals more particularly to microscopists than before.

BAGOUS PETRO FROM ASKHAM BOG, YORK.

REV. CANON W. W. FOWLER, M.A., F.L.S.,

Hon. Secretary to the Entomological Society of London.

IN my British Coleoptera, Vol. V., p. 288, I have described *B. petro* as from various localities; it turns out, however, that only the specimen recorded from Askham Bog, York, is really to be referred to this species, and that the remainder must be referred to *B. limosus* of our collections, which is synonymous with *B. petrosus* W.C.; the insects very much resemble one another in form and appearance, and owing to this and the similarity of names, confusion has arisen in more than one instance; thus Dr. Sharp gives *B. petro* as synonymous with *B. limosus* in the second edition of his Catalogue, p. 31. The true *B. petro* Herbst, however, is a very interesting insect, as representing a sub-genus, which ought certainly to have generic value: this is *Helminthimorphus* Cussac, which is distinguished by having the first joint of the club (the ninth of the antennæ) glabrous and shining, and as long as all the following united, whereas in *Bagous* proper the first joint is shorter and pubescent. My single specimen is unique as British; it was captured by myself in Askham Bog on August 10th, 1880, in company with the late Archdeacon Hey. I have written to the Rev. W. C. Hey to ask if he possesses any Bagoi from the locality, but he has none. I shall be much obliged if any collectors will kindly allow me to look at any specimens of the genus from localities north of Birmingham or Derby. The very rare *Bagous diglyptus* Boh. (represented as British by two specimens) was taken by my friend Mr. J. T. Harris near Burton-on-Trent. *B. tempestivus* has been recorded from Repton, Burton-on-Trent, and *B. glabrirostris* has occurred in Scotland, but with these exceptions all, or nearly all, the records are from localities south of the Midlands; one specimen only has been found in Ireland, which has been referred to *B. lutulosus*.

The species of *Bagous* may be obtained by examining the damp moss at the edge of pools; they may often be found in the water-net. They are very sluggish and easily passed over, but when one is found there are probably many others in its company, as the species are, in most cases, more or less gregarious.

LINCOLN, February 18th, 1892.

SOME NORTH-COUNTRY QUARTZITES.

ALFRED HARKER, M.A., F.G.S.

UNDER the name quartzite are included rocks which, while having the same general characters, have originated in more than one way. Confining ourselves to the limited and local occurrences of quartzites in the North of England, we may say that, in every case, the rock has once been a quartz-sandstone or grit, and has been altered to its present condition. The original fragmental nature has been partially obscured by the constituent grains becoming less distinct to the eye, and the whole has become compacted into a more or less homogeneous, stubborn rock. There are two different processes by which this result may be brought about, and although quartzites of the two classes may appear almost identical in a superficial view, the distinction becomes in most cases very apparent when thin slices of the rocks are examined under the microscope. The two processes are cementation and metamorphism.

It has been more clearly recognised of late years than formerly, that many quartzites have been produced without the operation of anything that is implied in the ordinary usage of the term metamorphism; that is, without either high temperature or great pressure. The interstices between the original grains of such a rock have been simply filled by new quartz deposited from solution in water. That the percolating water which carried this silica in solution was not necessarily at a high temperature is proved by the fact that the process of cementation is actually going on at the present day in some localities, where exposed surfaces of sandstone or grit are seen to be superficially converted into glassy-looking or enamel-like quartzite. The microscope shows that, in some cases, the new quartz is deposited entirely independently of the old grains; very often, however, the old grains themselves grow by the deposition on each of new material, which attempts to reconstruct the crystal of which the grain was a fragment. The grains grow until they interfere with one another, and the interstices are entirely filled in. Optical examination of a thin section of a quartzite thus formed, shows that the fringe of new quartz surrounding any original grain is in crystalline continuity with it; but the more limpid appearance of the new deposit usually enables the outlines of the old grain to be detected. Some of our Carboniferous sandstones have been converted into quartzites of this type. An excellent example occurs in the basement beds of that formation on Roman Fell, near Appleby.

It may be noticed that when the growth of the quartz-grains as described above, has not proceeded so far as to completely fill the interstices, the enlarged grains sometimes show the external form of perfect crystals. This was noticed long ago by Dr. Sorby, in the Penrith Sandstone, and beautiful specimens may be obtained on Penrith Beacon. In sandstones which contain fragments of felspar, these, like the quartz, sometimes show a secondary enlargement, but the phenomenon is much less common. It is seen occasionally in the Roman Fell quartzite.

The quartzites formed by thermal metamorphism, where sandstones come into contact with some large body of igneous rock, have often a very similar general appearance to those referred to above, but the different origin is clearly shown in thin slices. Here there is no distinction of original nucleus and secondary fringe; the outlines of the original grains are completely obliterated, and the slice is seen to be an irregular mosaic of perfectly clear grains, which interlock sometimes in quite an intricate fashion. It is evident that the whole rock has been recrystallised in place. One good example is furnished by a rock collected in Teesdale, where a fine-grained light-coloured sandstone of Carboniferous age comes into contact with the Great Whin Sill. The locality is on the Durham side of the river, about a quarter of a mile above High Force. The recrystallised grains interlock quite irregularly, or, in some places, are separated by little patches of an ill-defined, scaly, chloritic mineral. The original sandstone was partly feldspathic, and on examining the quartzite carefully in section, we see that the clear grains are not exclusively of quartz. Here and there the lamellar twinning of a triclinic felspar is to be seen. New-formed felspar of this kind is perfectly limpid in appearance, and in some quartzites, felspar and quartz are to be distinguished only by special optical tests, the grains of the former mineral being not always twinned. Some of the crystalline grains in the Teesdale rock contain minute cavities occupied by glass, a not infrequent feature of thermal metamorphism.

In impure sandstones and grits, metamorphism may give rise to other minerals than the simply recrystallized quartz and felspar. At Packhouse Hill, near Shap Wells, the grits of the Coniston Flags come within about 600 yards of the Shap granite, and are highly metamorphosed. A thin slice shows, under the microscope, the usual mosaic of clear grains, mostly quartz but with some felspar (apparently orthoclase); but, in addition, there are numerous little rounded granules, colourless or faint yellow, and very brightly polarising. These are referred to a pyroxene, rich in lime, a

common mineral in some cases of metamorphism ; in this instance built up from the dusty decomposition-products in the original grit, chiefly calcite and kaolin.

It is well known that in some regions massive quartzites and quartz-schists are found associated with various crystalline schists, and their precise mode of origin is a question not to be lightly handled. The absence of such rocks in our northern counties enables us to avoid a thorny question. There is, however, one other point about quartzites worthy of notice. Owing to their highly durable character, they are very frequently represented among the pebbles in conglomerates. The white and 'liver-coloured' quartzites in the Bunter Pebble-beds of Lancashire and Cheshire are an instance. Possibly a careful examination of these would enable some varieties to be identified with certainty, and so throw additional light on the problem of the source of the materials.

NOTES—MAMMALIA.

A White Seal on the Lincolnshire Coast.—I am indebted to Mr. G. H. Caton Haigh, of Grainsby Hall, for the following note. Stubbs, the wild fowler of Tetney, states that about the middle of December he saw a perfectly white seal sitting on the mud by Tetney Haven. He punted to within fifteen yards, but his gun missed fire, and the seal slipped away before the shot struck and did not appear again. He says it was so white that in the distance he thought it was a swan. He did not notice any dark marks on its back or muzzle. Stubbs is so well acquainted with the appearance of seals on the banks that it is very unlikely he should make any mistake in describing the colour of the present visitor, which was, in all probability, an albino *Phoca vitulina*. Two or three years ago he shot a grey seal (*Halichærus gryphus*) near the same place. This is now in Mr. Haigh's collection. The skull was sent at the time to Mr. Southwell, of Norwich, for identification.—JOHN CORDEAUX, Eaton Hall, Retford, Jan. 29th, 1892.

Young Otter at Thorp Arch.—In British Quadrupeds (2nd Edition, p. 176) Prof. Bell writes :—'The female [Otter] . . . produces from three to five young ones in March or April.' A young Otter has recently passed through my hands which must have been born either late in December or very early in January. A young friend of mine was fishing in the Wharfe at Thorp Arch on the 6th of January last, when he heard a loud and prolonged squeaking beneath his feet. On examination he found that the sound proceeded from a hole under the roots of a tree on the river bank. The hole was enlarged by means of a boat hook, and at the lateral depth of about three feet the passage was expanded into a chamber, wherein lay a single baby Otter, squeaking with might and main. The little creature was removed and fed upon new milk, which it sucked from a child's feeding bottle with great gusto. During the temporary absence of my friend the animal had been fed—it is supposed—on sour milk, which resulted in its death on the 10th, four days after its removal from the nest. It was at once forwarded to me. It would, I think, be about ten days old, as its eyelids were scarcely unsealed. It was, therefore, probably born some time between Christmas and New Year's Day. It seems probable, also, that only one young one was produced, as the animal was far too young to be able to leave the nest.—EDGAR R. WAITE, The Museum, Leeds, 13th February, 1892.

March 1892.

ADDITIONS TO THE NORTH LINCOLNSHIRE FLORA.

P. FOX LEE,

Dewsbury; Hon Secretary, Botanical Section, Yorkshire Naturalists' Union.

SEVERAL times during the past six or seven years, at varying seasons, I have enjoyed a day's botanizing on the sandhills and marshy places of the coast-line north and south of Skegness, and am glad to be able to make a few additions to the list enumerated by Mr. J. Burt Davy in connection with an excursion of Lincolnshire naturalists at Gibraltar Point, pp. 49 to 54 of 'The Naturalist' for February of the current year. Keeping pace, I suppose, with the advancing intelligence and gymnastic tendencies of the times, a fine stretch of the sandhills north of the town, on which I have seen a forest of *Hippophaë rhamnoides* L. ablaze with ripe fruit, and the plants of *Senecio jacobæa* L. smothered with the larvæ of the Cinnabar Moth (*Euchelia jacobææ*) has now stretching over it the ugly limbs of a switchback railway! The following species have been verified by Mr. Arthur Bennett, of Croydon, and I give them, hoping that a county 'flora' may one day be compiled.

Trifolium fragiferum L. Occurs plentifully amongst the grasses bordering a dyke behind the sandhills north of Skegness.

Juncus compressus Jacq. sub-sp. **J. Gerardi** Loisel. On marshy ground.

I believe all the *Scirpus maritimus*, so abundant in the dykes, is the var. *compactus*, with compact spikes and enlarged tubers on the roots. All I have gathered is so verified by Mr. Arthur Bennett.

Carex arenaria L., **C. glauca** Murr., **C. distans** L., **C. hirta** L. In marshy places.

NOTES AND NEWS.

The well-known Chief Curator of the Liverpool Free Public Museum, Mr. T. J. Moore, C.M.Z.S., has (we are glad to see) recently been elected an Associate of the Linnean Society of London.

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We have received from Messrs. Macmillan & Co. a prospectus of a new monthly magazine—'Natural Science'—to be devoted more especially to the interests of Biology and Geology. The first part will be published on March 1st, and is to contain articles from well-known scientists, including three of our own friends and supporters, viz., Mr. A. Smith Woodward, F.L.S., who will write on 'The Evolution of Fins'; Mr. James W. Davis, F.S.A., whose subject is to be 'English Lake Dwellings'; and Mr. Thomas Hick, B.A., B.Sc., who will contribute 'Palæo-botanical Notes.' The other writers are—Messrs. Frank E. Beddard, M.A., F.R.S.E.; J. J. H. Teall, M.A., F.R.S.; R. Lydekker, B.A., F.Z.S.; G. A. Boulenger, F.Z.S.; J. Walter Gregory, B.Sc., F.G.S.; and A. B. Rendle, M.A., F.L.S. The work will also contain reviews and notices of some new books, News of the Universities, Museums and Societies, Obituary, and Correspondence.

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REPTILES AND AMPHIBIANS, 1889-1890.

THE present instalment has been compiled and edited by
WM. DENISON ROEBUCK, F.L.S.

Previous instalments of this Bibliography have appeared as follows:—

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 „ 1885, „ Aug. 1886, pp. 241-242.
 „ 1886-7-8, „ July 1889, pp. 221-224.

- ANON. [not signed]. York S.W.
Yorkshire Dialects [as used in Calder Vale from Wakefield upwards; Askerd—dry askerd=land lizard (*Zootoca vivipara*); watter askerd=newts (*Triton* and *Lophinus*)]. Yorksh. Folk-Lore Journ., Part 1, Oct. 1885, p. 14.
- ANON. [signed 'Lyulph']. Cumberland.
Adder [*Pelias berus*] **Crossing a River** [the Eden, at Wetheral, 39 yards across]. Field, Oct. 5th, 1889, p. 504.
- ANON. [not signed]. Isle of Man.
Phenological Observations [in Isle of Man; Frog (*Rana temporaria*) spawn, Feb. 26th, hatched April 1st]. Yn Lioar Manninagh, No. 5, April 1890, p. 161.
- ANON. [not signed]. York N.E.
Ayton Association.— . . . **May 28th** [*Pelias berus*, *Anguis fragilis*, *Zootoca* captured on a walk]. Nat. Hist. Journ., June 15th, 1890, xiv. 89.
- J. ARKLE. Furness.
Notes from the North-West Counties [at Witherslack Mosses, July 23rd, 1888, Vipers (*Pelias berus*) were common impediments, and Lizards (*Zootoca vivipara*) swarmed in drier places]. Ent., Dec. 1888, xxi. 317.
- JAMES BACKHOUSE, jun. York S.E.
The Yorkshire Naturalists' Union at Kirkham Abbey and Acklam Brow [on Sept. 4th, 1889; *Rana* and 'Newt' noted]. Nat., Nov. 1889, p. 341.
- W. D. BRAITHWAITE. York S.W.
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- W. D. BRAITHWAITE. York S.W.
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- E. CHEAL. York S.W.
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- March 1892.

- WILLIAM CROSS. Lanc. W.
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- RILEY FORTUNE. York N.W.
[Reptiles, etc., observed by] the Yorkshire Naturalists' Union at
 Leckby Carr [18th May, 1891; *Zootoca* and *Triton cristatus*]. *Nat.*,
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- RILEY FORTUNE. York Mid W.
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Nat., Sep. 1891, p. 265.
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T. taniatus, *Rana* and *Bufo*]. *Nat.*, Nov. 1891, p. 333.
- LINNÆUS GREENING. Lanc. S. and W., Cheshire.
British Frogs and Toads . . . Bufo calamita (Natterjack Toad)
 [a detailed account of its occurrence on the Wallasey sand-hills, at Formby
 and at Garstang]. *Young Nat.*, Nov. 1888, ix. 214-217.
- LINNÆUS GREENING. Lanc. S.
Bullfrog preying on Natterjack [(*Bufo calamita*) from the sand-hills near
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 Durham, Lanc. S., Cumberland.
- W. S. GRESLEY. Durham, Lanc. S., Cumberland.
Schedule of Particulars of the Discovery of Live Toads [*Bufo vulgaris*],
Frogs [*Rana temporaria*], &c., in Coal, &c. [giving in tabular form dates,
 localities, depth, circumstances, etc.; about twelve Derbyshire occurrences
 and single ones for other counties; two instances are of Newts]. *Sci. Goss.*,
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- JAMES HARDY. Cheviotland.
Report of the Meetings of the Berwickshire Naturalists' Club for the
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Yorkshire Proverbs an' Speyks ['All of you masters,' as the Toad (*Bufo*
vulgaris) said to the harrow teeth; That man would stall (tire) a Toad aat].
Yorksh. Folk-Lore Journ., Part II, April 1888, pp. 218 and 224.
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Address of the Retiring President [mentions *Zootoca vivipara* as Manx,
 and inquires whether *Lacerta agilis* exists on the Island]. *Yn Lioar*
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- OSMUND W. JEFFS. Derbyshire, York S.W., Cheshire, Lanc. S.
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poraria and for *Zootoca vivipara*]. *Vannin Lioar*, January and April 1889,
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- P. M. C. KERM]ODE. Isle of Man.
Address by the Retiring President . . . Delivered . . . March 11,
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Zootoca vivipara, and *Lacerta agilis*, as the only Reptiles and Amphibians
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- H. WALLIS KEW. Linc. N.
Lincolnshire Marsh Drains [at Mablethorpe ; *Bufo calamita* numerous].
 Nat. World, October 1886, p. 182.
- E. P. KNUBLEY. York N.E.
**The Yorkshire Naturalists' Union at Robin Hood's Bay [21st June, 1889 ;
Rana the only amphibian noted].** Nat., August 1889, p. 229.
- E. P. KNUBLEY. York N.W., Durham.
**The Yorkshire Naturalists' Union in Upper Teesdale [August 1889 ;
 colour-variation in *Rana temporaria* described].** Nat., Sep. 1889, p. 282.
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 and one in Beaumont Park].** Nat., July 1889, p. 212.
- GEO. T. PORRITT. York S.W.
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**Vipers [(*Pelias berus*) at Wheel Birks, near Stocksfield-on-Tyne ; noted
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- J. H. SALTER and N. NEAVE. Lanc. S.
Manchester [Phenological] Notes [first spawn of *Rana temporaria*].
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- EDGAR R. WAITE. York Mid W.
**The Yorkshire Naturalists' Union at Harrogate [i.e. Fullwith and
 Rudding, 13th July, 1889 ; *Rana* and *Bufo* noted].** Nat., Aug. 1889, p. 237.
- EDGAR R. WAITE. York S.E.
**The Yorkshire Naturalists' Union at Lowthorpe near Driffield [26th May,
 1890 ; *Lophinus punctatus*, *Rana*, *Bufo*, noted].** Nat., July 1890, p. 206.
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**The Yorkshire Naturalists' Union at Bretton Park [14th June, 1890 ;
Lophinus punctatus and *Rana* noted].** Nat., August 1890, p. 225.
- EDGAR R. WAITE. York Mid W.
**Vertebrates of the Western Ainsty [Mid-West Yorkshire ; the distribution
 of *Tropidonotus natrix*, *Vipera berus*, *Lacerta vivipara*, *Anguis fragilis*,
Triton cristatus, *T. teniatus*, *Bufo vulgaris*, and *Rana temporaria* stated].**
 Nat., March and April, 1891, pp. 83 and 110-111.
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**[Reptiles and Amphibian noted by] the Yorkshire Naturalists' Union at
 Hayburn Wyke [11th July, 1891 ; *Vipera*, *Zootoca*, and *Rana*].** Nat.,
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- EDGAR R. WAITE. York S.E.
**[Amphibians noted by] the Yorkshire Naturalists' Union on the Wolds
 [at York Dale and Sledmere, 3rd August, 1891 ; *Bufo*, *Rana*, *Triton*
teniatus].** Nat., Oct. 1891, pp. 301-302.

W. H. WARNER.

Linc. N. and S.

The Common Snake (*Tropidonotus natrix*.) [one, 34 inches long, hooked in the Witham in 1881 by an angler fishing for perch with a frog]. Young Nat., January 1889, p. 6.

C. H. B. WOODD.

York Mid W.

Vertebrate Fauna of Langstrothdale, Mid-West Yorkshire [giving particulars as to *Lacerta vivipara*, ? *L. agilis*, *Vipera*, *Anguis*, *Triton taeniatus*, and *Rana*]. Nat., May 1891, pp. 138-139.

To take a general survey of what has been achieved in this department, it may first be remarked that the records are nearly all of a casual nature, only the papers by P. M. C. Kermode, Edgar R. Waite, and C. H. B. Woodd being capable of being regarded as synoptic or systematic works. The records (whether casual or systematic) being, however, brought together as in the following table, which includes the contents of all the bibliographies, it will be seen that they furnish a certain amount of material for faunistic work:—

	Linc. S.	Linc. N.	Notts.	Derbysh.	Cheshire.	Lanc. S.	Lanc. W.	York S.E.	York N.E.	York S.W.	Yrk.M.W.	Yrk.N.W.	Durham.	Nthbl. S.	Cheviotld.	West. & F.	Cumbrld.	I. of Man.	
<i>Tropidonotus natrix</i>	53	54	..	..	58	59	..	..	..	63	64	..	66	..	..	..	..	..	..
Ringed Snake ..																			
<i>Vipera berus</i>	58	..	60	61	62	63	64	..	66	67	68	69	70	..	..
Viper ..																			
<i>Zootoca vivipara</i>	..	54	..	..	58	59	..	61	62	63	64	65	66	..	..	69	..	71	..
Common Lizard ..																			
<i>Lacerta agilis</i>	58	59	..	..	..	..	..	..	..	..	..	..	..	..	71
Sand Lizard ..																			
<i>Anguis fragilis</i>	58	..	..	..	62	63	64	..	66	67	..	..	..	..	..
Blind-worm ..																			
<i>Triton cristatus</i>	..	54	..	..	58	..	..	61	62	63	64	65	66	..	..	..	..	..	..
Great Crestd. Newt																			
<i>Triton taeniatus</i>	58	59	..	61	..	63	64	..	66	..	..	..	..	..	..
Smooth Newt ..																			
<i>Triton palmipes</i>	60	..	..	63	..	..	..	..	..	..	..	..	..
Palmate Newt ..																			
<i>Bufo vulgaris</i>	57	58	59	..	61	62	63	64	..	66	67	..	..	70	..	..
Common Toad ..																			
<i>Bufo calamita</i>	..	54	..	..	58	59	60	..	..	..	64	..	..	..	..	..	70	..	..
Natterjack Toad																			
<i>Rana temporaria</i>	..	54	56	57	58	59	60	61	62	63	64	65	66	..	..	..	70	71	..
Common Frog ..																			
	1	5	1	2	10	7	4	6	6	9	9	3	8	3	1	2	4	3	

We need hardly say that we shall be glad to give an article dealing with the range of Reptiles and Amphibians in the North of England which shall embody all the definite records which our readers will send us for the purpose of filling up the blanks in this table, if they will be good enough to send them. It will be seen that while the naturalists of Yorkshire and Cheshire have but little to do to complete their reptilian lists, notes are still required from South Lincolnshire, Notts., Northern Northumberland, Derbyshire, Westmorland, etc., for even the common species.

A CONTRIBUTION TO THE FLORA OF NORTH (OR LAKE) LANCASHIRE.

LISTER PETTY,
Ulverston, Lancashire.

THE list that follows is a selection from notes made in an attempt to extend the Lancashire localities in Mr. J. G. Baker's 'Flora of the Lake District,' 1885. Only those plants are included whose Lond. Cat. (Ed. 8) census is 40 or under. So far as possible, no locality already published is given, except to confirm some record or note that a plant is disappearing. In these cases references are given. To Mr. Baker and Mr. J. Cosmo Melvill I am much indebted; of the new plants, specimens have been seen by one or other of those gentlemen where their confirmation was felt to be necessary, or where I found myself at fault. Mr. Wm. Duckworth has kindly allowed four new plants, found by him, to be included.

Plants new to North Lancashire are marked *.

'The Flora' = Mr. Baker's Flora of the English Lake District.

I. NATIVES.

- Crambe maritima.** Walney Island, as in the Flora. Almost eradicated now, 1891.
- Arenaria verna.** Hampsfell. Miss Hodgson's list, 1874, recorded a double-flowered form. I have not been able to find it.
- Lepigonum marginatum.** Foxfield Saltmarsh. Shore Oyster ground to Barrow.
- Rubus suberectus.** Bank of the Duddon, near Duddon Bridge.
- Saxifraga aizoides.** Coniston, about Tilberthwaite; Coniston, below Levers Water.
- ***Peplis portula.** Side of a small tarn on Coniston Moor, 1888. (Recorded from all the divisions of Yorkshire. In South Lancashire, Cumberland, and Westmorland. Watson's Top. Bot., 1883, and Baker's Flora, 1885).
- Circæa alpina.** Coniston, head of Lake, as recorded by Miss Beever in the Flora.
- Asperula cynanchica.** Reake Hill, Cartmel; and on Humphrey Head and Hampsfell, as recorded in the Flora.
- Senecio viscosus.** Walney Island (west side). Mr. F. A. Lees records it in the Flora on the east side. Shore bank between Rampside and Aldingham.

Statice rariflora. Oyster ground, near Barrow.

Statice auriculæfolia. Sandgate Marsh, Cartmel.

***Blackstonia (Chlora) perfoliata.** Near Cark. Mr. W. Duckworth, 1891. (Recorded from all the divisions of Yorkshire. In South Lancashire and Westmorland. Watson's Top. Bot., 1883).

Erythrea littoralis. Low Marsh, near Raven Winder.

Mertensia maritima. Walney, as in the Flora, but not so plentiful as a few years ago.

***Echium vulgare.** On the raised beach at Bardsea, 1888 and 1890, not seen there in 1891. (Recorded from four divisions of Yorkshire (if not from all), South Lancashire, Cumberland and Westmorland. Watson's Top. Bot., and the Flora.)

Atropa Belladonna. On Humphrey Head (E. Green in the 'Phytologist,' 1861, in an article on 'Plants of Holborn Hill,' i.e. what is *now* part of Millom). Still there, 1891. On the shore near Canon Winder (Aiton, 1843). See the Flora. Still there, 1891. Shore W. of Humphrey Head (Mr. Baker). Still there, 1891.

Veronica hybrida. High up (quite out of my reach), on steep W. face of Humphrey Head. One large piece, 1890. The locality in the Flora is Mr. Hall's in 2nd Ed. of Withering, 1787-92. Misprinted 3rd Ed. in the Flora, 'South End of Humphrey Head.'

Atriplex laciniata Linn. (*Arenaria*, Woods). Shore between Rampside and Roosebeck, as recorded by Woodward in 2nd Ed. of Withering. Seen by me there 1888. Walney, west shore.

Atriplex portulacoides. Saltmarsh, south of Holme Island, near Grange. Walney Island, as recorded by Mr. Bailey in the Flora.

Orchis pyramidalis. First recorded by Mason in Aspland. Omitted in the Flora. Near Cark (Mr. W. Duckworth, 1891).

Allium scorodoprasum. On the banks of the Lickle, near Broughton-in-Furness; on the bank of a ditch in a field near the Duddon.

Agropyron (Triticum) littorale. Marsh Grange Marsh, near Askham. Shore, Rampside. Shore, Bardsea.

***Hordeum murinum.** Shore bank, Rampside, 1888. (Recorded from four of the divisions of Yorkshire, South Lancashire, queried in Cumberland by Watson's Top. Bot.; 'Flimby, near Maryport' (Dickinson) in the Flora.)

II. ALIENS, DENIZENS, COLONISTS, ETC.

Amongst these plants I have had some difficulty in deciding what to include, and only hope the selection may prove interesting. In *Crocus*, remembering Dr. Payne's query, I have given all the explanations I could get of the origin in this district. I think there is no doubt that the plant is *not* indigenous in Britain.

Berberis Darwinii. Pointed out to me by Mr. W. Duckworth in Brick-Kiln Lane, near Ulverston. The remains of an old hedge. Ought this to be called naturalised?

Meconopsis cambrica. On the road-side between Beck Bottom and Wood End, near Penny Bridge. In this instance a long way from any house. At Coniston it appears on the road to Brantwood, and, passing there, goes down to the Lake, about half a mile beyond Mr. Ruskin's residence. Escaped from cultivation.

Alyssum maritimum. On the sea-wall north of Kents Bank. An escape from the garden patch of signal-box East of Grange. Where Hindson found it I do not know. The Flora, p. 34.

Iberis amara. Coniston, in a wood near Hollin Bank. Probably an outcast from the garden there.

Saponaria officinalis. Newlands Bottom, near Ulverston (Mr. W. Duckworth, 1890-91). I saw it in 1888, on road-side outside a house near Rampside. Probably an escape. Mr. Baker—Flora, 45—says 'Rare.'

Geranium phæum. Greety Gate, near Broughton-in-Furness. Now (1891) almost, if not quite, extinct.

Impatiens noli-me-tangere. Banks of the Lickle, near Broughton-in-Furness; near Duddon Bridge; on both Cumberland and Lancashire sides of the river; Cumberland, above the bridge; Lancashire, below, with *Mimulus*. It was reported by J. Robson from the Cumberland side. (See the Flora, p. 64). Mr. Baker, amongst the Westmorland records, says:—'First recorded by Lawson.' So it was, and from a definite Lancashire locality as well.

Ribes rubrum. Coniston, side of Yewdale Beck. In hedge, road-side between Hawkshead and Hannakin. Seen in fruit in both cases.

Sedum rupestre. Walls, Broughton-in-Furness, as recorded by Miss Hodgson (North or Lake Lancashire, 1874, and in Journal of Botany, 1874, from which the articles were reprinted). 'Introduced,' says Miss Hodgson, and from its position this is very probable. Walls at Hartley Ground, near Broughton-in-Furness, probably planted.

- Lonicera Xylosteum.** In a wood at Lindale-in-Cartmel, a fine specimen.
- ***Petasites fragrans.** Naturalised on a road-side near Grange (Mr. W. Duckworth, 1890). A very fine bed, and some distance away from the houses. Road-side, near Aldingham (Mr. W. Duckworth, 1889). A few plants only. A garden escape.
- ***Doronicum pardalianches.** Naturalised, near Swarthmoor Hall (Mr. W. Duckworth, 1890).
- ***Hieracium aurantiacum.** Side of Coniston Lake, 1888. A few plants only. Away from any house or garden ; but, of course, an escape. It is the 'Joseph and his Brethren' of old gardens.
- ***Vinca major.** A garden escape on the Ulpha road. Naturalised, and in some quantity when found in 1887. In 1890 I found most of it gone—carried away.
- Polemonium cœruleum** (White-flowered form). Side of Coniston Lake. Several plants. A garden escape.
- ***Symphytum officinale.** Hedge-side, near Sand Gap Farm, near Foxfield, 1887. (Recorded from all divisions of Yorkshire, South Lancashire, and Westmorland ; Watson's Top. Bot., 1883 ; Cumberland, in the Flora, 1885.) Outside the old Vicarage at Woodland, on road-side, 1887 (this with purplish corolla, but I do not feel justified in saying var. *patens*).
- ***Lycium barbarum.** Road-side, outside old Vicarage at Woodland, 1887. Probably some prunings have been thrown on road-side and have rooted. In a hedge, outside a cottage, on road-side between Ulverston and Arrad Foot. Probably an escape, 1891. Outside Wyke House, at north end of Humphrey Head ; growing on the limestone scar. An escape, but quite naturalised now (1888-1891).
- ***Linaria viscida** Moench. (**L. minor** Desf.). Railway embankment near Ulverston. Mr. W. Duckworth, 1891. (Recorded from all divisions of Yorkshire, and Westmorland. Watson's Top. Bot., 1883. Cumberland, Hodgson in Baker's Flora, 1885.)
- ***Euphorbia exigua.** In a carrot field at Rampside, 1888. (Recorded from all divisions of Yorkshire, South and West Lancashire, Westmorland and Cumberland. Watson's Top. Bot., 1883. Baker's Flora, 1885.)

I mark this as new because I know of no printed record of it. If any reader knows of such for North Lancashire, I shall be obliged for the information.

Crocus vernus. In a field, near the hamlet of Mansriggs, near Ulverston. No explanation forthcoming as to its introduction here, known quite 25 years. Pointed out to me by the late

Mr. James Atkinson. In a field on the Old Hall estate, near Ulverston, said by the tenant there to have come with ashes from the town. In this case a large area is covered by it. Fields about Springfield, near Ulverston, said by a gardener to have been introduced by 'throwing onto the land the sweepings of the potting-shed,' which contained bulbs that had been forced and so useless, that is from a gardener's point of view. But, if so, why have no white or yellow varieties survived? Aiton (1843) records it from 'near Swarthmoor Hall.' From this locality I have not seen or had it reported. But as Springfield and Swarthmoor are adjoining estates, it *may* be Aiton's locality. Fields about the Lund. This may be Aiton's (1843) locality, 'Field at Dragley Beck, near Ulverston.' But it is difficult to say now, as this portion of Ulverston has, of course, changed since 1843.

***Narcissus major** (Linn.), and **N. major** fl. pl. (Curt.). Naturalised in many of the old orchards in Furness, and but seldom escaping. See Watson's Top. Bot., 1883, p. 398, last paragraphs of *Narcissus pseudo-narcissus*.

***Narcissus poeticus** fl. pl. Thoroughly naturalised, on the bank of a stream in a field at Ashlack Hall. So far as is known the plant is not, and has not been, grown in the garden there. It is no exaggeration to say 'abundant.' Known there for 40 years, I am told, and plentiful then. In a meadow near the Duddon; a few plants only now. Although far away from any house or garden, it is an escape. Known in this locality for the last 25 years. The person who found it, a relation of mine, told me that 'there were plenty then,' i.e., 25 years since. Mr. Baker wrote—'Evidently double *Poeticus*.'

Galanthus nivalis. In a wood near Broughton Mills. In a wood near Broughton-in-Furness. A few plants in a field near Bortree Stile, Ulverston; probably carried with rubbish from garden there. I have seen the double cultivated form on the hedge bank, on road-side, outside a farm-house garden, from whence it had escaped. I give it so that it may be entered as most certainly a garden plant, and by no amount of imagination can it be called naturalised.

In regard to these bulbous plants, it may be stated that I am quite aware of, and agree with, what Mr. Lees says in his Flora of West Yorkshire about their dispersal and their claims.

In conclusion, I have seen *Ribes sanguineum* in a hedge on a road-side, and *Phalaris canariensis* on ballast on railway; but these plants cannot be included.

NOTE—MOLLUSCA.

Additional varieties of *Unio tumidus*.—A variety of *U. tumidus* has just been verified by M. J. R. Bourguignat. Description: Shell medium size, smooth, marked with alternate longitudinal bars of brown and green. It is now entered in the French scientific lists as *U. wilcocki*. The variety was originally named in Wilcock's MSS. as *U. tumidus* var *bicolor*. It is not uncommon in the river Trent. The original name should be retained. Another variety, *Unio tumidus* var *constricta*, has also been acknowledged by Bourguignat. Description: Shell dark coloured, slightly incrassate, both valves constricted. This form occurs in the Barnsley canal near Wakefield, and is not very rare. It is analogous to the var. *constricta* of *Anodonta cygnea*. I have not seen any constricted forms of *U. pictorum*.—GEORGE ROBERTS.

NOTES AND NEWS.

The 'Entomologist' for April, 1891, p. 104, contains an obituary notice of the late Robert Calvert, of Bishop Auckland, signed 'R. S.'

Some little time ago Mr. W. E. Collinge, Editor of our contemporary, 'The Conchologist,' was appointed assistant in Biology at St. Andrew's University, under Prof. W. C. McIntosh, F.R.S., etc.

A report upon Yorkshire Entomology for 1891 is in preparation, and Mr. A. E. Hall, F.E.S., Norbury, Sheffield, Secretary of the Entomological Section of the Yorkshire Naturalists' Union, wishes us to state that in December last he sent a number of circulars to entomologists in Yorkshire asking for lists of notable captures, etc., made during the year. While thanking those gentlemen who have kindly responded, he wishes to ask those who have not to do so at their earliest convenience, as he is anxious to proceed. Any notes, however trivial, connected with Entomology in Yorkshire will be thankfully received.

It would be difficult to estimate the value of the influence which Dr. George Johnston, the celebrated Naturalist of Berwick-on-Tweed, has exerted upon the development of Natural Science in Britain during the century which is now drawing to a close, more especially as the founder of the oldest and still one of the best and most flourishing of our Field Clubs, the Berwickshire Club.

It is, therefore, with peculiar pleasure that we draw attention to the fact that his daughter, Mrs. Barwell Carter, has collected and arranged a volume of 'Selections from the Correspondence of Dr. George Johnston,' which is now in the press, and is edited by James Hardy, LL.D., Hon. Secretary to the Berwickshire Naturalists' Club. Among the letters given are those to P. J. Selby, Joshua Alder, Rev. David Landsborough, Mrs. Alfred Gatty, Prof. C. C. Babington, William Thompson, Belfast, Dr. J. E. Gray of the British Museum, John Price, M.A., Rev. Thomas Riddell, M.A., C. W. Peach, Archibald Hepburn, W. H. Lizars, John Van Voorst, etc. Besides presenting the contemporary condition of Natural History and its Literature, the Letters supply the early History of the Berwickshire Naturalists' Club and the Ray Society for the publication of rare and expensive books on Biological Science, of both of which Societies, Dr. Johnston, in conjunction with his friends, was the originator. The notes, by the Editor, contain Biographical Notices of upwards of 130 of Dr. Johnston's correspondents, and others referred to in the Letters. The book will be published in Edinburgh by Mr. Douglas, in one volume, demy 8vo, containing more than 500 pages. A Portrait will also be given, and a Memoir, written by Dr. P. W. Maclagan in 1855. The price to subscribers will be 10s., whose names will be received by Mrs. Barwell Carter, The Anchorage, Berwick-on-Tweed. The volume is appropriately dedicated to the Club of which Dr. Johnston was founder and first president; and it is to be hoped that its members will loyally and heartily support the venture, and that all who appreciate its subject will do the like.

NEW YORKSHIRE EARTHWORMS;
WITH AN
EMENDED LIST OF NORTH BRITISH SPECIES.

REV. HILDERIC FRIEND, F.L.S.,

Idle, Bradford; Author of 'Flowers and Flower Lore,' etc.

AFTER bestowing a large amount of time on the task of reducing our worm-lore chaos to order, I have at length been able to determine that hitherto unrecorded species exist in considerable numbers in Airedale. The first has been previously noted as British, but I have no information respecting its distribution in these islands at present which is sufficiently authentic to be relied upon, except that which my own researches have supplied. I have no doubt, however, but that it occurs in many localities in rich soil and on the banks of rivers where plenty of vegetable mould occurs. I have found it myself by the lake at Clumber, as well as at Keighley and Apperley, and have received it from Hull, Northants, Gloucestershire, Devonshire, and elsewhere.

The worm under discussion was first described by Eisen in 1873, and named by him *Allolobophora subrubicunda*. As his original description has, so far as I am aware, never appeared in any English journal, I subjoin the Latin portion for the guidance of future collectors.

ALLOLOBOPHORA SUBRUBICUNDA.

Corpus cylindricum, antice aliquid depressum, postice attenuatum. *Lobus cephalicus* magnus, pallidus, dimidiam partem segmentis buccalis occupans. *Cingulum* magnum, perspicuum, e 7 segmentis sæpe confectum. *Tubercula pubertatis* tria in segm. 27, 28, 29, in utroque latere cinguli. *Setæ* ubique binæ approximatae, sed intervallo aliquanto majore quam in *Allolobophora foetida*. *Segmenta* circiter 110. *Longitudo* circiter 90 mm. (Eisen, 'Om Skand. Lombr.,' in *Öfversigt af Kongl. Vetén. Akad. Forh.*, 1873, No. 8, p. 51).

Following the systematic diagnosis is an account of the worm in Swedish, which supplies a number of characters by means of which this species may be distinguished from the Brandling, which is one of its nearest allies. It is evidence of the little interest which has been taken in this branch of science that though this species of earth-worm has been known to British anglers for at least a couple of centuries

as the gilt-tail, no one has attempted to determine it scientifically. Moreover, both at home and abroad the worm has been so often confused with another new Yorkshire species (*Allolobophora boeckii*) that the literature of the subject is inextricably tangled. It is necessary to remark in passing that the method of notation employed by Eisen differs from that in use among English systematists, which will account for the apparent differences between his figures and those which I shall employ in the description which follows.

A. subrubicunda is a delicate, soft worm about 2 inches in length—sometimes larger in a well-developed specimen, but averaging $1\frac{1}{2}$ inches in length when placed in spirits. It is of a warm brown colour on the back, with a ruddy-yellow tail, and prominent light-coloured girdle, which normally covers segments 26 to 32. The adjoining segments are, however, often affected, so that the girdle or clitellum may appear to cover them as well. The under-surface of the worm's body is flattened and light-coloured, the lip is colourless and tender, and only partially cuts the first segment or peristomium. The dorsal pores are easily seen, the first being found behind segment 5. This is expressed by the fractional sign $\frac{5}{8}$. The male pores are on segment 15, and the next segment behind is swollen or tumid in adult specimens, so that it may easily be mistaken for the segment carrying the male pores. Penial setæ occur on segment 9; there is a glandular ridge extending from the male pore to the girdle, and under the latter organ the band forming the *Tubercula pubertatis* extends from segments 28 to 30. The total number of segments in an adult specimen ranges from about 90 to 120, or an average of 100. There is a tendency for the setæ to form eight rows, instead of falling into four couples, as in the common earthworm. In this it resembles *A. boeckii* more nearly than any other species. Like the Brandling, Mucous Worm, and Green Worm, it exudes a yellow fluid when irritated, but while the foregoing can usually eject it from all the segments, this species secretes it only from the head and tail.

The internal characteristics are interesting, but I shall not allude to them, as external distinctions suffice to separate it definitely from all others, however closely they may resemble it at first sight. I am, moreover, publishing a series of articles in which critical genera will be compared and contrasted, and this species will then come in for fuller treatment.

As already indicated, this worm is often confused with *Allolobophora boeckii* (Eisen), which also is now to be recorded for Yorkshire. I discovered it (as reported in 'The Naturalist,' 1891, p. 277) on the banks of the river Wharfe, between The Strid and Bolton Abbey, on July 7th of last year, but as the species is well known to helmin-

thologists, I shall be content to give simply those characters by which it can be distinguished from the gilt-tail. Owing to the distance between the setæ, which are so divided as to appear like eight separate rows instead of four couples, Eisen made it the type of a new genus, and called it *Dendrobæna*. This generic title is now, however, discarded, as the gilt-tail, and other species of *Allolobophora*, have the same peculiarity in a somewhat less marked degree. The worm is darker and hardier than the gilt-tail, and somewhat shorter. The true position of the girdle in the type appears to be at present unknown, for different writers have confused at least three species in their diagnoses, and I am just now a little in doubt as to which claims precedence. My specimens have the girdle extending from segments 27 to 33, with *Tubercula pubertatis* forming a ridge on 28, 29, 30; but I have other specimens from Northants which are very similar in general form, yet appear to be the same as *A. arborea* Eisen, which has only recently been split off from *A. boeckii*, and was largely accountable for the confusion which has existed. I have taken the Tree Worm near Carlisle, and have recently received it from Gloucestershire. I need more material for settling the question definitely.

I have found the golden variety of *Allurus* at Calverley during the past year, which must be added to the record in 'The Naturalist,' 1891, p. 15.

In 1880 Oerley, a Hungarian naturalist, described a new worm as variety *lacteus* of the common earthworm (*Lumbricus terrestris* L., var. *lacteus* Oerley) as occurring at Buda-Pesth. Now, no true *Lumbricus* is other than a dark, purplish colour, and Oerley's worms have in more than one case been found to belong to the genus *Allolobophora*, though named by him *Lumbricus*. This variety is one of those which come under this head, and I have therefore named it *Allolobophora lactea* n. sp. It is not only new to Yorkshire, but new to Britain, and was found by me at Apperley Bridge, at a spot which has yielded some very valuable results to my careful and repeated investigations. I can do no more here than place the worm on record, because, while I have abundant material for determining the species absolutely, I am disposed to think it is either identical with or closely allied to *Allolobophora longa* Uhde—a species which abounds around Carlisle, and this point will be determined in my series of articles on critical species.

I append a revised and enlarged list of all the species of earthworm at present known to me as occurring in the North of England, but I still have materials on hand which will yield some additions to our fauna when properly worked up.

A LIST OF EARTHWORMS KNOWN TO OCCUR IN
THE NORTH OF ENGLAND AND SOUTH OF SCOTLAND, WITH
HABITATS FOR EACH SPECIES.

1. **Lumbricus terrestris** Linnæus. Widely distributed. Idle, Worksop, Lancaster, Carlisle.
2. **Lumbricus rubellus** Hoffmeister. Apperley, Carlisle, Keighley, Cockermouth.
3. **Lumbricus purpureus** Eisen. Carlisle, Annan, Idle.
4. **Lumbricus rubescens** Friend. New to science; Idle, 1891.
5. **Lumbricus eiseni** Levinsen. Carlisle. (I have discovered since writing this article that this is not a true *Lumbricus*, but have yet to determine its exact position.)
6. **Allolobophora longa** Uhde. Plentiful at Carlisle, Idle.
7. **Allolobophora fœtida** Savigny. Kendal, Apperley, etc.
8. **Allolobophora turgida** Eisen. Idle, Carlisle, Northants, etc.
9. **Allolobophora celtica** Rosa. Langholm, N.B.
10. **Allolobophora mucosa** Eisen. Kendal, Apperley, etc.
11. **Allolobophora chlorotica** Savigny. Widely distributed. Carlisle, Cockermouth, Idle, Apperley.
12. **Allolobophora boeckii** Eisen. Bolton Woods.
13. **Allolobophora subrubicunda** Eisen. Apperley, Hull, Keighley, Clumber.
14. **Allolobophora trapezoidea** Dugès. Carlisle, Idle, etc.
15. **Allolobophora arborea** Eisen. Near Carlisle, 1890.
16. **Allolobophora lactea** Friend. Apperley, January 1892.
17. **Allurus tetraedrus** Savigny. Widely distributed. Carlisle, Keighley, Idle.
18. **Allurus** var. **luteus** Eisen. Carlisle and Calverley.
19. **Perichæta indica** Horst. Kendal, introduced with foreign plants, 1890.

I believe this is the most perfect list of properly authenticated Earthworms that has ever been published in England, and I shall be glad of the assistance of my readers in making it even more complete.

Worms intended for identification should be sent in ventilated tin boxes with soft moss, addressed The Grove, Idle, Bradford.

NOTE—LEPIDOPTERA.

Lepidoptera in Yorkshire: A Correction.—Please make the following corrections. At p. 288 of *The Naturalist* for 1891, line 11 from bottom, read *Selenia illunaria* instead of *S. illustraria* in the list of captures of larvæ near Cloughton; and at p. 334, line 4 from bottom, read *S. illunaria* instead of *S. illustraria*, in the list of captures in Edlington and Wadworth Woods.—
A. E. HALL, Sheffield, Nov. 18th, 1891.

YORKSHIRE NATURALISTS' UNION.

30th ANNUAL REPORT, for 1891.

IN presenting the 30th Annual Report and Statement of Accounts the Executive has to congratulate the members upon a year of steady and continued progress, and valuable work, the publications have been quite up to the average, while the interest evinced in the excursions has been greater than in previous years, and a large amount of work has been achieved by the various Committees appointed for special research.

The Meetings held during the year have been five in number as usual, one for each division of the county.

The districts chosen for investigation and the dates of the meetings were as follows:—

May 18th, Whit-Monday, Leckby Carr.

June 20th, Saturday, Grass Wood.

July 11th, Saturday, Hayburn Wyke.

August 3rd, Bank Holiday Monday, York Dale and Sledmere.

September 16th and 17th, Wednesday and Thursday, Doncaster, for a Fungus Foray in Edlington and Wadworth Woods.

The usual descriptive circular for each excursion was issued to members and associates. A new feature was introduced in the shape of a small map showing the particular tract of country to be investigated, and it is believed that this departure was generally appreciated.

The opening excursion of the year was organised for the investigation of the lower portion of the drainage area of the river Swale. The meeting, which was presided over by Mr. Charles Brownridge, F.G.S., President of the Leeds Geological Association, was held at Brafferton, whence the woods at Baldersby and Leckby Carr and the district around Cundall and Azenby were explored by a large number of members, associates, and friends.

Grassington was selected for the second meeting, when the general body of members confined their attention to Grass Wood, while those Geologically inclined examined the Reef Knolls at Cracoe and Thorpe, under the competent guidance of Mr. R. H. Tiddeman, M.A., F.G.S. Mr. G. T. Porritt, F.L.S., President of the Entomological Section, occupied the chair at the general meeting. One result of this excursion was that several additions were made to the published fauna of the district.

The third meeting was held at Hayburn Wyke for the exploration of that part of the Yorkshire Coast lying between Hayburn Wyke and the Peak, including the Undercliff, Hayburn Beck, Staintondale,

Cloughton Moor, and Wyke. The general meeting was presided over by Mr. C. P. Hobkirk, F.L.S., President of the Botanical Section.

Wetwang-on-the-Wolds was the scene of the August meeting, which was arranged for the examination of York Dale and Sledmere. On this occasion, the Entomologists were successful in verifying an important record made by the Rev. E. Maule Cole, M.A., F.G.S., viz.—the occurrence of the Marbled White Butterfly, a species which had been regarded as extinct in Yorkshire for many years. At the meeting, held under the chairmanship of the Rev. Wm. Fowler, M.A., an ex-president of the Union, a hope was expressed that measures might be taken to protect so interesting and conspicuous an Insect in its last remaining Yorkshire habitat, a hope in which your Executive most earnestly join.

On September 16th, a Fungus Foray took place in the neighbourhood of Doncaster, at which the Union had the benefit of the presence of Mr. George Masee, F.R.M.S., and Prof. C. B. Plowright, F.L.S. The Foray was quite as successful as its predecessors of '81 and '88, and was the means of adding about thirty species of Fungi to the West Yorkshire List.

In connection with this Foray, and on the day following it, the last meeting of the year was held for the exploration of the woods at Edlington and Wadworth. The chair was occupied by the Rev. Wm. Fowler, M.A.

On all the excursions, arrangements had been made to enable photographers to have the use of 'Dark Rooms' in which to change their plates if required. The Hon. Secretaries would have no objection to repeat these arrangements another year if thought advisable, but they would mention that so far as they are aware, the privilege has not on any single occasion been made use of.

As on previous occasions the Yorkshire landowners have again been kind enough to assist in every possible way the work which the Union takes in hand, as have also the Railway Companies whose lines run through the county. The Union being in especial indebted to the North Eastern Railway Company.

The Societies which constitute the Union are now thirty-eight in number, a decrease of one from last year; this is caused by the Keighley Scientific and Literary Society having ceased to exist, and by no new Societies having been admitted during the year.

The Statistics which the Secretaries of the different Societies have again been kind enough to furnish, show a slight diminution in the number of associates, the aggregate membership of the thirty-eight societies now amounting to 2,488, a decrease of 92. Adding to this the number of direct members, the total numerical strength is 2,950.

The Membership now stands at 462, being 23 Life Members, 6 Honorary Life Members, and 433 Ordinary Members, a net increase of 22 upon the previous year. During the year 67 new members have been elected. In this connection, the Union's last annual meeting, held at Halifax, was very largely instrumental in enlisting increased support in that town and neighbourhood, no less than thirty-seven new members, seventeen of them being Life Members, being added on that occasion.

The Union has had to deplore the loss of a few earnest supporters by the decease of John Harrison, of Wilstrop Hall, John Wilson, J.P., of Seacroft, Owen Platt, of Saddleworth, John Spurling, Wakefield, John Trickett, Dacre Banks, and Dr. Wm. Young of Malton.

The Financial Position of the Union is much more satisfactory than in previous years, your Hon. Treasurer having been able by unremitting attention and the valued and efficient aid of the local Hon. Treasurers, to collect a large portion of the arrears of subscriptions which were outstanding twelve months ago. There are now no arrears in several of the collecting districts, and the amount of arrears actually owing is due from a comparatively small number of members.

The Publications of the Union have been as in former years.

The Transactions.—Parts 15 and 16, which are ready, will be sent out together before the end of the present month. This brings the issue of Transactions down to the end of 1890. Part 17, due for 1891, will be devoted to the continuation of Mr. Baker's 'North Yorkshire,' and Part 18, for 1892, will in all probability be occupied by Mr. Robert Kidston's Second Report upon the Yorkshire Carboniferous flora. There would still remain a large amount of MSS. actually in hand, which alone the want of funds prevents your Executive from sending to the printers.

The Library continues to increase by means of donations and exchanges, and it has been found necessary to re-arrange the books in order to economise the limited amount of space available at the Leeds Mechanics' Institution, the directors of which have also placed the Union under considerable obligation by their kindness in allowing the use of their Council Room for the meetings of your Executive. The Union has suffered some inconvenience in consequence of the vacancy caused by Mr. Brownridge's resignation of the office of Librarian last year not having been filled up. Your Executive has now the pleasure of announcing that a successor has been found in Mr. Percy H. Grimshaw.

The Sections of the Union have steadily carried on their work and it is to their systematic organisation that the success of the field excursions is largely due. Their efficiency has been materially

assisted by the adoption of a system of Annual Minute Books, which at the close of each year are to be deposited in the Library, when a new one will be issued. An attempt is being made by the Hon. Secretaries to recover all the Minute Books, Papers, and records of the various sections for previous years, and it is hoped that all past Sectional officers will aid in this endeavour by returning such as may be in their possession.

The Committees of Research have continued their investigations during the year with more or less satisfactory results, and have thoroughly maintained the reputation which the Union enjoys as a distinctively working body.

The Committee for collecting and recording Geological Photographs, of which Mr. James E. Bedford, F.G.S., is the Secretary, has again worked with remarkable success, and from the second report of the British Association Committee it appears that a considerably larger number of Photographs has been sent in from Yorkshire than from any other county. Many of them are of particular value as they refer to Sections which cannot again be photographed, such as fossil trees laid bare in quarrying and excavations for the foundations of buildings, etc.

The Boulder Committee has again been the means of communicating a considerable number of reports on Erratic blocks, and Yorkshire still continues to hold a prominent place in the British Association Committee's report.

The Yorkshire Fossil Flora Committee.—Mr. Robert Kidston is engaged upon a third report of the Yorkshire Carboniferous Flora, which, together with the second report, will duly appear in the Transactions.

The Coast Erosion Committee.—The work of this Committee during the year appears to have been entirely confined to measurements, taken by the Secretary (the Rev. E. Maule Cole, M.A.).

The Disappearance of Plants Committee has only had a moderate amount of assistance during the year, and a limited number of observations have been sent in.

The Committee appointed for the investigation of the Cryptogamic Flora and Invertebrate Fauna of the Freshwaters of Yorkshire, has, through the instrumentality of its Secretary, Mr. J. M. Kirk, F.R.M.S., accomplished a considerable amount of work in the neighbourhood of Doncaster, and hopes to receive support from other districts in the county.

The Marine Zoology Committee has had one opportunity of prosecuting its work in connection with the excursions, and at Hayburn Wyke two members devoted themselves to the investigation

of the Marine Zoology. It is, however, much to be deplored that so few persons take an active interest in this subject, considering the extent and variety of the Yorkshire Coast-line.

British Association.—The Union has again been appointed one of the Corresponding Societies of the Association, and was represented at the Cardiff meeting by the Rev. E. P. Knuble, M.A., whose report is printed in the 'Naturalist,' pages 57-71.

The President and the next Annual Meeting.—It is with great pleasure that your Executive have to announce that the presidency has been offered to and accepted by an old and valued member of the Union, viz. : Mr. Charles P. Hobkirk, F.L.S. The circumstance that the next Annual Meeting will be the 101st meeting of the Union since its reorganisation in 1876, renders it a suitable opportunity in which to review the past history and methods of work, and having regard to the long period during which Mr. Hobkirk has been closely and intimately connected with the Union, as well as to the value of his own scientific work, your Executive feel that no more appropriate selection could have been made.

To Prof. A. H. Green, M.A., F.R.S., the Union wishes to place on record its sense of gratitude for the honour he has conferred upon it by his tenure of office as President, for the year which now comes to a close.

NOTES—ORNITHOLOGY.

Hawfinch at Headingley, Leeds.—When going down the road in front of Oakfield Terrace, Headingley, this morning, I was greatly pleased at seeing a Hawfinch (*Coccothraustes vulgaris*) perched on the top of the hedge; I followed the bird when it flew away and obtained three or four views of it. I am *perfectly* certain that it was a Hawfinch. I never heard of one being seen in Headingley before. I send you this as I know it will interest you.—CHAS. KIRKBY, 6, Monkbridge Road, Headingley, Leeds, Nov. 25th, 1891.

Albino House Sparrows in Cumberland.—A few years since I took from a nest in a corn-stack two young albino House Sparrows (*Passer domesticus*). They were of a uniform creamy white, with no dark markings of any kind upon them. Two other young birds in the same nest were of the usual colour. I kept the albino Sparrows in a cage for a few years. They were very tame, flying about the room on the door of the cage being opened. They always retained the same creamy white colour.—J. CHAS. SMITH, Nandana, Penrith, Jan. 26th, 1892.

The Nightingale in Nottinghamshire.—'Generally speaking,' begins the article in January *Naturalist*, 'it is only very few localities north of the Trent that are favoured with the *regular* presence of the Nightingale.' Part of my school-days were passed at Worksop, and once—and once only—did we hear of a Nightingale in the neighbourhood. That would be in 1871 or 1872; I think the latter year. It was in a wood a short distance from Worksop, and a number of us were allowed to go and hear it (if we were quiet enough). We were, and this is the only time I have heard the bird in the North of England.—LISTER PETTY, Ulverston, 18th January, 1892.

—In this connection it should not be forgotten that *Daulias luscinia* ranges a good deal further north than Notts, even as far as Thirsk, whilst it is a regular and not infrequent visitor to the woodlands of South Yorkshire.—EDS. NAT.

YORKSHIRE NATURALISTS' UNION.

ANNUAL MEETING AT SCARBOROUGH.

THE Annual Meetings of the Union are not so popular as the excursions, for they are almost wholly of a business nature, and, moreover, are held at a proverbially dull season of the year. With regard, however, to the 30th Annual Meeting held at Scarborough on the 14th November last, it was with respect both to the attendance and the interest maintained, an unqualified success. Perhaps no place in the county—or out of it—could have been chosen more attractive to Yorkshire people than Scarborough. The Meeting had been fixed for Saturday, in order that the week-end might be spent at the sea-side. Arrangements had been made by means of which Members and Associates taking tickets on Friday or Saturday, might return on the following Monday or Tuesday. In addition to this the North Eastern Railway Company had, at the instigation of the Union, kindly run an excursion train from West Yorkshire, which enabled persons attending the meeting to return to their homes the same evening if desired. Quite one-third of the number of members attending the excursion took advantage of the arrangements for spending Sunday at this popular watering-place. The weather also was as delightful as could possibly be wished.

The local efforts to make the meeting a success had also been as strenuous as possible. By the kindness of the Scarborough Philosophical Society the Museum was placed entirely at the disposal of the Union, and this Society, together with the Field Naturalists' Club, invited the visitors to a *conversazione*, at which many valuable and interesting objects were to be shown, the most attractive exhibit undoubtedly being Mr. Alderman Champley's unrivalled series of nine authentic eggs of the Great Auk.

The proceedings commenced at 3 o'clock, when the Sectional Meetings were held in the various rooms of the Museum, after which a Conference of the Committees of Research took place. At 4 o'clock the General Committee met in the Library. Sixteen affiliated Societies were represented, nine of them being by direct delegation and the remaining seven by permanent members of the General Committee. The attendance also included the President (Prof. A. H. Green, F.R.S., F.G.S.), the President-elect (Mr. Charles P. Hobkirk, F.L.S.), two of the Hon. Secretaries (Messrs. Wm. Denison Roebuck, F.L.S., and Edgar R. Waite, F.L.S.), four members of the Executive, three Presidents and five Secretaries of Sections, four local Treasurers, and twelve other permanent members of the General Committee, making a total of forty-three.

The President occupied the Chair. The minutes of the previous Annual Meeting held at Halifax having been taken as read, the 30th Annual Report—printed on pp. 91-95—was read to the Meeting by Mr. Edgar R. Waite, F.L.S., while the Balance Sheet was read by Mr. Wm. Denison Roebuck, F.L.S., and the two taken together were unanimously adopted on the motion of the President, seconded by Mr. C. D. Hardcastle.

The Excursion-programme for 1892 as prepared by the Executive was next read, and on the motion of Messrs. G. T. Porritt, F.L.S., F.E.S., and John Braim, was adopted without discussion as follows:—

- York Mid W., Saturday, May 14th, Horton-in-Ribblesdale for Penyghent.
- „ S.E., Whit Monday, June 6th, Withernsea.
- „ S.W., Saturday, July 9th, Penistone and Dunford Bridge.
- „ N.W., Bank Holiday Monday, August 1st, Barnard Castle.
- „ N.E., Wednesday and Thursday, September 14th and 15th, Fungus Foray and Excursion, Coxwold and Byland.

For the Annual Meeting in 1892, letters of invitation were read from the Skipton, Huddersfield, and Wakefield Societies. An animated discussion followed, when the representatives of Skipton withdrew their claims with a strong recommendation for the following year. The claims of Huddersfield were strongly urged by the delegates from that town (Messrs. A. Clarke, T. W. Woodhead, G. T. Porritt, F.L.S., &c.). Wakefield was unrepresented, Mr. John Gerrard (President) having been prevented at the last moment from attending. Eventually Huddersfield was selected, the date fixed being Tuesday, November the 15th.

The election of officers next engaged the attention of the meeting, when Prof. Green remarked that he would shortly vacate the position of President of the Union in favour of Mr. Charles P. Hobkirk, F.L.S., Chairman of the Executive Council. The reason for modifying the custom of electing the President from outside the working officers of the Union being explained in the concluding paragraph of the Annual Report, page 95.

On the motion of the President, seconded by Mr. M. B. Slater, F.L.S., Messrs. Wm. Denison Roebuck, F.L.S. (Sunny Bank, Leeds), Rev. E. P. Knubley, M.A. (Staveley Rectory), and Edgar R. Waite, F.L.S. (The Museum, Leeds), were re-elected Honorary Secretaries. The proposal of the Executive that Mr. Percy H. Grimshaw should be elected to the vacant office of Librarian was unanimously adopted. The following retiring members of the Executive were re-elected, namely:—Messrs. Jas. W. Davis, F.L.S., F.G.S. (Halifax), Charles P. Hobkirk, F.L.S. (Dewsbury), Jno. Emmet, F.L.S. (Boston Spa), Rev. W. Fowler, M.A. (Liversedge), Benj. Holgate, F.G.S. (Leeds), H. T. Soppitt (Bradford), and J. J. Stead (Heckmondwike). Messrs. G. T. Porritt, F.L.S., F.E.S. (Huddersfield), and John

Gerrard (Wakefield) were elected to fill the vacancies caused by the retirement of Messrs. Wm. Cash, F.L.S. (Halifax), and M. B. Slater, F.L.S. (Malton).

On the motion of the Chairman, seconded by Mr. C. P. Hobkirk, F.L.S., the whole of the Committees of Research were re-appointed with sundry alterations and additions, as follows:—

Yorkshire Boulder Committee:—

Prof. L. C. Miall, F.L.S., F.G.S.,
Leeds (Chairman).
C. D. Hardcastle, Leeds (Vice-Chairman).
J. E. Bedford, F.G.S., Leeds.
C. Brownridge, F.G.S., Leeds.
W. Lower Carter, M.A., F.G.S., Leeds.
Samuel Chadwick, F.G.S., Malton.
Rev. E. Maule Cole, M.A., F.G.S.,
Wetwang.
J. W. Davis, F.G.S., F.L.S., Halifax.
Wm. Gregson, Baldersby.

Prof. A. H. Green, M.A., F.R.S.,
Oxford.
B. Holgate, F.G.S., Leeds.
Wm. Horne, F.G.S., Leyburn.
P. F. Kendall, F.G.S., Stockport.
Robert Law, F.G.S., Halifax.
James Spencer, Halifax.
J. W. Woodall, M.A., F.G.S., Scarborough.
J. R. Mortimer, Driffield.
R. Wood, M.D., Driffield.

Mr. Thos. Tate, F.G.S. (Leeds), was elected Secretary in succession to Mr. Chadwick, who had resigned the office.

Yorkshire Marine Zoology Committee:—

H. C. Sorby, J.P., LL.D., F.R.S.,
Sheffield (Chairman).
J. Percy A. Davis, Halifax (Hon. Secretary).
G. Brook, F.L.S., Edinburgh.
J. D. Butterell, Beverley.
W. Eagle Clarke, F.L.S., Edinburgh.
John Cordeaux, M.B.O.U., Retford.
W. Cash, F.L.S., Halifax.

Rev. W. C. Hey, M.A., York.
Baker Hudson, Redcar.
T. H. Nelson, Redcar.
O. T. Olsen, F.L.S., Grimsby.
Rev. H. Smith, M.A., Redcar.
J. W. Woodall, M.A., F.G.S., Scarborough.
George Masee, F.R.M.S., Kew, as
Botanical Referee.

Yorkshire Fossil Flora Committee:—

Prof. W. C. Williamson, LL.D., F.R.S.,
Manchester (Chairman).
James W. Davis, F.L.S., F.G.S., F.S.A.,
Halifax (Vice-Chairman).
William Cash, F.G.S., F.L.S., F.R.M.S.,
Halifax (Hon. Secretary).
Thos. Hick, B.A., B.Sc., Manchester.
Benj. Holgate, F.G.S., Leeds.

Robert Kidston, F.G.S., F.R.S.E.,
Stirling.
Robert Law, F.G.S., Halifax.
Prof. L. C. Miall, F.L.S., F.G.S., Leeds.
James Spencer, Halifax.
John Stubbins, F.G.S., F.R.M.S.,
Leeds.
William West, F.L.S., Bradford.

Yorkshire Coast Erosion Committee:—

J. W. Woodall, M.A., F.G.S., Scarborough (Chairman).
Rev. E. Maule Cole, M.A., F.G.S.,
Wetwang (Hon. Secretary).

Rev. H. E. Maddock, M.A., Patrington.
J. C. I'Anson, F.S.A., F.G.S., Saltburn-by-the-Sea.
F. Fielder Walton, F.G.S., Hull.

Yorkshire Micro-Zoology and Micro-Botany Committee:—

H. C. Sorby, J.P., LL.D., F.R.S.,
Sheffield (Chairman).
J. M. Kirk, Doncaster (Hon. Secretary).
C. B. Crawshaw, Dewsbury.
Charles Crossland, Halifax.

Prof. Alfred Denny, F.L.S., Sheffield.
Rev. W. E. Hancock, M.A., Knaresborough.
Chas. P. Hobkirk, F.L.S., Dewsbury.
M. H. Stiles, Doncaster.
William West, F.L.S., Bradford.

Disappearance of Native Plants Committee:—

- | | |
|---|---------------------------------------|
| Charles P. Hobkirk, F.L.S., Dewsbury
(Chairman). | John H. Phillips, Scarborough. |
| P. Fox Lee, Dewsbury (Hon. Secretary). | Rev. W. A. Shuffrey, M.A., Arncliffe. |
| R. Barnes, Saltburn-by-the-Sea. | Matthew B. Slater, F.L.S., Malton. |
| Edward Birks, Sheffield. | Rev. Wm. Thompson, M.A., Sedbergh. |
| John Emmet, F.L.S., Boston Spa. | T. W. Woodhead, Huddersfield. |

Geological Photographs Committee:—

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|--|---|
| James W. Davis, F.L.S., F.G.S.,
F.S.A., Halifax (Chairman). | Rev. E. Maule Cole, M.A., F.G.S.,
Wetwang. |
| James E. Bedford, F.G.S., Headingley,
Leeds (Hon. Secretary). | Edwin Hawkesworth, Leeds. |
| Frederick W. Branson, F.I.C., F.C.S.,
Leeds. | George Fowler Jones, Malton. |
| Godfrey Bingley, Leeds. | A. E. Nichols, A.M.Inst.C.E., Leeds. |
| | F. Fielder Walton, F.G.S., Hull. |

Protection of Wild Birds' Eggs Committee:—

On the proposal (by letter) of the Rev. E. P. Knubley, M.A., the Union's delegate to the British Association, and supported by members of the Vertebrate Zoology Section, it was resolved to form a new Committee, for the purpose of co-operating with the one appointed at the last meeting of the British Association, to consider proposals for the legislative protection of Wild Birds' Eggs, with instructions to collect evidence as to what birds' eggs should be protected, and how to protect them, and that it consist of the following members:—

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|---|----------------------------------|
| Rev. E. P. Knubley, M.A., Staveley
(Chairman). | John Gerrard, Wakefield. |
| James Backhouse, F.Z.S., Harrogate. | F. H. Nelson, M.B.O.U., Redcar. |
| F. Boyes, Beverley. | Hugh Richardson, M.A., Sedbergh. |
| Thomas Bunker, Goole. | J. C. Swailes, Beverley. |
| Riley Fortune, F.Z.S., Harrogate. | Rev. W. T. Travis, M.A., Ripley. |
| | Edgar R. Waite, F.L.S., Leeds. |

It was resolved that the Secretaries of the corresponding British Association Committees be Honorary Members of the respective Yorkshire Committees, and that the Honorary Secretaries of the Union be ex officio members of all Committees.

All the retiring Honorary Local Treasurers were re-elected, as follows:—

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|-----------------------------------|--------------------------------------|
| W. E. Brady, Barnsley. | Thos. H. Nelson, M.B.O.U., Redcar. |
| J. D. Butterell, Beverley. | Rev. R. A. Summerfield, B.A., Ripon. |
| H. Speight, Bradford. | Richard Barnes, Saltburn. |
| J. A. Erskine Stuart, Dewsbury. | J. H. Rowntree, Scarborough. |
| Geo. Winter, Doncaster. | Hugh Richardson, M.A., Sedbergh. |
| L. B. Ross, F.C.S., Driffield. | W. N. Cheesman, Selby. |
| T. Bunker, Goole. | A. T. Watson, Sheffield. |
| W. Cash, F.L.S., Halifax. | J. J. Wilkinson, Skipton. |
| Riley Fortune, F.Z.S., Harrogate. | J. J. Stead, Spen Valley. |
| John Stears, Hull. | Wm. Gregson, Thirsk. |
| Edgar R. Waite, F.L.S., Leeds. | Geo. Parkin, Wakefield. |
| M. B. Slater, F.L.S., Malton. | Thos. Newbitt, Whitby. |
| T. F. Ward, Middlesbrough. | G. C. Dennis, York. |
| Wm. Fletcher, Pickering. | |

Mr. A. Clarke was elected to fill the vacancy at Huddersfield.

As the retiring Auditors did not offer themselves for re-election, and as the Executive have no power to make suggestions in this matter, some little difficulty was experienced in obtaining nominations. At length Mr. J. H. Howarth, of Skipton, was elected to act with any two other members whom he might choose to form a Committee of three—of which number any two were empowered to act.

All members of the Union having received voting papers for the election of ten new permanent members of the General Committee, 36 papers had been returned to the scrutineers, who reported the following ten to have received the highest number of votes:—Rev. John Hawell, Ingleby Greenhow; Rev. Wm. Spiers, Hull; J. H. Howarth, Skipton; J. J. Marshall, Market Weighton; J. H. Phillips, Scarborough; Henry Pocklington, F.R.M.S., Leeds; James Rhodes, Keighley; M. L. Thompson, Saltburn; J. W. Sutcliffe, Halifax; and T. W. Woodhead, Huddersfield.

The Darlington Naturalists' Field Club was proposed and seconded in writing, and on the proposition being put to the meeting a member raised the question as to whether a society outside the county should be admitted into the Yorkshire Naturalists' Union. On it being pointed out, however, that although in Durham the members of the club chiefly directed their investigations to the Yorkshire side of the Tees, the Society was unanimously elected into the Union.

It was then unanimously and enthusiastically resolved that the Honorary Membership of the Union be conferred upon Mr. Richard Spruce, Ph.D., F.R.G.S., of Coneysthorpe, near Malton, and Mr. George Robert Vine, of Attercliffe, Sheffield, on the ground of their eminent scientific attainments, as well as of the services which they have rendered to the Union in its work. These propositions were made on behalf of the Council. That in Dr. Spruce's case was introduced by Messrs. Charles P. Hobkirk, F.L.S., and M. B. Slater, F.L.S., and supported by a large number of members. The qualifications on which this proposal was grounded are almost too well known to need repetition; his world-wide reputation as a botanist, and more particularly as regards the mosses and hepatics, in the study of which groups he is recognised as *facile princeps*, his many discoveries and his additions to scientific knowledge during his long sojourn and extensive travels in South America, along the rivers Amazon, Negro, and Orinoco, and among the Andes of Ecuador and Peru, his splendid monograph, entitled 'Hepaticæ Amazonicæ et Andinæ,' and last, but not least, so far as this Union is concerned, the valuable help which he has long given to the Botanical Section, as well as the List of East Riding Hepatics

published in the Transactions, were referred to as making it an honour to Yorkshire naturalists to enrol so distinguished a brother Yorkshireman as one of the Honorary Life Members. In Mr. Vine's case the nomination was made by Prof. A. H. Green, M.A., F.R.S., and Dr. H. Clifton Sorby, F.R.S., who referred to the great value of his long-continued and careful researches in connection with fossil Polyzoa, and reference was also made to the great obligations under which he has laid the Union by his papers upon micro-palæontology, which have been published in 'The Naturalist,' all of which make it an honour to the Union to be able to add such a name to the list. This nomination, like the former one, was also strongly supported by the Executive Council.

The new ordinary members elected were :—

Ellwood Frockbank, Settle.	W. E. Lindley, Skipton.
Jno. G. Chapman, Scarborough.	E. W. Read, B.A., Scarborough.
W. J. Clarke, Scarborough.	J. F. Robinson, Hull.
F. W. Fierke, Hull.	Wm. Rowntree, J.P., Scarborough.
Ernest Fortune, Harrogate.	Michael Waller, Hull.
D. Hudson, Scarborough.	J. J. Wilkinson, Skipton.
P. F. Kendall, F.G.S., Stockport.	

The Sectional Officers were next called upon, when they announced the following to have been elected for 1892 :—

B. Vertebrate Zoology.—President, Wm. Eagle Clarke, F.L.S., M.B.O.U., Edinburgh. Secretaries, James Backhouse, F.Z.S., M.B.O.U., Harrogate, and Riley Fortune, F.Z.S., Harrogate (re-elected).

C. Conchology.—President, John W. Taylor, F.L.S., Leeds. Secretaries, F. W. Fierke, Hull, and William Nelson, Leeds.

D. Entomology.—President, Geo. T. Porritt, F.L.S., F.E.S., Huddersfield. Secretaries, J. H. Rowntree, Scarborough, and A. E. Hall, F.E.S., Sheffield, all re-elected.

E. Botany.—President, William West, F.L.S., Bradford. Secretaries, M. B. Slater, F.L.S., Malton (re-elected), and P. F. Lee, Dewsbury.

F. Geology.—President, J. W. Davis, F.G.S., F.L.S., Halifax. Secretaries, W. Lower Carter, M.A., F.G.S., Leeds (re-elected), and F. Fielder Walton, F.G.S., Hull.

A vote of thanks to the retiring President for his services in the chair, passed on the motion of the President-elect and seconded by Mr. Thomas Tate, F.G.S., concluded the business of the meeting.

The members then adjourned to the Grand Hotel, where tea was served.

The Annual Public Meeting was held in the large hall of the Grand Hotel at 7 o'clock, when the chair was occupied by Mr. J. W. Woodall, J.P., M.A., F.G.S. The Annual Report, as

printed in pages 91-95, was taken as read, and after the Excursion-programme for 1892 had been announced to the meeting, the Chairman called upon Prof. A. H. Green, M.A., F.R.S., to deliver the Presidential Address:—"Some Moot Points in Geological Speculation." Afterwards a vote of thanks was accorded to Prof. Green for his presidential services and for his address, on the motion of the Chairman, seconded by Mr. J. H. Phillips.

Votes of thanks were also passed to Mr. Woodall for his services in the chair, and to the Scarborough Philosophical and Naturalists' Societies for their co-operation in the meeting, after which the assembly dispersed to inspect the excellent and interesting exhibition arranged by the Scarborough Societies.

The entertainment took the form of a *Conversazione* and Exhibition of Local and General Natural History specimens, the most interest-absorbing contribution being the unique series of nine eggs of the Great Auk, the property of Alderman Champley, of Scarborough.

E. R. W.

NOTES AND NEWS.

The 'Q.J.G.S.' for November 1891 contains a paper by Mr. Alfred Harker, entitled 'Petrological Notes on Rocks from the Cross Fell Inlier,' a copy of which lies before us.

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The development of the head of the imago in *Chironomus* was the subject of a discourse by Prof. L. C. Miall and Mr. A. R. Hammond at the Linnean Society last December. It was illustrated by a series of illustrations with the oxy-hydrogen lantern.

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Among those elected Fellows of the Geological Society during the past year are Messrs. W. H. Fitton, of Beeston; W. Cheetham, of Horsforth; W. E. Garforth, of Normanton; H. H. Howorth, M.P., of Eccles, Manchester; A. W. Lucas, of Chester; and W. H. Collins, F.C.S., of Bolton.

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At the Annual General Meeting of the Geological Society on February 19th, Mr. W. H. Hudleston, M.A., F.R.S., was elected to the chair of President. Mr. Hudleston was President of the Yorkshire Naturalists' Union in 1888, and is well known for his work among the Yorkshire Oolites. The recently issued volume of the Palæontographical Society's memoirs contains a fifth instalment of his monograph on the Jurassic Gasteropoda, in which many specimens from Yorkshire and Lincolnshire are described and figured.

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The annual meeting of the Bradford Scientific Association was held on September 25th, the President (Dr. Monckman) in the chair. The financial statement showed a balance of £38 11s. 6d. in hand. The work of the session has been highly satisfactory, both in respect of the attendance of members and in the quality of the papers read. The following officers were elected:—President, Mr. W. West, F.L.S., Lecturer on Botany at the Bradford Technical College; vice-presidents, Mr. J. Monckman, D.Sc., and Mr. J. T. Riley, D.Sc.; treasurer, Mr. J. E. Wilson; council, Messrs. J. Bennett, F.R.M.S., J. H. Skelton, F.S.A.S., E. Naylor, S. A. Walker, C. Wood, F.C.S., and J. Wyld; auditors, Messrs. J. S. Colefax, J.P., and J. Andrews; librarian, Mr. A. Jessop; secretaries, Messrs. T. Pawson, 90, Sydenham Pl.; and F. G. Skelton, Crossley Hall Works, Bradford.

Naturalist,

THE EROSION OF THE YORKSHIRE COAST.

REV. E. MAULE COLE, M.A., F.G.S.,

Vicar of Wetwang, East Yorkshire, Hon. Sec. to the Yorkshire Naturalists' Union Coast Erosion Committee.

THE Committee, of which Mr. J. W. Woodall, M.A., F.G.S., of Scarborough, is Chairman, and the writer is Honorary Secretary, also includes Mr. J. C. I'Anson, F.G.S., F.S.A., of Saltburn-by-the-Sea, Rev. H. E. Maddock, M.A., F.G.S., of Patrington Rectory, and Mr. F. Fielder Walton, F.G.S., of Hull; and, as extra members, Messrs. C. E. DeRance, F.G.S., and Wm. Topley, F.G.S., the Secretaries of the British Association Committee appointed to deal with the same subject. Our Yorkshire Committee was first appointed in November 1888, and has since been re-appointed annually.

The following paper includes the reports for 1889 and 1890.

The great variety of material, of which the rocks which form the Yorkshire coast are composed, necessarily gives rise to a very jagged outline. Here, the sea has free access to the base of a perpendicular cliff, and the waves that rage horribly gather increased force from rushing over a smooth, slippery scar of lias; there, masses of fallen sandstone or chalk are heaped up in wild confusion at high-water mark, and serve as a breakwater to defy the fury of the winter storms. Erosion, however, is always going on, although unequally and somewhat fitfully. One cannot look at those lias and limestone scars and chalk pavement, stretching out to sea far beyond the low-water mark, without realising that they are the bases of cliffs long since worn away, and that the present coast-line is very different from what it was in the ages that are passed. If this be true of comparatively hard rocks, much more is it true of that softer material which fills so many pre-glacial valleys of the Yorkshire coast—namely, boulder clay. This clay is subject to a two-fold denudation—sub-aerial and marine. Rain moistens it, and causes the sticky substance to be ever on the move downwards; springs, issuing from streaks of sand, undermine it and produce great landslips; frost breaks off huge masses, and sends them thundering to the beach below; and then the sea licks, and washes, and grinds, and churns, till thousands of tons are converted into the finest possible mud, and carried away by the tide to form fresh land in the ages to come, and nothing is left but a few boulders, which for a time help to swell the ever-shifting beach of shingle as it travels southwards.

Such being the case, we are not surprised to find that the greatest ravages on the Yorkshire coast are precisely in those localities where the cliffs are composed of boulder clay. The sea, in fact, is regaining its own, for boulder clay is an intruder; it has no business here, defiling and disfiguring all the lovely bays and arms of the sea which used to exist in the boyhood of our race, before the great Scandinavian ice-giant came, heaping up his dirty moraine in every eastern nook and corner he could find. But to come to particulars. Take the coast-line from Sewerby to Spurn. It is retreating slowly westwards before the slow but persistent attacks of denudation. Holderness is simply a mass of boulder clay and drift, filling up an ancient bay, whose shores once extended from Sewerby round by Kilham, Craike Hill, Middleton, and Beverley, to the wolds of Lincolnshire. The sea is re-asserting its rights, and fortunately we have a gauge by which to measure the rate of progress.

In the year 1786, Polson, writing his valuable history of Holderness, recorded the distance of certain churches from the edge of the cliff. It is to be presumed that he measured from the east end of the chancel in the nearest straight line to the cliff top. Captain Kenney, R.E., of the new Ordnance Survey, has kindly forwarded the exact distance of the same taken in 1889. From these reports the following table has been constructed:—

	Distance from Cliff Top.		Total loss in 103 Years. Feet.	Aver. per annum. Ft. In.
	1786. Feet.	1889. Feet.		
Hornsea Church	3,399	2,695	704	6 10
Aldborough Church ...	6,132	5,604	528	5 1½
Tunstall Church	2,772	2,075	697	6 9
Holmpton Church	3,600	3,145	455	4 5

Hence it is evident that erosion varies on different parts of the coast, probably owing to the temporary formation of sand-banks and deflection of currents. This is corroborated by a remarkable instance in the case of Auburn House, communicated by Mr. T. Boynton, late of Ulrome. 'Some 30 years ago part of this house was removed by the sea; none has gone since, a sand-bank having formed above high-water level.' An extract from the register belonging to the parish of Atwick, kindly contributed by the Rev. E. Gordon, Vicar, tends to the same conclusion. For nine years previous to the year 1795, the average loss of the cliff was 10 ft. 4 in. per annum. In 1795 the distance of Atwick Cross from the cliff top was 2,856 ft. In 1871 it was 2,508 ft., an actual loss in 76 years of 375 ft., or an average of only 4 ft. 8 in. per annum. During the past year the hon secretary has taken several measurements at different points on the coast, which will be placed on permanent record with the Y.N.U., viz.:—
Bempton Cliff, above Scale Nab; Sarnwick, near Thornwick Bay;

Sewerby, opposite Sewerby House ; Sands Cottage, near Bridlington Quay ; Filey Bay and Carr Naze. At the latter place the capping of boulder clay (80 ft.) resting on the middle oolites is being rapidly destroyed, partly by the rainfall, partly by the heavy waves breaking on the northern face of the rocks. The narrowest portion of Carr Naze, on the top, measured only 224 inches on August 6th, 1889. In no very distant time this will be cut through, and the appearance of the Brigg materially altered.

Captain Kenney, R.E., has kindly been at the trouble to furnish a table of measurements in Holderness, which will be of great use in furnishing fresh data for future generations.

The following is the full text of Capt. Kenney's valuable report :—

EROSION OF COAST OF YORKSHIRE.

Distances in September, 1889, from objects inland to the Coast.

6in. Sheet, and 25in. Plan of the Ordnance Survey.	Parish.	Name of inland fixed object.	Nearest Measurements.		Measurements due East.	
			To Top of Cliff.	To High Water M.	To Top of Cliff.	To H. W. M.
Sht. 197, Plan 3	Hornsea ..	St. Nicholas' Ch. Tower (Trig. Station) ..	Feet. 2810'0	*	3225'0	* H.W.M. not yet examined.
"	"	" Chancel End	2695'0	2923'0	3095'0	
Sht. 213, Plan 9	Aldborough	St. Bartholomew's Ch. Tower (Δ) ..	5703'0	5813'0	6823'0	6945'0
"	"	" Chancel End	5604'0	5714'0	6717'0	6839'0
"	"	Old Windmill (centre of)	5307'0	5432'0	6364'0	6479'0
Sht. 228, Plan 7	Hilstone ..	St. Margaret's Ch. Tower (Δ)	3215'0	3308'0	3940'0	4047'0
"	"	" Chancel End	3170'0	3263'0	3885'0	3992'0
Sht. 228, Pln. 11	Tunstall ..	All Saints' Ch. Tower (Δ)	2135'0	2194'0	2624'0	2714'0
"	"	" Chancel End	2075'0	2135'0	2548'0	2640'0
Sht. 243, Plan 5	Hoilym ..	St. Nicholas' Ch. Tower (Δ) Withernsea	920'0	1213'0	1282'0	1478'0
"	"	" Chancel End	840'0	1137'0	1186'0	1382'0
Sht. 257, Plan 2	Holmpton	St. Nicholas' Ch. Tower (Δ)	3203'0	3317'0	4093'0	4195'0
"	"	" Chancel End	3145'0	3273'0	4038'0	4140'0

A. H. KENNY, CAPT. R.E.,

COMDG. 8TH DN. ORD. SURVEY.

O. S. O.,

CLIFTON, BRISTOL,

11.12.89.

In speaking of coast erosion it must be remembered that waves of the sea exercise only a limited amount of work. As a general rule, they can only extend to a certain height, which is as nothing compared with the height of many cliffs. If the main work were performed at

the bottom of a cliff, the cliffs would become beetling; but they seldom, if ever, are so. Almost all cliffs have a decided slope backwards, from the bottom upwards. Hence sub-aerial denudation must more than counter-balance the destruction wrought by the sea.

The main work of the sea consists in breaking up and removing masses which have fallen from above. It also has a tendency to form caves, the roofs and pillars of which subsequently fall in, by three separate processes, viz., by the weight of water hurled against the rocks; by the battering of stones, shingle, and sand contained in the waves; and by the force of compressed air driven into the interstices of the joints. But the agency of wind, rain, frost, and percolating water on the upper surface of the cliff causes it to retreat at a more rapid rate than the sea can undermine it, and so preserves the before-mentioned slope.

On August 24th, 1890, an extensive landslip took place on the north cheek of the Castle Hill, Scarborough. From all accounts thousands of tons of rock were precipitated into the sea. In a description of the catastrophe published in the 'Scarborough Gazette,' August 28th, 1890 (with which we have been favoured by the Editor) occurs the passage: 'We understand it is questionable whether the slip is to be attributed to the action of the sea, or to the natural character of the cliff throughout its extent. Probably both causes have been in operation.' As a matter of fact the sea had nothing to do with it; but the natural character of the cliff had a great deal. The lowest portion of the cliff consists of massive boulders of hard Kellaways Sandstone, which present an almost impervious barrier to the attacks of the waves; but the upper portion, consisting of Calcareous Grit and Oolitic Limestones, rests on a yielding base of Oxford Clay. Three inches of rain fell in the first three weeks of August, and this, percolating through the joints and fissures in the super-incumbent limestone, moistened the surface of the clay and rendered it insufficient to support the weight of rock above, already somewhat loosened and ready for disintegration by the repeated discharges of cannon on the Castle Hill plateau; consequently down it came, and more is ready to follow. A similar phenomenon occurred on August 6th, 1857, and from similar causes.

As the writer in the 'Gazette' suggests 'the desirability of a sea-wall at the base, to prevent further disruptions as much as possible,' it is only fair to the promoters of the proposed drive to say, whilst exonerating the sea, that the danger from the cliff will be as great as ever.

The fall of the cliff at Scarborough in 1857 gave rise to a 'cloud of yellow smoke.' The Rev. B. Irvin, Vicar of Saltburn, describes a

similar appearance near Saltburn. Whilst walking (Jan. 1889) on the cliff by the Zetland Hotel, which directly faces Huntcliff, he saw a steamer rounding the point, and at the same time a 'cloud of black smoke,' which he attributed to another steamer following the first. With eyes fixed on the cliff, he saw, within a second or two, an immense mass of rock (Lias) leave the face of the cliff and plunge into the sea, throwing up another 'cloud of black smoke' which explained the first.

Notes of certain measurements made by the Secretary for future reference.

January 11th, 1889. SEWERBY.

Position $0^{\circ} 9' 45''$ W., $54^{\circ} 6' 0''$ N.

1. Pond surrounded by iron railings between Sewerby House and the cliff. From centre of south side of railings—middle junction post—to edge of cliff, 70 yds. 1 ft. 7 in.
2. A brick wall with sunk fence on west side of above grass field from plantation to cliff. Length of *wall*, 81 yds. 2 ft. 10 in.

June 4th, 1889. SARNWICK NEAR THORNWICK.

A wire fence with iron uprights, running to the cliff. From post to post, 37 iron uprights.

August 2nd, 1889. SANDS COTTAGE, BRIDLINGTON BAY.

1. From S.E. corner, wall of shed continued in a straight line easterly to edge of cliff, 44 ft. 4 in.
2. From N.E. corner, wall of farm building continued in a straight line easterly to edge of cliff, 76 ft.

August 2nd, 1889. BEMPTON CLIFFS, above Scale Nab.

Two basalt boulders, $0^{\circ} 9' 20''$ W., $54^{\circ} 8' 40''$ N.

1. Northern one distant from centre of sod bank, 28 ft. $4\frac{1}{2}$ in.
2. Southern one distant from centre of sod bank, 105 ft. 6 in.

August 5th, 1889. FILEY BAY.

About $1\frac{1}{2}$ miles South of Filey a large sandstone boulder on the shore, nearly opposite a wooden shed on the cliff, distant from bottom of cliff 90 ft. June 19th, 1890, the same, distant 95 ft.

February 13th, 1891. HILDERTHORPE.

1. Coast-guard post to edge of cliff—for direction get central post and east rope in a straight line—distance 180 yards.
2. From end of Mr. W. O. Jarratts' lane to edge of cliff; direction, lane continued straight; point of departure, centre of lane between two *thick* posts on either side; distance 61 yds. 2 ft.

REPORT ON YORKSHIRE BOTANY FOR 1880-91.
CRYPTOGAMIA.

M. B. SLATER, F.L.S.,

Malton; Cryptogamic Secretary of the Botanical Section of the Yorkshire Naturalist's Union.

NEW RECORDS, ETC., AND NOTES.

1781. **Ceterach officinarum** Willd. Gathered by M. B. Slater on a wall in the village of Langton. There is a possibility of the plant having been introduced, but at any rate it is thoroughly naturalised. New record for East Riding.

N.B.—From later information there is good evidence that the plants are truly native and not introduced.

1811. **Equisetum maximum** Lam. var. **serotinum** A. Br. In Forge Valley, July 1889 (Nat. 1889, p. 16), Messrs. W. W. Reeves and M. B. Slater. New record for North Yorkshire.

MUSCI.

218. **Grimmia torquata** Hornsch. This moss, which is not uncommon in Britain, in Alpine situations, occurs on the Scars of Upper Teesdale, but always barren in Britain. It has, however, been recorded as fruiting in the mountains of Idaho, U.S.A., at an altitude of 6,000 feet, by Mr. J. M. Leiberg, March 1889 (Rev. Bryol., 1890, p. 16, and Nat., 1890, p. 94).
452. **Thuidium recognitum** Hedw. On grassy calcareous banks near Settrington (Slater), and also near Sledmere (G. Webster). It is recorded 1790 and 1820 as fruiting at Matlock Bath, and Yorkshire bryologists should look out for fruiting specimens in their own county. New record for South-East Yorkshire.
457. **Cylindrothecium concinnum** DeNot. On the debris of an old lime quarry in Sleightholmdale, near Kirby Moorside, March 1890 (M. B. Slater), and again a small tuft in debris of a lime quarry near Welham, March 1890 (Slater), on an extension of the calcareous ridge of the Howardian Hills, which have been cut through by the R. Derwent at Malton.

HEPATICÆ.

Colo-lejeunia Rossettiana Mass. This—which was noticed in Journal of Botany, Dec. 1889, by Mr. W. H. Pearson, as confounded with, but distinct from *Lej. calcarea* Lib.—has been gathered by Mr. R. Barnes, on the Swale, near Richmond. New record for North Yorkshire.

Blepharozia ciliaris var. **pulchrum** Corda. Was found in October, in York Dale, near Sledmere, on trees; M. B. Slater. New to South-East Yorkshire.

EXCURSIONS.

At the Lowthorpe excursion 30 Mosses and 4 Hepatics were recorded, but all only of general distribution, including a very broad-leaved form of *Brachythecium plumosum* Sw., on the Weir near the Mill.

At the Kildale excursion *Barbula cylindrica* Taylor, was gathered in fine fruit, and *Dichodontium flavescens* Dicks. sterile, also some fine masses of *Nardia obovata* Nees.

Mr. Barnes' (of Saltburn) paper on 'Some additional localities and new records for the mosses of N. Yorkshire and Durham' (Naturalist, July 1890, p. 211-222) contains 34 Mosses, new records for that district, and of the 130 gathered in Teesdale and the Cleveland district, seven are given as new to N. Yorkshire, and nine new to Yorkshire generally. Altogether the season's work may be considered as quite satisfactory, and fairly good results have been recorded.

REPORT ON MOSSES AND HEPATICS GATHERED DURING THE YEAR 1890-91.

At the Leckby Carr excursion on Whit-Monday, May 18th, 1891, Mr. R. Barnes, of Saltburn, explored the district for Mosses and Hepatics, and made a very successful gathering. He reports having met with about 30 to 40 Mosses, mostly of general distribution. The rarer Mosses gathered were *Campylopus pyriformis* Brid., *Aulacomnium androgynum* L., *Polytrichum gracile* Menz., *Plagiothecium latebricola* Wils., all got in Leckby Carr. *Amblystegium fluviatile* Swartz., was found by the Swale below Asenby. The most interesting plant gathered in this section was the rare Hepatic *Cephalozia fluitans* Nees. This was found growing amongst Sphagnum in the Carr. It is the first record of the plant in the West Riding. *Cephalozia connivens* Dicks., also one of our rarer Hepatics, was growing intricately mixed with *fluitans*. Both plants were got with fruit in good condition. For excellent description and history of these two plants consult Dr. R. Spruce's pamphlet on

'Cephalozia,' 1882. We have no report in this section at the Grassington excursion, where it was unrepresented.

At the Hayburn Wyke excursion, report is given in 'The Naturalist' for October. No specially rare forms were met with; the district, however, should be more carefully searched by some local students of this tribe during the autumn and spring months, when many of the plants seen during the excursion might be collected in more perfect condition than during the drier summer months.

The excursion in York Dale, Sledmere, was also reported upon in the October number of 'The Naturalist,' and lists of the plants given, in which two new records for East Riding are noticed: Moss, *Thuidium recognitum* Hedw.; Hepatic, *Ptilidium ciliare* var. *pulchrum*. Mr. J. J. Marshall, of Market Weighton, has recently commenced to study this tribe, and has found in his locality *Pottia bryoides* Dicks., which is the first record of this Moss for the East Riding. This he gathered during the spring; and more recently he has met with, growing on the stems of willows, *Pylaisia polyantha* Schreb., a moss which is noticed by Schimper as of very common distribution on the Continent, but which, however, occurs only rarely in the British Isles.

Orthotrichum pulchellum Sm., growing on *Sambucus* in Lees Wood, near Birdsall, and *Cylindrothecium concinnum* DeNot., met with in an old lime-quarry near Langton, are both additions to the East Riding list. The latter moss grows in the North Riding upon the calcareous Howardian Hills near Welburn and at Hildenley; also near Pickering and Kirby Moorside, on similar geological formation. It has, however, not been met with in fruit.

NOTES AND NEWS.

A useful list of the 'Heterocera of the Isle of Man' by Mr. Henry Shortridge Clarke, F.E.S., of Douglas, is being simultaneously published at intervals in our contemporaries, the British Naturalist and Yn Lioar Manninagh.

A compliment is paid to our friend and colleague, Mr. C. P. Hobkirk, in that his arrangement and his descriptions are adopted in the Botanical Gallery of the British Museum for a series of British mosses which had been added to the already arranged representation of the British Flora.

The December number of the Annals and Magazine of Natural History contains papers by two Yorkshire naturalists. The Rev. Thomas Hincks, B.A., F.R.S., gives the appendix to his 'Contributions towards a General History of the Marine Polyzoa, 1880-91'; and Mr. George Brook, F.L.S., describes a number of new species of *Madrepora* in the collection of the British Museum.

Another of Mr. William West's valuable contributions to our knowledge of the range of freshwater algæ appears in the Journal of Botany for December 1891, dealing this time with the Freshwater Algæ of Maine, U.S.A. The paper is illustrated by a plate, which like those to Mr. West's other papers, is from the pencil of his son, Mr. G. S. West, whose aid in the preparation of the paper generally is acknowledged in the opening remarks.

SOME VERNACULAR NAMES OF PLANTS.

REV. FREDERIC ADDISON, M.A.,

Thirsk.

It is often observed that the spread of education among the working and other classes will cause future generations to regret if proper care is not now taken to record peculiar words, which, though not recognised in classical English, have a philological value. I have lately been trying to clear up the derivation of some of the vernacular plant names, and have found much assistance from a work by the present Professor of Anglo-Saxon at Oxford, the Rev. John Earle; and also from a 'Nomenclator Octilinguis,' printed at Geneva in 1619, and founded on the work of Adrianus Junius. This latter work professes to include equivalent English names, but in the case of plants, trees, shrubs, and parts of plants, it is totally silent; probably at that period, any works by our English botanists would be almost unknown on the Continent.

I have selected a few examples, which I hope may prove of interest, and may lead others, who have greater facilities by means of public libraries, to pursue the subject.

Mr. Earle shows that there has been another name for the rose in England. We may imagine that the monks and the few learned men in the Middle Ages would prefer to use the word Rose, on account of its Latin and Greek origin. But in early times the word *heopa* signified *rose*. It is *hiufa* in Old High Dutch. We have at present, in the vernacular around Thirsk, a compound name for the fruit of the wild rose: the prefix is *cat*, and the ending is *jug*. Hip, by gradual transition from Old Saxon *hiopa*, in Cumberland (where I resided nearly forty years ago, and the antiquarians were much interested in the word), becomes *choops*; and Mr. Earle says that the briar is thus called the choop-tree. This word is the connecting-link to our cat-jug.

This prefix *cat*, I would say, has no reference to the animal of that name, although certain plants are called cat-mint, etc. I trace its use from cat-jug, to cat-haw (in this locality used for the word haws), and to the fruit of the ash tree, called in Teesdale *cat-i-kees*; and in some places in the North, called cat-and-keys; also kitty-kees in north-east Cleveland. This last joins on with *bumble-kite* (in our locality), meaning the fruit of the bramble. This prefix *bumble* is no doubt derived from the old German for a bushy place (*nidere Baumlin*). I may observe that a many vernacular forms of common words in this locality are from the Belgian and German, on account

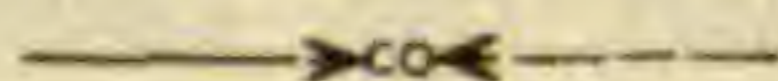
of the number of the natives of these places, who were invited by our Edward I. and succeeding kings to settle in this country as weavers, etc. The English working classes would thus be induced to adopt the names these people used.

Another interesting word is mistletoe. In one of the Anglo-Saxon lists it is given, along with the Latin, *viscarago mistiltan*. As regards the prefix, Mr. Earle quotes the German author, Grassman, who considers the word *mistil* to mean *sprawler*. But I think it to be a modification of the Latin *viscum*, in Italian *vischio*. The latter part of the word, namely, *tan*, is considered to signify twig or rod. Thus in Icelandic, it is *mistilteinn*.

It is quite possible that a many of the vernacular names may be traced to the Indo-Germanic source, of which Sanskrit, Greek and Latin are only dialects. As the emigrations from the north of the Himalayas advanced along the more fruitful west, in the course of two or more thousand years, the first-comers would be driven forward by the succeeding hordes; and thus it is highly probable that, as in numerals, so in the names of plants and animals, the extreme West of Europe may have many names in common with the Sanskrit, but slightly altered.

NOTES AND NEWS.

We hope it is not too late to mention an excellent portrait and biographical notice of the late Thomas Gough, who did so much for natural history in Westmorland, which is given in the fifth part of the Westmorland Note-Book and Natural History Record, published in March 1889. Gough was born at Middleshaw, Old Hutton, Nov. 30th, 1804, entered the medical profession, and practised at Kendal from 1833 to 1854, and after an interval caused by ill-health, again from 1860 to 1872. He died July 17th, 1880. As a naturalist he was an excellent all-round man, but published very little. The scientific institutions of Kendal owed much to him, and that they appreciated his great worth was abundantly manifested by the great pains which were taken to persuade him to succeed the eminent Prof. A. Sedgwick as President of the Kendal Literary and Scientific Institution.



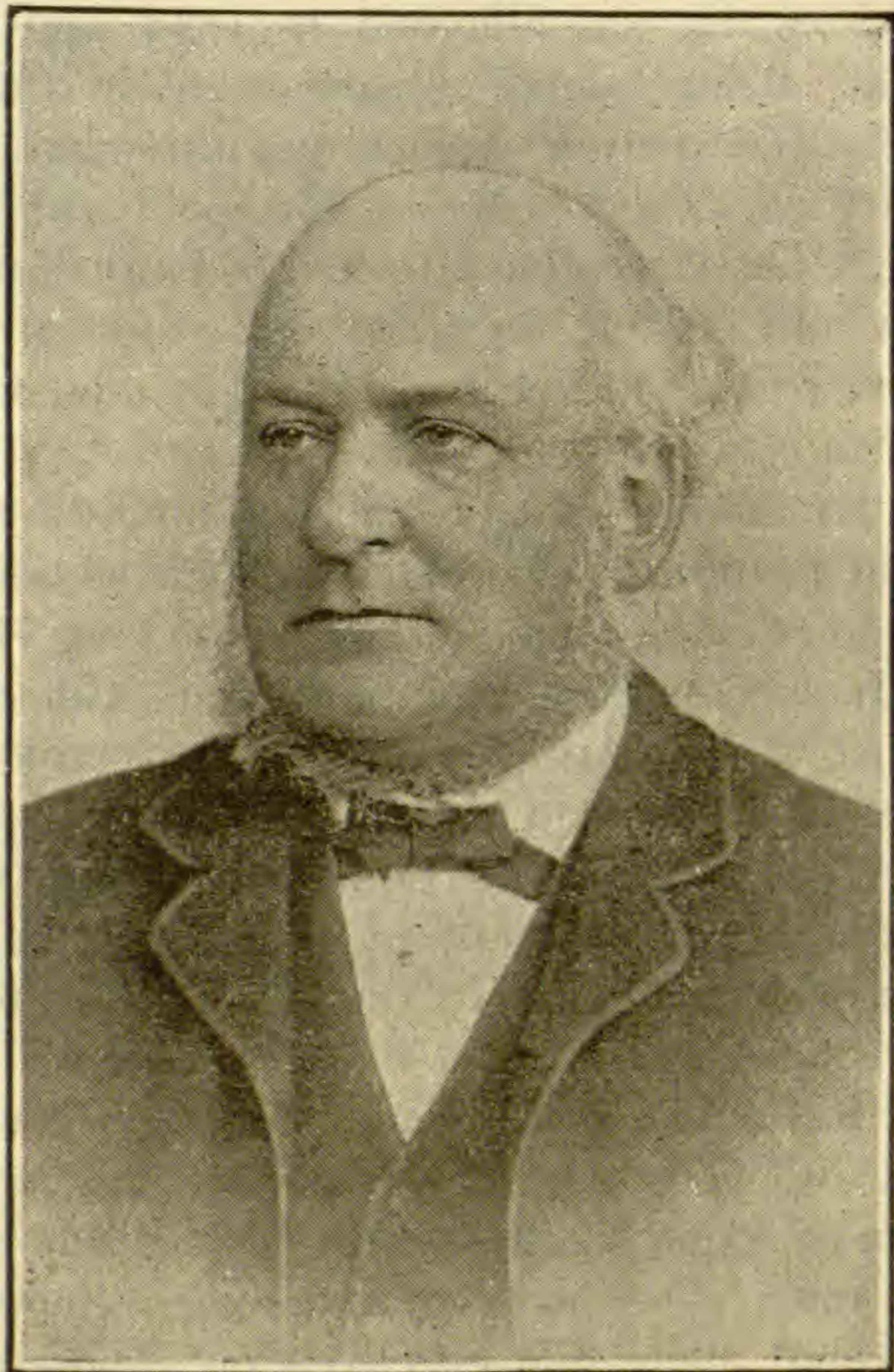
We heartily commend 'Larva Collecting and Breeding' to all interested in the subject. The book, compiled by the Rev. J. Seymour St. John, is of handy size for the pocket, and consists of 165 pages. The plan is that of an English-Foreign, Foreign-English dictionary, and is divided into two portions; the first, consisting of 79 pages, is devoted to 'Larvæ and Food-plants' and in this section the names of the insects are printed in conspicuous type, while immediately under each species a list of the food-plants is given. Pages 81-144 are devoted to 'Food-plants and Larvæ,' which are arranged botanically. The names of the larvæ feeding upon any given plant are seen at a glance. The work is rendered more useful to non-botanical lepidopterists by having the common, as well as the scientific, names of the plants printed in both portions of the book, and also in the index, which deals with the genera of both insects and plants. A few blank pages are added for private notes and memoranda. The book may be obtained either from the publishers, Messrs. Wm. Wesley and Son, 28, Essex Street, Strand: or from the author, 42, Castlewood Road, Stamford Hill, London, N.

In Memoriam.

FRANCIS ARCHER.

WE regret to have to record the death, from diphtheria, after a nine days' illness, of the well-known naturalist, Mr. Francis Archer.

Mr. Archer, who was born in Renshaw Street, Liverpool, on June 17th, 1839, was the son of the late Francis Archer, surgeon, a



F Archer
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native of Belfast, who settled in Liverpool early in life. His mother's maiden name was Frances Fletcher, daughter of Joseph Fletcher, merchant, of Liverpool. His taste for natural history was inherited from his father, who had a good medical practice in Liverpool, and was well-known among the naturalists of his day.

Mr. Francis Archer, or Frank Archer as he was more familiarly known to his friends, received his education as a boy first with the Rev. Mr. Payne, Faulkner Street, Liverpool, and then at the Liverpool Collegiate Institution, Shaw Street. Rising from the Middle School to the Upper, in which he became second boy, he entered Trinity College, Cambridge. He became a Scholar of Trinity, and in 1862 took his degree with honours, being a wrangler. Entering the office of Messrs. Bateson & Robinson, a distinguished firm of Liverpool solicitors, he was admitted in 1865, and became their managing clerk. Being offered a partnership in the firm, which became Lowndes, Thornely & Archer, and afterwards Thornely and Archer, he practised as a solicitor in Liverpool with success for a good many years, but, becoming attracted by journalism and politics, he left the law and became for a time sub-editor of the 'Liverpool Daily Post,' a newspaper distinguished then, as now, for the literary ability with which it is conducted.

From what Mr. Archer hinted to me, he found the newspaper life too exacting and absorbing, but, whatever may have been the reason, he gave it up and re-entered the practice of the law. In partnership with the late Mr. Isham Gill, under the name of Gill & Archer, and later Gill, Archer & Maples, he was concerned professionally with many important railway, water, and other undertakings in Liverpool and Cheshire. The sub-aqueous tunnel under the Mersey, called the Mersey Railway, was the most important of them, and marked an era in railway engineering. In 1890-91 he was President of the Liverpool Law Society.

Mr. Archer was a many-sided man of great vigour, but, withal, tender and not without sentiment. Professionally, he was esteemed as an able man of sound sense—straightforward and upright in all his ways. He was a good musician and singer, knew Tennyson off by heart, and would quote him effectively on almost any subject of human interest. Charles Darwin he held in the greatest reverence from the very first appearance of the 'Origin of Species,' which Mr. Archer read when at Cambridge. He has often told me the storm it aroused among the Dons, and said that Charles Kingsley was the only man besides himself who at all supported the new views of nature.

During the whole course of his life Mr. Archer was interested in natural science. It was not a mere hobby, or a collector's instinct—though of the latter he was not deficient. Science was a living reality to him, and, acting on a cultured mind, gave form to his thoughts. The writer has never known anyone else of whom this could be said with such truth and force. It gave him broad views

of nature and human nature, which dry specialization and the recording of facts, though of the greatest importance to the progress of knowledge, often seems to deny to some of the votaries of science.

In November 1866, Mr. Archer joined the Liverpool Geological Society, of which he continued a member to the last. He acted as Treasurer to the Society from 1867 to 1872, and was several times offered the Presidential chair, but could never be persuaded to take it. He was a member of the council of the Liverpool Biological Society, and took an active part in the establishment of a Biological Station at Puffin Island. Dr. Herdman informs me that Mr. Archer was to have accompanied him and Mr. Isaac Thompson, on the 7th March, to examine and report upon a suitable locality in the Isle of Man to which to remove the Station, Puffin Island having been found inconvenient of access during a considerable part of the year. He was most intimately connected with the marine biological work, and went on all the dredging trips. His lists—which were nearly ready—were to have been laid before the Biological Society at an early meeting, and had, indeed, been announced. Dr. Herdman also says that he had ‘lately been examining the Mollusca and Brachiopoda which I collected last summer in Norway, and was actually working here (University College) with me in the laboratory on these specimens just the Wednesday before he took ill.’

Entomology was also one of the branches of Natural Science he was well up in, and he has done excellent work in collecting, as may be seen on reference to Dr. Ellis’s lists published in this Magazine.

Perhaps the subject in which he of late years took the greatest interest was Anthropology. With a view of adding to this branch of knowledge he paid a visit to the valley of the Somme, and several times to the North-east coast of Ireland and to the West of England. He read before the Liverpool Geological Society ‘Notes on Flint Implements from a Raised Beach at Kilroot, Co. Antrim,’ and another entitled: ‘Notes on the worked Flints of the Raised Beaches of the N.E. coast of Ireland.’ In addition, he gave the Society several addresses on similar subjects, which, being from mere notes, unfortunately could not be published. In the pages of ‘Nature’ may be found letters on Natural History and Anthropology from his pen. He got together a very good private collection, bearing upon the history and development of early man.

Mr. Archer was highly cultured, of a literary turn, and frequently reviewed scientific works in the columns of the ‘Daily Post’; but what he has published would give a very restricted notion of the man. The writer has known him intimately for over twenty years, and is pleased to acknowledge the stimulating influence of his ideas and

presence. Nothing gave him more pleasure than assisting others, especially the young, in their scientific efforts, and I know of no single instance where his judgment of the individual, though generous, was at fault. With Mr. Archer's death an important factor in the scientific work of Liverpool has gone. His well-known sturdy figure and massive head gave evidence of bodily and mental vigour, as did also the candid sincerity of his language. He thoroughly enjoyed a joke, was a charming companion on an excursion, and few could exchange ideas with him without adding to their knowledge. It is sad to think that such a life should be sacrificed in its prime, but we have the satisfaction of feeling that Mr. Archer's good influence will long outlast him.—T. MELLARD READE.

NOTES—ORNITHOLOGY.

Gadwall in Yorkshire.—Although the records of the Gadwall (*Chaulelasmus streperus*) from our county are anything but numerous, it is highly probable that this species occurs more commonly than is generally supposed; immature birds possibly being confounded with Wigeon of similar age. A fine female was shot in February last at East Cottingwith, near York, and will shortly be added to the museum of the Yorkshire Philosophical Society. The Rev. H. A. Macpherson, who has made a special study of the duck tribe, and has examined the bird in question, reports that it is a 'bird of the year' and pure bred.—J. BACKHOUSE, Harrogate, March 8th, 1892.

Birds near Ripon.—During October last, a pair of Hawfinches (*Coccothraustes vulgaris*) frequented some yew-trees in my garden. I have not before seen any in this locality. They were seen on several occasions. On November 14th my son saw ten goldfinches (*Carduelis elegans*) together, in a low tree, in the river flats. The Martins (*Chelidon urbica*) that nest under the eaves of my house were this year feeding second broods at the time when, in other years, they have left us. I am sorry I did not note the date.—R. A. SUMMERFIELD, North Stainley Vicarage, Ripon, Jan. 2nd, 1892.

Great Grey Shrike at Harrogate.—A specimen of this bird (*Lanius excubitor*) was seen by myself in Barber's Coppice on January 27th, 1892.—R. FORTUNE, Harrogate.

Pallas' and Great Grey Shrikes in Notts.—On the 2nd January last, a pure bred specimen of the variety known as Pallas' Grey Shrike (*Lanius major*) was killed near Chilwell. This specimen, which is in my possession, does not show the slightest trace of white on the bases of the secondaries.

At the end of February, a specimen of the Great Grey Shrike (*L. excubitor*) was killed at Bingham. This specimen, which appears to be a female, is marked with considerably more white on the secondaries than on the primaries, and appears to be a thorough-bred *L. excubitor*.—F. B. WHITLOCK, Beeston, Notts., March 2nd, 1892.

Kittiwake Inland and Great Grey Shrike near Knaresborough.—As my son and I were walking to Arkendale on the 26th of January, we saw sitting on a hedge, a Great Grey Shrike (*Lanius excubitor*). When it took wing its magpie-like flight left no doubt as to its identity.

On the 20th of February, a Kittiwake (*Rissa tridactyla*) was brought to me for identification. It had been taken alive in a field adjoining the village of Staveley. There were 22° of frost on the 18th, followed by a snow-storm from the east on the 19th. No doubt the bird had been driven inland by the storm and had fallen exhausted in the place where it was found. For a day or two after its capture it seemed to improve in health and to gather strength. During this time it ate raw meat freely. It, however, only lived a short time in confinement and died on the 29th. It proved on dissection to be a female.—E. P. KNUBLEY, Staveley Rectory, March 3rd, 1892.

SALT SCAR.

REV. W. C. HEY, M.A., M.C.S.,

Vice-President of the Yorkshire Philosophical Society; West Ayton, York.

THERE are at Redcar three large rock-platforms, known respectively as East Scar, West Scar, and Salt Scar. The two first are accessible from the sands at low water; the last can only be reached by boat. To one who loves the sea and its living wonders, the Yorkshire coast affords no pleasanter expedition than a row to Salt Scar and a ramble among its rocks and pools. Choose the smallest boat you can find—for the water is very shallow—and a boy to row you. It is necessary to have someone who knows the channels; but a boy is preferable to a man. He will go where you want to go, and not bore you with tiresome information when you want to be quiet and think.

As the boat proceeds slowly you look through the clear water, and, amid the Laminaria forests, see many Sea Urchins (*Echinus sphaera*), some at the bottom, others crawling up the stout seaweed stalks. Here and there a Scarlet Sunstar (*Solaster papposa*) is seen gleaming from below, while many wavy bodies of small fishes pass in and out among the dark weeds. In about ten minutes Salt Scar is reached. On the North side of it a sharp ridge of rock stands up, and on it the waves break with great force; but on the landward, or South side, long channels of perfectly still water extend. The boat will pass gently up and down these, except at dead low water, and whatever is in them can then be observed with great ease and comfort. Or still better, draw the boat close to the rocky edge of the channel, and, lifting up the overhanging Fucus and Laminaria, look beneath them. The orange-coloured *Doris* is common and fine here, and there are some exquisitely beautiful species of *Æolis*. The deep red stars of *Cribella oculata* are seen here and there among the commoner Starfishes. In the nooks and crannies of the rock one of the Spider Crabs (*Hyas araneus*) abounds, though so sluggish and weed-grown that it is not always easy to detect. The common eating Crab (*Cancer pagurus*) abounds, but is seldom large. If the thongs of Laminaria are lifted up, the beautiful blue-rayed Limpet (*Patella pellucida*) will be found adhering to them in numbers. Its thick variety *lævis* generally occurs at the root of the same weed. The Cowry (*Cypræa europæa*) is sometimes to be found alive here, especially in the broad shallow channel on the landward side of the

Scar. Landing on the platform of rock, we shall find the pools well worth examining. Large green Anemones, spotted with red, abound, and I have even seen the white-plumed Anemones. Under stones, the little Porcellan Crab (*P. longicornis*) is very common, together with the Brittle Stars. Three species of Chiton occur—*marginatus*, *ruber*, and *fascicularis*. Sometimes, however, much larger game is to be caught on Salt Scar. On one occasion I found a Wolf-fish (*Anarrhichas lupus*) left in a pool, measuring over two feet. On another, I came across a very large Lumpsucker (*Cyclopterus lumpus*), so firmly attached to the rock that I was quite unable to dislodge it.

These are a few of the things to be found on Salt Scar, but I never go there without seeing many creatures of whose nature I am quite ignorant—so many that I heartily wish it was possible for a good marine zoologist to take up his abode at each important place on the Yorkshire coast, to whom anyone might carry his unknown treasures for information and illumination.

When one is tired of specimen-hunting at Salt Scar, it is delightful to recline peacefully in the boat as it glides softly with the tide along the still pellucid channels; to watch the waters gradually swallowing the rocks and listen for the splashes of the growing waves; to enjoy the solitude of the place when the last crabber has gone; and to enter more and more deeply into the great majestic spirit of the sea, as it slowly enfolds its wonders and hides them again from mortal eye.

NOTES—ORNITHOLOGY.

Notes from North Lincolnshire.—The following birds have recurred in Lincoln (North) this winter. The particulars have been supplied to me by Mr. H. H. Kew, of Louth, to whom they were sent to be stuffed.

Waxwing (*Ampelis garrulus* L.). Tealby Manor; shot by Wm. Drakes, 29th February, 1892.

Rough-legged Buzzard (*Archibuteo lagopus* Gmel.). Saltfleetby; shot by Mr. Phillips, 4th December, 1891.

Peregrine Falcon (*Falco peregrinus* Tunst.). Great Carlton; shot by Mr. Finch, 9th January, 1892.—

JAS. EARDLEY MASON, Alford, Lincolnshire, 21st March, 1892.

The Nightingale in Notts.—I do not clearly gather from Mr. Lister Petty's note whether he confirms or demurs to my statement 'that, generally speaking, it is only very few localities north of the Trent that are favoured with the regular presence of the Nightingale.' Perhaps I may therefore be allowed a few words of explanation. To the above I added that Sherwood Forest was an important exception, quoting Mr. Sterland as my authority. As I have been in possession of a copy of the 'Vertebrate Fauna of Yorkshire' for some years, I was naturally aware that the range of this species extended into South Yorkshire. From the text, however, I do not gather that *Daulias luscinia* is found in any abundance in Yorkshire. I am now working at the avi-fauna of Derbyshire, and as far as my present knowledge goes, my note that north of the Trent the Nightingale is generally speaking at most a local bird, is confirmed—F. B. WHITLOCK, Beeston, Notts., March 2nd, 1892.

NOTE ON THE METAMORPHOSED SKIDDAW SLATES.

[TRANSLATED FROM PROF. H. ROSENBUSCH.]

[THE following is extracted from Professor Rosenbusch's work *Die Steiger Schiefer*, pp. 211-213 (1877). Occurring in a memoir of the Geological Survey of Alsace-Lorraine, it will be new to many readers, and as it contains important corrections and additions to the well-known work of the late Mr. Clifton Ward, it may be worth reproducing here.—A.H.]

J. Clifton Ward* recently made some extremely interesting communications on the contact-zones of the clay-slates around the granites in northern England, the so-called Lake District. Through the kindness of my friend Lossen† I was enabled to study specimens of the three stages of metamorphism distinguished by Ward, from without inwards; viz. Chiasmolite-slate, Spotted Schist, and Mica-schist.

A piece of chiasmolite-slate from the slope of Skiddaw opposite Landscale showed a normal clay-slate with porphyritically imbedded chiasmolite crystals, in no way differing from the known occurrences of the Fichtelgebirge, Brittany, and the Pyrenees, and thoroughly agreeing with the occurrence in the Erlen valley in the outermost zone of the contact-ring of the Barr-Andlau granite. Of crystalline new-formation there is nothing else to be seen in it except a few laths of a colourless mica and little chlorite-scales. The great abundance of carbonaceous matter allows nothing more to be recognized than the quartz-granules and the above-named minerals, with yellow doubly-refracting grains of indeterminable nature. The chiasmolites are comparatively pure, but still only seldom so fresh that one can perceive the characteristic pleochroism.

The stage of metamorphism next following the Chiasmolite-slate was designated by Ward 'Spotted Schist' (*Knotenschiefer*): the description which Ward gives of it agrees only very badly with the occurrence which I have been able to study. This comes from the slope of Skiddaw opposite Landscale. The spots stand out very little, in a thin slice, from the rest of the rock: they consist of just the same minerals as form the slate, and owe their origin only to a comparatively slight accumulation of carbonaceous matter: they

* On the Granitic, Granitoid, and Associated Metamorphic Rocks of the Lake District; Quart. Journ. Geol. Soc. (1875) xxxi, pp. 568-602; (1876) xxxii, pp. 1-34.

† [Lossen has elsewhere compared the Skiddaw metamorphism with that on the north side of the Ramberg granite in the Harz; Zeits. deuts. geol. Ges. (1872), xxiv, p. 716.]

lie pretty regularly in rows, and this circumstance in conjunction with a stratiform alternation of the quartz and other constituents, gives the rock a banded appearance. The rock consists in this stage of a not quite microscopically fine-grained mixture of brown, strongly pleochroic magnesia-mica, colourless potash-mica, and quartz. The carbonaceous substance is no longer scattered as a fine dust through the whole mass, but clustered together in large patches. As an accessory, tourmaline is not very rare, and sometimes in similar quantity, i.e., in sparse granules or little crystals, occurs andalusite; more commonly pyrites. The rock is thus a true spotted or knotted mica-schist. For the suggestion that the spots are undeveloped andalusites, or that from the mechanical mixture which constitutes them andalusite is subsequently developed, the microscopic analysis gives not the slightest support. The crystal-sections in the Chiasmolite-slate have absolutely nothing in common with the knots in the Spotted Schist. An interesting point here too is the disappearance of the chlorite from the slate in its conversion into knotted-mica schist. Unfortunately in Ward's memoir the knots and the chiasmolite-crystals are not always clearly distinguished from one another, and so it is very difficult to obtain a clear picture of the progress of the metamorphism: sometimes the formation of chiasmolite crystals in unaltered slates, sometimes the formation of knots is indicated as the first stage. Still, I think, in spite of the opposite statement in the 'Summary,' I may venture the idea, based chiefly on my own observations, that the development of chiasmolites in the still unaltered slate here as elsewhere precedes the formation of knots, where the latter goes hand in hand with a crystallisation of the material of the slate. Thus the Chiasmolite-slate would be an equivalent of the knotted-clay-slate (*Knotenthonschiefer*), and the knotted-mica-schist would follow this.

It is absolutely unintelligible to me how Ward (l.c. p. 4) can give the absence of pleochroism in support of the suggestion of andalusite. Apparently there exists here a confusion with the small laths of colourless potash-mica, and Ward has not seen the andalusite, which one can identify simply by its pleochroism among the colourless minerals of the rhombic system. No more can I imagine what the author has meant by the following passage on the same page: 'When viewed with polarized light, most of them [the spots] distinctly exhibit shades of colour arranged in the form of a cross, as shown in fig. 3, and there seems to be little doubt that the spots are undeveloped chiasmolite crystals.' The appearance here described is here and there visible in the specimens lying before me too, and simply depends upon a roughly radial grouping of the mica-flakes.

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BIRDS, 1889.

THE present instalment has been compiled and edited by
WM. DENISON ROEBUCK, F.L.S.

The previous instalments of the Bibliography of Birds have appeared as follows:—

For 1884—in ‘Naturalist,’	March and April 1885,	pp. 185-200,
	continued in May 1885,	„ 223-227.
„ 1885—in ‘Naturalist,’	September 1886,	„ 260-272.
„ 1886—	„ May and June 1889,	„ 145-175.
„ 1887—	„ August and Sept. 1889,	„ 249-270.
„ 1888—	„ June and July 1890,	„ 177-198.

The counties and vice-counties of which cognizance is taken are the following, as named and numbered in the Watsonian scheme:—

53, Lincoln S.; 54, Lincoln N.; 56, Notts.; 57, Derby; 58, Cheshire; 59, Lancashire S.; 60, Lancashire W.; 61, York S.E.; 62, York N.E.; 63, York S.W.; 64, York Mid W.; 65, York N.W.; 66, Durham; 67, Northumberland S.; 68, Cheviotland; 69, Westmorland with Furness; 70, Cumberland; and 71, Isle of Man.

The remarks prefixed to the Bird-bibliography for 1886 (published in the ‘Naturalist’ for May 1889, p. 145) are equally applicable to the present instalment.

ANON. [various observers]. **Derbyshire.**

Calendar of Nature, 1879 [about Burton-on-Trent; dates given for numerous species of birds]. 4th Ann. Rep. Burton-on-Trent Nat. Hist. and Arch. Soc., 1880, pp. 67-70.

ANON. [various observers]. **Derbyshire.**

Calendar of Nature for 1882 [giving dates near Burton-on-Trent, for *Alauda arvensis*, *Erithacus*, *Hirundo* (Walton), *Turdus viscivorus* (Bradley)]. 7th Ann. Rep. Burton-on-Trent Nat. Hist. and Arch. Soc., for year ending 31st March, 1883, p. 14.

ANON. [not signed]. **Cheshire.**

Abnormally Plumaged Woodcock [(*Scolopax rusticola*); uniformly dove-coloured, shot in Alderley Park one October, now in possession of Lord Stanley of Alderley]. Land and Water, Dec. 25th, 1886, p. 640.

ANON. [not signed]. **York S.W.**

Calder-Vale Words [as used from Wakefield upwards; Dickey-dunnock = hedge sparrow (*Accentor modularis*); Daker-hen, grass drake = Corn Crake (*Crex pratensis*); Dunnock = hedge sparrow (*Accentor modularis*)]. Yorks. Folk-Lore Journ., Parts 6 and 7, Jan.-April 1887, pp. 112-114.

ANON. [not signed]. **York N.E.**

Great Northern Diver [(*Colymbus glacialis*) killed near Thirsk; measurements given.] Land and Water, Jan. 8th, 1887, p. 32.

- ANON. [not signed]. **York N.E.**
The Yorkshire Naturalists' Union [at Thirkleby Park, July 20th; various wild ducks hatched in the grounds]. *Land and Water*, July 30th, 1887, p. 58.
- ANON. [not signed]. **Cheviotland.**
[Review of] Report on the Migration of Birds [in 1886, with copious extracts: *Cosmonetta histrionica* at the Farnes, and *Otocorys* on the east coast south of Farnes noted]. *Land and Water*, Nov. 26th, 1887, p. 478.
- ANON. [not signed]. **York N.W.**
A fine flock of Golden Plovers [(*Charadrius pluvialis*) on Richmond High Moor, Nov. 19th, 1887]. *Land and Water*, Nov. 26th, 1887, p. 479.
- ANON. [not signed]. **Linc. N.**
[Podiceps rubricollis shot on strand at Cleethorpes, 5th Nov. 1887, much emaciated]. *Land and Water*, Nov. 26th, 1887, p. 479.
- ANON. [signed 'Piscator']. **Linc. N.**
The Kingfisher [(*Alcedo ispida*) and its habits, as noted by Mr. Ford at the Manor Fishery, Caistor]. *Land and Water*, Dec. 17th, 1887, p. 547.
- ANON. [signed 'G. A. P.']. **York S.E., Cheshire.**
The Golden Eagle [(*Aquila chrysaetos*): records for East Yorkshire and Cheshire repeated from Morris' *British Birds*]. *Land and Water*, Jan. 28th, 1888, p. 96.
- ANON. [signed 'E. C. B.']. **Furness.**
'Barnacles' [with excerpt from Gerarde's Herball, 1597, p. 1391, of the generation of Geese (*Bernicla leucopsis*) from barnacles at a 'small Ilande in Lancashire, called the Pile of Foulders']. *Westm. Note-Book*, Part 1, March 1888, p. 21.
- ANON. [signed 'R. T. L.']. **Cumberland.**
'Barnacles' [in connection with the generation of Geese from them; name of a Cumberland village 'Rotington' from 'Rotgeese']. *Westm. Note-Book*, Part 1, March 1888, p. 22.
- ANON. [not signed]. **Westmorland.**
Field-Meeting of the Kendal Natural History Society [at Longsleddale, 2nd Aug. 1888; *Buteo vulgaris*, *Falco peregrinus*, *Tringoides hypoleucos*, *Turdus torquatus*, *Corvus corone*, *Saxicola*, *Cuculus*, *Anthus*, *Muscicapa grisola*, etc., noted]. *Westm. Note-Book and Nat. Hist. Record*, Vol. 1, Part 3, Sept. 1888, p. 65.
- ANON. [not signed]. **York Mid W.**
Big Bag of Grouse [*Lagopus scoticus*] by Lord Walsingham at Blubberhouse [1058 birds on Aug. 30th, 1888; details given; also totals for each season from 1829-1843 and 1865-1886, from the Blubberhouse game-book]. *Land and Water*, Sept. 8th, 1888, p. 298; also see Sept. 15th, p. 332.
- ANON. [signed 'Coniston']. **York Mid W.**
Grouse [*Lagopus scoticus*] lying to Dogs in Yorkshire [on Coniston and Kettlewell moors; evidence anent change of habits of grouse during this century]. *Land and Water*, Sept. 15th, 1888, p. 332.
- ANON. [signed 'H. M., Birkdale, Southport']. **Lanc. S.**
The Natural History of the Birkdale (Southport) District [referring to R. S.'s record of *Columba oenas*, doubting its existence on the sand-hills and suggesting that the birds seen were escaped domestic pigeons]. *Research*, Dec. 1888, p. 100.
- ANON. [not signed]. **Durham, York N.E., Cheviotland, Northumberland S.**
List of . . . Donations to the Museum . . . of the Natural History Society [of Newcastle], from August 4th, 1887, to August 10th, 1888. [*Harelda glacialis*, shot at Holy Island (Thos. Thompson); *Aegialitis hiaticula*, shot at Whitley (J. T. Maling); *Cotile*, young, Helmsley, July

- 1874 (F. Raine); *Syrrhaptes*, Teesmouth, 1863 (J. Hancock); *Coracias*, Yorkshire (Id.); *Aquila naevia*, Cresswell, Oct. 1885 (Id.); *Ruticilla tithys*, Cullercoats, 1856 (Id.); *Alauda arvensis*, Newcastle Town Moor (Douglas Currie); *Syrrhaptes*, Craggside, 23rd May, 1888 (Lord Armstrong); *Syrrhaptes*, Whickham, May 17th, 1888 (Thos. Thompson); *Corvus frugilegus*, Holleyn Hall, Wylam (Wm. Dinning); *Turdus viscivorus*, Willington-on-Coquet, April 1888 (J. Hancock); *Corvus corone*, malformed beak, Hexhamshire (F. Hutchinson); *Fratercula*, caught on Tyne (Mr. Wardle)]. Nat. Hist. Trans. Northumb. Durh. and Newc., Vol 10, Part 1 (1888), pp. 172-174.
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[Archibuteo lagopus trapped on Stublick Moor, near Allandale Town,
 Northumberland; measurements given]. Research, Feb. 1889, p. 128.
- ANON. [not signed]. York S.E.
Sheffield Museum [possesses a pair of *Syrrhaptes paradoxus* killed at
 Market Weighton, June 1888]. Research, Feb. 1889, p. 134.
- ANON. [newspaper par.]. Westmorland.
Blackbird [*Turdus merula*] Nesting at Christmas [near Kendal, 4 eggs].
 Nat. Hist. Journ., Feb. 15th, 1889, p. 24.
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Notices of New Books.—Our Rarer Birds . . . by Charles Dixon
 [reference (by Dixon) to *Muscicapa luctuosa* in Yorkshire]. Zool., March
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[Review of A. Chapman's] Bird Life of the Borders. Field, May 11th,
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- ANON. [signed 'Auceps']. York S.E.
The Hawfinch [*Coccothraustes vulgaris*] in East Yorkshire [discussed at
 length, with account of nidification, increase of numbers, etc.]. Field,
 May 11th, 1889, p. 653.
- ANON. [signed 'Bono']. Cheviotland.
A Plague of Slugs and Insects.—Barley and Oat Chaff and Gulls
 [including an extended account of a gullery near Cornhill of *Larus*
ridibundus]. Field, May 18th, 1889, p. 682.
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Piratical Habits of Rooks [(*Corvus frugilegus*) in the vicinity of York;
 depriving Starlings of their food]. Field, June 22nd, 1889, p. 885.
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Zoological Society of London. Additions to the Menagerie [June 14th,
 2 Razor-bills (*Alca torda*), Yorkshire Coast, presented by H. B. Hewetson].
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Rooks [(*Corvus frugilegus*) robbing Starlings (*Sturnus vulgaris*) at Lan-
 caster; the practice not uncommon; also done by *Corvus monedula*]. Field,
 July 13th, 1889, p. 45.
- ANON. [signed 'T. D.']. York N.E.
Lark [*Alauda arvensis*] Nesting by Road-side [between Osbaldwick and
 Heworth, June 1889]. Field, July 20th, 1889, p. 97.
- ANON. [not signed]. Derbyshire, Northumberland.
Grouse [*Lagopus scoticus*] Hawking [in Derbyshire and Northumberland].
 Land and Water, Aug. 24th, 1889, p. 261.

- ANON. [signed 'W. J., Jun. (Masham)']. **York N.W.**
Gull [*Larus canus*?] caught inland [at Masham] with hook and line [26th August; called 'Common Gull']. *Field*, Aug. 31st, 1889, p. 325.
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Leeds Naturalists' Club and Scientific Association [*Alca torda*, *Colymbus*, 'Auk,' and *Lomvia troile*, noted on Filey Cliffs, 20th July]. *Research*, Sep. 1889, p. 70.
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Migrant Table. No. 13, 1889 [dates and averages given for 28 birds at Manchester (J. H. Salter), York (several), Thirsk (J. Richardson), Penketh (J. T. Gumersall), Wigton (T. E. Wilkinson and E. Little), and Silloth (F. Carr)]. *Nat. Hist. Journ.*, Sept. 15th, 1889, xiii. 111.
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Collision amongst Flying Teal [(*Querquedula crecca*) as observed near Wiverton, Notts; details given]. *Field*, Sept. 28th, 1889, p. 476.
- ANON. [not signed]. **Isle of Man.**
Crossbill, *Loxia curvirostra*, Lin. [in the Isle of Man, Aug. 24th, 1889; particulars given]. *Yn Lioar Manninagh*, No. 4, Oct. 1889, i. 109.
- ANON. [signed 'W.']. **'Yorkshire.'**
Grouse Driving v. Shooting over Dogs [compared, with a Yorkshire keeper's views on the birds that will lie to the dog]. *Field*, Oct. 5th, 1889, p. 503.
- ANON. [signed 'R. E. P. (Carlisle)']. **Cumberland.**
Curious Roosting-place for a Water Ouzel [(*Cinclus aquaticus*); under eaves of verandah, Southwaite station, L. & N. W. R.] *Field*, Oct. 5th, 1889, p. 504.
- ANON. [not signed]. **Cumberland.**
Early Woodcock [*Scolopax rusticola*] in Cumberland [shot 'last week' at Holm Rook]. *Land and Water*, Oct. 12th, 1889, p. 454.
- ANON. [signed 'L.']. **Notts.**
Osprey [*Pandion haliaëtus*] in Nottinghamshire [shot by George Eddison, of Shireoaks Hall; 5 ft. across wings]. *Land and Water*, Nov. 16th, 1889, p. 636.
- ANON. [signed 'Borderer']. **Lanc. S.**
Song of the Pied Wagtail [(*Motacilla lugubris*) described as heard at Tunbridge Wells and at Southport]. *Field*, Nov. 23rd, 1889, p. 720.
- H. COOPER ABBS. **Durham, York N.W. and N.E.**
[Presidential] Address to . . . the Tyneside Naturalists' Field Club . . . May 24th, 1886 [Nest of *Phylloscopus trochilus* noted in Chopwell Woods, May 29th, 1885; *Charadrius pluvialis* on Addleborough, Wensleydale, June 26th, 1885; nests of *Chelidon* noted on the ledges of Huntcliffe, Sept. 17th, 1885]. *Nat. Hist. Trans. Northumb. Durh. and Newc.*, Vol. 8, Part 3, 1889, pp. 327, 336, and 341.
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Woodcock [*Scolopax rusticola*] nesting in Westmorland [at Grizedale, Hawkshead]. *Field*, April 27th, 1889, p. 590.
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Sand Grouse [*Syrnhaptes paradoxus*] in Lincolnshire [three shot out of a hundred at Saltfleetby, near Louth, in Feb. 1889]. *Zool.*, May 1889, p. 184.
- F. W. A[NDREWS]. **Derbyshire.**
Calendar of Nature, 1884 [near Burton-on-Trent; dates given for *Hirundo*, *Turdus pilaris*, and *Troglodytes*]. 9th Ann. Rep. Burton-on-Trent Nat. Hist. and Arch. Soc., for 1884, pub. 1885, pp. 23-25.

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Note on Willow Wrens [(*Phylloscopus trochilus*); partly based on specimens from Spurn Point, Aug. 1885, and Rainworth, Notts, May 1887] Zool., March 1889, pp. 105-106.
- OLIVER V. APLIN. Notts.
In Sherwood Forest [treating in picturesque language of the habits and occurrence of *Phylloscopus trochilus*, *P. rufus*, *P. sibilatrix*, *Caprimulgus europaeus*, *C. egyptiacus*, *Anthus trivialis*, *Gecinus*, *Dendrocopus major*, *Sturnus*, *Ruticilla*, *Columba palumbus*, *Garrulus*, *Corvus cornix*, *Scolopax rusticola*, *Linota rufescens*, *Caccabis rufa*, and *Perdix cinerea*]. Midl. Nat., March 1889, pp. 54-58.
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In Sherwood Forest [treating of *Tetrao tetrax*, *Pratincola rubetra*, *Saxicola œnanthe*, *Turdus torquatus*, *Anas boschas*, *Querquedula crecca*, *Spatula*, *Fuligula cristata*, *Tachybaptus*, *Gallinula*, *Fulica*, *Gallinago cœlestis*, *Larus ridibundus*, *Hydrochelidon nigra*, *Hirundo*, *Cotile*, *Mareca*, *Turdus musicus*, *Cuculus*, *Acrocephalus phragmitis*, *Locustella œvia*, *Vanellus*, *Caprimulgus*, and *Columba œnas*]. Midl. Nat., April 1889, pp. 82-86.
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Black Grouse [(*Tetrao tetrax*) in Mansfield Forest; the old race still lingers]. Nat. Hist. Journ., May 1889, p. 72.
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Garganey [*Querquedula circia*] and other Birds in Warwickshire [with references also to its former breeding in Northumberland and its visiting Lincolnshire in April]. Zool., Oct. 1889, p. 390.
- H. T. ARCHER. Northumberland S.
Tame Blackbird [*Turdus merula*, female] in the Newcastle Museum [in one of the curator's rooms]. Nat., April 1889, p. 102.
- H. T. ARCHER. Northumberland S.
Hawfinches [*Coccothraustes vulgaris*] in Northumberland [several shot in early February up the Tyne Valley]. Nat., April 1889, p. 102.
- CHARLES F. ARCHIBALD. Lanc. S. or W.
Dusky Redshank [*Totanus fuscus*] in Summer Plumage in Lancashire [near the Ribble mouth, in April a few years ago; description and Editorial note]. Zool., March 1889, p. 109.
- J. J. ARMISTEAD. 'Yorkshire.'
More about the Kingfisher [*Alcedo ispida*] and some of his friends [notes based on observations in a manufacturing district in Yorkshire]. Land and Water, Dec. 17th, 1887, p. 547.
- J. BACKHOUSE, JUN. York N.E.
Black Redstart [*Ruticilla tithys*] at Scarborough [a mature female shot in Cayton Bay, 25th Dec. 1888]. Nat., June 1889, p. 176.
- JAMES BACKHOUSE, JUN. York N.W. and Durham.
The Yorkshire Naturalists' Union in Upper Teesdale [Aug. 1889; *Corvus corax* (breeds still below Middleton), *Tetrao tetrax*, *Tringa alpina*, *Ardea cinerea*, *Linota flavirostris*, *Querquedula crecca*, and *Motacilla melanope* noted; and at p. 291 is given the full list of 38 species observed]. Nat., Sept. 1889, p. 282, and Oct. 1889, p. 291.

- JAMES BACKHOUSE, jun. York S.E.
The Yorkshire Naturalists' Union at Kirkham Abbey and Acklam Brow
 [Sept. 4th, 1889 ; 19 resident and 4 migrant birds noted, *Turdus musicus*,
T. merula, *Erithacus*, *Accentor*, *Motacilla lugubris*, *Troglodytes*, *Parus*
cæruleus, *P. britannicus*, *Linota rufescens*, *Certhia*, *Fringilla cœlebs*, *Pyrrhula*,
Emberiza citrinella, *Alcedo*, *Corvus corone*, *C. monedula*, *Garrulus*, *Columba*
palumbus, *Gallinula*, *Phylloscopus collybita*, *P. sibilatrix*, *Hirundo*, and
Cotile]. Nat., Nov. 1889, p. 341.
- MATTHEW BAILEY. York S.E.
Flamborough Bird-notes [*Turdus musicus*, *T. merula*, *T. iliacus*, *T. pilaris*,
Alauda arvensis, *Plectrophanes nivalis*, *Archibuteo*, and *Syrrhaptēs*, noted].
 Nat., Jan. 1889, p. 24.
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Flamborough Bird-notes [*Pandion haliaetus* and *Caccabis rufa* shot, emigra-
 tion of *Corvus cornix*, of *Anser albifrons*, *A. canadensis*, arrival of *Ruticilla*,
Saxicola, and *Turdus torquatus*, departure of *Scolopax rusticola* and occurrence
 of *Lanius excubitor*]. Nat., May 1889, p. 130.
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Flamborough Bird-Notes [arrival of *Sylvia cinerea*, *Cuculus*, *Muscicapa*
atricapilla, *Ruticilla*, and occurrence of a fifth *Lanius excubitor* this season].
 Nat., June 1889, p. 176.
- MATTHEW BAILEY. York S.E.
Flamborough Bird-Notes [anent occurrence of *Loxia curvirostra*, *Larus*
minutus, *Puffinus anglorum*, *Lomvia troile*, *Alca torda*, *Fratercula*, and
Columba livia, and departure of *Saxicola ananthe*, *Ruticilla phœnicurus*, and
Hirundo]. Nat., Oct. 1889, p. 291.
- MATTHEW BAILEY. York S.E.
Flamborough Bird-Notes [anent occurrence of three *Dendrocopus major*,
Procellaria pelagica, *Fulmarus*, *Larus minutus*, *Ædemia fusca*, and *Xema*
sabinii, and arrival of *Scolopax rusticola*]. Nat., Nov. 1889, p. 333.
- W. S. BAILEY. Isle of Man.
[Occurrences of *Mergus serrator*, female. Castletown Coast, Jan. 22nd, 1889;
and of *Totanus canescens*, in the Isle of Man]. Yn Lioar Manninagh, No. 2,
 April 1889, i. 33.
- W. S. BAILY. Isle of Man.
Ornithological Notes, April and May, 1889 [anent *Saxicola ananthe*,
Bernicla brenta, *Limosa lapponica*, *Tringa striata*, *Oidemia nigra*, *Podiceps*
griseigena, *Corvus frugilegus*, *Tringoides*, *Cotile*, *Tringa alpina*, *Strepsilas*,
Numenius phæopus, *N. arquata*, *Falco æsalon*, *Tadorna cornuta*, *Crex*, *Sula*,
Ardea alba, *Uria grylle*, and 'Spotted Redshank, *Scolopax totanus*,
 Pennant']. Yn Lioar Manninagh, No. 3, July 1889, i. pp. 83-84.
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Manx Natural History and Antiquarian Society [*Machetes pugnax*, young
 one shot 10th Aug., 1889, at Ronaldsway]. Research, Nov. 1889, p. 115.
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Protection of Wild Birds on the Farne Islands [with balance sheet and
 notes on all the birds noted as breeding in 1888]. Land and Water,
 Sept. 29th, 1888, p. 377.
- HUGH G. BARCLAY. Cheviotland.
Protection of Wild Birds on the Farne Islands [report for 1889, with notes
 anent *Larus argentatus*, *L. fuscus*, *Fratercula*, *Lomvia*, *Sterna fluviatilis*,
S. macrura, *S. cantiaca*, *S. dougalli*, *Ægialitis hiaticula*, *Tadorna cornuta*,
Phalacrocorax carbo, *Somateria mollissima* and *Rissa*]. Land and Water,
 Dec. 7th, 1889, p. 745; Field, Dec. 28th, 1889, p. 913.

- W. I. BEAUMONT. Cheshire.
Crossbills [*Loxia curvirostra*] in Cheshire [a flock of about twenty on the outskirts of Delamere Forest, Jan. 22nd, 1889]. Nat., April 1889, p. 102.
- THOMAS BLOUNT. York S.W.
Blount's Yorkshire Tenures [at Adwick-on-Deerne, keeping hawks; at Tinsley, the same]. Yorksh. Notes and Queries, Part 11, April 1888, pp. 211-223.
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Rough Notes on the Birds observed during twenty years shooting and collecting in the British Islands . . . The Peregrine Falcon [(*Falco peregrinus*), refers to its preying on sea-birds in Northumberland, Cumberland, Yorkshire, etc.]. Land and Water, April 9th, 1887, p. 342.
- F. BOYES. York S.E.
Pallas's Sand Grouse [*Syrrhaptes paradoxus*].—A Disclaimer [as to an alleged occurrence of nest and young at Withernsea]. Field, Feb. 9th, 1889, p. 190.
- F. BOYES. York S.E.
The Nightingale [*Daulias luscinia*] in East Yorkshire [in 1889 at Beverley, South Cave, and Cherry Burton]. Field, May 25th, 1889, p. 754.
- F. BOYES. York N.E.
Variety [pied] of the Ring Ousel (*T[urdus]. torquatus*) [shot by H. J. R. Pease on his moors near Whitby, Aug. 13th; description given]. Field, Aug. 31st, 1889, p. 325.
- F. BOYES. York S.E.
Migration of the Whimbrel [(*Numenius phaeopus*) in unusual number over Beverley the present autumn]. Field, Sept. 28th, 1889, p. 476.
- F. BOYES. York S.E.
Crossbills [*Loxia curvirostra*] in East Yorkshire [at Beverley, a flock; *Columba palumbus*, *C. anas*, *Parus britannicus*, *Coccothraustes vulgaris* (a frequent visitor), *Phylloscopus rufus*, and *Strix flammea* (breeding) also noted]. Field, Sept. 28th, 1889, p. 476.
- F. BOYES. York S.E.
Great Spotted Woodpecker [(*Dendrocopus major*) near Hornsea; its East Riding range stated in correction of P. Inchbald's record of one shot; E. H. H. Blagg follows with a correction as to its sex]. Field, Sept. 28th, 1889, p. 476.
- F. BOYES. York S.E.
Spotted Crane [(*Porzana maruetta*) breeds near Beverley in small numbers, and has occurred in some quantity of late]. Field, Oct. 12th, 1889, p. 524.
- F. BOYES. York S.E.
Little Stints [*Tringa minuta*] in East Yorkshire [rather numerous on the coast this autumn]. Field, Oct. 12th, 1889, p. 524.
- F. BOYES. York S.E.
Arrival of Redwings [(*Turdus iliacus*) near Beverley; 1st Oct. 1889]. Field, Oct. 12th, 1889, p. 524.
- F. BOYES. York S.E.
Arrival of Goldcrests [(*Regulus cristatus*) near Beverley, ten days earlier than usual; date not given]. Field, Oct. 12th, 1889, p. 524.
- WM. E. BRADY. York S.W.
Food of the Rough-legged Buzzard [(*Archibuteo lagopus*); one shot at Bessecar, Doncaster, Nov. 21st, contained a Mole; one near Barnsley in 1876 had a Rat]. Nat., Jan. 1889, p. 24

- ARTHUR BUCKLEY. York N.W.
Singular Injury to Grouse [*Lagopus scoticus*] shot at Bowes; feathers of lower jaw thrust into mouth through a hole under tongue]. Field, Aug. 24th, 1889, p. 278.
- J. J. CAMBRIDGE. Durham.
The Quail [*Coturnix communis*] at Hartlepool [one picked up, 4th July]. Young Nat., Sept. 1889, p. 180.
- M. N. CARR. Cumberland.
A flock of three or four hundred Bernicle Geese [*Bernicla leucopsis*] . . . seen on the Solway, at the estuary of the river Waver, Oct. 19th [1889]. Nat. Hist. Journ., Nov. 15th, 1889, p. 156.
- B. J. CARTER. York S.W.
Arrival of Summer Birds [in 'South Yorkshire'; *Phylloscopus rufus*, April 10th]. Field, April 13th, 1889, p. 506.
- BASIL CARTER. York N.W.
The Stockdove [*Columba oenas*] double-brooded [at Masham; dates given]. Field, Sept. 21st, 1889, p. 416.
- BASIL CARTER. York N.W.
Is the Starling [*Sturnus vulgaris*] Double-brooded? [discussed from observations made at Masham]. Nat., Dec. 1889, p. 371.
- J. CARTER. York N.W. and Mid W.
Arrival of Summer Birds [at Masham; *Phylloscopus rufus*, March 26th]. Field, April 13th, 1889, p. 506. [*Tringoides hypoleucos*, April 14th]. Field, April 20th, 1889, p. 567. [*Chelidon*, April 22nd; *Cotile*, April 22nd; *Phylloscopus trochilus*, April 19th]. Field, April 27th, 1889, p. 590. [*Cuculus*, May 1st; *Crex*, April 28th; *Ruticilla phoenicurus*, April 28th; *Hirundo*, April 22nd; *Anthus trivialis*, April 20th]. Field, May 4th, 1889, p. 640.
- C. CASTELLAIN. Cheshire.
Dead Swans [*Cygnus olor*] on a pond in Cheshire, not far from Capenhurst]. Field, April 27th, 1889, p. 590.
- York N.E., Linc. N., Cheviotland, Northumberland S.,
Durham, Cumberland.
- ABEL CHAPMAN.
Bird-Life of the Borders. Records of Wild Sport and Natural History on Moorland and Sea . . . London: Gurney and Jackson . . . 1889 [8vo. pp. xii + 286 and 56 woodcuts; a most interestingly written book, in which are successively dealt with—Spring-time on the Moors; arrival of the Spring migrants, with some observations on Migration; Bird-life on the Moors in Early Spring; Bird-life on the Moors in May; Summer on the Moors; a Summer Ramble on Cheviot; Some Recollections of 'the Twelfth'; Notes on Grouse and the Grouse-Disease; Bird-life on the Moors in August; the same in September; Blackgame; Bird-life on the Moors in October; Carting to Moorgame; Bird-life on the Moors in November; the same in December; Wood-Pigeons; Wild-fowling with the Stanchion-Gun; Wild-fowl of the N.E. coast, their habits and haunts; Game-ducks; Midnight on the Oozes—a winter's night in a gunning-punt; Brent-geese; Among the wild geese—a winter's day in a gunning-punt; Grey-geese; Diving-ducks; Sea-ducks; waders, divers, and other fowl; some specific observations on the wading birds; Grebes and divers; Wild-fowling in mild weather—'blank day' (in Jan. 1886); Wild-fowl and the weather in March 1886; sundry incidents of fowl and fowling; difficulties and dangers of the gunning-punt; the last day of the season—'a lucky wind-up.' At p. 81, *Perdix rufa* noted at Hilton, near Yarm, Yorkshire; at p. 109 an amusing newspaper record of *Sula bassana* near Kirton-in-Lindsey].
- ALFRED C. CHAPMAN. Northumberland.
Long-tailed Duck [*Harelda glacialis*] inland [on a small loch in Northumberland, 35 miles from sea; female shot, Oct. 30th, 1889; *Fuligula cristata* there in Sept.; also *Clangula glaucion*, *Anas boschas*, *Querquedula crecca*, and *Mareca*]. Field, Dec. 21st, 1889, p. 888. Naturalist,

- R. W. CHASE. York S.E.
 [Emberiza cioides taken at Flamborough Head, Nov. 1886]. Midl. Nat.,
 Dec. 1889, p. 286.
- W. E. CLARKE. York S.E.
 Wintering of the Ruff [(*Machetes pugnax*); one in Leeds Market, Jan. 1877;
 one obtained near Withernsea, Jan. 20th, 1889]. Nat., March 1889, p. 79.
- W. EAGLE CLARKE. York S.E.
 A Yorkshire Bird [*Emberiza cioides* Brandt] new to the European
 avifauna? [one obtained at Flamborough Oct. 1887]. Nat., March 1889, p. 79.
- W. EAGLE CLARKE. York S.E.
 On the Occurrence of *Emberiza cioides* Brandt in Yorkshire [at
 Flamborough, Nov. 1886; now in coll. R. W. Chase]. Nat., April 1889, p. 113.
- W. E. CLARKE. York S.E.
 [Scolopax rusticola at Spurn Head on April 16th, a much lighter coloured
 bird than the autumn immigrants]. Nat., May 1889, p. 130.
- W. EAGLE CLARKE. York S.E.
 The Date of the Occurrence of *Emberiza cioides* at Flamborough
 [discussed, and Saunders' statements discussed and corrected]. Nat., Nov.
 1889, p. 334. [Settled to be Nov. 1886; evidence and full particulars
 given]. Nat., Dec. 1889, p. 356.
- W. J. CLARKE. York N.E.
 Reported Nesting of the Redstart [*Ruticilla phoenicurus*] in December
 [1888, at Hackness, near Scarborough; Editor suggests it was a Wren].
 Zool., March 1889, p. 106.
- [LORD] CLIFTON. Yorkshire.
 Woodpecker [*Dendrocopus major*] carrying off acorns and chestnuts [in
 East Kent; with note that 22nd Sept., 1889, was the date of the bird's
 arrival in Yorkshire]. Field, Nov. 9th, 1889, p. 667.
- [LORD] CLIFTON. York S.E.
 Two-barred Crossbill [*Loxia bifasciata* C. L. Brehm] in Yorkshire [one,
 immature, shot near Easington, Holderness, Aug. 12th, 1889]. Field,
 Dec. 7th, 1889, p. 824.
- E. MAULE COLE. York Mid W.
 Redshanks [*Totanus calidris*] breeding near York [in the parish of Ryther,
 in company with *Vanellus*; probably on account of being disturbed at
 Strensall]. Nat., Aug. 1889, p. 247.
- G. COOKE. York S.E. ?
 Little Gull [*Larus minutus*] in Yorkshire [killed at end of Oct. 1889, four,
 immature]. Field, Nov. 16th, 1889, p. 709.
- JOHN CORDEAUX. York N.E. & S.E., Durhm., Cheviotld., Cumbld.
 Report of the Committee, consisting of . . . [six names] . . .
 for . . . obtaining . . . observations on the Migration of Birds at
 Lighthouses and Lightvessels . . . [noting *Tringa subarquata* at Redcar
 and Spurn, *T. minuta* on the coast, with dates, *Scolopax rusticola* at Seaton
 Carew, Sept. 19th, *Ædemia fusca*, *Æ. nigra*, and *Harelda* at Farnes in
 considerable numbers, *Tringa temmincki* and *Podiceps auritus* at Spurn,
Anthus richardi in Lincolnshire, *Saxicola isabellina* shot at Allonby, Cum-
 berland, Nov. 11th, etc.]. Rep. 58th meeting of Brit. Ass., Bath, 1888
 (pub. 1889), pp. 146-149.
- JOHN CORDEAUX. Linc. N.
 Pallas's Sand Grouse [*Syrrhaptes paradoxus*] in Lincolnshire [at Goxhill,
 Oct. 23rd, 1888, flock of 20; at Grainthorpe, Nov. 8th, 1888, flock of
 forty]. Zool., Jan. 1889, p. 34.
- JOHN CORDEAUX. York S.E., Linc. N.
 Notes from the Yorkshire and Lincolnshire Coasts in the Autumn of 1888
 [anent *Puffinus anglorum*, *Corvus cornix*, *Turdus torquatus*, *Totanus glareola*,
 May 1892.

- Tringa maculata*, *Scolopax rusticola*, *Regulus cristatus*, *Syrrhaptes*, *Bubo*, *Larus glaucus*, *Podiceps cristatus*, *Turdus pilaris*, *Plectrophanes nivalis*, *Vanellus*, *Linota flavirostris*, *Pratincola rubicola*, *Hirundo*, *Strepsilas*, *Hæmatopus*, *Nycticorax griseus*, *Totanus fuscus*, and *Cypselus*]. Nat., Jan. 1889, pp. 1-4.
- JOHN CORDEAUX. Linc. N., York N.E. and S.E.
Bird-notes from the Humber District [anent *Nucifraga caryocatactes* at Marsh Chapel (first Linc. record), *Scolopax rusticola*, *Chelidon* at Whitley, and *Machetes pugnax* at Sunk Island]. Nat., Feb. 1889, p. 44.
- JOHN CORDEAUX. Linc. N.
The Nutcracker [*Nucifraga caryocatactes*] in Lincolnshire [at Mumby Chapel, Nov. 6th, 1888]. Nat. Hist. Journ., March 15th, 1889, p. 32.
- JOHN CORDEAUX. York S.E., Linc. N.
Ornithological Notes from N.E. Lincolnshire and Holderness [anent *Fuligula ferina*, *F. marila*, *Anas boschas*, *Machetes*, *Tadorna cornuta*, *Gallinago cælestis*, *Plectrophanes nivalis*, *Botaurus stellaris*, *Syrrhaptes*, *Charadrius pluvialis*, and *Limnocryptes*]. Nat., May 1889, pp. 129-130.
- JOHN CORDEAUX. Linc. N., Cheviotland, York S.E. and N.E., Durham.
The Migration of the Woodcock [*Scolopax rusticola*] in Autumn and Spring [as observed on the East Coast of England, and full details of the great flight in Autumn 1888, and notes for various other years, in detail; includes one or two notices of *Regulus cristatus* and *Asio brachyotus*]. Field, July 6th, 1889, p. 7; July 27th, p. 122; and Aug. 3rd, p. 185.
- JOHN CORDEAUX. Linc. N.
A Day amongst the Birds on the Lincolnshire Coast [noting *Syrrhaptes*, *Sterna cantiaca*, *Larus fuscus*, *L. canus*, *Rissa*, *Stercorarius crepidatus*, *Hæmatopus*, *Strepsilas*, *Tringa canutus*, *Ægialitis hiaticula*, *Tringa alpina*, *Totanus calidris*, *Squatarola*, *Limosa*, *Numenius phæopus*, *N. arquata*, *Ædemia nigra*, *Mareca*, *Turdus musicus*, *Erithacus*, *Plectrophanes nivalis*, *Saxicola ananthe*, *Pratincola rubicola*, *Sterna macrura*, *S. fluviatilis*, *Querquedula crecca*, *Totanus canescens*, *Gallinago cælestis*, *Sterna minuta*, *Hydrochelidon nigra*, *Machetes*, *Helodromas*, *Totanus glareola*, *Tringa subarquata*, *T. minuta*, *Oriolus galbula*, *Upupa*, *Merops*, *Nucifraga*, *Lanius excubitor*, and *Dendrocopus major* referred to as seen then or formerly]. Field, Sept. 21st, 1889, pp. 415-416.
- J. C[ORDEAUX]. Cheviotland, Northumberland S., Durham.
[Review of] Bird-Life of the Borders . . . By Abel Chapman [with numerous scraps of information culled from the book on various birds]. Nat., Oct. 1889, pp. 315-320.
- JOHN CORDEAUX. Linc. N.
Is the Starling (*Sturnus vulgaris*) **Double-brooded?** [question discussed and observations at Great Cotes adduced]. Nat., Dec. 1889, p. 367.
- J. C. C[RELLIN]. Isle of Man.
"Snipe" [(*Gallinago cælestis*) its occurrence, breeding, and migration in the Isle of Man, briefly stated]. Yn Lioar Manninagh, No. 4, Oct. 1889, i. 112.
- L. MORLEY CROSSMAN. Cheviotland.
A Rookery [of *Corvus frugilegus*] on Holy Island [commenced this year, never known before; 15 nests on low trees]. Field, Ap. 13th, 1889, p. 506.
- F. CURTIS. York N.E.
York, Bootham. Natural History Club [flock of *Vanellus* at Bootham, Oct. 17th; *Corvus cornix* over Clifton Ings, Nov. 2nd]. Nat. Hist. Journ., Dec. 15th, 1889, xiii. 168.
- CHARLES DIXON. Yorkshire.
Our Rarer Birds [not seen; contains Yorkshire records].
- C. WOLLEY-DOD. Cheshire.
The Nightingale [*Daulias luscinia*] in Wales [and at Edge Hall, Malpas, Cheshire]. Field, May 25th, 1889, p. 754. Naturalist,

- H. DRYDEN. Cumberland.
Long-tailed Duck [*Harelda glacialis*] in Cumberland [a male in full breeding plumage, caught on a moorland stream on the Fells above Renwick (near Kirkoswald)]. Field, June 8th, 1889, p. 801.
- R. DUNCAN. Northumberland S.
The Birds of Newcastle-on-Tyne Town Moor [a list of no less than 112 species, with remarks on their relative abundance]. Nat., July 1889, pp. 213-219.
- D. EMBLETON. Durham.
Note on the Birds seen at Nest House, Felling Shore, in May and June, 1884 [viz. :—*Passer domesticus*, *Accentor*, *Fringilla coelebs*, *Emberiza citrinella*, *Motacilla lugubris*, *Turdus musicus*, *T. merula* (these two absent), *Sturnus*, *Cuculus*, *Rissa*, *Larus fuscus*, *L. ridibundus*, and *Saxicola ananthe*]. Nat. Hist. Trans. Northumb. Durh. and Newc., Vol. 8, Part 2, 1886, p. 219.
- JOHN EVANS. Linc. S.
Goshawk [*Astur palumbarius*] and **Little Owl** [*Athene noctua*] in Lincolnshire [localities not stated, presumably not far from Bourn; Wild Swan (*Cygnus musicus*) shot at Cowbit]. Field, March 23rd, 1889, p. 422.
- EDWARD D. FISH. Cheshire.
Birds and Insects in relation to Agriculture [a paper in which the action of Cheshire farmers in destroying *Passer domesticus* is criticized]. Liverp. Sci. Stud. Ass. Ann. Rep. for 1887-88, pp. 23-26.
- F. R. FITZGERALD. York Mid W.
Is the Starling (*Sturnus vulgaris*) **Double-brooded?** [discussed in the light of observations at Starbeck]. Nat., Dec. 1889, p. 372.
- THOMAS FORD. Linc. N.
Scarcity of Winter Birds in North Lincolnshire [i.e. Caistor; *Turdus pilaris*, *T. iliacus*, *Gallinago caelestis*, *Numenius arquata*, *Columba palumbus*, all scarce, and *Scolopax rusticola* absent, but *Vanellus* and *Corvus frugilegus* are abundant]. Field, Jan. 12th, 1889, p. 51.
- B. T. H. FORDER. York Mid W.
Feet of Peewit (*Vanellus vulgaris*) **entangled with wool** [shot near Skipton, 16th August]. Field, August 24th, 1889, p. 277.
- RILEY FORTUNE. York N.E.
Little Gull [(*Larus minutus*) and **Sclavonian Grebe** (*Podiceps auritus*) near Scarborough [Dec. 18th and Dec. 6th]. Nat., Feb. 1889, p. 52.
- RILEY FORTUNE. York Mid W.
Nightingale [*Daulias luscinia*] at Ripley, Yorkshire [arrived May 12th; song described]. Nat., June 1889, p. 176.
- RILEY FORTUNE. York Mid W.
Nightingale [*Daulias luscinia*] in Yorkshire [at Ripley, six or seven successive years; also at Staveley]. Field, June 1st, 1889, p. 767.
- RILEY FORTUNE. York Mid W.
Hooded Crows [*Corvus cornix*] **attacking and devouring Salmon** [in the Yore at Mickley, Ripon, Dec. 1888; details given]. Nat., Aug. 1889, p. 244.
- RILEY FORTUNE. York Mid W.
Curious Nests of Missel Thrush [(*Turdus viscivorus*) described; one at Birk Crag, near Harrogate, entirely of large white feathers, and one five years in succession of bookbinders' cuttings at Barber's Coppice]. Nat., Aug. 1889, p. 247.
- RILEY FORTUNE. York Mid W.
Spotted Crake [*Porzana maruetta*] at Harrogate [one shot 26th Sept. 1889; *Totanus calidris* noted as having again bred near Harrogate]. Nat., Nov. 1889, p. 333.

- R. FORTUNE. York S.E.
Late Stay of Swifts [(*Cypselus apus*) at Easington, Oct. 17th, and at Newton, near there, Oct. 19th; first *Scolopax rusticola*, 19th Oct. at Easington]. Field, Nov. 2nd, 1889, p. 644.
- RILEY FORTUNE. York Mid W.
Is the Starling (*Sturnus vulgaris*) **Double-brooded?** [discussed and Harrogate observations cited]. Nat., Dec. 1889, p. 368.
- W. FOX. Derbyshire.
Sheldrake [*Tadorna cornuta*] in **Derbyshire** [one killed April 25th, at Stanton by Dale]. Field, May 11th, 1889, p. 653.
- J. H. FRYER, Sec. 'York.'
York, Bootham. Natural History Club [notes on *Tinnunculus*, *Cotile*, white-winged *Corvus frugilegus*, *Gallinula chloropus*, *Columba palumbus* (two eggs), *Cypselus* last seen 19th Aug., *Hirundo* Oct. 3rd, *Chelidon* Oct. 3rd, *Cotile* Sept. 28th; all near York]. Nat. Hist. Journ., Nov. 15th, 1889, p. 151.
- T. GIBBS, Jun. Derbyshire.
Calendar of Nature for 1882 [at **Bretby**, near **Burton-on-Trent**, dates given for *Hirundo*, *Cuculus*, *Crex* (by Ashby Road), and *Chelidon*]. 7th Ann. Rep. Burton-on-Trent N. H. and Arch. Soc., year ending 31st March, 1883, pp. 16-17.
- T. GIBBS, Junr. Derbyshire.
Calendar of Nature, 1883 [at **Bretby** near **Burton-on-Trent**; dates given for *Turdus musicus*, *Alauda arvensis*, *Hirundo*, *Cuculus*, *Motacilla raii*, *M. lugubris*, *Crex*, and *Alcedo* (Trent, near **Burton Baths**)]. 8th Ann. Rep. Burton-on-Trent N. H. and Arch. Soc., year ending 31st December, 1883, pub. 1884, pp. 22-23.
- T. GIBBS, Junr. Derbyshire.
Calendar of Nature, 1884 [near **Bretby**, **Burton-on-Trent**; dates given for *Turdus merula* (Bretby Park), *Alauda arvensis*, *Columba palumbus* (Bretby), *Dendrocopos minor* (Repton Shrubs), *Hirundo* (Ashby Road), and *Cuculus* (Bretby)]. 9th Ann. Rep. Burton-on-Trent N. H. and Arch. Soc., for 1884, pub. 1885, pp. 23-25.
- T. GIBBS, Junr. Derbyshire.
Calendar of Nature, 1885 [near **Burton-on-Trent**; dates given for *Turdus musicus*, *Alauda arvensis*, *Motacilla lugubris*, *Cuculus*, *Crex*, *Erithacus*, and *Troglodytes* (Ashby Road)]. 10th Ann. Rep. Burton-on-Trent N. H. and Arch. Soc., for 1885, pub. 1886, pp. 21-24.
- T. GIBBS. Derbyshire.
Calendar of Nature, 1887 [for **Burton-on-Trent**; dates given for *Alauda arvensis* (Bretby), *Turdus musicus* (Foremark Bottoms), and *Cuculus* (Bretby Park)]. Ann. Rep. Burton-on-Trent N. H. and Arch. Soc., for 1887-88, pub. 1888, pp. 31-32.
- T. GIBBS, Junr. Derbyshire.
Calendar of Nature, 1888 [for neighbourhood of **Burton-on-Trent**; dates given for *Turdus merula*, *Hirundo rustica* and *Cuculus*]. Ann. Rep. Burton-on-Trent N. H. S., for 1889, p. 22.
- THOMAS GIBBS. Derbyshire.
The Influence of Temperature on the Progress of Vegetation in the Early Months of the year [discussed, and table given to show the average, earliest, and latest dates of hearing or seeing *Turdus musicus*, *Alauda arvensis*, *Sylvia rufa*, *Hirundo*, *Cuculus*, and *Crex*, in the **Burton-on-Trent** district]. Trans. Burton-on-Trent Nat. Hist. and Arch. Soc., Vol. i, 1889, 81.
- F. GILPIN [sec.]. York N.E. & S.E.
York, The Mount. Natural History Society [at **Castle Howard** and **Kirkham Abbey**, 4th May, 1889; *Ruticilla phanicurus*, *Emberiza schanielus*, *Phylloscopus trochilus*, *P. rufus*; at the school, nest of *Muscicapa grisola* on hinge of garden door]. Nat. Hist. Journ., June 15th, 1889, xiii. 85.

- THOS. GOULDESBOUGH. Notts.
Grouse [*Lagopus scoticus*] **Twenty-five Miles from a Moor** [a hen killed at Wallingwells, near Worksop, during a partridge drive]. *Field*, Nov. 2nd, 1889, p. 614.
- W. O. GRAZEBROOK. Lanc. S. ?
Late Stay of Landrail [(*Crex pratensis*); one secured, 30th November, 1889, near Oakhill Park, Liverpool]. *Field*, Dec. 7th, 1889, p. 824.
- C. S. GREGSON. ? Lancashire S.
The Foolish Guillemot (*Colymbus* [i.e. *Lomvia*] *troile*) [one picked up 'in the sea alive,' presumably near Liverpool]. *Young Nat.*, July 1889, p. 154.
- J. T. GUMERSALL. Lanc. S.
A Late Cuckoo [(*Cuculus canorus*) seen near Sankey Station, Oct. 11th]. *Nat. Hist. Journ.*, Dec. 15th, 1889, xiii. 172.
Yorkshire, Cumberland, Lancashire, Durham, Northumberland.
- J. H. GURNEY, Jun. Northumberland S.
The Status of the Firecrest [*Regulus ignicapillus*] as a British Bird [Yorkshire, Cumberland, Northumberland and Durham, and Lancashire records, all admit of more or less doubt]. *Zool.*, May 1889, pp. 172-174.
- J. H. GURNEY, Jun. Northumberland S.
Hybrid Waterfowl [a Swan (*Cygnus musicus* female × *C. olor* male) reared on Gosforth Lake]. *Zool.* July 1889, p. 260.
- G. H. CATON HAIGH. Linc. N.
Night Heron [*Nycticorax griseus*] in Lincolnshire [shot at Tetney, 26th November, 1888; immature]. *Zool.*, Jan. 1889, p. 33.
- G. H. CATON HAIGH. Linc. N.
The Nutcracker [*Nucifraga caryocatactes*] in Lincolnshire [shot at Marsh Chapel, 6th November, 1888; first occurrence in the county]. *Zool.*, April 1889, p. 153.
York N.E., Mid W.
- ALLAN B. HALL. Northumberland S.
Thirsk and Leeds Notes [*Turdus musicus*, *Syrnium aluco*, *Corvus corone*, *C. frugilegus* at Thirsk; *Bernicla leucopsis*, *Anas boschas* and *Gallinago celestis* at Adel Dam; *Pica caudata* near Leeds; *Cotile* on the Wharfe; dates given]. *Nat. Hist. Journ.*, May 15th, 1889, p. 71.
- JOHN HANCOCK. Northumberland S.
Note on the Indian form of the Spotted Eagle (*Aquila navia*, Briss.) shot on the Northumberland Coast, near Cresswell, October 31st, 1885 [measurements, etc., given]. *Nat. Hist. Trans. Northumb. Durh. & Newc.*, Vol. 8, part 2, 1886, p. 217.
York Mid W.
- ISAAC HARDING. York Mid W.
Rare Birds in Yorkshire [*Archibuteo lagopus*, Craven Moors; *Upupa epops*, pair observed in May in a covert near the Craven Moors; *Syrnhaptus paradoxus*, pair for some time on the moors near Settle, and have successfully bred; particulars given]. *Wesl. Nat.*, Oct. 1888, ii. 235.
- C. HARDWICK. Lanc. S., York Mid W., S.W.
Spectre Huntsman and Hounds [treated of—also Gabble Retchet, Gabriel Hounds; in explanation Curlews (*Numenius arquata*) and Bean Geese (*Anser segetum*?) are referred to]. *Yorksh. Folk-Lore Journ.*, Part II, April 1888, pp. 200-207.
- JAMES HARDY. Cheviotland.
Report of the Meetings of the Berwickshire Naturalists' Club, for the year 1888 [at Edlingham, 30th May, no *Corvus corax* at Corbie or Raven Letch, *Muscicapa grisola* and *Fringilla caelebs* noted, at Shawdon Hall *Corvus frugilegus* nesting in Hollies, *Garrulus*, *Syrnium*, *Strix*, *Asio otus*, *A. brachyotus*, *Buteo*, *Turdus torquatus*, *T. viscivorus*, *Cuculus*, at Heathpool, near Kirknewton, 27th June, *Ruticilla phœnicurus*, *Saxicola œnanthe*]. *Proc. Berw. Nat. Club*, for 1888 (pub. 1889), Vol. 12, pp. 167-220.

H. S. HARLAND.

York N.E.

A Home-sick Blackbird [(*Turdus merula*), kept in cage at Malton, when set at liberty a mile away, returned to captivity]. Land and Water, Sept. 1st, 1888, p. 265.

ROBT. P. HARPER.

York N.E.

Ornithological Notes from Yorkshire [Scarborough, Filey and Leeds; *Falco peregrinus*, *F. æsalon* reported as *F. subbuteo*, *Archibuteo*, *Circus cyaneus*, *Columba livia*, *Lanius collurio*, *Rissa* in flocks, *Larus marinus*, *Anas boschas*, *Mareca*, *Ædemia fusca*, *Tadorna*, *Tringa striata*, *Larus glaucus* (noted as not seen), *Lomvia troile*, *Scolopax rusticola*, *Puffinus griseus*, *Somateria mollissima* noted, and doubt as to the British origin of the *Ardea garzetta* previously recorded]. Zool., April 1889, pp. 149-150.

J. W. HARRISON.

Linc. N.

Oystercatcher [*Hæmatopus ostralegus*] within the Humber [at Goxhill, two shot, Aug. 29th and 30th, 1889]. Nat., Oct. 1889, p. 291.

J. E. HARTING.

Linc. N. and S.

Wild-Fowl Decoys in Essex [with notes as to 4,000 birds taken at one drive in Deeping Fen, Lincs. (Willoughby 1678), and 31,200 ducks taken in one season in ten decoys near Wainfleet (Pennant, B. Z.), and 113 ducks at one time and 248 altogether the same day, at Ashby Decoy, Lincs.]. Essex Nat., Oct. 1888, ii. 163 and 166.

J. E. HARTING [but not signed].

Cumberland, Durham.

Memoir of the late Frederick Bond [with notes of some of his birds, including Cumberland (1848) examples of *Muscicapa atricapilla* (p. 413), *Loxia bifasciata* from Brampton (p. 415), and albino *Sturnus vulgaris* from Darlington (p. 417)]. Zool., Nov. 1889, pp. 401-422.

WILLIAM HEWETT.

'Near York.'

Hawfinch [*Coccothraustes vulgaris*] near York [male caught alive 19th Jan.]. Nat., March 1889, p. 79.

WILLIAM HEWETT.

'York.'

Sand Grouse [*Syrrhaptes paradoxus*] near York [three in his possession; sixty Yorkshire examples seen by writer]. Nat., March 1889, p. 78; repeated in Nat. Hist. Journ., March 15th, 1889, p. 32.

WILLIAM HEWETT.

York S.E.

Sand Grouse [*Syrrhaptes paradoxus*] in Yorkshire [near York and near Beverley, June 1888; description]. Zool., March 1889, p. 108.

J. F. HILLS, Sec.

York N.E.

York, Bootham. Natural History Club.—April 8th [notes on breeding of *Corvus frugilegus*, *Turdus viscivorus*, *Motacilla raii*, *M. lugubris* and *Parus palustris* round York]. Nat. Hist. Journ., May 15th, 1889, p. 67.

J. F. HILLS.

York Mid W.

An Impregnable Domicile [nesting of *Sturnus vulgaris* in a hydrant at York Station]. Nat. Hist. Journ., May 15th, 1889, p. 71.

J. F. HILLS, Sec.

York N.E. and Mid W.

York, Bootham. Natural History Club [nest and 4 eggs of *Alcedo ispida*, Knaresborough, R. H. Sikes (described); eggs of *Accipiter nisus*, *Acrocephalus phragmitis*, *Turdus viscivorus*, *Passer montanus*, all near York; breeding of *Rallus aquaticus* at Buttercrambe, A. S. Rowntree]. Nat. Hist. Journ., June 15th, 1889, xiii. 85.

W. HOBSON.

Lanc. S.

Late Swallows [(*Hirundo rustica*?) seen at Whalley Range, near Manchester, 10th Nov. 1889]. Nat. Hist. Journ., Dec. 15th, 1889, xiii. 172.

WILLIAM HODGSON.

Cumberland.

Is the Starling (*Sturnus vulgaris*) **Double-brooded?** [discussed in the light of extended experience in various parts of Cumberland; their increase in numbers also mentioned. and the effect of hard winters on them and *Turdus musicus*]. Nat., Dec. 1889, p. 371.

Naturalist,

- ABRAHAM HOLROYD (Shipley). York Mid and S.W.
Yorkshire Proverbs an' Speyks [There's no carrion can kill a Crow (*Corvus corone*)]. Yorksh. Folk-Lore Journ., Part 2, April 1888, p. 224.
- JOHN HOPKINSON. Northumberland.
Notes on Birds observed in Hertfordshire during the year 1888 [*Syrrhaptēs paradoxus*; the only British records from Feb. 1864 to May 1888 include a flock seen in Northumberland early in June 1872]. Trans. Herts. Nat. Hist. Soc., Vol. 5, Part 5 (June 1889), p. 141.
- H. KNIGHT HORSFIELD. York Mid W.
Late Breeding of the Nightjar [(*Caprimulgus europæus*) at Thornthwaite, Sept. 2nd, 1889, probably a second brood]. Nat., Nov. 1889, p. 333.
- ROBERT J. HOWARD. Lanc. S. and W.
Notes on the Occurrence of Pallas's Sand Grouse [*Syrrhaptēs paradoxus*] in Lancashire [detailed particulars of all the Lancashire (excl. Furness) occurrences known to writer; details of measurements, stomach-contents, etc., of six specimens shot at St. Michael's-on-Wyre; total number for Lancashire, 59, of which 11 were killed]. Zool., Feb. 1889, pp. 51-55.
- ROBT. J. HOWARD. York S.W.
Sand Grouse [*Syrrhaptēs paradoxus*] in Yorkshire [on Manshead Moor near Todmorden, mid June, 1888, two pairs, all shot; another on the open moor, 1,200 feet alt.]. Zool., July 1889, p. 266.
- E. HOWARTH. York S.E.
Pallas' Sand-Grouse [*Syrrhaptēs paradoxus*] on the Yorkshire Wolds [at Market Weighton; a pair shot out of a flock of thirty, now in Sheffield Museum]. Nat., Jan. 1889, p. 24.
- E. HOWARTH. Cheviotland, York S.E., Durham.
Pallas's Sand Grouse [(*Syrrhaptēs paradoxus*); general sketch of the 1888 immigration; reference to the first English occurrence of 1863 being at Thropton in Northumberland, on 21st May, and to its nesting in East Yorkshire and Durham in 1888]. Research, Feb. 1889, pp. 131-132.
- W. W. H. HULTON. Lanc. S.
The Preservation of Rookeries [giving figures showing gradual diminution from 1884 to 1889 of the number of Rooks (*Corvus frugilegus*) in three rookeries near Hulton Park, Bolton-le-Moors]. Field, April 6th, 1889, p. 497.
- D. E. HUME. York S.E.
Bittern [*Botaurus stellaris*] on the Humber [a full-grown example lately shot on Broomfleet Island]. Field, March 16th, 1889, p. 367.
- A. HUTCHINSON. Derbyshire.
Uncommon Birds in the Midlands [nine *Loxia curvirostra*; a *Botaurus stellaris* shot on the Trent at Drakelow, near Burton; *Archibuteo lagopus* captured in Monsal Dale, where it committed ravage among the rabbits]. Field, March 23rd, 1889, p. 422.
- A. S. HUTCHINSON. Derbyshire.
[Pair of Black Terns (*Hydrochelidon nigra*) captured at Langley near Derby; recorded at foot of a note on 'Martens in County Kerry']. Field, June 8th, 1889, p. 801.
- PETER INCHBALD. York S.E.
The Great Grey Shrike [*Lanius excubitor*] in Holderness [at Arram Hall, near Hornsea, April 1889]. Zool., June 1889, p. 234.
- PETER INCHBALD. York S.E.
Great Spotted Woodpecker [*Dendrocopus major*] in the East Riding [one, young, shot at Arram Hall, near Hornsea]. Field, Sept. 21st, 1889, p. 416.
- JAMES INGLEBY. York Mid W.
Notes on Nesting Sites of the Missel Thrush [(*Turdus viscivorus*) near Brimham Rocks; written in reference to Butterfield's and Lees' notes published in 1888]. Nat., Feb. 1889, p. 52.

- JAMES INGLEBY. York Mid W.
Crossbills [*Loxia curvirostra*] in **Nidderdale** [several seen in Harefield Wood near Pateley Bridge, July 1888]. Nat., Feb. 1889, p. 52.
- J. ISMAY. York S.W.
Some Account of the Parish of Mirfield (by Mr. Ismay), to a friend in Cumberland. 1755 [Wild ducks (*Anas boschas*), Wigeon (*Mareca*), Teal (*Querquedula crecca*), Coots (*Fulica*), and several sorts of Water Hens (Query, species) are seen about the river (Calder) in winter, especially in a great frost; the Great Speckled Loon or Diver (*Colymbus glacialis*) was shot here September 29th, 1749, and was the only one perhaps ever seen in this country; speaking of sport, Woodcocks (*Scolopax rusticola*), Snipes (*Gallinago caelestis*), Wood Pigeons (*Columba palumbus*), Plovers (*Vanellus vulgaris*), Quails (*Coturnix communis*), Daker-hens or the Land-rail (*Crex pratensis*), Water-rails (*Rallus aquaticus*), Red-wings (*Turdus iliacus*), Fieldfares (*T. pilaris*), Woodpeckers (*Picus*, species), Jays (*Garrulus glandarius*), Nightingales (*Daulias lusciniæ*) are mentioned, also that we have some Pheasants (*Phasianus colchicus*) in the wood, but the breed is in a great measure destroyed]. Yorksh. Notes and Queries, Part 10, Jan. 1888, pp. 206-207.
- J. ISMAY. York S.W.
Extracts from the Diary of the Rev. J. Ismay [of Mirfield; 1745, Dec. 1st, Robin Redbreast (*Erithacus rubecula*) in song]. Yorksh. Notes and Queries, No. 10, Jan. 1888, p. 197.
- E. B. JACOB [Secretary]. Cumberland.
Wigton Boys' Association [note of breeding of *Larus ridibundus* at Moorthwaite Loch, where they have greatly increased under protection]. Nat. Hist. Journ., June 15th, 1889, xiii. 85.
- J. M. JEFFCOTT. Isle of Man.
Address of the Retiring President [gives Manx names for *Lagopus scoticus*, *L. mutus*, *Aquila*, *Botaurus*]. Yn Lioar Manninagh, No. 2, April 1889, i. 58.
- J. M. JEFFCOTT. Isle of Man.
"Snipe" [(*Gallinago caelestis*) their Migration, Nidification and Occurrence in the Isle of Man]. Yn Lioar Manninagh, No. 3, July 1889, i. 92.
- J. J. DUNNINGTON JEFFERSON. York S.E.
Great Plover or Thick-knee [*Ædicnemus scolopax*] near York [one shot December 24th 'here' (?=Thicket Priory, writer's residence)]. Field, Jan. 5th, 1889, p. 27.
- F. P. JOHNSON. Cumberland.
Weight of Woodcocks [(*Scolopax rusticola*); one shot near Brampton weighed just over 1 lb.]. Zool., June 1889, p. 233.
- P. M. C. KERMODE. Isle of Man.
Phenological Observations [with Manx dates for *Turdus merula*, *Corvus frugilegus*, *Turdus viscivorus*, *Scolopax rusticola* (Ramsey), *Hirundo rustica*, *Vanellus* (egg), *Sula bassana* (Ramsey Bay), and *Phylloscopus trochilus*]. Vannin Lioar, No. 1, Jan. 1889, p. 19.
- P. M. C. KERMODE. Isle of Man.
Our Insect Enemies: Wireworm [with evidence as to the value of *Corvus frugilegus* as against the pest, from Manx observations]. Yn Lioar Manninagh, No. 2, April 1889, Vol. 1, pp. 23-24.
- P. M. C. KERMODE. Isle of Man.
[Pallas' Sand-grouse (*Syrrhaptes paradoxus*) shot in a field at North Ramsey, Isle of Man, Jan. 2nd, 1889]. Yn Lioar Manninagh, No. 2, April 1889, i. 32.

(To be continued.)

NOTE ON THE NESTING OF THE PEEWIT.

IN WHAT TIME DOES THE PEEWIT LAY HER
CLUTCH OF FOUR EGGS?

 RICHARD HOWSE,

*Curator of the Museum, Newcastle-on-Tyne; and Hon. Sec. Tyneside Naturalists'
Field Club, etc.*

Read at the Joint Evening Meeting of the Nat. Hist. Society, and Tyneside
Nat. Field Club, April 5th, 1892.

AT Eastertide, 1880, I made an observation on the nesting habit of the Peewit (*Vanellus vulgaris*), which seemed entirely new, and which, so far as I am aware, has not been mentioned or recorded by any writer on the habits of birds in any work on ornithology.

It is, I believe, the generally accepted opinion, that all birds after commencing to lay, deposit one egg per day of twenty-four hours. This appears to be the acknowledged rule with regard to domestic poultry, and also with regard to those small well-known birds whose habits are of easy observation, but there are some rare deviations from this rule among domestic fowls, for it is well known that some hens lay two eggs per day occasionally, but not so regularly as to invalidate the rule of one egg per day of twenty-four hours. Till within a few years I certainly thought this was the general rule for all birds, but an observation made at Easter, 1880, led me to doubt the universality of this habit of one egg per day among the Plovers, and to conclude that at least some of them laid their clutch of four eggs in a much shorter space of time than four days.

On the Saturday morning preceding Easter, 1880, I searched for Peewits' eggs with a friend in a small field, on the edge of an extensive moor in Redesdale. The field was very small, and sloped rapidly towards the south, and was enclosed with high stone walls, and was well sheltered from the cold east winds which were then prevailing. A dozen or more Peewits were hovering about over the field, and on our entering it, the birds did not disperse, but kept hovering round us, but did not cry vociferously as when they have nests or young. We were, however, induced to think by their behaviour and their not dispersing, that their nesting operations were begun. The field, the lower part of which was in rigs, was regularly quartered, and carefully searched over, rig by rig, for a long time, with the result that only numerous false nests, or slight depressions trodden down into the ground by the birds, were seen. With some reluctance, after our long

and unsuccessful search, we quitted the field about twelve o'clock, and afterwards as carefully searched the nearest part of an adjoining field, but without success, for we did not find a single egg all day. Out of the sunshine, the air was bitterly cold, and though there were birds in great numbers, no eggs were to be found on the Saturday.

On the Monday following (Easter Monday), after a long moorland walk, we were returning homewards by the same small field, but approaching it in a different direction, and along a road by which we were concealed from view, and could not be seen till we were close to it. On looking cautiously over the stone wall to see if the birds were still there, we saw several Peewits rise from the ground in the peculiar manner they assume when rising from their nest. Proceeding over the wall directly to the spot where the bird nearest had risen from the ground, we came upon a nest with four eggs, and at short distances off we found two others, each with two eggs. In the adjoining field, which we had searched also on the previous Saturday, we found another nest with four eggs, and not far off, on an adjoining rig, another nest with two eggs. That is, in about twenty minutes on the Monday at noon we found altogether fourteen eggs on the same ground which, on the previous Saturday, we had searched for about an hour and a half without finding a single egg. As we had on the Saturday examined the ground with much care, and were certain that we had not overlooked any eggs on that day, the conclusion was forced on us that the nests with four eggs, as well as the others, must have been laid within the forty-eight hours, that is, between 12 o'clock on Saturday and the same hour on Easter Monday, if not in even a shorter time.

As further evidence that Peewits lay their eggs quickly and in a short time, and confirmatory of the above observation, it may be mentioned that in Easter week, 1866, I found some Peewits' eggs under the following circumstances in the same district, but not in the same fields. There had been a severe snowstorm and a heavy fall of snow for the season on Easter Monday, and all the moors were covered with snow until the Wednesday morning following, when it all disappeared from the higher grounds exposed to the sun's rays. About five o'clock on Thursday evening I started a Peewit from a piece of uncovered moorland, though snow was still lying in all the hollows and sheltered spots around. On going to the place from which the bird rose there was a nest with two eggs, which the bird had been sitting on, as they were quite warm. Now both these eggs must have been laid since the morning of the previous day, if not in a shorter time, for all the moors were

covered with snow till the middle of that day. That is, two eggs had been laid in or within the twenty-four hours.

Peewits, as is well known, often rise from a nest containing only one or two eggs. This seems to indicate that these birds begin to sit continuously from the time the first egg is laid. This habit would be of the greatest advantage to the Peewit, for, the nest being always on exposed, open ground, the eggs, if voluntarily left uncovered by the parent bird for a short time even, would inevitably fall a prey to the numerous gulls, rooks, and crows which are constantly hawking for eggs over the moors in spring.

To the more migratory species of this family, which have to travel such immense distances for the purpose of nesting and rearing their young, this rapid habit of laying their eggs and incubating them would be of special service, for many of these birds leave our shores late in spring for their breeding-grounds, often within the Arctic circle, the young of some of them returning as early as August, and the others in the early part of September, on their journey back to the north of Africa, or further southwards; the whole process of nesting and rearing their young, and the passage of many thousand miles to and from their winter quarters having to be accomplished in three or four months. It must be evident from these facts that the shorter the period required for the purposes of incubation and rearing their young, the greater would be the advantage to the Plover family.

Since the above observations were made, I have not had an opportunity of confirming their correctness, or otherwise rectifying any error in the observation. I have, therefore, given this rather long account of what may seem a very trifling matter in bird-life, but which, if substantiated, would be of considerable interest, in the hope that someone with ample opportunity may further investigate this question, and establish the exact time in which the Peewit and other Plovers lay their clutch of eggs.

NOTE—LEPIDOPTERA.

Amphidasis prodromaria and Hybernia leucophæaria near York.—Whilst entomologising in Sandburn Wood, near York, on the 28th March, about 11 a.m., I took a male and female specimen of the Great Oak Beauty (*Amphidasis strataria* Hufn. = *prodromaria*) in copulâ. They were at rest on the bole of an oak-tree. The female has laid about 100 eggs, of a pale greenish colour. This species is of rare occurrence in the neighbourhood of York, and I see on consulting Mr. Porritt's list of Yorkshire Lepidoptera, that it has only been recorded from this district once previously, viz., by the late Mrs. Thomas Wilson.

On the same date I also took specimens of *Hybernia leucophæaria* (including a couple of specimens of the var. *marmorinaria* Esp.). These were obtained by searching the boles of oak-trees.—W. HEWETT, Howard St., York, 4th Ap., 1892.

NOTES ON THE GREAT CRESTED GREBE.

F. B. WHITLOCK,
Beeston, Notts.

THE Great Crested Grebe (*Podiceps cristatus*) is best known on the Trent as a bird of tolerably frequent appearance in the autumn months of the year, being seldom met with in breeding plumage, though it nests on neighbouring private waters, where it is protected

I was therefore agreeably surprised on rounding a sharp bend of the river, to row my boat almost between a very fine pair. I approached as quietly as possible, following the male, but could not get nearer than thirty yards before he dived, to reappear again about thirty yards below me, so that he must have passed very nearly under my boat when he dived. I noticed that birds of this species seem to have the power of nearly submerging themselves before diving, so that when they disappear entirely, they only have to roll forward, the dive being accomplished with the greatest ease and without any noise. I several times saw this pair travel for quite seventy yards entirely under water. In diving to escape observation, they did not appear to go very deep, as I could trace their course on one occasion, by the eddies formed on the surface of the water as they passed beneath. After following them a little way down the river, they both took wing, rising from the water rather awkwardly. Two days later I again met with one of this pair, but this time the bird appeared to have been put up by an approaching barge. I was greatly surprised to see what a powerful and sustained flight this species is capable of, even in the teeth of a strong east wind.

On the wing, the Great Crested Grebe has a peculiar appearance, the head and neck being stretched forward to their fullest extent, and the peculiar feet extended behind, so that the bird appears to possess a broad expanded tail. The white on the underparts is very conspicuous during flight, as are the white feathers of the wings. The only note I heard was a guttural call of the male, which sounded like 'Kük Kük.'

April 10th, 1892.

NOTE—ORNITHOLOGY.

Sheldrakes on the Solway.—It is interesting to note the increase of the Sheldrake (*Tadorna cornuta*) in some parts of the Solway district owing to the protection afforded by the Wild Fowl Act. These birds have already returned to their breeding haunts. The nest is formed of down plucked from the breast of the duck, and is placed in a variety of situations—under a piece of rock or in a rabbit hole, in a depression in the ground, under the root of a blown-down tree, under a mass of sticks or hazel cuttings, etc., left in woods. The birds sometimes nest several miles away from the sea, and when the young are hatched they are led by the parent birds in the early morning to the nearest stream, by following the course of which the sea is reached. Several times have I encountered the families on these journeys, generally about 4 a.m.—J. J. ARMISTEAD, Solway Fishery, Dumfries, March 4th, 1892.

Naturalist,

ORNITHOLOGICAL NOTES FROM REDCAR for 1891-92.

THOMAS H. NELSON, M.B.O.U.,
Redcar.

MARCH 1891.—As is usually the case as soon as the close-season commences, Golden Plover (*Charadrius pluvialis*) assembled on the low lands near the coast; a N.E. gale and snowstorm on the 8th March brought down these birds in large flocks, as also numbers of Wood Pigeons (*Columba palumbus*). The snowfall continued until the 11th, and small birds were hard pressed for food, but by the 13th the fields were clear once more. On the 20th the first Wheatears (*Saxicola œnanthe*) and Whinchats (*Pratincola rubetra*) made their appearance. Pied Wagtails (*Motacilla lugubris*) were also noted.

On the 1st April a Red-necked Grebe (*Podiceps griseigena*) and three Red-throated Divers (*Colymbus septentrionalis*), in full plumage, were seen near East Scar. Early in this month Cormorants (*Phalacrocorax carbo*), which leave this district in winter, were observed flying backwards and forwards from the cliffs S. of Huntcliffe to the mouth of the Tees, the white patch on their thighs being distinctly visible. 8th.—Strong E. gale and rain. Several Woodcocks (*Scolopax rusticola*) were on the sand-hills, probably awaiting a favourable opportunity for crossing the sea on their return to the breeding-grounds in the North of Europe. During the easterly gales, which continued up to the 13th, there was considerable mortality amongst Puffins (*Fratercula arctica*) and Guillemots (*Lomvia troile*), many of each species being washed up on the beach, the former all being in winter dress, whilst the latter had assumed the brown head and neck indicative of the breeding-plumage. 22nd.—A solitary Shore Lark (*Otocorys alpestris*) was picking amongst the grass opposite the Fishermen's Square. 27th.—Swallows (*Hirundo rustica*), House Martins (*Chelidon urbica*), and Sand Martins (*Cotile riparia*) arrived in considerable numbers. Ring Ouzels (*Turdus torquatus*) were noticed on the Cleveland moors. On the 30th a Landrail (*Crex pratensis*) was picked up in a field near Guisbrough. On the 28th I found several newly-formed Ring Dotterel (*Ægialitis hiaticula*)'s nests, and on the 3rd May one of these contained the full complement of four eggs. I observed the first Redshank (*Totanus calidris*)'s nest, with four eggs, on the 11th. Sedge Warblers (*Acrocephalus phragmitis*) were heard and seen on the 5th, and, on the same date, several Terns, probably *Sterna macrura*, were passing at sea to the

N.W. Between this date and July there is nothing worthy of remark to note; during the latter half of July a few Whimbrels (*Numenius phaeopus*) were to be seen on the foreshore, and their musical cry might frequently be heard in the neighbourhood of the estuary. These birds are invariably the first to arrive of the winter, or rather autumn, migrants, and I have occasionally noticed them during the first week of July. On the 31st a Fulmar Petrel (*Fulmarus glacialis*) was picked up on the sands, having apparently died at sea and been washed ashore.

Aug. 7th.—Curlews (*Numenius arquata*) passed overhead at dark, calling loudly, and on the 13th I again heard shore-birds calling overhead about 11 p.m. The next day a few Knots (*Tringa canutus*) were on the sands of the estuary, and on the 17th adult Sanderlings (*Calidris arenaria*) and immature Turnstones (*Streptilas interpres*) put in an appearance. On the 21st a Knot with the chestnut breast of summer plumage, and a Greenshank (*Totanus canescens*) were procured. The first Bar-Tailed Godwit (*Limosa lapponica*) was shot on the 29th.

Sept. 3rd. The usual shore-birds were fairly plentiful, and I shot another example of the Greenshank. 10th.—While off in a boat about 300 yards from the shore, a small flock of birds passed over the sands; I called them within range and procured two, which proved to be Curlew Sandpipers (*Tringa subarquata*). On this and the two succeeding days numbers of Sandwich Terns (*Sterna cantiaca*), both adult and immature, passed from N.W. to S.E. They did not hover around and fish, like their Common and Arctic cousins, but flew straight on, as though on their migration from their breeding-places on the Farne Islands to more southern latitudes.

Richardson's Skuas (*Stercorarius crepidatus*) had been abundant in the Tees Bay for some days, and on the 12th I noticed forty or fifty of these pirates pursuing the Common and Arctic Terns which were feeding on the herring 'sile.' Both the adult dark and light-breasted forms of *S. crepidatus* were present, in about equal numbers; they often hunted in couples, and I several times noticed that one of each form took part in a chase. 20th, 21st, and 22nd.—N.E. wind, and rain. Several flocks of ducks passed. On the 21st a Velvet Scoter (*Ædemia fusca*) was shot whilst flying over the sands near the Breakwater.

October 1st. Mr. E. B. Emerson informed me that a Fork-Tailed Petrel (*Oceanodroma leucorhoa*) was brought into the kitchen at Easby Hall by a cat. So far as I am aware this is only the second instance of the occurrence of this Petrel in Cleveland in the space of forty years, and there is little doubt that it had been blown inland

from the opposite coast by the severe gales which brought so many of these little ocean wanderers within the observations of naturalists on the W. coasts of England and Scotland, as recorded in the pages of the 'Field.' 6th.—Southerly gale, with rain. Many Ducks and Larks (*Alauda arvensis*) passed on migration. A Short-Eared Owl (*Asio accipitrinus*) was noticed. The passage of Ducks and Larks, during S.W. gales, continued until the 12th, when Green Plovers (*Vanellus vulgaris*) and Hooded Crows (*Corvus cornix*) appeared, and on the 21st there was a great migratory rush; thousands of birds crossed from the sea from early morning till late in the afternoon; the flocks consisted principally of Thrushes (*Turdus musicus*), Redwings (*T. iliacus*), Fieldfares (*T. pilaris*), Chaffinches (*Fringilla cælebs*), Larks, Green Plovers, Hooded Crows, and a few Snow Buntings (*Plectrophanes nivalis*); many Ducks, of various species, also passed at sea.

For a few days, after this, the wave of migration slackened, although each day witnessed the arrival of a few flocks of oversea visitors. On the 16th, during a strong S.W. gale, a Little Grebe (*Podiceps fluviatilis*), driven by the storm, sought refuge on the platform of the railway station, where it was captured by the watchful policeman on duty. Three Ruffs (*Machetes pugnax*) were seen in a field near Redcar, and one, an immature example, was shot. 23rd.—A Red-necked Phalarope (*Phalaropus hyperboreus*) was picked up on the sands near the Tees breakwater; this is the first specimen I have seen in the flesh here. 25th.—A Redcar pilot brought in a female Great Grey Shrike (*Lanius excubitor*) which he had taken when two or three miles out at sea: the bird was in an exhausted condition, and alighted on the 'sheet,' where it remained until the pilot secured it. Short-Eared Owls were frequently observed towards the end of the month, one which was shot on Redcar sand-hills on the 22nd had been feeding upon Meadow Pipits (*Anthus pratensis*), and its claws were thickly matted with the blood and feathers of its prey. 26th.—A N.W. wind, moderate in force. Several Woodcocks came over, and two were shot on the sand-hills. Numerous Gannets (*Sula bassana*) and flocks of Ducks passed at sea. 29th and 30th.—E. wind, foggy. Hooded Crows and Larks were migrating in large bodies; the Hooded Crows generally appear in greatest numbers during thick weather in October and November. 31st.—I noticed two Purple Sandpipers (*Tringa maritima*) feeding by the edge of the shore to the E. of Redcar.

Nov. 16th.—E. wind, strong, rain, and 21st.—N. squally, rain. Large flocks of Snow Buntings passed each day. 19th.—A Red-necked Grebe was shot off Redcar. On the same day the

Middlesbrough taxidermist received a Spotted Crake (*Porzana maruetta*) which had been shot on the marshes on the N. side of the river. From the 18th to the 23rd Swallows and House Martins were continually hawking about on the Esplanade and in the High Street. (See Mr. Harting's article on 'Belated Swallows' in the 'Field' of 30th January, 1892.) 26th.—Three Eider Ducks (*Somateria mollissima*) were observed swimming near Redcar Pier. Although this sea-duck is very rare with us, it is quite probable that, now it is increasing so rapidly at the Farne Islands, owing to the strict protection afforded to it there, we may in future have more opportunities of recording its occurrence on the Yorkshire coast.

Dec. 18th.—Frosty; fine. An immature Great Northern Diver (*Colymbus glacialis*) was shot at sea. Two flocks of Geese passed. 26th.—Snow Buntings came over in large flocks.

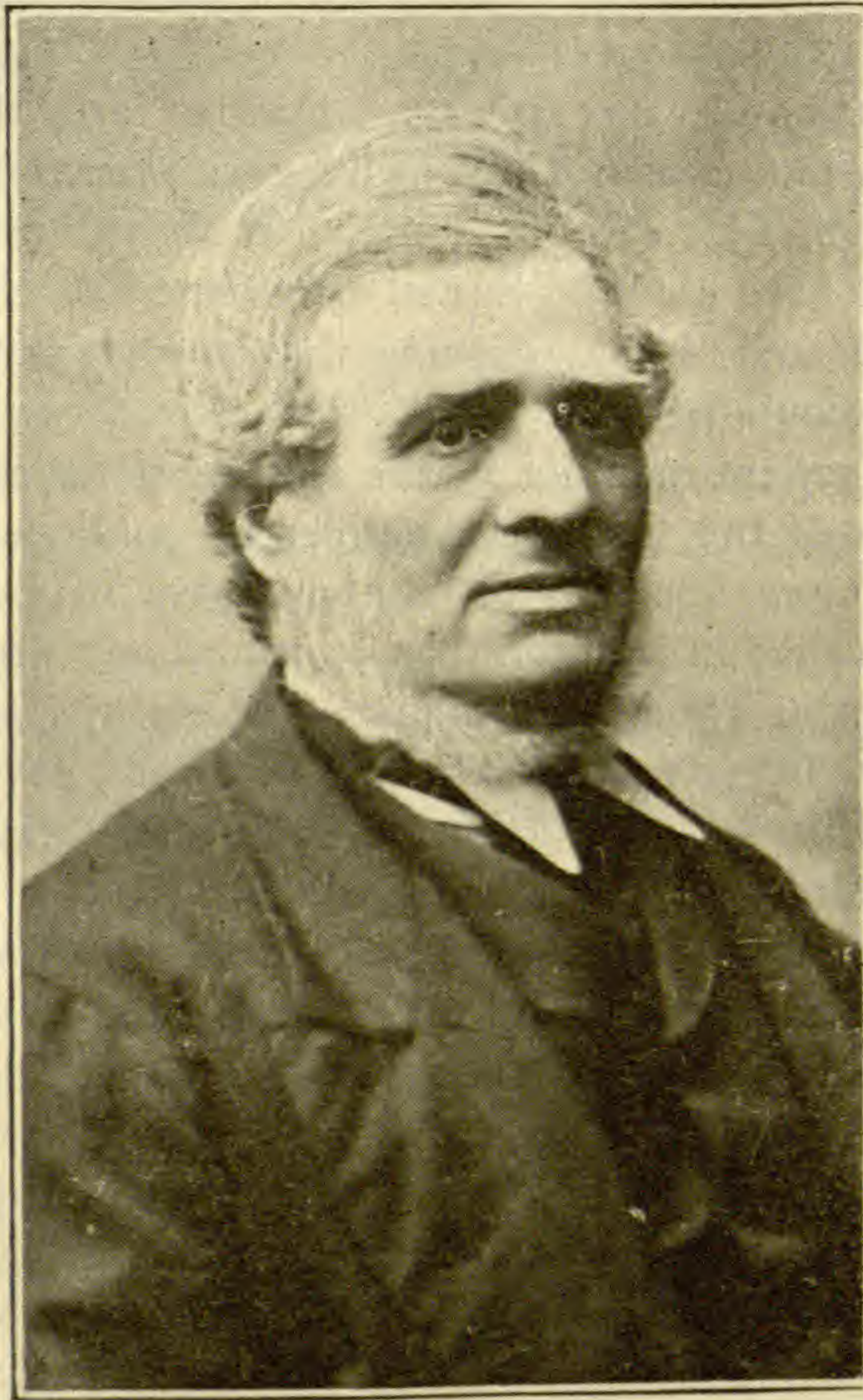
Jan. 2nd, 1892, with a N.W. gale, both Skylarks and Snow Buntings migrated in considerable numbers, passing without intermission all the morning, and on the 7th, with a N.E. gale and heavy snow, there was a passage of Redwings and Fieldfares to the N.W. 11th and 12th.—N.E. gale. Great numbers of Common Gulls (*Larus canus*), both adult and immature, passed to N.W. On the 12th an immature specimen of the Glaucous Gull (*L. glaucus*) was shot close to the town, and an adult Grey Phalarope (*Phalaropus fulicarius*) was obtained at the Tees Mouth. 24th.—The last arrival of winter migrants was noted. Wind S.W., light; fine and mild. Thrushes, Fieldfares, and Larks passed all the morning, and a large flock of Green Plover crossed about noon.

February 10th, 11th, and 12th.—Attracted by the numbers of Kittiwakes (*Rissa tridactyla*) to be seen about a mile out at sea, I procured a boat and went off to ascertain the cause of this vast assemblage of Gulls; both E. and W., as far as the eye could reach, their graceful white forms were visible, many busily engaged dipping into the water and others flying overhead, and then darting down to pick up some object from the surface; I shot two or three examples and found that their mouths were full of small crustaceans, with which the sea was literally alive; heaps of these were afterwards washed ashore by sea-winds, and afforded a feast for Starlings and other frequenters of the tidal line. (The crustaceans were submitted to the Rev. Canon Alfred Merle Norman, M.A., D.C.L., F.R.S., who refers them to *Euthemisto compressa*, a species not hitherto observed in British seas). 18th.—A female Great Northern Diver was shot in the estuary. 21st.—A Fulmar was found washed up on the beach. 26th.—I saw two more Great Northern Divers and a Great Crested Grebe (*Podiceps cristatus*) near the Tees Mouth.

In Memoriam.

CHARLES SMETHURST.

THE year 1892 opened disastrously for the naturalists of Leeds, for on the 1st day of January death put an end to the life and the sufferings of Charles Smethurst. He was born at Horsforth, near Leeds, and, being sent to work at the early age of six years, had no opportunity of securing even the most elementary education, until later in life, when he acquired a knowledge of reading and writing.



Charles Smethurst

As an all-round field naturalist he had few equals, having a practical acquaintance with plants, shells, birds, insects, spiders, etc., in fact, nothing in the fields or woods escaped his keen eye, but being of a retiring disposition, none, except his most intimate friends, knew of the stores of information he possessed on these subjects.

It was, however, as a lepidopterist that he was best known, and to him the naturalists of Leeds are indebted for the sight of many rare species of moths. In this branch he was a most assiduous worker, going out, night after night, collecting the night-feeding larvæ, and sugaring the trees in the woods around Meanwood; and for many years he was one of the most successful lepidopterists that attended the meetings of the Yorkshire Naturalists' Union, when he usually distinguished himself by making some addition to the Yorkshire list—a by no means easy feat when it is remembered what a number of keen students of this branch of natural history Yorkshire has possessed.

It was always a pleasure to see his massive form at the meetings, and to note the enthusiasm which lit his genial face when speaking in homely language of his exhibits, for he had no jealousy in his hobby, but most freely gave his hard-earned experience to all who desired, although it was only by questioning that any idea of the extent of his knowledge could be got.

He was an ardent member of the Naturalist Societies of Leeds, of which a few of the first met at different public-houses, but they seemed to be more Societies for the purchase of birds' skins and insects from dealers in London than to record any work done by the members. During 1860 a Naturalists' Society was started by a few lovers of nature living at the east end of Leeds at the East Ward Mechanics' Institute. The Institute soon after came to grief, and the Working Men's Institute being established during 1861 at the Old Assembly Rooms, several of the members of the East Ward Society formed a nucleus round which from time to time gathered a first-rate society, including such men as Liversedge, Smethurst, Todd, W. H. Taylor, J. Dixon, J. W. Davis, etc. Of this Society Smethurst was one of the first to join, and always contributed a good proportion of work towards keeping alive the interest of the Society. From that time until 1886 his activity was unflagging, then came the accident by which he ultimately lost his leg. After this, being unable to follow any employment, he soon became poor, but through all his adversity he clung tenaciously to his cabinet of insects. The crippled leg was a constant source of pain to him, which he bore uncomplainingly until he was carried off by chronic bronchitis on Friday, 1st January, 1892, aged 63, and was buried in Woodhouse Cemetery.

And so passed away a man who, under happier circumstances, might have placed himself in the front rank of his science and made himself a name beyond his own town or county.

CROSSGATES, NEAR LEEDS.

WM. NELSON.

Naturalist,

TROUT HATCHING AT KNARESBOROUGH.

EDGAR R. WAITE, F.L.S.

SEVERAL causes have conspired to render the fish so much loved by British anglers, viz., the trout, scarce. One of the principal causes is the pollution of the rivers by sewage and waste materials poured into them from various manufactories erected on their banks, thus rendering trout-producing rivers fewer in number, the remaining rivers becoming consequently besieged by anglers and so over-fished. Another cause may be found in the ever-increasing custom of ignoring the so-called coarser fish for the sake of the higher art of throwing the fly, so that the coarser fish are allowed to increase in numbers to the detriment of the ova and young fry of the trout; but whatever the cause or causes may be, the fact remains that it has become necessary, in order to increase the number of trout, to resort to artificial means of raising them. The hatchery of the Knaresborough Angling Club has been instituted to that end. By the kindness of Mr. J. Gavin Brown, the Hon. Secretary, and Mr. Wm. Todd, the Bailiff of the Club, I had on the 26th March an opportunity of inspecting the process of the operations carried on at the hatchery.

Before referring particularly to the interior arrangements of the hatchery, it will be necessary to imagine that we are accompanying the bailiff on his visits during the months of November and December to the upper reaches of the Nidd, to which the gravid fish have made their way for the purpose of spawning. By means of nets the bailiff secures as many of these fish as possible, and with gentle pressure causes them to part with their respective reproductive elements of spawn and milt into a suitable vessel, afterwards replacing the fish into the river.

Returning to the hatchery, the bailiff transfers the contents of this vessel to zinc trays, which are arranged in gradations on both sides of the shed. They are each about three feet long, ten inches wide, and four deep, furnished at the outflow end with a perforated screen, through which the water passes into the next tray. The bottom of each tray is covered to the depth of an inch with fine gravel. The water-supply which has to be substituted for the natural stream of the river is furnished from two sources. One from the substratum of a large adjoining filter-bed, and the other from a reservoir of unfiltered water, the object of the latter arrangement being to afford a certain amount of organic matter such as would be found in the river itself.

From observations taken on the spot, by means of a standard river thermometer, it was ascertained that the temperature of the water supplied from the bottom of the filter beds was 41.6° , that from the reservoir of unfiltered water 45° . Both the supplies run into a tank at the head of the trays, and the resultant temperature proved to be 44° . From this tank the water runs through each of the trays successively and the temperature of the water on leaving the last tray was found to have risen to 45.2° , that of the open river at the same moment being 46° . The bailiff finds that from about 95 to 105 days is necessary for the artificial hatching out of the ova as deposited in the trays.

Great care requires to be exercised on every part of the operations, not the least important being the daily inspection of the ova with a view to discover the presence of a destructive fungus which frequently attacks unfertilised ova, thence spreading to neighbouring ova which are fertile. It is also necessary to discover and remove infertile ova, in order to lessen as much as possible the grounds of the attack of this fungus.

The young fish are allowed to remain in the zinc trays until the yolk-sacs are almost absorbed, when they are removed into the reservoir of unfiltered water, where they remain for the greater part of a year. By this time the fish have attained the size of a gudgeon, and are then transferred into the river, a certain proportion being conveyed and turned into the upper reaches whence the spawn was first obtained, as a compensation to the Yorkshire Fisheries Board, by whose permission the Knaresborough Angling Club is enabled to procure the necessary supply of spawn.

The following table shows the result of visits made to the higher reaches of the Nidd during the months of November and December last year:—

Date.	Males.	Females.	Ova obtained.
Nov. 11	24	8	1,000
" 12	43	21	300
" 14	42	32	2,500
" 18	14	3	100
" 19	4	3	1,000
" 26	8	5	150
" 30	13	8	1,500
Dec. 1	1	1	150
" 4	51	19	2,300
" 7	53	30	5,500
" 8	36	30	9,500
" 10	13	13	1,500
" 11	27	24	6,000
" 12	24	12	4,000
" 14	23	10	1,000
" 17	22	9	1,000
" 18	3	5	500
" 29	6	5	2,000

SAND-SCULPTURE.

T MELLARD READE, F.G.S.,

Park Corner, Blundellsands, Liverpool.

THE sand-dunes on the Crosby coast at the present moment exhibit an interesting phenomenon which, if it has occurred before, I have not noticed. On some of the perpendicular faces which have been cut into the sand-dunes by recent high tides an apparently vertical structure, at right angles to the face, has been developed. It presents the appearance of a prismatic cleavage, extending vertically from bed to bed through the 'cross-bedding' of the sand. On closer examination, some of these vertical markings are seen to be like the flutings of a Doric column, the edges being as sharp and definite as any mason's work I ever saw. Others are like gashes cut back from the face across the ledges presently to be described. Sometimes these gashes are wider at the bottom than the top, and simulate miniature mountain gullies. Between the several beds there are square ledges with loose sand talus lying on them, so that some of the series present a remarkable likeness to the outline drawings of the Cañons of the Colorado, which the Geological Survey of the United States has made us all so familiar with. In several cases these miniature cliffs jut out from the ledge in overhanging projections.

A careful examination shows that this apparent structure is really no structure at all, but simply the result of sand-sculpture. A very wet season, during which the sand has got thoroughly saturated and consolidated, has been followed by exceptionally dry weather, with the effect of drying the surface-grains rapidly, leaving the sand behind still moist and solid.

The slightest disturbance of the wind sets these grains in motion, and their attrition and concussion in falling from ledge to ledge cuts out these curious forms. One of my sons very soon showed how it was done, by climbing up a sandhill and setting the loose sand in motion. It came down first in several big rills, which divided lower down into scores of small rills, looking precisely like streams of water falling from ledge to ledge.

This sculpture by falling sand so exactly simulates other denudations on a larger scale by subaerial agencies, and is so striking, that I venture to think that this notice may be interesting to some of the geologists and others who read 'The Naturalist.'

April 13th, 1892.

May 1892.

NOTES AND NEWS.

The Entomological Society of London continues—we are glad to see—to increase its list of Fellows. Amongst its latest acquisitions in our Northern district we note the name of Mr. F. N. Pierce, the Secretary of the Lancashire and Cheshire Entomological Society at Liverpool.

—>oo<—

It will be of much interest to know (as we learn from Science Gossip for March) that natural history specimens can be sent abroad at the same rate of postage, viz., 1d. for a packet weighing under 4 ounces, a concession having been made by the British Post Office, which had not been hitherto made well-known.

—>oo<—

We have received the Second Volume of the Transactions of the Leeds Naturalists' Club and Scientific Association, which contains a List of Papers and Meetings for the years 1886 to 1888, and Abstracts of Papers read in 1889 and 1890. The record is a good one, and we have pleasure in congratulating the Society on its work. An important feature of the book is an article by Harold Wager, on the 'Structure and Life-History of a Fungus,' illustrated by a carefully prepared plate, which serves as frontispiece to the volume.

—>oo<—

We are pleased to see a 'Preliminary list of the Hymenoptera-Aculeata of Lancashire and Cheshire, with notes on the Habits of the Genera,' commenced in the 'British Naturalist' for January. It is from the pen of Mr. Willoughby Gardner, F.E.S., and embodies all previously published records, including those of Mr. B. Cooke published in 'The Naturalist' thirteen years ago, which in reality was the 'preliminary' and pioneer list. About a dozen species of Ants figure in the first instalment, one of which, however, *Formica cunicularia* Latr., should be deleted, inasmuch as its locality (Greenfield) is in Yorkshire.

—>oo<—

We have received the 2nd Part, dated 1891, of 'An Account of British Flies (Diptera),' of which Mr. F. V. Theobald, B.A., F.E.S., is now sole author, the Hon. Cordelia Leigh having retired. It is published by Elliot Stock. This part finishes the account of the Aphaniptera or Flies, and commences the fourth chapter, which is devoted to the *Cecidomyiidae*, a lengthy account being given of the Hessian Fly and briefer ones of nine other species of *Cecidomyia*. The book is still open to the objection that no notice is given of distribution and no attempt made to record localities; we may note, however, in justice to the author, that several of the species are from the observations of Mr. Peter Ingham, whose carelessness in this respect has always been remarkably conspicuous. Pretty full details of life and history are given by Mr. Theobald, and in the case of fleas and of the Hessian Fly, remedial and distinctive measures are indicated and suggested.

—>oo<—

That there is vigour and no little ability among the naturalists of Burton-on-Trent is evidenced by the contents of the Second Volume of the 'Transactions of the Burton-on-Trent Natural History and Archæological Society,' an excellent specimen of Bemrose's best typography, which has just been published and now lies before us. The functions of a local natural history society are admirably discussed in a presidential address by Mr. P. B. Mason, F.L.S., who also, in conjunction with Mr. J. T. Harris, F.E.S., carries into execution the views he expresses by the compilation of an excellent list of the Micro-Lepidoptera of the district. Local Archæology is represented by an article with two plates on some ancient Burton MSS., by Mr. T. Knowles, M.A. Cantab. In a paper of a more general character on Trout and Grayling, Mr. G. Morland Day includes an account of a Fish-hatchery at Milton, close to Repton, and Messrs. J. E. Nowers and J. G. Wells have a most interesting paper entitled 'Notes on a Salt-Marsh at Branston' (with a map). There are other articles, on Huskless Barley from Thibet, on the Irish Aran, and on a Summer Tour in Norway, which, however interesting in themselves, are quite out of our province, and, we fear, hardly in perfect harmony with the scope of the Transactions themselves. But so far as these articles leave room, the local work is well done, and worthy of all praise.

FOUR NEW YORKSHIRE MOSSES;

WITH FURTHER LOCALITIES AND NEW RECORDS
FOR THE MOSS-FLORA OF UPPER SWALEDALE AND
NORTH YORKSHIRE GENERALLY.

RICHARD BARNES,

The Gardens, Saltburn-by-the-Sea.

THE discovery in an entirely new locality of four rare and elegant species of Bryum, viz., *Bryum Warneum* Bland, *Br. lacustre* Brid., *Br. Marratii* Wils., and *Br. calophyllum* R. Br., will be, doubtless, of some interest to working bryologists, since, so far as their distribution in Britain is concerned, they are confined to few stations indeed, and to which, apparently, no recent additions have been made; and, moreover, their occurrence in the marshes adjoining the estuary of the Tees furnishes respectively, to the best of my knowledge, new records for the Moss-flora of Yorkshire generally, while *Br. Warneum* and *Br. Marratii* are new to the East Coast of England. Tod Point is situated somewhat west of Coatham, and from this portion of the coast the estuary of the Tees is bounded for a considerable distance by a broad tract of sandy, marshy ground—usually known as Coatham Marshes. The physical character which this locality presents has led me often to regard it as being likely to yield some of the rare mosses known to occur at Southport and the two Scottish stations, viz., Tents Muir and the Sands of Barrie. A careful investigation, however, was not made until the latter part of 1891, when the pleasure was afforded me of meeting with the rare species mentioned herein.

In the 'Phytologist,' for December 1858, p. 638-643, and April 1859, p. 104-107, there are excellent accounts by the late Dr. J. B. Wood, regarding, among other rarities, the occurrence of *Br. Warneum*, *Br. Marratii*, and *Br. calophyllum* on the sands at Southport, in which locality, I believe, they were first discovered as new to the Moss-flora of Britain. Many interesting incidents are given as to the earlier gatherings of the above-named plants, which render the two papers well worth perusing.

My sincere thanks are hereby tendered to Dr. Braithwaite, F.L.S., for his kind assistance in examining and verifying the species enumerated in this list.

The sub-genus *Cladodium*, to which Schimper refers the present four species, depends on the more or less imperfect structure of the inner peristome as its chief distinguishing characteristic.

Bryum Warneum Bland. Coatham Marshes, Sept. 1891. Growing mostly in company with *Bryum calophyllum*. The unusually pale straw colour of the capsule on turning to maturity will have probably attracted the attention of other bryologists.

Bryum lacustre Brid. Coatham Marshes, November 1891. Occurring by far the most plentifully of the four species, and often associated with *Trichostomum tophaceum* Brid. In the 'Journal of Botany,' March 1888, p. 70, Rev. E. N. Bloomfield, in his paper 'The Moss Flora of Suffolk,' refers to a very early record for this species by Eagle at Wangford, 1804.

Bryum Marratii Wils. Coatham Marshes, December 1891. Growing in much less quantity than the other three species. It is usually stated to ripen its fruit in September, but in this locality it does not reach that condition until the middle or end of December.

Bryum calophyllum R.Br. Coatham Marshes, October 1891. Discovered at Melville Island on Captain W. E. Parry's voyage. It well deserves the name assigned to it by its founder.

The following species marked with one asterisk, are new to Swaledale, and those with two, to North Yorkshire generally.

Systegium crispum Hedw. Saltburn Gardens.

Gymnostomum squarrosus N.&H. Saltburn Gardens. With regard to this species and the above, there is some doubt attached to their nativeness in this locality, as they were growing near spar brought from Derbyshire.

****Weissia viridula** Brid. var. **densifolia** Schpr. On banks of disused lead-mines, Kisdon Force, Upper Swaledale.

***Dicranella subulata** Hedw. Whitsundale Beck, Upper Swaledale.

***Archidium phascoides** Brid. West Stonesdale, Upper Swaledale.

Seligeria tristicha Brid. This species which was recorded for Kisdon Force, in 'Naturalist,' July 1890, p. 215, has been found to grow in great abundance on the banks of all the tributaries of the Swale about Keld, where dripping limestone rocks occur.

***Barbula revoluta** Schwg. On walls at Thwaite and Keld, Upper Swaledale. I have also gathered it on walls near Hawes, Wensleydale, and in similar situations at Bowlees, Upper Teesdale, Co. Durham.

- ***Encalypta ciliata** Hedw. Arngill, Upper Swaledale.
- ***Discelium nudum** Dicks. Whitsundale Beck, Upper Swaledale.
- ***Webera annotina** Hedw. Whitsundale Beck, Upper Swaledale.
I have also met with this species at Wiley Cat Gill, Guisbrough Moor.
- ***Bryum bimum** Schreb. var. **cuspidatum** Bry. Eur. Swinner Gill, Upper Swaledale.
- ****Bryum murale** Wils. On walls, Rokeby Park. New county record.
- ***Diphyscium foliosum** L. Banks of Whitsundale Beck, Upper Swaledale.
- ****Plagiothecium latebricola** Wils. Wiley Cat Gill, Guisbrough Moor, with perfect fruit; and also in Roxby Woods.
- ***Amblystegium confervoides** Brid. Kisdon Force, Upper Swaledale, October 1889. This species should have been included in my first list of Swaledale Mosses. It was gathered with *Heterocladium heteropterum* Bruch, and was not determined until some time after. I have also gathered it on limestone rocks near Richmond, with fruit in fine condition.
- ***Amblystegium fluviatile** Swartz. On stones in West Stonesdale Beck, Upper Swaledale.
- ***Hypnum ochraceum** Turn. In most of the streams in Upper Swaledale, and growing luxuriantly where the grit makes its appearance. I have also met with it in Wiley Cat Gill, Guisbrough Moor, Cleveland.
- Hypnum giganteum** Schpr. Holwick Fell, Upper Teesdale. Stag's Fell, Wensleydale. I have gathered it in a fine state of fructification at Hell Kettles, near Darlington.
- Lejeunea Rossettiana** Mass. It may be as well to note that I have met with this species at Kisdon Force in similar situations as at Richmond.

NOTES AND NEWS.

We are sorry to read in the March number of 'Grevillea' a paragraph announcing the discontinuance of the present series. The Editor, Dr. M. C. Cooke, after twenty years' labours, finds himself compelled to retire, owing to 'fickle health, increasing years, and diminished vigour.' We sincerely echo his wish that some other proprietor may be found to undertake the responsibility and carry on the work. A journal like 'Grevillea' is indispensable to working cryptogamic botanists, and while congratulating Dr. Cooke on its past success, we look forward to its continuance on the same lines. And we must not forget that the present Editor has conducted the journal as a work of love, and that, accordingly, the thanks of all its readers are due to him for his invaluable labours.

NOTES—MOLLUSCA.

Testacella haliotidea at Shipley.—I have pleasure in sending particulars concerning the discovery of *Testacella haliotidea* in these gardens by myself. During 1889 I found two specimens, but these were not recorded. During 1890, I found nine specimens, and in 1891 thirteen at least. The following are the dates for 1891, January 22nd and 29th, February 18th, March 18th and 19th, April 22nd and 30th, May 6th and 8th, June 13th and 25th, August 31st, and September 14th. I was much surprised to find that this slug could endure immersion in water for a considerable time, as one, to my knowledge, was lying in a tank into which it had fallen, for over three hours. I took it out, and after lying some hours on some damp stable manure it began to glide away.

It has been stated that *Testacella* is unknown in the gardens at York, but I am of opinion that this is a mistake, as I found one specimen in the drainage of a *Cypripedium* which came from York the previous day, and although I looked hard I failed to find any trace of it having travelled over the stage upon which the plant stood. I was also told by a gardener, who was employed at York Nurseries a few years ago, that he frequently found this slug there when digging. I showed him one I found here, and he knew that it was a carnivorous animal and he advised me to encourage it. He also said that York was the only place where he had ever seen it, previous to its appearance here.

Mr. Waite is mistaken when he says that I have obtained nearly a score. As a matter of fact I have only *observed* them, and have done all I could to encourage this remarkable slug.—EDWARD SELF, The Gardens, Ferniehurst, Shipley, April 10th, 1892.

Testacella scutulum at Horbury.—On the 30th March, whilst digging in the garden, I turned up a slug which appeared unfamiliar to me. On closer examination a day or two following it turned out to be a *Testacella*. Mr. J. W. Taylor, to whom the specimen was sent, informs me that it is undoubtedly *T. scutulum*.—W. RUSHFORTH, Horbury, Wakefield, April 27th, 1892.

NOTE—BOTANY.

Narcissus pseudo-narcissus still at Bullcliffe Wood.—It is a pleasure to be able to record that the above still occupies its old habitat as recorded by Mr. Gissing nearly 30 years ago, viz., Bullcliffe Wood. I found a fair number of plants in the spring of 1891. A few days ago I sent a specimen to Mr. Baker, Kew, who replies, 'This is the true *Pseudo-narcissus*.'—W. RUSHFORTH, Horbury near Wakefield, April 27th, 1892.

NOTE—FISHES.

The Tadpole Hake at Redcar.—On the morning of the 12th April I picked up a fish on the beach which Mr. W. Eagle Clarke confirms me in determining as *Raniceps trifurcus*. On referring to Clarke and Roebuck's 'Vertebrate Fauna of Yorkshire,' I find that Redcar is the only place in Yorkshire where the fish has occurred, and that it is extremely rare, only a couple of instances being mentioned, the present making the third.—T. H. NELSON, Redcar, April 12th.

NOTES AND NEWS.

Ireland has not hitherto possessed a journal specially devoted to its own Natural History, and we are, therefore, glad to welcome the first number of the 'Irish Naturalist.' This journal is to be the official organ of the Royal Zoological Society of Ireland, Dublin Microscopical Club, Belfast Natural History and Philosophical Society, Belfast Naturalists' Field Club, Dublin Naturalists' Field Club, Armagh Natural History and Philosophical Society, and Cork Naturalists' Field Club. Accordingly, we may expect to see therein important papers on the fauna and flora of the Sister Isle. The number now before us promises well, containing articles by prominent naturalists on Recent Additions to the List of Irish Birds, Seaweeds from the West Coast of Ireland, The Crossbill (*Loxia curvirostra* L.) in Ireland, County Dublin, past and present, and the Coleoptera of the Neighbourhood of Armagh; and, in addition to these, several short notes and accounts of the Proceedings of the several Societies already mentioned.

THE YORKSHIRE BOULDER COMMITTEE AND ITS FOURTH YEAR'S WORK.

SAMUEL CHADWICK, F.G.S.,
Malton; Honorary Secretary to the Committee for 1890.

THE Committee, in presenting its report at the annual meeting of the Yorkshire Naturalists' Union, have pleasure in stating that although the year has not been so favourable so far as regards the number of boulder reports received, yet there has been a series of detail gone through with a view of re-arranging the method of recording, and of systematising a more thorough survey than has yet been attempted, the general idea being to divide the county, more or less, into sections (which would be placed under the supervision of various members of the Committee, with the assistance, as far as possible, of members and associates of the Union), by which means they hope to be able to present a more detailed survey of the boulder district. The boulder reports which have been received during the year have been carefully examined by the Committee, and duly forwarded to the British Association Boulder Committee, by whom they have been accepted, and presented at the recent meeting of the British Association held at Cardiff. As many of the more remarkable boulders have now been recorded, the Committee is desirous of obtaining systematised information upon the erratics of particular districts of Yorkshire, and will, in the course of next year, endeavour to obtain reports of a more connected description. To aid in the identification of boulders steps are being taken to form a collection of some of the more characteristic rocks of the Lake country. Mr. T. Tate will visit the Lake district and spend several days collecting on behalf of the Committee. Mr. Benjamin Holgate has contributed an extensive and important series of rocks from the same district very carefully labelled, the localities being affixed at the time of collecting.

REPORTS UPON ERRATICS IN NORTH AND EAST RIDINGS OF YORKSHIRE.

S. CHADWICK, F.G.S.,
Malton; Hon. Secretary to the Committee.

Nos.	No.				
—	1	Flotmanby Hall	...	near Filey	... East Riding.
5	2	Flotmanby Hall	...	„ Filey	... „
1	3	Ganton	...	„ Scarborough	... „
2	4	Ganton	...	„ Scarborough	... „
100	5	Lund	...	„ Beverley	... „

1. A square block of whinstone. The length is 2 ft. 7 in. \times 2 ft. 4 in. \times 2 ft. 3 in. above ground. In the parish of Folkton, near Filey, on the estate of Mr. J. W. Woodall, Scarborough. The farm is called West Flotmanby Hall farm. Folkton is situated about five miles to the west of Filey. West Flotmanby Hall is east of Folkton about half a mile. No striations or marks of any kind, but upon the N.E. face of the boulder is the mark of the Government broad arrow. The nearest district from which it could have travelled is Kildale, in Cleveland, about forty miles west. About 150 ft. above the sea. It is situated nearly on the top of a ridge of gravel running N.E. by S.W., and rests upon gravel-sand and beds of clay.

2. In the parish of Folkton, on the estate of Mr. J. W. Woodall, Scarborough, round a spring head at the N.E. side of West Flotmanby Hall, near Filey, there are several boulders which have been collected from the Carrs; the largest is—

2 ft. 6 in. \times 1 ft. 11 in. \times 1 ft. 3 in. Mountain limestone.

1 ,, 7 ,, \times 1 ,, 4 ,, \times 1 ,, 1 ,, Diorite.

1 ,, 3 ,, \times 0 ,, 11 ,, \times 0 ,, 8 ,, ,,

1 ,, 1 ,, \times 0 ,, 10 ,, \times 0 ,, 8 ,, Whinstone.

1 ,, 0 ,, \times 0 ,, 9 ,, \times 0 ,, 8 ,, Sandstone.

All are subangular to rounded. They have all been moved to their present position. The whinstone and diorite may have come from the west, and the sandstone from the north-west; probably about forty miles distant. Height about 150 ft. above sea-level.

3. Boulder of Shap granite; measuring 2 ft. 11 in. long, 2 ft. 6 in. broad, 2 ft. 1 in. thick. In the parish of Ganton, near Scarborough, on the estate of Sir C. Legard, Ganton Hall, now forming the corner-stone on the premises belonging to the Greyhound Inn. Is a large Shap boulder. It is from subangular to rounded, and is oblong in shape. There are no indications of any striæ or grooving. It has been a sort of trysting-stone for generations. An old man remembers when he first came to the village, sixty-two years ago, this stone was then at the junction or angle of the road, and from this position anyone could be seen approaching the village by the highway. It was removed across the road to its present position in 1853. It formerly stood at the north corner of the village lane joining the highway. Height, about 60 ft. above the sea. The formation on which the boulder rests is composed of beds of sand to a great depth; there is occasionally a band of rough angular flint intermixed, but generally speaking the whole district about here is a huge sand-bed.

4. At the west end of the same house are two boulders measuring—

2 ft. 6 in. \times 1 ft. 4 in. \times 1 ft. 3 in. Whinstone.

1 ft. 3 in. \times 1 ft. 2 in. \times 1 ft. 0 in. Oolitic sandstone.

The one composed of whinstone is angular, the Oolitic sandstone subangular. Both have been moved to their present position. The sandstone may have come across the valley about six miles north. Height above the sea, about 60 ft.

5. Boulder of grey granite; 3 ft. 8 in. long, 1 ft. 8 in. broad, 1 ft. 6 in. thick, occurs in the parish of Lund, at the north end of the village of Lund, near Beverley, East Riding of Yorkshire, and about 150 yards to the north of Lund Church. Subangular. There is no doubt but that this boulder has been removed to its present position, although a long time ago. No striæ or markings. Probably the nearest source would be about 200 miles north. Height, about 150 ft. above the sea.

In the parish of Lund, at the north end of the village, principally in the village street, at the north side of the church, there are about 100 boulders, which are to be seen in the footpaths, foundations of old houses, banks of the road, etc.; these are composed of whinstone, diorite, hard compact sandstone, and granite, but the majority are whinstone. The largest is about 2 ft. long, 14 in. broad, and 9 in. thick; the smallest is about 9 in. thick, 8 in. broad, 7 in. deep. Besides these are several hundreds not more than 6 in. x 6 in. x 6 in., which have been used for paving footpaths. They are all rounded to subangular. The whole have been moved to their present position. The nearest rock of the same nature would be about Cleveland in the north; probably 100 miles north. Height, about 150 ft. above the sea. Boulders, more or less small, of all sorts of foreign rocks are being continually cleared off the land about here, and broken up for roads. There seems to be only a thin covering of boulder clay in some parts, and underneath a great thickness of rounded chalk gravel with flints, etc.

WILLIAM GREGSON,
Baldersby, Thirsk.

Nos.	No.				
I	1	Sand-Hutton	...	near Thirsk	... North Riding.
I	2	Barton	...	„ Darlington	... „
I	3	Rainton	...	„ Thirsk	... „

1. Boulder of Shap granite in the village street of Sand-Hutton, near Thirsk; 3 ft. x 1 ft. 10 in. x 1 ft. 10 in.; subangular; direction of longest axis N.N.W. and S.S.E.; no striæ; about 98 ft. above the sea; isolated; resting on Keuper sandstone.

2. Boulder of Shap granite at Barton (Yorkshire, N.R.), between Darlington and Richmond; 1 ft. 8 in. x 1 ft. 6 in. x 2 ft.; rounded. About 250 ft. above the sea, and resting on Keuper sandstone.

3. Boulder of millstone grit, at Rainton, near Thirsk; 2 ft. 6 in. \times 2 ft. 3 in. \times 1 ft. 10 in.; subangular; no striæ; a block of the same nature occurs fifteen miles west, about 150 ft. above the sea; isolated, and resting on Keuper sandstone.

BENJ. HOLGATE, F.G.S.,

Regent House, Grosvenor Road, Headingley, Leeds.

Nos.	No.				
100	1	Falsgrave	...	Scarborough	... North Riding.

Group of boulders, $0^{\circ} 25' 15''$ W. longitude; $54^{\circ} 16' 30''$ N. latitude. Falsgrave, near Scarborough, where Stepney Road turns sharply to the right at Falsgrave. One 3 ft. 8 in. \times 2 ft. 6 in. \times 2 ft. 8 in., basalt; one 3 ft. 3 in. \times 1 ft. 6 in. \times 1 ft. 6 in., red granite. Two of nearly the same size of lias, and numerous others down to the smallest sizes. About 130 tons have been carted away for road metal. Generally rounded, but a few are subangular. All have been moved. Striations in large boulders in all directions. They are from all directions and different distances, and represent different formations, but many are igneous or metamorphic. Say 27 per cent. various; 12 per cent. some twenty kinds of granite and syenites of different colours; 4 per cent. gneiss; 12 per cent. basalts, various; 8 per cent. quartzites; 2 per cent. greenstones; 4 per cent. volcanic ashes; 12 per cent. mountain limestone; 1 per cent. millstone grit; 6 per cent. lias; 5 per cent. oolite; 5 per cent. pisolite; 1 per cent. chert; 1 per cent. chalk flint. Height, 200 ft. above the sea, and covering an area of 150 yards \times 20 yards. They are embedded in glacial drift, evidently slightly pervious. Some water must have percolated through the clay, acting chemically on some of those most easily thus acted upon. In some cases the iron has been turned brown, but there has not been a free passage of water through. In levelling the road in question in no case have they gone more than 6 ft. deep; thus all were near the surface.

The Secretary will always be glad to supply schedules for the purpose of recording observations upon erratics, or in supplying any information that from time to time may be required.

NOTES AND NEWS.

We must congratulate the Merchant Taylors' School at Crosby upon the excellence of its magazine, the 'Merchant Taylors' Review,' of which we have received a copy of No. 5, for April 1892, containing an interesting paper by Mr. Aley Lyell Reade (son of our well-known geological contributor), entitled 'A few words on the study of Conchology, with special reference to the neighbourhood of Crosby.' It is of course necessary in a paper of this class to include elementary information on classification, but otherwise it is a most interesting series of remarks on the shells to be found on the shore at Crosby, with frequent allusions to their habits and relative frequency.

THE YORKSHIRE BOULDER COMMITTEE AND ITS FIFTH YEAR'S WORK.

THOMAS TATE, F.G.S.,

Leeds; Honorary Secretary to the Committee.

DURING the two years that have elapsed since the lamented decease of Mr. S. A. Adamson, F.G.S., the work of this Committee has been successfully prosecuted, especially in the North and East Ridings.

In the autumn of last year, the present writer was commissioned to make a collection of such Lake Country rocks as, by the possession of individual characteristics, are capable of prompt identification. Mr. B. Holgate, F.G.S., has also contributed an important series of rocks from the same district, very carefully labelled, the localities having been affixed at the time they were gathered. This collection of parent rocks will shortly be accessible for the definite recognition and determination of boulders by comparison therewith.

As many of the more remarkable boulders have now been recorded, the Committee are desirous of obtaining systematised information upon the erratics of particular districts in Yorkshire, and will, in the course of next year, endeavour to obtain reports of a more connected description from local investigators.

They will gratefully accept help in this new departure from willing workers, if they will kindly communicate with the Honorary Secretary (Thomas Tate, F.G.S., 5, Eldon Mount, Leeds), who will gladly give any further information.

Appended are the reports as presented to the Boulder Committee of the British Association by the late Honorary Secretary, Mr. S. Chadwick, F.G.S., Malton.

SOUTHBURN, PARISH OF KIRKBURN.—In the township of Southburn, parish of Kirkburn, on the estate of Mr. J. Walker, about a mile S.E. of Southburn Church, a large number of boulders have been moved to their present position. There are no striations visible. There are specimens of whinstone, mountain limestone, red granite, etc., etc., in the yard, among heaps of stones; most of them are from the North. The greater proportion are whinstone; they are about 100 ft. above sea-level. The boulders have been collected from the adjoining land and used for paving the yards.

SOUTHBURN.—In the township of Southburn, parish of Kirkburn, about a mile S.E. of Southburn Church, in a stackyard occupied by A. Foster, Esq., is a boulder. It is 32 in. \times 22 \times 19, lying close to the roadside. It is subangular, nearly black, with rough granules

like diorite or coarse whinstone. It was found imbedded in the foundation of some old thatched cottages, and is about 100 ft. above sea-level. There is no photograph of it. It rests upon chalky gravel.

2. In the township of Southburn, parish of Kirkburn, on the farm occupied by Mr. A. Foster. At the north end of the farmhouse is a boulder 2 ft. 8 in. long, 1 ft. 5 in. broad, and 1 ft. 3 in. out of the ground. It is rounded but oblong. On the inner side are fine grooves, varying from 9 in. long, $\frac{1}{4}$ in. broad, $\frac{1}{8}$ in. in depth, all running in the direction of the longer axis. It is whinstone, 100 ft. above sea-level. It is not a boundary stone; there is no photograph of it; the boulder is at the end of Mr. Foster's farm, and rests upon a bed of gravel.

LOWTHORPE.—1. In the parish of Lowthorpe, quarter mile N.W. of Lowthorpe station, N.E.R., and 40 yards east of Lowthorpe Road. 2 ft. 2 in. \times 1 ft. 8 in. \times 1 ft. 3 in., subangular, has been moved to present position; no ice-markings; whinstone; about 50 ft. above sea-level; resting upon boulder clay.

2. Within a radius of 40 yards is a group of boulders of red sandstone, mountain limestone, estuarine sandstone, and whinstone. Several of these have been taken out of the adjoining fields during the last ten years, and are now resting on boulder clay at about 60 ft. above sea-level. In no case do they show any traces of ice-scratches.

SCARBOROUGH.—In the parish of Newby, on the north side of Scarborough, estate belonging to the Burial Board, and now used as a cemetery, about half mile west of the coast and 100 yards east of the Scarborough and Whitby Railway. It is 4 ft. 10 in. \times 3 ft. 2 in. \times 2 ft. 9 in., subangular, has been moved; there are no ice-marks; hard compact sandstone resting on boulder drift about 50 ft. above sea-level.

SCALBY (NORTH RIDING).—In the parish of Scalby (near Scarborough), Dr. Rook's estate, about $1\frac{1}{2}$ mile west of the coast and half mile east of the village of Stainton Dale, at the bottom of Stainton Dale beck, 1 ft. 8 in. \times 1 ft. 2 in. \times 1 ft., dolerite; another one is 1 ft. 11 in. \times 1 ft. 4 in. \times 9 in., whinstone. Both are subangular, resting on boulder drift about 100 ft. above sea-level.

RUSTON PARVA (EAST RIDING).—In the parish of Ruston Parva, about $2\frac{1}{2}$ miles west of Lowthorpe station, there is a large block of diorite forming a protection for the angle of the road leading from Driffield to Kilham at the west side of the village of Ruston Parva. It stands in an upright position 28 in. out of the ground, its greatest length across the exposed surface is 28 in. by 25 in. thick.

It is quite angular, almost indicating from its surface that an attempt has been made to reduce its size.

So far as can be ascertained, the boulder has been in its present position for upwards of 100 years.

There are no ruts, grooving, or striation upon its surface.

Its position is about 100 ft. above the level of the sea, resting on boulder clay.

SPEETON.—In the parish of Speeton, near Filey, on the farm occupied by Mr. J. Jordan's trustees; Speeton Gap. At the bottom of the gap, just where the footpath crosses the beck, and about 250 yards N.W. of the beach, are five large boulders.

No. 1 is 3 ft. 10 in. \times 2 ft. 3 in. \times 1 ft. 8 in. above ground. Rounded to subangular; has not been moved; longest axis E. and W.; shows groovings in direction of longest axis, some being from 11 to 9 in. long, $\frac{1}{4}$ in. deep, and $\frac{1}{2}$ to $\frac{1}{4}$ in. wide; close-grained sandstone.

No. 2.—3 ft. \times 1 ft. 9 in. \times 1 ft. 7 in. Rounded; has not been moved; longest axis, N.E. and S.W.; dolerite.

No. 3.—2 ft. 9 in. \times 2 ft. \times 1 ft. 8 in. Rounded to subangular; has not been moved; longest axis, N.E. and S.W.; shows groovings and striæ in direction of longest axis, some being nearly a foot long; Shap Fell granite.

No. 4.—2 ft. 1 in. \times 1 ft. 10 in. \times 1 ft. 8 in. Rounded; whinstone.

No. 5.—3 ft. 8 in. \times 2 ft. 6 in. \times 1 ft. 3 in. Flat angular block of fine grained sandstone.

These are all about 50 ft. above sea-level, and rest upon the chalk.

NOTE.—All these boulders are scattered over a distance of about 50 yards up the creek in a westerly direction.

In Speeton Gap, and following the course of the beck for about 150 yards westwardly from the footbridge, are the following boulders:—

1 ft. 8 in. \times 1 ft.	\times 9 in.	Rounded	Whinstone.
1 ft. 2 in. \times 1 ft.	\times 9 in.	„	Mountain limestone, containing <i>Productus giganteus</i> .
1 ft. 6 in. \times 1 ft. 1 in.	\times 6 in.	Subangular	Fine sandstone.
1 ft. 6 in. \times 1 ft.	\times 7 in.	Rounded.	Dolerite.
1 ft. \times 6 in.	\times 6 in.	Rounded to Subangular.	Whinstone.
1 ft. 6 in. \times 1 ft.	\times 1 ft.	Rounded.	Fine Sandstone.
1 ft. \times 9 in.	\times 6 in.	Subangular.	Whinstone.
1 ft. 4 in. \times 1 ft. 2 in.	\times 7 in.	Angular.	Fine sandstone.
1 ft. \times 7 in.	\times 10 in.	Subangular.	Dolerite.
1 ft. \times 6 in.	\times 4 in.	Rounded.	Mountain limestone containing coral.
3 ft. 5 in. \times 1 ft. 6 in.	\times 10 in.	Angular	Coarse, gritty sandstone.
1 ft. 4 in. \times 1 ft.	\times 8 in.	Angular to subangular.	Whinstone.

Besides the above there were about 50 sandstones, 15 whinstones, 6 mountain limestones, and 5 ironstones, averaging 1 ft. × 8 in. The whole were much worn, and show no definite markings or striæ. Others, still smaller, may be seen, of red and grey granite, mica schist, red fine-grained sandstone (Permian?), lias showing *Gryphæa incurva*, limestone, slate, various sandstones, and nodular ironstone from the estuarine series.

They are about 60 ft. above sea-level.

Most of these boulders rest upon clay overlying the chalk.

STAINTONDALE CLIFFS (COAST).—About $\frac{3}{4}$ of a mile S.E. of Peak Hall, near Robin Hood's Bay, on the first ledge of the cliffs is a boulder 3 ft. 5 in. × 3 ft. × 2 ft. Rounded and much weathered longest axis N.W. and S.E.; no groovings or striations; Shap Fell granite; is about 250 feet above sea-level.

LOCKINGTON.—At Lockington, near Beverley, on the farm of Mr. George Langdale, a boulder protects an artesian well, about half a mile E. of the railway station.

It is at present 2 ft. 7 in. × 1 ft. 10 in. × 1 ft. 9 in., but has evidently been reduced in size; a coarse-grained grit, like Millstone Grit; is about 100 ft. above sea-level; originally rested on boulder clay, which covers the surrounding district.

FILEY.—On the estate of Mr. Martin, and extending about 60 yards from the shore up the ravine, or at the bottom of what is known as Bentley's Beck, are boulders of Whinstone, Sandstone, and Mountain Limestone.

No striæ visible; about 30 ft. above sea-level; all are more or less imbedded in the clay, save those which have rolled down from their former positions.

At the mouth of the ravine were observed the following boulders:—Whinstone, Coarse Grit, Dolerite, Hard Red Sandstone, Estuarine Sandstone, Mountain Limestone (full of corals), etc.

The whole of these boulders have been removed to their present positions. The absence of granite boulders is accounted for, after inquiry, by their selection for the ornamentation of gardens.

SEAMER (NEAR SCARBOROUGH).—Seamer gravel-pit, adjoining Seamer Station, N.E. Railway. This pit is about 20 acres in extent, with an average depth of 12 ft.; during the time of excavation the following boulders were found: The largest at present in the pit is 4 ft. 8 in. × 2 ft. 8 in. × 1 ft. thick; angular, but no ice markings. There are 10 boulders averaging 3 ft. × 2 ft., four of which are 3 ft. 2 in. × 2 ft. 1 in. × 1 ft. 8 in.; rounded whinstone; no striation; and four averaging 3 ft. 4 in. × 3 ft. 1 in. × 2 ft.; composed of different kinds of sandstone; angular. One 3 ft. 10 in. × 2 ft. 7 in. × 2 ft.; angular;

fucoid sandstone ; estuarine ; is crumbling away from exposure ; and one 3 ft. 4 in. \times 3 ft. \times 1 ft. 3 in. ; rounded ; mountain limestone ; no striation on surface. There are 40 more, principally composed of sandstone, averaging 2 ft. \times 1 ft. \times 1 ft. ; eight of these are more or less angular blocks of whinstone ; no striation. A short distance away are 31 boulders, averaging 2 ft. 2 in. \times 1 ft. 6 in. \times 1 ft. ; part of these are rounded ; in some instances showing faint traces of striation. Scattered and in heaps are 64 composed of grits to fine grain compact sandstone, 56 of which average 1 ft. 2 in. \times 1 ft. 1 in. \times 11 in., and eight are rounded whinstone ; no striation. Two others are iron grey granite, averaging 1 ft. 6 in. \times 1 ft. 7 in. \times 1 ft. ; rounded ; no striation.

NOTE.—The drift rests upon the Coralline Oolite. The whole extent of this drift bed is about 60 acres. Generally speaking, the main of the boulders were found on or towards the north face of the drift, which also contained the roughest gravel. To the south-east the gravel gradually gets smaller, more decayed, and rotten.

On the estate of Lord Londesborough, in the parish of Seamer, there is a boulder at the bottom of an old quarry in Limekiln Field on Eastfield Farm, occupied by Mrs. Eldines.

It is 3 ft. 1 in. \times 2 ft. 9 in. \times 2 ft. 1 in. ; angular ; there are wide hollow groovings in the direction of its longest axis ; dark blue whinstone ; about 200 ft. above sea-level.

Near Eastfield House, about quarter mile due east of Seamer railway station, is a boulder 2 ft. 8 in. \times 2 ft. 2 in. \times 1 ft. 7 in. ; rounded ; has been moved ; a light brown sandstone, resembling the moor grit ; about 150 ft. above sea-level ; was found in a ridge of gravel running north-westerly.

On Eastfield Farm, about two miles S. of Scarborough and about half a mile E. of Seamer railway station, are boulders of Whinstone and Sandstone. No striæ visible ; removed from the adjoining fields ; about 150 ft. above sea-level.

KILNSEA (E. RIDING).—Mr. John Cordeaux, M.B.O.U., Great Cotes, Ulceby, Lincolnshire, records an erratic. On the beach about 500 yards south of Kilnsea Beacon, Kilnsea, near Patrington, was a boulder, but now removed to the lawn of Mr. Hewetson's garden, Easington.

It is 3 ft. 2 in. \times 2 ft. 4 in. ; subangular ; long-shaped ; longest axis N.W. and S.E. ; there are deep striæ or groovings in direction of longest axis ; Shap Fell granite ; it rested upon blue clay, had been probably exposed only a few days and was in situ when discovered by himself and Mr. Hewetson on November 10th, 1889.

NOTE.—This boulder has the value of being the only one found hitherto so far south on the Yorkshire Coast near Spurn Point.

EASINGTON.—Mr. John W. Stather, Hull (Hon. Sec. Hull Geological Society), describes the following group of erratics :—On the half mile of beach opposite Easington, about six miles from Spurn Point, and at the southern end of Dimlington 'high land' (boulder clay cliffs) are many boulders, twelve of the largest being measured, viz. :—

A. 4 ft. 2 in. × 2 ft.	× 1 ft. 6 in.	G. 5 ft.	× 3 ft.	× 2 ft.
B. 4 ft. 3 in. × 3 ft.	× 2 ft. 6 in.	H. 5 ft.	× 3 ft. 6 in.	× 2 ft.
C.		I. 4 ft. 6 in. × 3 ft.		× 2 ft. 6 in.
D. 2 ft. 3 in. × 2 ft.	× 1 ft.	K. 4 ft. 3 in. × 4 ft.		× 2 ft. 6 in.
E. 3 ft. 3 in. × 2 ft. 6 in.	× 1 ft. 6 in.	L. 4 ft. 6 in. × 3 ft.		× 2 ft. 6 in.
F. 3 ft. 6 in. × 3 ft. 6 in.	× 2 ft.	M. 1 ft. 6 in. × 1 ft.		× 4 in.

Are all subangular ; the longest axis of A, B, and H are N.W. and S.E., those of G and L being E. and W. ; K and F are striated, and D more decidedly so ; they are below high-water mark, and rest upon the basement clay, in which they are partly imbedded ; others have probably fallen from the purple clay which here forms the upper part of the cliff.

LAITHKIRK (NORTH RIDING).—Rev. W. R. Bell, Vicar of Laithkirk, states that at Laithkirk, near Mickleton, there is a large boulder. It was found on the north bank of the Lune, immediately below the church, and is now set up in the Laithkirk Vicarage gardens. It is 2 ft. 8 in. × 1 ft. 9 in. × 2 ft. 6 in. ; it is roughly cuneiform in shape ; subangular ; has been moved ; Shap Fell granite ; its original site was 700 feet above sea-level ; no striæ visible.

WATH (NORTH RIDING).—Mr. T. Carter Mitchell, Topcliffe, Thirsk, reports that on the Coldstone Farm, Middleton Quernhow Estate, and parish of Wath, is a boulder. It is on the side of the road from Middleton Vicarage to Ainderby Quernhow, and about half-way between.

It is 2 ft. 1 in. × 1 ft. 5 in. × 1 ft. 3 in. ; subangular ; has been moved ; there are no ice markings, but it is curiously grooved by weathering ; is about 200 feet above sea-level ; it is isolated ; rests on drift, overlying Triassic deposits.

MULGRAVE PARK, NEAR WHITBY.—Mr. R. Taylor Manson, Darlington, records a boulder in Mulgrave Park, 4 miles N.W. of Whitby ; nearest station is Sandsend, on the Saltburn and Whitby line. It is on the north bank of a stream running east between the Old Castle of Mulgrave and a spot known as the 'Hermitage.' It is 3 ft. in diameter ; rounded ; no striæ or groovings ; Shap Fell granite ; about 100 feet above sea-level ; it is isolated in the rivulet, to which it has probably rolled down from the clay above ; the stream is cut through lias shale.

BALBY, NEAR DONCASTER.—In the Balby brickyards, near Doncaster, the following group of boulders is recorded by Mr. E. Moor:—

Largest boulder, 2 ft. \times 1½ ft. \times 1 ft.; striations numerous on the top, but faint, and in direction of short axis.

Smallest boulder, 2 in. \times 1½ in. \times 1 in.; fossiliferous limestone; girth 16 in.; length 10 in.; striations numerous, but faint, about 1 in. long in direction of long axis; granite block, angular; girth 12 in. \times 8 in. long. The boulders are rounded and subangular.

The group extends over about five acres; small ones very numerous. These boulders are surrounded by a thick deposit of clay, which has been excavated to the depth of 50 ft., and are met with at various depths in the clay.

WINESTEAD.—Mr. Wm. Barugh, Winestead, Hull, describes two erratics. About half a mile N. of the railway station, near site of former hall, about fifty yards from highway, is a boulder, 4 ft. 2 in. \times 3 ft. 6 in. \times 1½ ft. It is subangular; it has been moved; there is a groove ½ in. deep and length of the stone. The boulder is striated at the top in direction of longer axis; it is whinstone; probably 20 ft. above sea level; it is isolated, resting on boulder clay.

In the paddock at Winestead, belonging to the Park Farm, is a boulder 2 ft. 8 in. \times 2 ft. 2 in. \times 1 ft. It is much rounded; it has been moved; it is mountain limestone; about 20 ft. above sea-level; isolated; it rests on the surface of the ground.

[Further details of most of the boulders included in this report will be found in the Report of the Meeting of the British Association, 1891, pp. 295-7.—EDS. NAT.]

NOTES AND NEWS.

The Southport Society of Natural Science, founded in September 1890, has issued its First Report, which is very encouraging. Besides the Presidential Address and the Reports of the Meetings, there is a valuable appendix containing a 'List of the Mollusca of Southport and District,' and a 'Report upon the Foraminifera' by G. W. Chaster, M.R.C.S., the Secretary of the Society, also a carefully compiled list of the Flora of the District, by Henry Ball, A.P.S.

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We have received a little book, entitled 'Glimpses of Animal Life; A Naturalist's Observations on the Habits and Intelligence of Animals,' by Wm. Jones, F.S.A. (London, Elliot Stock, 1889). Which though containing nothing original, is nevertheless very entertaining and well worth reading. It is virtually a series of anecdotes illustrating various phases of animal life culled from many sources. The last chapter, on 'The Mole' is perhaps the best, while that entitled 'Luminous Animals' will be found exceedingly interesting to the general reader. Altogether the book is one which may be taken up with benefit by any one fond of animals, be he old or young, although it seems to us the sub-title is somewhat misleading. The typography and get-up of the book are tastefully done.

In Memoriam.

ROBERT MORTIMER.

THE East Riding of Yorkshire has lost one of its most distinguished scientists by the sudden demise of Robert Mortimer, who was found dead in bed on April 12th. Born at Fimber, in the year 1829, in the quaint old house which is figured and described by his friend, the Rev. E. Maule Cole, M.A., F.G.S., vicar of Wetwang-with-Fimber, in one of the volumes of 'Old Yorkshire,' the subject of this notice, though almost wholly uneducated, turned his attention early in life to the remarkable entrenchments which surround his native village. The investigation became a hobby, and, for miles round, every field and dale was diligently and carefully examined and tested by sections, with the result that in 1886 he published at his own expense a map, on the six-inch Ordnance scale, entitled, 'A Restoration of the Ancient British Entrenchments and Tumuli, also the Surface Geology and modern enclosure of Fimber on the Yorkshire Wolds.' The writer bears willing testimony to the accuracy of the delineations, which are far in advance of anything that has ever been published in any part of England.

In conjunction with his brother, Mr. J. R. Mortimer, now residing at Driffield, he assisted in opening some 300 tumuli on the Yorkshire Wolds, the contents of which are preserved in their excellent museum at Driffield (see 'The Antiquary,' July 1891).

Many of the geological specimens were collected and most of them dressed by Robert Mortimer, who, in addition to his archeological tastes, was an ardent though self-taught geologist. In fact, he has on his account surveyed carefully, and mapped, the difficult geological ground on the North and West sides of the Yorkshire Wolds, with an acumen which is remarkable, though whether these maps will ever be published, in view of the recent Government geological survey, is doubtful; still, all praise is due to a man, who, with limited resources and little learning, succeeded fairly in deciphering what to trained officials was no easy task. In addition to the pursuits above mentioned, Robert Mortimer took great interest in the preservation of the old dialect of the Wolds, which, unfortunately, under the advance of modern education, is fast disappearing. To the writer's knowledge he made extensive notes on the words and phrases which were current in his boyhood, and possibly these may yet be published *in memoriam*. Though the brothers Mortimer have not attached to their name so wide and unenviable an one as 'boycotting,' it is a fact that farm lads commonly speak of flint arrowheads, celts, etc., which they pick up in ploughing, as 'Mortimers.'—E.M.C.

REMAINS OF FALLOW DEER FROM GOOLE MOOR.

EDGAR R. WAITE, F.L.S.,

Curator, The Museum, Leeds.

DURING last summer my friend Mr. Thomas Bunker, of Goole, sent me portions of a skull, some vertebræ, and a rib for determination, together with a considerable portion of hair and peat upon which they had been found. The remains are those of the Fallow Deer (*Dama vulgaris*), and are in a most peculiar condition; the bones are quite pliable and elastic and of a dark brown colour, reminding me very much of sheet gutta-percha. They are also very light, and float with about one-third of their bulk out of water. All the inorganic matter has evidently been dissolved out of them, and even the teeth, which usually resist chemical action for an immensely long period of time, are almost as pliable as the other portions, not a trace of the enamel being left.

In conjunction with Mr. J. C. Birch, L.D.S., I have made a careful examination of the teeth. In colour, the exposed portions are precisely similar to the bones themselves, but the roots are quite black. Like the bones, they float in water, but owing to their greater density, with only about one-twelfth of their bulk above the surface. After steeping for about three hours, during which period absorption takes place, they become heavier and gradually sink.

The action of the dissolvent acids is extremely interesting.

The crown of the normal tooth of a deer or similar animal is covered with a layer of enamel infolded at the grinding surface, and in time the portion in contact with the opposing teeth becomes worn down and leaves an inner as well as an outer layer of enamel. In the root, the place of the outer enamel is taken by cementum, or tooth bone.

The teeth under consideration show the root of normal size, whereas the crown is much reduced, owing to the complete removal of the enamel. This condition exactly agrees with the respective composition of the two substances—enamel and cementum. The former consists of only 3 per cent. of organic or gelatinous matter, and 97 per cent. of inorganic matter, the whole of which has been dissolved out, consequently the crown is reduced to the bulk of the dentine.

Cementum consists of only 68 per cent. of inorganic matter and 32 per cent. of organic matter, and although the former has been removed, the gelatinous residue of about one-third has been sufficient to maintain the size of the root of the tooth.

The body of a tooth consists of dentine, and this having even a greater proportion (about 38 per cent.) of gelatinous matter, has also retained its normal bulk.

A vertical section of a tooth shows the entire absence of tissue in the pulp canal. Transverse sections examined under an inch objective show the characteristic markings of dentine; a section of the crown reveals the entire absence of enamel, while other sections show the peculiar character of the cementum on the external surface of the root.

In Mr. Kendall's report, appended to this article, he mentions that Hibbert had discovered the marrow in some bones of *Megaceros hibernicus* which had been found in an Irish peat bog.

Our own observations scarcely fall short of this, for the skull contains the brain of the animal, shrivelled up, but perfectly preserved.

The hair is in a most perfect state, and appears as though it had only just been cut from the animal.

Mr. Bunker's letter, which accompanied the remains, stated that they had been found in the peat on Goole Moor, and the mere fact of their discovery is interesting, as it is generally supposed that the Fallow Deer is an introduced species, although the period when it was first imported is very uncertain, but even more interesting is the remarkable condition of the bones, and, being anxious to obtain further information, I wrote to Mr. Bunker, to whom I am much indebted for the following particulars, which I extract from his letter. He writes:—'With regard to the Deer-remains I sent you, I may state that in the early part of the summer (1891) some bones, hair, and the peat on which they rested were brought to me by Mr. Herbert Bennett, of Swinefleet, whose labourers found them when cutting peat for moss litter on the Goole side of the moor; I afterwards visited the place with Mr. Bennett, and procured a jaw bone and some more hair. The depth at which they were found was about 2 feet 9 inches; but as that part of the moor was well drained, the real depth may have been from 4 to 5 feet. A considerable portion of the moor on the Goole side has been warped, but the place where the remains were found is about 200 yards from the present edge.

'Red Deer, and probably Fallow Deer also, were formerly very abundant on Hatfield Chace and Thorne Moor, for Abraham de la Pryme records that at the entertainment of Henry, Prince of Wales, in 1609, as many as 500 deer were driven from the woods and wastes into Thorne Mere, and many of them killed.

'In the 30th year of the reign of Henry VIII. at the court of Swainmote, the inhabitants of "Roecliffe, Arymin, Gowle, Howke, and Holden" were accused of killing many of the deer.

'In the Museum of the Yorkshire Philosophical Society part of the skull of a deer, dug out of the peat on Thorne Moor, is preserved.

'In 1747 the body of a woman was found 6 feet deep in a peat bog near Haxey; from the antique sandals on the feet it was judged the body had been buried many years (Phil. Trans., 1747, vol. xliv, p. 575). Abraham de la Pryme states that in the 17th century the body of a man was found at the bottom of a turf-pit, the skin tanned by the peat water, but the flesh and bones decayed.' Mr. Bunker adds that as the peat is removed, in all probability, other remains will be found and, it is hoped, preserved.

Writing on March 5th, my friend further informs me that a large quantity of bones has been found in the Ouse during the last ten days, and through the kindness of Mr. W. H. Bartholomew, engineer to the Aire and Calder Navigation Company, he has had free access to them. They consisted of jaws and skulls of the horse, ox, and dog; also a few ribs, vertebræ, and leg-bones. Part of a whale's jaw was also found. Mr. Bunker adds:—'The explanation was simple, the dredger was at work on a spot where bones were formerly landed from vessels on their way to Sheffield.'

I showed the bones of *Dama vulgaris* to Mr. Percy F. Kendall, who promised to have them analysed for me, and he has kindly sent the following report.

NOTE ON THE MODE OF PRESERVATION OF THE BONES.

PERCY F. KENDALL, F.G.S.,

Lecturer on Geology at the Yorkshire College, Leeds.

THE bones were shown to me by Mr. Waite, and I was at once struck with the fact that they were, at the same time, extremely light and remarkably elastic. Such a bone as the pterygoid could be doubled up so that the ends met, and upon being released it immediately sprang back to its normal form.

The colour of the bones was a rich walnut-brown. It occurred to me that, though I had never heard of such an operation taking place in nature, the peaty water which came in contact with the skeleton might have contained a considerable percentage of the humic acids, such as are never absent from water flowing off peaty land, and that these acids had simultaneously removed the mineral matter by forming soluble salts of lime, etc., and had tanned the gelatine which forms a species of skeleton to each bone. With the assistance of Dr. Cohen and Mr. Proctor, both of the Yorkshire College, I was able to ascertain that this was the case.

The bones were steeped in water and sections cut which, upon microscopic examination, showed the structure of the bone admirably, but when treated with strong acetic acid, there was neither an effervescence such as would indicate the presence of carbonate of lime, nor was there any swelling of the fibres of organic matter. The latter observation showed that such organic matter (gelatine) as was present had been perfectly tanned.

Dr. Cohen kindly made an analysis of a sample of bone (a portion of a maxilla) which he found to yield, upon ignition, an ash equal to only .21 per cent. or about $\frac{1}{500}$. This residue would represent the whole of the mineral matter, and it consisted of iron, calcium, and phosphoric acid.

Mr. Proctor informs me that tannic acid (a generic term which covers a considerable number of acids possessing tanning properties) has been extracted from peat in sufficient quantities to be placed upon the market, and therefore it need excite no surprise that a skeleton which has lain for years in peat should have undergone conversion into leather so far as its gelatinous constituents are concerned, and geologists have long been acquainted with the fact that bones are often well preserved in peat. Hibbert has mentioned the discovery in an Irish peat bog of bones of the great Irish Elk (*Megaceros hibernicus*) which actually contained the marrow. What is perhaps new in the present case, is that the preservative process of tanning has gone on simultaneously with the practically complete removal of the mineral matter of the bone, and that the two processes have been effected by the same agent.

NOTE—GEOLOGY.

New Plant-Beds at Hilton.—In a paper before us (Mem. and Proc. Manchester Lit. and Phil. Soc.) Mr. W. Brockbank records his discovery in the upper sandstones of Hilton Beck, Westmorland, of plant-remains similar to those well-known from the lower sandstones. Although opinions differ as to the value of botanical evidence, the discovery is an important one, strengthening the argument for placing the whole in the Permian, as against the new mapping of the Geological Survey (Mr. Goodchild) which includes the upper rocks in the Trias. It is not quite accurate, however, to regard the Triassic age of the St. Bees sandstone as a novel idea. It was the view held by Sedgwick and apparently endorsed by most geologists not immediate followers of Murchison. The Survey memoir has not yet appeared, but we may expect that the view of the former Director-General has not been abandoned for that of Sedgwick without what appeared to be cogent evidence.—ALFRED HARKER, Cambridge, May 4th, 1892.

NOTES AND NEWS.

A worthy worker in Yorkshire palæontology is worthily honoured in having his name associated with one of his own finds. Mr. Robert Kidston has described in the *Annals and Magazine* for February 1892, a new species of *Equisetum* from the Barnsley coal-field, under the name of *hemingwayi* Kidst., after his indefatigable helper Mr. W. Hemingway.

A MONOGRAPH OF THE MYXOGASTRES.

A Monograph of the Myxogastres. By GEORGE MASSEE. London: Methuen and Co.

The publication of this excellent monograph is an event in which Yorkshire biologists may be expected to take exceptional interest, the author being well known in the county and an old member of the Yorkshire Naturalists' Union. But in commending it to the notice of all who are interested in the *Myxogastres*, we have no hesitation in doing so on the strength of its merits alone, as these are of a sufficiently high order to give it a creditable position in our biological literature. To write anything like an adequate account of its contents would be impossible within the limits of an ordinary review, and we must therefore confine ourselves to drawing attention to some of its more prominent characteristics. In doing so it will be convenient to regard it as consisting of three parts, and to consider these separately in the order in which they occur.

In the first part, which is brief and introductory, the author deals with some of the more characteristic events in the life-cycle of the *Myxogastres* and the various important questions to which they have given rise. He does not, however, dwell upon such details as are to be found in extenso in ordinary text-books, but addresses himself chiefly to a discussion of the systematic position of the group and their classification on what may be termed phylogenetic principles. Naturally the first point to be considered is the fundamental question as to whether they are animals or plants, a question which he deals with in an ingenious way, and with a breadth and minuteness of knowledge which no reader will fail to recognise. De Bary, who was the first to give a really scientific account of the group, was led, on various grounds, so far back as 1858, to place it outside the vegetable kingdom, and by zoologists it is now usually claimed as a group of the *Protozoa*.

In contesting the validity of this claim, Mr. Masee, in the first place, maintains, and with justice, that in searching for the affinities of a group of organisms, the phenomena of the entire life-cycle should be taken into consideration. He then reminds us that in the organism in question, the life-cycle consists of two sharply contrasted phases, the vegetative and the reproductive, and that it is from the characteristics of the former alone, that the animal affinities of the *Myxogastres* are commonly inferred. Indeed, De Bary himself found the mark of separation between them and plants in the formation of plasmodia by the coalescence of naked, protoplasmic, swarm-cells, or their aggregation, during the vegetative phase of their existence. When, however, we turn to the reproductive phase, the many

and close analogies which they present with the fungi are obvious to the most superficial observation, and hence we have the perplexing antithesis of a vegetative phase with animal attributes and a reproductive one with the attributes of fungi. Under the circumstances it is not surprising that biologists should reach different conclusions, as it is difficult to exclude altogether the influence of the 'personal equation' in deciding to which of the two phases the greater importance should be attached. Mr. Masee contends, however, that even in the vegetative condition the characteristics of the *Myxogastres* are not exclusively animal, and that they have a larger number of points of contact with the fungi than is commonly supposed. As a proof of this, he gives a most striking account of the phenomena met with in the development of the vegetative mycelium of some of the *Phycomycetes*, which gives considerable support to his contention. Avoiding details which would carry us too far, it will suffice to say that he shows conclusively, that in these and other fungi, there are phenomena in the coalescence of hyphæ, 'clamp-connections,' etc., which have some analogy with the formation of plasmodia, and that in some cases, *Mucor lateritius* for example, the protoplasm of the fungus may be regarded as a sort of plasmodium whose parts are enclosed in a continuous, non-septate, cellulose membrane. From this he concludes that the aggregate tendency of the evolved features of the *Myxogastres* is in the direction of the vegetable kingdom and more especially in that of the fungi, and consequently that the reasons assigned for excluding them from the plant-world do not justify such a proceeding.

However much the botanist may sympathise with this view, reflection will probably suggest that it does not quite cover the whole of the difficulty. It is admitted that the *Myxogastres* cannot be brought into phylogenetic relationship with any of the divisions of existing fungi, that they are in fact a terminal group, and that they have most probably been evolved from forms resembling the *Flagellata* of the zoologists. On the other hand, the fungi are generally recognised as the degenerated descendants of ancestors that were chlorophyllaceous, and that the imperfect development of their vegetative structures is to be correlated with the parasitic or saprophytic habits which they affect. Hence it may be urged on the one hand, that the evolved features of the *Myxogastres* are not sufficiently pronounced to warrant their removal from the *Protozoa*, and on the other, that the analogies between them and fungi are due to the degenerated condition of the latter, which emphasises their animal character at the expense of the vegetable. On the whole, then, we think it preferable in the present state of knowledge, to

avoid a definite conclusion as to the animal or plan nature of the *Myxogastres*, and while awaiting the acquisition of further facts, to keep an open mind on the subject.

In the second part of the volume, the *Myxogastres* are dealt with from the systematist's point of view and in a manner to which, with our present knowledge, it is scarcely possible to take the slightest objection. As a matter of fact, this is by far the most important part of the volume, and the one on which its merits and demerits will ultimately be assessed. Here Mr. Masee is seen at his best, and here we have incorporated the results of the long and close attention he has given to the group, both in the herbarium and in the field. As to herbarium specimens, he admits that he has enjoyed unusual advantages in having had access to the splendid collection in the Royal Herbarium at Kew, but even these have been dealt with in an independent manner and subjected to an examination which is thoroughly critical. In the matter of classification he has adopted an arrangement which appears to have the advantage of being at once more natural and more practical than those previously published, and at the same time embodies the views he entertains of the phylogeny of the various divisions of the group. In framing these divisions, he starts with the principle that the most pronounced feature in the evolution of the *Myxogastres* is in connection with spore dissemination, and consequently bases his primary divisions upon the relative development of the capillitium. This enables him to arrange all the known forms in four orders, viz., *Peritricheæ*, *Columelliferæ*, *Lithodermææ*, and *Calotricheæ*, all of which are carefully defined and distinguished before being separately dealt with. It will be noticed, however, that he excludes not only Van Tieghem's *Acrasieæ* and Cienkowski's *Monadineæ*, but also the genus *Ceratium*, which is sometimes made the representative of an exosporous division of the group. Of the thoroughness with which the definitions of the genera and species have been revised and amended, and the care with which the diagnostic characters are indicated, it is scarcely possible to speak too highly, as almost every page bears testimony to much conscientious and painstaking work in this direction. As they stand, the definitions are unquestionably the fullest and most precise yet offered to British students, and as they are at the same time very definite and direct, they may be regarded as doing all that words can do to mark and delimit the forms to which they apply. It is not the author's fault that in these definitions characters which are only visible under high microscopic powers hold a prominent place, for in the present state of knowledge this is inevitable. As he himself puts it, 'When we are

better acquainted with the main lines of development and lines of variation, also the conditions determining these variations, it is certain that the main factor in the discrimination of species will not be a one-twelfth oil-immersion objective'; but, unfortunately, that consummation is still among the things to be wished for. In leaving this part of the volume it may be added that, in all, there are descriptions of no less than 41 genera and 412 species, which, we believe, is a much larger number than is to be found in any previous publication of a similar character; that the geographical distribution has been worked out from actual specimens; and that, exercising a wise discretion, Mr. Masee has not attempted to carry the synonymy further back than 1875, the date of Rostafinski's Monograph, unless justified by the existence of type-specimens.

Coming now to the third and concluding part of the volume, we have a splendid series of coloured plates, in which artistic finish and scientific accuracy are combined in a way one rarely sees in an English publication of this kind. Fortunately, being as gifted with the pencil as with the scalpel, Mr. Masee has been able to paint his own illustrations, which have been faithfully reproduced by chromolithography, and appear to have lost little or nothing in the process. Altogether there are 12 plates containing no less than 313 figures, showing not only the microscopic details needful for the determination of British and some exotic species, but also the form, habit, colour, etc., of the whole organism on an enlarged scale. To the student who is feeling his way through the maze of specific distinctions, and endeavouring to get a correct mental picture of the facies of the typical genera and species, these figures will be invaluable.

We conclude then, as we began, by strongly recommending this volume to all who are interested in the *Myxogastres* as well as to biologists generally. It is the only work in our language which deals systematically and comprehensively with the group, and for a long time to come will probably be the only authority to which English students can appeal. That it is worthy of such a position we have endeavoured to show, and if we have not dwelt upon the few minor blemishes we have met with, it is because they in no way detract from the utility of the volume, and in no degree diminish the general and special excellences it exhibits.—T. H.

NOTE—MOSESSES.

Aulacomnium androgynum in Upper Swaledale.—This species, though previously noted as occurring in several localities in North Yorkshire, is new to Upper Swaledale. It was found growing on ledges of rock by the side of the Swale above Keld, Oct. 1891, and should have been included in my list in last month's issue, but was, by an oversight, unfortunately omitted.—RICHARD BARNES, The Gardens, Saltburn-by-the-Sea, May 23rd, 1892.

RARE CRUSTACEA ON THE YORKSHIRE COAST.

REV. CANON A. MERLE NORMAN, M.A., D.C.L., F.R.S., ETC.

MR. ROEBUCK sent me, in February, some Amphipoda which had been received by him from Mr. Thomas H. Nelson from Redcar, and requested me to examine them. Mr. Nelson stated that there were 'millions of them in the sea' in the second week of February, and that they were affording food to thousands of Kittiwake Gulls.

These Amphipodous Crustacea were *Euthemisto compressa* (Göes), which is one of the family Hyperiidæ. I am not aware that this species has before been noticed in the British seas. It is an Arctic form, which has been found off the coasts of Norway, Finmark, Jan Mayen, and Greenland.

The specimens thus sent to me had been dried and pressed between paper, and in replying to Mr. Roebuck, I regretted that they had not been preserved in spirits of wine. The result was that Mr. Nelson, on the 4th of April, collected some specimens which had been cast up on the sands and sent them in spirits. Mixed with the *Euthemisto compressa* then sent were other Crustacea of much interest. There was a cast skin of *Lepidactylis arenaria* (Slabber) = *Sulcator arenarius* Bate & West.; showing that that species lives in the sand between tide-marks at Redcar. But much more important were mutilated specimens, but enough for positive identification, of two oceanic species of Schizopoda, which had been washed in with the *Euthemisto*. The Schizopoda belong to the family Euphausiidæ,* and are:—

Thysanoessa longicaudata (Kröyer).

Thysanopoda longicaudata Kröyer, Voy. en Scandinavie, etc., pl. viii, fig. 1.

Thysanoessa tenera G. O Sars, Oversigt af Norges Crust., p. 1, 1882, p. 53, pl. i, figs. 19-20.

Thysanoessa longicaudata Hansen, Oversigt over det Vestlige Grönlands Fauna af malak: Havskrebsdyr, 1887, p. 54.

This delicate little 'shrimp' has been found in the seas of Greenland, Norway, and Finmark; and I determined specimens which were taken in the Faroë Channel by the 'Triton' in 1882.

* In the 'Annals and Magazine of Natural History' for the present month (June), I publish a descriptive catalogue of the Lophogastridæ and Euphausiidæ of the British Seas.

As a British species it first became known to me from specimens sent in 1886 for determination by Dr. W. C. McIntosh, who told me that on the 28th of April of that year, miles of sand at St. Andrews were lined by their remains, which were thrown up by the waves at high-water mark. There is a single specimen in Mr. Nelson's Redcar gathering.

Nematoscelis megalops G. O. Sars.

Thysanoessa borealis Norman. Name only in Sim, 'Stalk-Eyed Crustacea of N.E. Coast of Scotland.' Scottish Naturalist, 1872 (p. 8 of separate copy).

Nematoscelis megalops G. O. Sars, Report 'Challenger' Schizopoda 1885, p. 127, pl. xxiii, figs. 5-10 and pl. xxiv.

Nematoscelis is a remarkable genus, distinguished from its allies by the very long and slender first pair of feet, which terminate in a bunch of curiously constructed serrated spines.

As long ago as 1863 the late Mr. Thomas Edward sent me this highly interesting species from Banff. In 1868 Mr. George Sim sent it from Aberdeen; and it now has occurred on the Redcar coast. For twenty-five years it remained undescribed, like great numbers of other things, from inability to find time, amid other work, to keep pace with material constantly pouring into my collection. In 1885 *Nematoscelis megalops* was described by Professor G. O. Sars from 'Challenger' gatherings, and his description of the species accords with the British form (Mr. Sim, in stating that the first feet terminated '18 or 20 spines,' greatly over-estimated their number). It was procured by the 'Challenger' on three occasions in the South Atlantic Ocean, and in the North Atlantic off Nova Scotia.

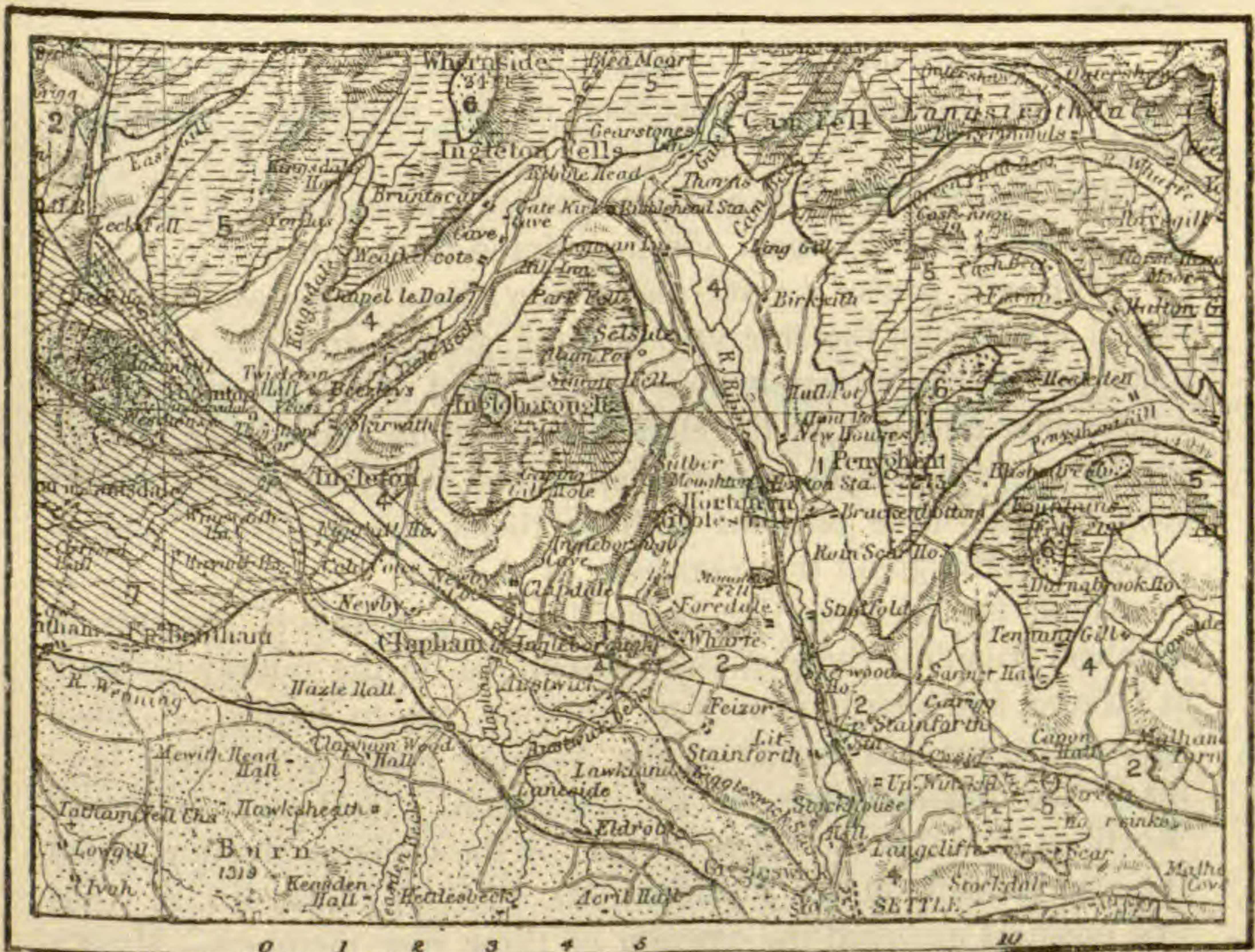
NOTES AND NEWS.

The three handbooks issued by the Manchester Museum, are models of what such books ought to be. The first, a 'General Guide,' by William Hoyle, M.A., F.R.S.E., the Keeper of the Museum, contains a vast store of information for visitors, the sections on the Palaeontological and Zoological Collections being exceptionally well put together. Prof. A. Milnes Marshall, so well known to our zoological readers, is responsible for the other two, a 'Descriptive Catalogue of the Embryological Models' and an 'Outline Classification of the Animal Kingdom.' These are both of a technical character, and will prove invaluable to students. The latter is a mere list of names, but is interesting on account of its including all known animals, whether recent or fossil.

Our friend Mr. H. T. Archer sends us a note of an unusual occurrence which took place last summer at the Whitwell Grange Farm of Mr. J. M. Ogden. Mr. Ogden keeps some valuable stock there, amongst them being an Ayrshire cow. This cow gave suckle to two calves which were not her own, and at the time she was doing this a mare, which had a foal, became dry. The agent on the farm, Mr. W. J. Heslop, then tried the experiment of putting the foal also to the Ayrshire cow, and after a little trouble succeeded in doing so. The cow could therefore be seen morning and evening feeding the two calves and the foal at the same time

THE YORKSHIRE NATURALISTS' UNION AT HORTON-IN-RIBBLESDALE.

NOTWITHSTANDING the heavy rainfall of Friday, and the foreboding aspect of the following morning, a good number of members of the Yorkshire Naturalists' Union attended the first excursion of the season, which took place on Saturday, May 14th; the place of meeting being Settle, for the investigation of Horton-in-Ribblesdale, Ribbleshead, Ling Gill, and Penyghent. Several enthusiastic members availed themselves of the railway facilities, and were upon the ground on Friday, and not a few lingered in the district until the



EXPLANATION OF MAP.—The following formations are shown : 8 Permian ; 7 Coal Measures ; 6 Millstone Grit ; 5 Yoredale Beds, etc. (with Pendleside Limestone) ; 4 Carboniferous Limestone ; 3 Basement Carboniferous, and Upper Old Red ; 2 Silurian, 1 Ordovician.

following Monday. In consequence of the great distance of the scene of operations from the centre of the county, arrangements had been made whereby the excursion could be worked by two contingents, a first to arrive about 8.30 a.m., and a second at noon. Three routes had been arranged. The first, planned for geological

investigation, was to leave Horton on the arrival of the early train, and to make a cursory examination of the leading features on the west side of Horton Valley. If time permitted, Coombs Quarry was to be visited, after which a move was to be made towards the north, over the scars of Moughton, in order to meet the noon arrivals at Ribbleshead. The united party were then to pay special attention to the glacial phenomena of the neighbourhood, and return to Horton along the east side of the valley.

Members accompanying the second party were instructed to proceed by train to Ribbleshead Station, and thence work across the moors to Gearstones, so as to strike the head of Ling Gill, which was to be descended, whence the moors were to be traversed to Horton.

A third route had been arranged for the benefit of those members desirous of investigating Penyghent, or the immediate neighbourhood.

[The proceedings of the several parties are described at length in the reports of the Sectional officers, printed further on.]

The early parties set out under very disadvantageous meteorological conditions, the morning opening gloomy and wet, but, as if influenced by the determination of the band of 'early enthusiasts,' a little after nine o'clock the clouds began to lift and scatter, and the sun broke forth with all its power, and aided by a fine breeze, matters soon became more pleasant both overhead and underfoot, and so continued throughout the remainder of the day.

About five o'clock, the whole body of members (seventy in number) attending the excursion, assembled on the railway platform at Horton, and shortly after were on their way to Settle. A much appreciated tea was served at the Ashfield Hotel, which had been made the head-quarters of the excursion. The usual Sectional Meetings were followed, at 6.45 p.m., by the General Meeting, under the chairmanship of the President, Mr. C. P. Hobkirk, F.L.S. The first business included the election of three new members—Messrs. Reuben Gaunt, Jr., Stanningley; Richard Howse, Newcastle-on-Tyne; and G. H. Parke, F.L.S., F.G.S., Wakefield; and the admission of a new society into the Union, viz.:—The Leeds Co-operative Field Club.

Representatives were present from the following affiliated societies:—Barnsley, Wakefield, Liversedge, Leeds Naturalists' and Leeds Geological Associations, Conchological Society, Goole, Dewsbury, Malton, Cleveland, Harrogate, Craven, Leyburn, Huddersfield, Bradford Naturalists', and Bradford Scientific Associations.

On the motion of Mr. John Gerrard, seconded by Mr. Geo. Webster, and supported by Prof. L. C. Miall, F.L.S., F.G.S., a hearty vote of thanks was accorded to Messrs. John Foster, James Farrer, J. Hammond, Ald. T. B. P. Ford, John Slinger, and the Rev. Arthur Ingilby, for granting permission for their estates to be visited; to Mr. J. G. Goodchild, F.G.S., Mr. R. H. Tiddeman, F.G.S., the Misses Thompson, Mr. and Mrs. Ellwood Brockbank, Messrs. Wm. Whitwell, Wm. West, F.L.S., and E. Peake, for leading parties, or contributing to the excursion programme.

The reports of the Sectional officers were next presented, and the following accounts have since been supplied for publication.

Mr. Riley Fortune, F.Z.S., one of the Secretaries of the Vertebrate Zoology Section, supplies the following report:—

The members bent on investigating the vertebrate fauna of the district divided into two parties, among whom were the two Hon. Secs.: Messrs. James Backhouse, F.Z.S., and Riley Fortune, F.Z.S., John Braim, John Gerrard, W. Ridsdale, Edgar R. Waite, F.L.S. and others.

One party started from Horton, worked up the valley of the Ribble and joined the other one, which had started from Ribbleshead Station, in Ling Gill. The combined forces then took across the moors to Penyghent, returning to Horton by Douk Gill. The day's work resulted in the recording of 5 species of Mammals, 51 Birds (35 residents, 16 migrants), 1 Amphibian, and 2 Fishes.

The most noteworthy event of the day was the appearance of a small party of Fieldfares, an unusually late date for them to be seen in this country. The numbers of Yellow Wagtails to be seen on all sides was very noticeable, they having apparently quite taken the place of the Grey Wagtail. The finding of a Lapwing's nest containing the unusual number of five eggs, excited some amount of interest. Dippers were extremely plentiful, many nests being met with. The total absence of the Kingfisher in the district worked was specially noticeable. The Peregrine Falcon and Raven both had young among the inaccessible cliffs of Penyghent. The thanks of all naturalists are due to Mr. John Foster, of Horton, who affords these birds every protection. The efforts of such gentlemen as Mr. Foster for the preservation of these noble birds, however, are to a very great extent minimised by such persons as the one who shot the Raven in Feizor Wood, and then nailed it to his fowl-house, where it was seen by a party of naturalists who stayed over Sunday.

The following is a complete list of Vertebrates noticed. The asterisks (*) indicate nest with eggs, and the daggers (†) young birds.

Mammals.

Mole.
Weasel.
Stoat.

Hare.
Rabbit.

Birds.

RESIDENTS.
*†Missel Thrush.
*Song Thrush.
*Blackbird.
Redbreast.
Hedge Accentor.
*†Dipper.
Blue Tit.
Wren.
Pied Wagtail.
*†Grey Wagtail.
*Meadow Pipit.
House Sparrow.
Chaffinch.
Twite.
Reed Bunting.
*†Starling.
Magpie.

*Jackdaw.
Crow.
Rook.
†Raven.
*Skylark.
Sparrowhawk.
†Peregrine Falcon.
Kestrel.
Heron.
Mallard.
*Grouse.
Partridge.
*Waterhen.
†Golden Plover.
*†Lapwing.
†Snipe.
*Curlew.
Herring Gull.

MIGRANTS.
Fieldfare.
Ring-Ouzel.
Wheatear.
Whinchat.
Redstart.
Whitethroat.
Willow Warbler.
Sedge Warbler.
Yellow Wagtail.
Tree Pipit.
*Swallow.
*Martin.
Sandmartin.
Swift.
Cuckoo.
Sandpiper.

Amphibia.

Frog.

Fishes.

Trout. Minnow.

The Conchological Section was but poorly represented at the excursion, not one of the officers of the Section being present, and the Secretarial duties were discharged by Mr. W. Denison Roebuck, who was the only systematic collector on the ground, although Mr. A. H. Pawson paid attention to the mollusca which came in his way, and Mr. R. E. Leach and other members brought shells from the west side of Ribblesdale. The districts in which Messrs. Roebuck and Pawson collected were Castleberg and Ashfield Hotel grounds, at Settle, on the previous evening, and Gearstones, Ling Gill and Penyghent slopes on the day of the excursion. The species which Mr. Roebuck noted a few weeks before in Douk Gill, when making arrangements for the excursion, are also included.

Altogether 30 species were noted, only two of these being water shells and 7 slugs—the remaining 21 being land shells. The most noteworthy shells were *Pupa secale* brought from the western slope of Ribblesdale by Mr. R. E. Leach, *Helix aspersa* abundant on Castleberg, and *Limax levis* found at Douk Gill beneath the same log of wood as *Arion subfuscus*, *A. circumscriptus* and *Limax agrestis*, all lying close enough together to admit of being simultaneously covered by a penny piece. As a matter of course the submontane and calcareous species, *Helix rupestris*, *Balea*, and *Clausilia dubia* were common, and *Helix rufescens* was particularly abundant in many

places. *Clausilia rugosa* and *Zua lubrica* were found on the limestone scars of Penyghent at 1,900 feet elevation. *Ancylus fluviatilis* swarmed in Douk Gill Beck, and Mr. Riley Fortune, F.Z.S., found *Limnæa peregra* abundantly in the river Ribble above Horton. The other species noted were *Arion ater*, *Arion minimus* (an example at Gearstones was brilliant primrose yellow when found, but lost the colour completely and was quite white after five minutes' crawling on the captor's finger, which in its turn became yellow, showing that the colour was that of the shine), *Limax arborum* (Castleberg), *Vitrina pellucida*, *Zonites cellarius*, *Z. alliarius*, *Z. nitidulus*, *Z. crystallinus* (Ling Gill), *Z. fulvus* (ditto), *Helix nemoralis*, *H. arbustorum*, *H. concinna*, *H. hispida*, *H. rotundata*, and *Pupa umbilicata*.

The Entomological Section was reported upon by its President, Mr. Geo. T. Porritt, F.L.S., F.E.S. Very few members were present, and included, besides himself, Messrs. John Braim (Pickering) and E. G. Potter (York). Not many insects were noted: *Tæniocampa rubricosa* in the imago state; and larvæ of a *Scoparia*, probably *muralis* or *coarctalis* (*angustalis*), in abundance in moss on the walls; with the *Scoparia* were a few of a *Gelechia*, which there is little doubt will produce *confinella*. Among Neuroptera only *Nemoura meyeri* and *Leuctra fusciventris* were determined with certainty, both species being common.

The botanists who attended the excursion included, among many others, the President, Mr. C. P. Hobkirk, F.L.S.; the Rev. W. Fowler, M.A., who presented the Phanerogamic report; and Mr. M. B. Slater, F.L.S., Cryptogamic Secretary of the Section. The following account is written by Mr. P. H. Grimshaw, from information supplied from various sources:—

The botanists were gratified by having a very successful day, especially considering that the season was so late and the date so early. Representatives of this section accompanied all the three parties, though the greater number arrived with the later contingent at noon. Those who took the Ling Gill and Penyghent route, or at any rate those who started early, were very limited in number, yet some good observations were made, record being taken of about 120 species of Phanerogams. Immediately on alighting from the train at Ribblehead, the great rarity of the district was noted, the now far-famed *Arenaria gothica*. From Ribblehead to Gearstones several species were seen, the more noteworthy of which were *Alchemilla arvensis*, *Saxifraga tridactylites*, and *Thymus serpyllum*. The walk from Gearstones to Ling Gill yielded little of an interesting nature, being mostly over moorland covered with such plants as *Calluna Erica*, *Erica Tetralix*, and *Empetrum nigrum*. However,

Viola palustris and *Eriophorum vaginatum* were seen, and the absence of *Erica cinerea* was noted as curious. Several limestone hillocks were traversed, and these proved more interesting. *Viola lutea*, *Hypericum humifusum*, *Geranium sylvaticum*, *Poterium Sanguisorba*, *Pimpinella Saxifraga*, *Galium verum*, and *Hieracium Pilosella* were all found on the grassy slopes, and seemed to form a fitting introduction to the rarer plants found in Ling Gill. This lovely ravine was at length reached, and here the party soon found that all their energies must be devoted to merely getting down the stream, and that the botanising must take its chance. After a while, when time was found to look round, and when it was safe to do so, several good records were made. *Scolopendrium vulgare* was the most conspicuous fern, being exceedingly abundant on the cliffs, while *Asplenium Trichomanes* and *A. Ruta-muraria* filled up the smaller crevices. *Sesleria cærulea* was very plentiful, and indeed over the whole district, being noted frequently during the day. The other plants seen in this charming spot, which would have stood a whole day's careful examination, were *Ranunculus auricomus*, *Arabis sagittata*, *Erophila vulgaris*, *Cochlearia officinalis* var. *alpina*, *Sisymbrium Thaliana*, *Helianthemum Chamæcistus*, *Geranium lucidum*, *Geum rivale*, *Chrysosplenium oppositifolium*, *Adoxa moschatellina*, *Valeriana dioica*, *Scabiosa Columbaria*, *Cnicus heterophyllus*, *Lactuca muralis*, *Campanula latifolia*, *Salix phylicifolia*, and *Polypodium vulgare*. From Ling Gill the members proceeded across open country in the direction of Penyghent, stopping at Copsy Gill Wood and Brow Gill on the way. The former yielded a profusion of that richly-coloured but peculiarly-scented orchid, *O. mascula*, which also occurred in abundance in Ling Gill. On the rocks at the mouth of the cave at Brow Gill were found *Aquilegia vulgaris* and *Polystichum lobatum*. A section of the party then worked forward to the slopes of the mountain, returning with some good specimens of *Saxifraga oppositifolia* and *Lycopodium Selago*. The remainder, who examined Douk Scar, found there in plenty *Sedum Telephium*. *Chenopodium Bonus-Henricus* and *Meconopsis cambrica* were seen in the village of Horton, these being about the last records made.

In addition to the plants mentioned in the foregoing sketch, the following are reported by the Rev. Wm. Fowler, M.A., to have been seen by the other parties: *Trollius europæus*, *Chelidonium majus*, *Arenaria verna*, *Prunus Padus*, *Sedum Rhodiola*, *Saxifraga hypnoides*, *Antennaria dioica*, *Pinguicula vulgaris*, *Primula farinosa*, and *Daphne Mezereum*. Mr. R. E. Leach, M.A., noticed on the west side of the Ribble *Salix repens*, *S. nigricans*, *Asplenium viride*, and *Vaccinium Myrtillus*.

Several members continued their explorations next day, and were again successful. Mr. A. H. Pawson, of Farnley, reports having found in Feizor Wood the following rare plants: *Convallaria majalis*, *Daphne Laureola*, *D. Mezereum*, *Hippocrepis comosa*, *Thalictrum minus*, *Rubus saxatilis*, and *Geranium sanguineum* 'in vast abundance.'

A hybrid *Primula* and *Paris quadrifolia* were also found in the same wood, while *Sedum Telephium* was again seen, this time at the little hamlet of Wharfe. *Chenopodium Bonus-Henricus* was common at Wharfe and Austwick, and a great abundance of *Saxifraga tridactylites* was noted on the roads near Settle.

Before calling on the spokesman of the Geological Section, the President availed himself of the opportunity of congratulating, on behalf of the Union, Prof. L. C. Miall on his having been selected as one of this year's fifteen new Fellows of the Royal Society. Mr. Charles Brownridge, F.G.S., who had been acting as Secretary of the Section, gave way for Mr. Goodchild, who then gave an account of the day's proceedings.

Mr. George Brownridge writes:—The excursion being to a district noted for its scenic beauty and grandeur, as well as its scientific interest, a strong contingent of West Riding geologists took advantage of the facilities offered them to pay a visit to the valley of the Ribble, for the investigation of the geology of the district around Ribbleshead and Horton. The district being an especially interesting one for the glacial evidences to be met with, it had been arranged to pay most attention to the investigation of this branch of work, and among the party taking part in the day's proceedings were Professor Miall, F.G.S. (Chairman), Mr. T. Tate, F.G.S., Mr. P. F. Kendall, F.G.S., Mr. W. Horne, F.G.S. (Leyburn), and other members of the Yorkshire Boulder Committee.

The leadership of the party devolved on Mr. J. G. Goodchild, F.G.S., of the Geological Survey, whose intimate and thorough knowledge of the district was of invaluable service to the party during the day. Mr. Goodchild having arrived from Edinburgh on the previous day, walked over the ground to arrange suitable times for the various parts of the work, and the excursion, therefore, was conducted with commendable regularity and smoothness.

A visit was first made to Beecroft Hall Quarries to see the junction of the Silurian and mountain limestone, and to examine the impure coal seams in the base of the latter; then proceeding over Moughton Scars, ample traces were seen on the bare limestone plateau of the former presence of Boulder clay, which has been denuded off its surface, various fine striæ were examined, and after a brief examination of the Caves and Pot Holes in the vicinity the

party struck northwards to Ribblehead to meet the later arrivals. The strongly reinforced party, now numbering 26, under the guidance of Mr. Goodchild, and supplied by him with hand map and sections illustrating the geology of the district, at once set out to examine a good exposure of limestone in the cutting a little to the south of the station, showing glacial striæ or markings having a south-westerly direction. Crossing the railway the party made for the higher ground on the slopes of Park Fell, where at a suitable spot a halt was made for a brief survey of the surroundings. The view from this point of vantage was fine. Whernside, towering up its 2,414 ft. above sea level, shut in the view to the west, while away north the caps of Widdale and Cam Fells, and to the east the gaunt form of Penyghent, alternately smiled and frowned in the sunlight as some white drifting cloud temporarily hung near their summits and cast an ever-changing series of shadows on their forms.

Mr. Goodchild here took the opportunity of briefly describing the physical features of the neighbourhood. The glacial drift covers most of the surface of the district, and is here well shown by a series of drumlins or hummocks lying in and occupying the whole of the valley. These mounds are of long semi-ovoid or dome shape, and many of large size; the longer axes lie in the direction of and generally conform to the ice flow, which, coming from Newby Head and Cam Fell, forced a part down Chapel-le-Dale, while the other portion spread out and flowed down Ribblesdale. The sectional form of these mounds generally conforms to the shape of the underlying rocks which by various agencies have been shaped into their peculiar ovoid form, and the overlying material consists of boulder clay largely interbedded with sands and gravels. Mr. Goodchild explained that the material differed in character from that of a moraine profonde; the layers largely conformed to the shape of the rock surface underneath, and were, from their form and character, rather material that had been left by the ice when melted. The general direction of the ice flow in the valley has been S.S.W., and as the gathering-ground for the glacier was only a little distance north no far-travelled boulders are found in the clay. The probable height to which the drift occurs has been estimated at over 2,000 ft. above sea level on the south-east side of Ingleborough.

The party now proceeded along the hill-side, passing good exposures of the boulder clay and drift bared by the mountain streams, and examined many ice groovings or striæ, and after an interesting series of wall-climbing feats, during which some of the stiffer members of the party were heard to remark that a little mortar would have been useful in building, both for the safety of the wall

and climber, and passing on the way many fine examples of limestone weathering, Long Churn and Dickon Pot were reached, and a brief and cursory examination of these caves, which form underground runs or channels to Hellan Pot, was made, after which Hellan Pot was visited. This is one of the most important and striking pot-holes in the district, and, lying in the deep afternoon shadow of Simon's Fell, its gaping mouth, though relieved by the fresh spring vegetation, looked sombre and forbidding. This shaft or chasm was explored some time ago by Mr. Birkbeck, of Settle, and was found to be 216 ft. deep. At the bottom lies a large mass of gravel, and on the north side runs a cave, along which runs the stream falling into the pot. This cave contains some fine chambers and cascades, but after passing some distance, a deep eddying-pool effectively cuts off further exploration. None of the party wishing to make a more intimate investigation of its hidden depths beyond timing the fall of stones, the journey to Horton was resumed, and the clouds gathering round the cap of Ingleborough made the weather look again threatening, and the leader anxious to get on to easier travelling ground; fortunately it turned out only a passing scowl of nature, and the hilltops resumed their merry appearance in a short time; briefly examining an exposure of limestone on the Fell side the high road to Horton was gained, and passing on each side many cosy-looking old farmsteads, after a short time Horton was reached, and a well-earned halt for refreshments made. Many of the party took the opportunity of making a brief visit to Douk Ghyll to examine the upper Ordovician rocks exposed there, after which the train for Settle was taken.

A vote of thanks to the chairman, proposed by Mr. D. Grimshaw, and seconded by Mr. Waite, concluded the business.—E.R.W.

NOTES AND NEWS.

The Leeuwenhoek Microscopical Club, Manchester, consisting at present of six members, has issued a review of its work from October 1867, the date of its foundation, to March 1891. From this it is evident that the Club has done much to advance the science of microscopy. For instance, it has been instrumental in introducing the use of a mixture of naphthalin and stearine for imbedding, and of benzole as a solvent for balsam; also the use of an iris diaphragm *above* the objective, in order to increase the penetrating powers of wide-angled objectives, when viewing solid objects of considerable depth, by limiting the aperture whilst the object is kept in view.' The list of papers read is very comprehensive and interesting, and makes one regret that there are not more Societies of the same kind.

We notice in the May number of the 'Irish Naturalist' a short account of a method of photographing natural history specimens without a camera, which should be useful to many of our readers. The process is only available for flat objects, but is especially suitable for such things as seaweeds, mosses, ferns, etc. By proper exposure some little detail can be developed, besides the outline, so that something more than a mere silhouette is produced.

DISTICHIUM INCLINATUM: AN ADDITION TO THE MOSS-FLORA OF ENGLAND.

RICHARD BARNES,
The Gardens, Saltburn-by-the-Sea.

I HAVE recently had the pleasure of discovering this rare and interesting plant in Coatham Marshes, and also in similar situations on the Durham side of the Tees estuary at Seaton Snook. It appears to have been first found in Britain by Don, on the sands of Barrie, Dundee, and the few stations that have since been recorded for its occurrence are, without exception, confined to Ireland and Scotland. The two present localities afford, therefore, new records for the moss-flora of England. *Distichium inclinatum* Hedw. (= *Swartzia inclinata* Ehrh., Br. Moss-Flora) may be known from its much commoner ally *D. capillaceum* L. (= *Swartzia montana* (Lamk.), Lind., Br. Moss-Flora), not only by the shorter, inclined capsule, but also by the shorter more crowded leaves and distinct male bracts, and besides the teeth of the peristome are much broader and more distinctly articulated than in *D. capillaceum* L. It was scarcely the right time to meet with the fruit in good condition, yet I was fortunate enough to gather a tuft with capsules having the peristome sufficiently perfect to show this latter character.

Specimens were sent to Dr. Braithwaite, F.L.S., who kindly assures me of its being the true plant.

Bryum lacustre Brid. and *Br. calophyllum* R. Br., were also found at Seaton Snook, and no doubt the other rare species already noted to occur at Coatham will be met with also on the Durham side of the Tees estuary.

NOTES—ORNITHOLOGY.

Tufted Duck in Notts.—On May 6th last there were about forty Tufted Ducks (*Fuligula cristata*) visible from the bridge on Clumber Lake. I do not think that they had begun nesting operations, as they were swimming in pairs about the middle of the water.—LEONARD BUTTRESS, Grove, near Retford, Notts, 9th May, 1892.

Flamborough Bird-Notes.—I have been waiting some time expecting the arrival of our spring visitors, but having taken all particular observations and made all enquiries respecting their arrival, cannot hear of a single Blackstart (*Ruticilla tithys*) or Redstart (*R. phœnicurus*) making its appearance on the Headland up to this date; I cannot understand the reason, as we have had a most favourable season for them. The Swallows (*Hirundo rustica*) did not arrive until the last week in April; also the Ring-Ouzel (*Turdus torquatus*) and Cuckoo (*Cuculus canorus*), May 7th. Can any reader account for this most mysterious affair—quite the reverse of last spring arrivals?—MATTHEW BAILEY, Flamborough, May 12th, 1892.

OCCURRENCE OF THE COMMON RORQUAL, OR FINNER, IN THE HUMBER.

JOHN CORDEAUX, M.B.O.U.,

Eaton Hall, Retford.

ON April 14th a large whale of this species (*Balænoptera musculus*) was seen blowing in the North Channel, and subsequently it got stranded on 'The Den'—a prominent shoal or bank within the Spurn, and presumably the site of the old Humber towns of Ravenser and Ravenserodd. Mr. Winson, to whom I am indebted for the earliest information on the subject, writes:—'We succeeded in killing it by stopping up the blow-hole with seaweed, mud and gravel; when the whale was dying it opened its mouth, displaying two beautiful rows, eighteen inches deep at the back and about nine wide, of what appeared to be whalebone, extending the whole length of the top jaws—a man could have walked upright into its mouth—I can assure you a most wonderful sight. Yesterday (the 15th) we towed it across to Cleethorpes for exhibition.'

On the 16th I had an opportunity of viewing it on the coast near Cleethorpes, in company with Mr. H. B. Hewetson, of Leeds, who, despite the Arctic weather, was able to take several photographs. It was then on its back and partly buried in mud and sand. The dimensions, as I was then able to take them, and taking half the girth and doubling it, were as follows:—Total length over all, 76 ft.; girth behind flippers, 32 ft. 4 in.; gape, 15 ft. 6 in.; across tail (extreme), 15 ft. 6 in.; length of pectoral fin, 7 ft. 6 in. The colour greyish-black above, very smooth and polished looking. The under parts white. Owing to the rigor mortis having set in, it was impossible, even with mechanical appliances, to raise the lower jaw, which was then uppermost, so as to examine the baleen plates; by reclining on the sand and looking under the lip I could see that the external surface of these was nearly white, towards the front clouded with violet or dusky-grey. This, and the comparatively small size of the pectorals, as well as some other external features, point to the conclusion that this is the so-called Common and not Sibbald's Rorqual (*B. sibbaldii* J. E. Gray), the only one of the *Balænopteridæ* with which it could be possibly confounded. In this latter the baleen is entirely of a deep rich black. The most striking peculiarity of this huge creature was the very wonderful deep longitudinal plaits or plicæ on the under surface curving from chin to vent in symmetrically disposed lines, resembling, as much as anything else, bars of white soap, two inches in width on the surface, and so closely placed that

you could just insert your finger ends between them to the depth of about one-and-a-half inches. It is difficult to understand what use they subserve in the economy of the animal. The whale was a male, and probably of considerable age. The weight was variously estimated from seventy to one hundred tons. It was sold by auction on the coast for seventy-five pounds.

Since this was written I have had a most interesting conversation with Mr. Winson relative to the capture. Mr. Winson says the upper jaws rested well within the lower, and, when the mouth was closed, there was a considerable free space between the two, so much so, that after the creature's death he lifted his little daughter into the space, and she was able to walk all round outside the mouth within the lower lip. The baleen plaits were very nearly white in front and brownish towards the back of the mouth. The inner surface being frayed out much like a brush, these bristles were white. The roof of the mouth was a most beautiful contrast to these, and pink in colour, with regular prominent bars or ridges crossing it. Just before the whale died it opened its mouth for about a minute and a half—an eight-foot man might have very well then stood inside. In the act of breathing the plaits or furrows on the under surface contracted and expanded in the most wonderful manner. Seaweed and mud thrown into the blow-hole were violently expelled, but not the stones and gravel.

May 2nd, 1892.

NOTES AND NEWS.

Mr. Arnold T. Watson, of Sheffield, writes to 'Nature,' May 5th, 1892, p. 7, that Prof. W. C. McIntosh identifies as *Sabella saxicava* the annelid whose curious protective device was described in 'Nature' of last September.

This year's list of fifteen candidates selected for the Fellowship of the Royal Society includes two names of special interest to our readers. Seldom has the Fellowship been bestowed upon worthier representatives of natural science than the well-known Professor of Biology at the Yorkshire College at Leeds, Mr. Louis C. Miall, F.L.S., F.Z.S., and the active and indefatigable Professor of Natural History at the Liverpool University College, Mr. W. A. Herdman, D.Sc., F.R.S.E., etc. Prof. Miall's researches in comparative anatomy and palæontology, and Prof. Herdman's very successful work in investigating the marine fauna and flora of the Irish Sea, or as he calls it, Liverpool Bay, have long ago established their claim to the grateful appreciation of all investigators of Natural Science in the North of England, and the honour now conferred on them is well-deserved.

Speaking of the Fellowship of the Royal Society, may we be permitted to express our feeling of surprise that the Society should not long ago have honoured itself by the election of Mr. Alfred Russell Wallace and Prof. John Obadiah Westwood, whose rank as amongst the most eminent and most distinguished of living naturalists is too obvious for dispute. The fame of Mr. Wallace as one of the twin originators of the doctrine of 'natural selection,' will cause his name to be had long in reverence, while Professor Westwood (a Sheffield man by the way) ranks as among the most eminent of entomologists of this or any age. The Entomological Society has long ago marked its appreciation of Prof. Westwood's merits by appointing him Honorary Life President, an honour which had been previously borne by the Rev. Wm. Kirby.

THE HYDRADEPHAGA OF LANCASHIRE AND CHESHIRE.

A PAPER READ BEFORE THE ENTOMOLOGICAL SOCIETY OF LANCASHIRE AND CHESHIRE,
FEBRUARY 8TH, 1892.

W. E. SHARP,
Ledsham, Cheshire.

"DOST KNOW THIS WATER-FLY?"—*Hamlet.*

SINCE the days of Linnæus and the dawn of the systematic study of nature, the order Coleoptera has been primarily divided into certain large groups or sub-orders, which in value perhaps correspond with those sections of the Lepidoptera which we call Butterflies and Moths. These great coleopterous divisions have been based on different characteristics. Linnæus recognised in the antennæ a feature of primary importance; others, notably the great Latreille, insisted on the number of tarsal joints; but in all the systems the group *Adephaga*, as it is called, or *greedy devourers*, has always been assigned the first place among the beetles. This group has been generally recognised as representing the highest pitch of development to which the order has attained, and as the Coleoptera head the Class Insecta, and Insecta the sub-kingdom Articulata, so from one point of view, we might assert that this group of Adephagous beetles exhibits the topmost pinnacle of organic elaboration, which so far on this earth, has been reached by the Articulata. Now without expanding into a dissertation on the peculiarities of the structure of this group, we will merely say that it is divided into two great sections, the Geodephaga, or *devourers of the earth*, the Hydradephaga, or *devourers of the water*, and it is this latter section, the Hydradephaga, which I propose to consider more particularly in this paper. These beetles then are, as we may say, that extension of the *Geodephaga*, which have become aquatic and modified in form and structure, to meet the demands which such an environment imposes. We must not allow ourselves to imagine that the whole group was originally aquatic, and that the Geodephaga are Hydradephaga which have taken to a terrestrial life. The reverse is the case. Coleopterous life undoubtedly began not in the waters, but on the earth; portions of the order have since its divergence become aquatic and semi-aquatic; and just as the highest point of complexity of structure and adjustment of structure to function among the terrestrial forms of Coleoptera is to be found among the *Geodephaga*,

so of all the beetles which inhabit the water, the *Hydradephaga* assume the highest place and exhibit a corresponding perfection of adjustment. And furthermore, inasmuch as this group has advanced the furthest in modification of structure to an aquatic life, so the steps by which it has arrived at that high position have been more completely erased and become extinct. For, whereas if we consider the only other group of the Coleoptera which shows any decided modification of structure to subserve a similar aquatic environment—that extension of the *Clavicornia* which we name *Palpicornia*—if we consider these, I say, we shall at once discover a long series of connecting links, a perfect sequence of form from say *Cercyon*, which is entirely terrestrial, on through *Sphæridium* and *Cyclonotum* to *Anacæna* and *Laccobius*, genera purely aquatic. But we detect no such perfect sequence among the *Adephaga*. No doubt it once existed. *Haliphus*, though in habit a wholly aquatic genus, to some extent acts as a link between *Dytiscidæ* and *Carabidæ*; and in North America we find that singular genus *Amphizoa*, which is perhaps not so much a present link of union as a relic of some archaic form, from whence the ancestors of both groups may have been derived.

Hydradephaga, therefore, is a very well-defined and quite isolated group, and it is impossible to mistake any of its members for species of any other division.

Now, it is a fact worth attention in this connection that most of the major divisions of the Coleoptera have their aquatic or semi-aquatic species or genera. As we have seen, the *Adephaga* have succeeded best in the production of the group we are considering, but *Clavicornia* are not far behind, as represented by the *Palpicornia*. We know of no British aquatic representatives of the *Lamellicornia*, it is true, but at the other end of *Clavicornia* we have *Parnus*, *Elmis*, and *Heterocerus*, all semi-aquatic genera, and in that extension of this great division, known as *Brachelytra*, there are certain of the *Steni* and our one species of *Diänous*, besides one or two *Quedii* and all the species of *Lesteva* and *Geodromicus*, which inhabit the wettest moss saturated continually by the spray of waterfalls and mountain streams. We have also *Diglossa* and *Micralymma* genera almost *submarine* in habitat, and we find many *Homalotæ* and *Thinobii* only in the wettest shingle.

Among the *Rhyncophora*, the weevils, there are certain distinctively semi-aquatic genera, and *Eubria* and *Scirtes* exhibit the same tendency in *Malacodermi*. Even among such a purely plant-frequenting section as the *Phytophaga*, *Donacia* is a genus which may almost be considered as more aquatic than terrestrial; but

none of these genera or species are in any way modified as regards structure. However much they may delight in wetness, it is only actual life in the waters that is potent to alter shape. Nevertheless, it cannot be doubted but that a long series of semi-aquatic and only partially modified ancestors must have existed before such perfected forms as *Dytiscus* or *Hydrophilus* began to be.

We have already stated that this group of *Hydradephaga*—highly specialized as it is—is in fact merely *Geodephaga* expressly modified to an aquatic life. Let us then consider the links of union which show that such is the case. In the first place they are all equally predacious and carnivorous. Now in relation to the affinities of insects, the character of their food may appear an unimportant point; it is however, in reality of the first magnitude, because the whole structure of an insect and all its economy is arranged primarily in relation to the character of its food, not the food to the structure. That is an important point to notice; for instance, it is not because *Cicindela* (tiger beetle) possesses those powerful and ruthless jaws, those agile legs, and ready wings, not because it has been endowed with all these, that it therefore seeks its food by the capture of other insects only less swift and less powerful than itself; but that the need of such and no other sustenance has induced the means most fitted to secure that end. The character of food then goes deeper than structure, because it occasions it, and we find a bond of union between *Geodephaga* and *Hydradephaga* in that both live on other living organisms, captured by their superior means of offence. But further, proceeding to a consideration of morphological similarities, we find that in both these groups there are invariably five tarsal joints for each leg in both sexes. No beetle has more than five—just as no vertebrate has more than five digits—although whether there be any significance in the parallelism we will not now consider—but many beetles have fewer tarsal joints than five. Some of the other groups are very irregular in this matter of tarsal joints, some having four, some only three, some different numbers on different pairs of legs, some differing according to sex, but superior to all these aberrations we find all the *Geodephaga* and all the *Hydradephaga* have always five joints in all the legs in both sexes, although it must be admitted in some few cases one joint is rudimentary. Furthermore, in both these groups we find similar mouth organs or trophi and similar antennæ. Now among all the organs on which various classifications of the Coleoptera have been based, the antennæ have always been given a prominent position, and the mouth organs according to their greater or less development differentiate with the utmost precision the minor as well as the major groups.

We have already seen that the five-jointed tarsi is a feature common to both these groups, and we may now add that both are distinguished by moniliform antennæ, slightly tapered at the extremity, and never thickened, clubbed, or foliated, and by a maxillary palpus having a jointed inner lobe, with very few exceptions. These are points of similarity which undoubtedly denote a common origin, but if we turn to the table of the families of the Adephaga, given at the end of this article, we shall see a group called *Gyrinidæ*, which is placed after all the other families, and if this group or family be included among the Adephaga, as it usually is, then these remarks about similarities in structure will not apply. For these Gyrinidæ are quite an aberrant group, they are indeed one of the most singular and exceptional in the whole order of Coleoptera, and we can hardly understand why they should come under the heading of Hydradephaga at all, except perhaps because of their purely aquatic habits. Morphologically they will not come into line at all with the other families of the section. They represent a much greater advance in development, a much more elaborated adjustment of structure to function, than do any other members of the group with which they are usually associated. If we consider more in detail the consecutive differentiation of organs in the other members of the Hydradephaga, we shall the more readily see how widely divergent these Gyrinidæ are from the typical *Dytiscus* after which they are usually placed.

Now, we must bear in mind that the great idea expressed by this sequence, the ultimate aim of this modification of structure, is simply this—from perfect adaptation to the needs of a terrestrial life to perfect adaptation to the needs of an aquatic life—that is a transition actually bridged in the course of ages, and the links in the chain of that transition are still stamped in the physiology of the various genera from *Haliphus* to *Gyrinus*.

From this point of view let us, then, consider these external features, viz., antennæ (A), legs anterior and posterior (B), and general contour (C). We need say nothing of the mouth organs, because they are adapted not so much to the environing medium as to the food, and the food is similar all along the line. From a like reason the internal organisation is undifferentiated, the disparity in habitat affects neither the nervous, digestive, nor respiratory systems.

1 (A). If you examine the antennæ of any Geodephagous beetle you will notice how the joints are set angularly on one another, and furnished with bristles or pubescence. In the *Haliphus* type, the angles are bevelled down, the joints being set close one against another, very much narrowed, and quite glabrous. This type obtains, without much modification, all through the true *Hydradephaga*, and

it is to be noted that they taper to a point instead of being uniform in thickness, as the Geodephagous antennæ is throughout. In *Gyrinus*, however, the antennæ are altogether shortened almost to a knob, and the joints are reduced to the form of concentric rings. The meaning of course, of all this modification is less and less resistance to the insect's passage through the water; angles and bristles, and, to some extent, length, act as a drag on rapid motion, and hence they have been modified away in the *Hydradephaga*.

(B). Secondly, let us consider the legs, and here we have two, if not three, objects to be attained. Firstly, and most important, propulsion; secondly, reduced retardation; thirdly, a purpose which is generally assumed to be facility in pairing, and in this the anterior pair of the male only are concerned.

Now, propulsion is principally effected by the second and third pairs of legs, and if we compare those pairs in *Haliplus* with the Geodephagous type, we can detect little, if any, difference. The tibiæ in neither are very much flattened, and in both forms the tarsi are set on angularly to the tibiæ, and have angular tarsal joints; nor is the pubescence of either tibiæ or tarsi particularly long or close. But in the genera from *Hydroporus* to *Acilius* we observe a great advance in the direction of the oar; we see a compressed tibiæ and a tarsus set in a curved line with the tibiæ; we see a distinctly horizontal instead of vertical play of the joints; and we see the tarsal joints elongated, cylindrical, and tapered, and fringed together with the tibiæ on the lower edge with long stiff hairs, which project a good way beyond the tarsal claw, and spread out like a feathering paddle at the backward stroke of the leg, which impels the insect forward through the water.

But now if we consider the posterior leg of the genus *Gyrinus* to which we alluded above, what a divergence do we find! This limb is neither lengthened nor furnished with swimming hairs, but instead the whole leg, femur, tibia, and tarsus is flattened into broad blades, and the tarsal joints, instead of being imposed one on another, are fixed like paddles round a common centre, and can be shut up like the leaves of a fan. The adaptation is perhaps not much more perfect than in the *Dytiscus* type of leg, but it is in a direction far more remote from the original.

In considering leg modification, I mentioned as the second object to be attained, diminished retardation. This is more important as one might say 'forward' than 'aft,' and as the antennæ have been with the same purpose reduced, so the anterior legs, which in the Geodephagous type are nearly as long as the others, in *Haliplus* are slightly shorter, and in the Dytiscidæ very much reduced in length.

The tarsal joints also on these legs are much compressed in length (although enlarged in diameter), until in *Dytiscus* the first three joints are together almost spherical. In *Gyrinidæ* again on the contrary these anterior legs are very much lengthened (for prehensile purposes), but they can be folded up very neatly when the beetle is in rapid motion, so as not to impede its course. The third direction of leg modification we have to notice, is that peculiar enlargement of the anterior tarsal joints of the male. Now this is a characteristic which is found more or less all through the Coleoptera, and its use has generally been assumed to lie in increased facility in pairing. It is not quite certain, however, that the structure was originated solely to serve such a purpose as this. In the *Geodephaga* it is by no means uniform as one would expect so purely sexual an apparatus to be, and in certain genera the second as well as the first pair of legs have the tarsal joints enlarged. The theory, however, derives some support from the extraordinary development of these joints in *Dytiscus* and the allied genera, because it is obvious that if union in pairing requires any adventitious assistance at all, it will require it more in the denser medium of water than in the less resisting one of air. However that may be, we can trace a distinct increase in the enlargement of these joints correlated with more perfect adaptive modification. In any species of *Harpalus*, you see the normal enlarged tarsus of a *Geodephaga*. In *Haliplus* they are hardly enlarged at all, but in *Deronectes* and *Hydroporus* we notice the first three joints swollen and globular, tending to the still fuller development of *Dytiscus* in which the first three joints are not only much swollen, coalescent and almost spherical, but furnished with small cup-suckers, after the manner of the arms of a cuttle-fish, which appears to be a structure quite unique among Coleoptera.

So far then for adaptive modification of antennæ and legs among *Hydradephaga*. We have next to notice the considerable alteration in shape, lending itself more and more to the physical needs of the environment.

(c). Now, if we examine any typical terrestrial form, we notice a generally angular contour, protuberant eyes, and a very distinct angle between thorax and elytra. In *Haliplus*, the lines have become more rounded, and the eyes more deeply sunk in the head. In *Deronectes*, on the other hand, the general contour seems hardly so well disposed as in *Haliplus*. This form marks in this respect the least differentiated among the Dytiscidæ; you notice the distinct head, the rounded sides of the thorax, and the wide angle between thorax and elytra; but now, on turning to *Agabus* or *Dytiscus*, we recognize a distinct improvement. Their lines compared with the *Deronectes* are like those of the s.s. 'Teutonic,' by the side of a Dutch

brig. If we saw the insects in profile, the singular adaptation of form to planes of least resistance would be still more striking. Here we have certainly the perfection of aquatic form. We see it exemplified in the genera *Agabus*, *Ilybius*, and *Colymbetes*, as well as in *Dytiscus* or *Acilius*, and perhaps nothing could more graphically exhibit the modifying power of environment than the contrast, in outline alone, between one of these *Dytisci*, and such a form as *Cicindela*, perfectly fitted as *it* is to a terrestrial life.

In this slight survey of the morphology of the group, we ought not to omit a very important feature. I refer to the wings, which are ample and well developed in all the *Hydradephaga*. The purpose is obvious. Perfect adaptation to a life in the water means perfect helplessness on dry land. But in summer the pools and marshy places, in which so many of these *Hydradephaga* live, frequently become dry, and this would involve the utter extermination of those inhabitants unless they had some other means of locomotion to rely on than that of their legs. Hence, while in most Geodephagous forms, the wings are aborted and useless, in all the *Hydradephaga* they are perfectly developed and constantly used.

There is one other point to which I must allude, as the feature is very characteristic of this group. Their females, in many cases, appear under two forms, dimorphic as it is called; this difference is only an external one, the dissimilarity is restricted to striation and punctuation, one form of the female being like the male, the other quite distinct, elytra deeply sulcate, whereas the male and first female form, are quite smooth: or dull, whereas the others are polished and so on. It must be admitted that we are really quite ignorant of the origin or utility of this female dimorphism; some have assigned to it a sexual purpose analogous to the masculine enlarged tarsi, but the real puzzle is not female differentiation, but, female *dimorphism*; and sexual purposes which might explain the first class of phenomena, are utterly inadequate to throw any light on the second. The females of the *Gyrinidæ* do not seem to share this peculiarity at all.

I trust I have not out-worn the patience of my readers in dwelling thus at some length on these structural details. To summarise them, we find in the *Hydradephaga*, from *Haliphus* to *Dytiscus*, a gradual process of adaptation from a typical Geodephagous to a typical Hydradephagous form. Of course the small points of differentiation, which distinguish and divide genus from genus and species from species, are innumerable; but, broadly speaking, we find:—

- 1.—Slight shortening, tapering, and complete nakedness of antennæ, cylindrical joints, and effacement of angular apertures between joints.

- 2.—Shortening of anterior legs, and enlargements (possibly for sexual purposes) of anterior tarsi in males.
- 3.—Lengthening of posterior legs, and alteration of vertical play to a lateral oar-like movement; lateral compression of both posterior and, to some extent, median legs, and formation of thick fringe of hair to assist in propulsion.
- 4.—Gradual alteration in contour, both horizontally and laterally; smooth surface without striation in males, and recession of eyes into head.
- 5.—Amplification and general use of wings.

These, then, are the points which arrest our attention in our survey of the Hydradephaga from *Haliphus* to *Dytiscus*, but it must be noticed that we have not included that singular family of the *Gyrinidæ* in these remarks at all. In them we discover a far more extreme differentiation than these points we have recapitulated cover. The contour, indeed, remains much the same, but no further progression was easily possible beyond *Agabus* and *Dytiscus*; their lines are so fine as to be unsusceptible of improvement, but the following features are distinctly unique:—

- 1.—Eyes duplex, that is half the eye above, and half below the median line of the head so as to appear like four eyes instead of two. This arrangement is to subserve the needs of a life mostly passed on the surface of the water instead of in the depths.
- 2.—Antennæ shortened and compressed to a mere knob.
- 3.—Anterior legs lengthened, but tarsal joints not enlarged.
- 4.—Median and posterior legs shortened and extremely flattened, and tarsal joints flattened to the likeness of paddles and inserted differently from the usual plan.

Such differences as these, so important and fundamental, have suggested the idea that this family of *Gyrinidæ* should be elevated to the rank of a sub-order, being as diverse from either *Adephaga* or *Clavicornia* as these groups are from each other, but as they are and always have been treated as part of Hydradephaga, we shall include them provisionally in our consideration of that division.

Finally, we may remark that the Adephagous water-beetles afford excellent illustrations of the protective resemblance attained by colour. This is seen in none of them better than in *Laccophilus hyalinus*. The colour of this beetle is a kind of dirty olive-green with a glassy semi-transparent look about it, than which no better tint could be imagined to conceal the creature in the still clear water of ponds full of semi-lights and reflections from water-plants. There

is no bright or metallic coloration throughout the entire group, except indeed in the case of *Gyrinus*, but these beetles, as we have said, keep on the top of the water, and depend more for safety on the agility and speed with which they turn and double and dive, than in any protective resemblance. All the others range from a sort of fulvous yellow, through shades of brown and olive-green, to black; and the spots with which so many are adorned, are so arranged as to appear like the spots and flecks of light among the weeds wherein their life is spent. The larvæ of the Hydradephaga may often be dredged up among caddis-cases, shells, aquatic hemiptera, and the like. They are ferocious monsters, more insatiable even than the perfect insects, and armed with enormous jaws in most species. Of the pupæ and methods of pupation, as is usual among the Coleoptera, next to nothing is known.

DISTRIBUTION.

And now as regards the distribution of these insects in our own district, that is, the counties of Lancashire and Cheshire. It should be said in preface that the following remarks apply almost exclusively to the Western part of those counties. We have only one observer in Mid Lancashire, but none to whose records I have been able to gain access in either South Cheshire or North or extreme East Lancashire. Thus a great deal of our district remains still unexplored, localities which from their character are likely to add considerably to our local list; such, for instance, are the meres and mosses which stud the Southern division of Cheshire, and the mountains, tarns, and marshes of Furness in the North of Lancashire.

In compiling a list of records Dr. Ellis, of Liverpool, has done more in this, as in the other divisions of Coleoptera, than all the other observers put together; but we must also mention the name of the late Mr. Kinder, of Bootle, who seems to have worked the pits and ponds in his immediate vicinity with singular thoroughness. We have also—besides the records of Mr. Chappell, which cover more especially the district around Manchester—the observations of Mr. Wilding and Mr. Stott in Lancashire, and Mr. Newstead and Mr. Tomlin in Cheshire, and from the recorded observations of these gentlemen we have been able to compile a fairly full list of the local Hydradephaga.

Beginning then with the family HALIPLIDÆ, those crawling more than swimming beetles of the water. As you will see from the table, there are three genera: *Brychus*, *Haliplus*, and *Cnemidotus*. The first and the last of these genera have one species each, and both are said to occur in the East Cheshire district, but we have no records from the immediate vicinity of Liverpool.

Haliphus has eleven recognised British species; two of them, *H. ruficollis* and *H. lineatocollis*, are two of our most abundant water beetles, and I have, I think, never dragged pond or ditch in the district without meeting with the former insect at any rate.

H. obliquus I have only taken in Flintshire, but Dr. Ellis has it from Bidston near Birkenhead.

H. confinis is a scarce insect. I have never taken it in Cheshire, but Mr. Kinder reports it from Kirkdale.

H. fulvus and *H. flavicollis* are fairly common.

H. fluviatilis has been recorded, and Dr. Ellis has taken *H. striatus*, which seems more probably to be only a racial variety of *H. ruficollis*, and not a distinct species. Thus of the eleven species of this genus we have records of eight; the other three are rare everywhere.

Of the PELOBIIDÆ there is but one genus, *Pelobius* (dweller in the deep), and one species, which is very uncommon in the north but has been taken at least once by Mr. Gregson at Rufford.

The next family, DYTISCIDÆ, contains a number of genera, which have been arranged under various tribes and sub-families, with which, however, we need not concern ourselves here, as it will be less confusing to treat of the genera simply as they are placed, but the groups in which they are massed in the table will give some idea of their affinities.

Noterus (the wet one) is a small genus of two species. One of these, *N. sparsus*, occurs in the district, but not by any means frequently.

Then comes *Laccophilus* (lake lover). There are three species. Their synonymy is rather confusing, and Canon Fowler has altered the specific names of the first two. Good and sufficient reasons doubtless exist for his doing so, but it is nevertheless very confusing, after having learned to recognise certain forms by certain specific names, to be suddenly called upon to change or even reverse them.

The first of these species of *Laccophilus*, *L. minutus*, I have never been able to discover in the district, but it has been reported by Dr. Ellis. The second, now called *L. hyalinus*, I have taken quite abundantly in most of the Cheshire ponds. It was particularly plentiful in 1890; the previous year I had not taken more than two or three. In this connection I may observe that I have noticed that every year seems to have its particular water-beetles, which then do more especially abound, and then seem to die out perhaps for years. The laws which govern these phenomena are exceedingly obscure, but it is impossible to doubt that they are controlled by laws perfectly rigid in their application. I am myself persuaded that such instances are similar in character to the aberrant abundance of such

Lepidoptera as *Deilephila galii* and *Colias edusa*, and owe their origin to a similar set of factors, and in the case of *Hydradephaga* we can hardly seriously invoke the agency of migration to explain what we cannot understand, as has been done in the case of the Lepidoptera.

For instance, 1888 was notable for *Hyphydrus ovatus*. All the ponds swarmed with that species; since then, they have only occasionally been met with. In 1889 *Agabus sturmi* was unusually abundant; in 1890 the *Cælambii versicolor* and *inæqualis* took the lead, and also this *Laccophilus hyalinus*; while last year, *Hydroporus lineatus*, a beetle usually rather scarce, was particularly plentiful. Only a careful study of atmospheric conditions and meteorological records, over a long course of years, combined with a series of accurate observations on greater and less abundance could, I think, furnish us with any sort of tenable theory to account for these phenomena. But this is a work as yet untried.

But passing into the next group of genera, we commence with *Hydrovatus* (*Oxynoptilus* in Dr. Sharp's Catalogue). There is only one species, and that has only been taken in one pond near Portsmouth.

The three genera, *Bidessus* (compressed or well bound), *Cælambus* (scooped out), and *Deronectes* (swimmer), are usually all included in the great genus *Hydroporus*; but Canon Fowler, with very good reason, separates them. They are four entirely distinct types of insect, and the old genus *Hydroporus* was always cumbrously large.

The three species of *Bidessus* are small rounded beetles, all very rare, and none so far taken in our district.

Hyphydrus, which has always been a distinct genus, has one species; an insect which to mistake is impossible. It is a dark orange-red colour, and almost globular. It is fairly common in all the Cheshire ponds, and was especially so, as mentioned above, in the summer of 1888.

Cælambus has eight species.

C. reticulatus (*versicolor*) is common in the district, but more local and erratic than *C. inæqualis*, and it also appears rather earlier.

C. luceratus is recorded by Mr. Gregson from Bromborough, Cheshire.

C. parallelogrammus I have taken once in a peaty pool in Delamere Forest. It is rather a scarce species, and does not seem to have been otherwise recorded in the district. The other three species are not recorded, so we have five out of eight in this genus.

We now come to *Deronectes* with five species, all fine distinguished looking insects, with a certain rotundity of outline and dilation of

the thorax which renders them conspicuous. Three of these are taken in the district. One of them, *D. assimilis*, seems to have been identified first as British, by Dr. Schaum, from specimens taken by Mr. Gregson, in Mosslake Fields, Liverpool. I have found it commonly over all the district that I have explored. Of another species, *D. 12-pustulatus*, Mr. Stott, of Bolton, has an interesting observation. He found a number of them hibernating under water, under the bark of rotten sticks, in a pond at Lostock, in January 1886. This is the only instance that I have ever come across of any number of the Hydradephaga being found *in hybernaculo*. The case demonstrates to us very forcibly how completely vital action must be suspended during hibernating, because respiration must cease almost entirely. For the *Hydradephaga* do not, like fishes and gill-bearing larvæ, breathe the air held in solution by the water; they are compelled to fill the space between the elytra and the abdomen with atmospheric air obtained from the surface of the water, and if kept in a lightly stopped bottle full of water to the exclusion of any air, they will, as a usual thing, very soon drown; therefore, it seems that we must conclude that these hibernating beetles found under bark of submerged sticks, existed for probably several months on the minute bubble of air retained under their elytra from their last visit to the surface. This species, however, I have not taken so frequently as either *D. assimilis* or *D. depressus*. The other two, *D. latus* and *D. griseo-striatus*, do not occur here. The first inhabits clear running streams, and the last is quite a northern insect.

We now come to *Hydroporus* (wayfarer of the water), the largest of the genera of the Hydradephaga. The species are all small obscurely coloured insects, and they present to the student the greatest difficulties in the way of identification. Canon Fowler enumerates thirty-six species; a great many of them are uniformly black, and these are the most difficult of all. One of them, *H. palustris*, is the most abundant water-beetle we have in this district, except perhaps *Haliplus ruficollis*; but of the thirty-six species there are records of twenty-two or twenty-three.

One *H. ferrugineus*, a very rare species, is cited as from Whalley near Preston, by Fowler, but no authority is given.

Two species rest on single specimens. Dr. Ellis took *H. celatus* at Otterspool, on the Mersey shore, and I have taken one specimen of *H. flavipes* at Ledsham, Cheshire.

At Simonswood, Lancashire, Dr. Ellis took *H. tristis* and *H. melanarius*, and in the same place I took *H. atriceps*, and in Delamere two specimens of *H. obscurus*. These are our only records of these species.

Interesting records are *H. rivalis*, in clay-pits behind Wavertree Park, *H. septentrionalis* and *H. davisii*, the latter by Mr. Chappell and Mr. Gregson. The other, *H. septentrionalis*, is recorded by Mr. Kinder as from Kirkdale freely, but this seems to me to require confirmation. *H. septentrionalis* is one of the species restricted apparently to clear running streams, and Mr. Kinder's localities were clay-pits, which seem most unlikely situations.

H. pictus, a very small and easily-distinguishable species, occurs in nearly all the Cheshire ponds of clear waters sparingly, and generally singly. *H. lepidus* is also not a common insect. I have taken it at Heswall and Ledsham, Cheshire, and the late Mr. Archer records it from New Brighton. *H. lituratus* I have taken usually in ditches near the sea at Leasowe, Cheshire, and Heswall, and have also come across it in Delamere Forest. *H. nigrita*, *H. vittula*, and *H. angustatus* I have found very erratic in their appearance, but *H. palustris*, *H. memnonius*, *H. erythrocephalus*, *H. melanocephalus*, *H. planus*, *H. gyllenhalli*, and *H. lineatus* are always more or less plentiful in the district. On the whole, we are well represented in this genus, the species that do not occur being rare and local.

We now have to consider another group of genera, of which *Agabus* is the largest.

Ilybius (the mud dweller) numbers seven species, one of which is doubtful as British, *I. subæneus*, and if Mr. Gregson's record of *I. augustior*, 'formerly plentiful in Mosslake Fields,' be accepted, we have all the others. One of them, *I. guttiger*, indeed is recorded from no nearer than Preston, by Mr. Wilding, but the others are fairly distributed. It is noteworthy that all the specimens of *I. obscurus* which I have taken, have been of the variety *sexdentatus*; the type form I have never seen.

Agabus contains nineteen species, of which we have nine recorded. One of them, *A. bipustulatus*, is very common everywhere.

A. chalconatus, in a ditch near Morton, and in Shotwick Brook, also by Mr. Stott at Lostock, Bolton.

A. sturmi I have taken abundantly all through Cheshire.

A. paludosus rests on one species reported by Mr. Kinder, from Crosby, but Mr. Stott takes it near Bolton.

A. nitidus, Mr. Wilding has taken near Preston.

A. guttatus, fairly common. *A. nebulosus*, Dr. Ellis in his Fauna mentions as abundant, but I have never met with a specimen in Cheshire. He took his on the sand-hills at Wallasey.

A. conspersus, a rather rare and maritime species taken at Crosby and Hightown.

A. unguicularis, taken by Mr. Chappell, Withington, Rusholme, Cheshire.

Platambus (flattened) is another genus, with one species, *P. maculatus*. I have taken it abundantly in the Alyn, at Gresford, and doubtless it would occur among the shingle on the right bank of the Dee, which would bring it into our district.

Copelatus (the rower), formerly *Liopterus* (smooth-winged), has also one species, *C. agilis*, which I have so far never met with, but it occurs generally over the district.

Rhantus and *Colymbetes* were formerly combined under one genus *Colymbetes*. According to Canon Fowler's arrangement, however, *Colymbetes* (the diver) has but one species, *C. fuscus*, a large insect like a *Dytiscus*, which is common generally, and particularly abundant in the shallow lagoons formed on the sand-hills.

The other division, now *Rhantus* (which I think means *sprinkled*, in allusion to their dotted elytra), represents six species. Three have been taken here. Dr. Ellis took a dead specimen of *R. exoletus* once on the banks of the Alt; *R. grapii*, one specimen taken by Mr. Gregson, in Mosslake Fields, and also by Mr. Chappell, near Pendleton; and *R. bistratus*, taken by myself in Delamere Forest.

We now come to the *Dytiscina* group of genera.

Dytiscus itself (made like a diver); *Hydaticus*; *Acilius* (smooth-pointed), and *Graphoderes* (scratched or striated skin).

Dytiscus contains the largest and best known of all the water beetles. *D. marginatus* is the commonest, but *D. punctulatus* has been taken at Wallasey and in Delamere. Of six species of this genus, we only possess these two. Neither of the two *Hydati* are recorded. Of *Acilius*, *A. sulcatus* is fairly common, the other one, *A. canaliculatus*, is recorded in Mr. Cosmo Melvill's list of the Manchester Coleoptera, but the record may be a mistake for *A. sulcatus*, as these two species are very similar.

The remaining genus of the Dytiscidæ, *Graphoderes*, contains one species, which is supposed to be extinct as British.

We have now merely to allude to those two genera which form the family Gyrinidæ, which as we have seen differs so materially from any other of the families of the Adephaga. *Gyrinus* (the whirler) numbers nine species, which it seems to me are among the most difficult of all the Coleoptera to satisfactorily determine. We have records of four species, two of which are very common, *G. marinus* and *G. natator*. The commonest species about my own district seems to be *G. marinus*, and Mr. Chappell says the same of the Manchester locality. Mr. Gregson took the rare species, *G. bicolor*, from Raley, in Cheshire, and Mr. Chappell and others have met with *G. distinctus*

at Leasowe. The last genus which I have to mention is *Orechtochilus* (with stretched lip or edge). There is one species which occurs in the Bollin, also the Alyn, and doubtless many other streams.

Such then is a brief résumé of the records of the members of the group *Hydradephaga* which our district has so far supplied, about seventy-four species out of a total of one hundred and twenty-nine; and of twenty-four genera, there are but four of which we have no representative.

It is chiefly in the denizens of clear running waters that we are deficient, but the immediate vicinity of Liverpool is not noted for its clear brooks and shingly streamlets. Then there are some species purely local like *Hydrovatus clypealis* from Portsmouth, and *Bedissus minutissimus* only taken in Devonshire; there are also a few northern and semi-arctic species which we could not expect to find, such as *Dytiscus lapponicus*, *Agabus arcticus*, and others. Then there are a few forms which seem restricted to a southern range. But on the whole we have as large a proportion of the total numbers of the group as perhaps any other district of an equal size can boast of. We are fortunate in possessing singular facilities for working these insects in the number of pits or ponds which stud the surface of all South Lancashire and West Cheshire. All over that great belt of glacial clay, which like a thick veil covers the Triassic sandstones, these quiet ponds mark nearly every field. To account for their origin we must go back to the years long past, when wheat was the staple crop of the heavy clay lands, and not, as now, restricted to an isolated field here and there. Then, when patent manures were unknown, the only way of recuperating the surface, exhausted as it must have been then by a long course of wheat crops, was by application of the virgin sub-soil as a top-dressing. For that purpose were dug those deep pits, and there they have remained ever since, the home of generations of water-beetles. Usually dug in the corners of the fields, great oaks have grown up around them, and tangles of gorse and hawthorn shut them in. There the sly Water-Hen paddles silently out from the thick reed beds, and into their still waters on winter evenings the wheeling wild ducks drop with a splash that resounds all across the pastures. It is these pools that make the study of the Hydradephaga so fascinating. No inverting tons of angular stones on bleak mountain sides, no grubbing among dung and carrion. Here is all the charm of trout-fishing, the bright April morning—for April is the best month for the Hydradephaga, before the water-weeds have grown too much—the yellow gorse, the catkined willows. You may have the luck to see a kingfisher, a resplendent vision of sapphire, for a moment he sits poised on an aspen bough, then like a flash he has

gone. The black-headed, most beautiful of the buntings, will sit and swing in an osier, and sometimes even if you are very quiet, you may see the great bald coot, with his scarlet wattles, steal out from the Iris flags. That strange rustling, crunching, sort of sound you hear, is the water-vole nibbling at the roots of the reeds, and those short spasms of jerky song, is the voice of the sedge-warbler, once more returned to his beloved pond side. Such are the visions of pond land, and of such gracious associations are our carded specimens of Halipli and Hydropori for ever redolent. We may work them out with microscope and dissecting needle by the winter lamplight, and struggle and toil at their distinguishing, and the result to our non-entomological friends may seem poor enough, a series of black and brown dots on cards, but to us, they ever bring back the halcyon days of some early spring, and in our ears as we enumerate them, is the fitful wail of the plover over the springing corn, and the lapping of water among reeds; and in our eyes the pleasant flicker of sunlight between the oak boughs, and with such things as these are we rewarded.

GEODEPHTHAGA.	}	CICINDELIDÆ. I Genus.					
		CARABIDÆ. Sundry Genera.					
HYDRADEPHAGA.	}	HALIPLIDÆ.	<i>Brychius</i> ... ..	...	...	containing 1 species.	
			<i>Haliplus</i> ... ..	...	...	11 "	
			<i>Cnemidotus</i> ... ..	...	...	1 "	
		PELOBIIDÆ.	<i>Pelobius</i> ... ..	...	...	...	1 "
			<i>Noterus</i> ... ..	...	...	...	2 "
		DYTISCIDÆ.	<i>Laccophilus</i> ... ..	...	...	...	3 "
			<i>Hydrovatus = Oxynoptilus</i> ...	...	...	...	1 "
			<i>Bidessus</i> ... ..	...	...	...	3 "
			<i>Hyphydrus</i> ... ..	...	...	...	1 "
			<i>Cælambus</i> ... ..	...	...	...	8 "
			<i>Deronectes</i> ... ..	...	...	...	5 "
			<i>Hydroporus</i> ... ..	...	...	...	36 "
			<i>Ilybius</i> ... ..	...	...	...	8 "
			<i>Agabus</i> ... ..	...	...	...	20 "
			<i>Platambus</i> ... ..	...	...	...	1 "
			<i>Copelatus = Liopterus</i> ...	...	...	...	1 "
			<i>Rhantus</i> ... ..	...	...	...	6 "
			<i>Colymbetes</i> ... ..	...	...	...	1 "
		<i>Dytiscus</i> ... ..	...	...	...	6 "	
		<i>Hydaticus</i> ... ..	...	...	...	3 "	
<i>Acilius</i> ... ..	...	...	...	2 "			
<i>Graphoderes</i> ... ..	...	...	...	1 "			
GYRINIDÆ.	<i>Gyrinus</i> ... ..	...	...	...	9 "		
	<i>Orectochilus</i> ... ..	...	...	...	1 "		

THE YORKSHIRE NATURALISTS' UNION AT ROKEBY.

It would be difficult to imagine that any Whit-Monday excursionists could have had a more enjoyable or profitable outing than the seventy or eighty members of the Yorkshire Naturalists' Union who journeyed on the 6th June, to Barnard Castle, for the purpose of investigating



that delightful and romantic portion of Teesdale, which has been rendered classic ground by Sir Walter Scott, who in his well-known and oft-quoted poem of Rokeby, portrays the physical features of the district with characteristic fidelity and with many a graphic phrase. Leave to visit the estate was generously granted by the trustees, Mrs. Morrill (widow of the late owner), and Mr. G. Gilpin Brown.

July 1892.

Similar permission was granted by Lord Strathmore, of Streatlam Castle, for the exploration of the neighbouring district immortalised by Charles Dickens. The fine weather preceding the excursion-day had induced numerous members to spend the week-end in the neighbourhood, the Cleveland Naturalists' Club in particular, having one of their regular excursions in Upper Teesdale.

On the early morning of Monday, however, the weather looked so threatening (especially after the heavy rainfall of Sunday), that it no doubt deterred some from attending the excursion. However, by the time Barnard Castle was reached, all clouds had passed away, and the sky was one glorious stretch of sunlight. On leaving the train at 11.30, the travellers from all parts of Yorkshire, augmented by the advance party, proceeded through the town, which presented a very gay appearance. The cyclists of the North Eastern Counties were holding a large camp in the neighbourhood, and large bodies of 'wheelers' blocked the streets accompanied by bands of music; bunting was everywhere flying, and one in particular, 'Welcome to the visitors,' was appreciated equally by the naturalists. Leaving the busy little town with its gay and festive scenes, the members proceeded to carry out the programme which had been arranged for them. Although well scattered about, the same general direction was taken by all who participated in the excursion.

The leadership of the geological party was undertaken by Messrs. W. F. Kealing Stock, F.C.S., and J. I'Anson, J.P., both of Darlington, while the general body of naturalists was under the direction of Mr. J. G. Brass, in whom the Barnard Castle neighbourhood possesses an efficient and accomplished all-round investigator.

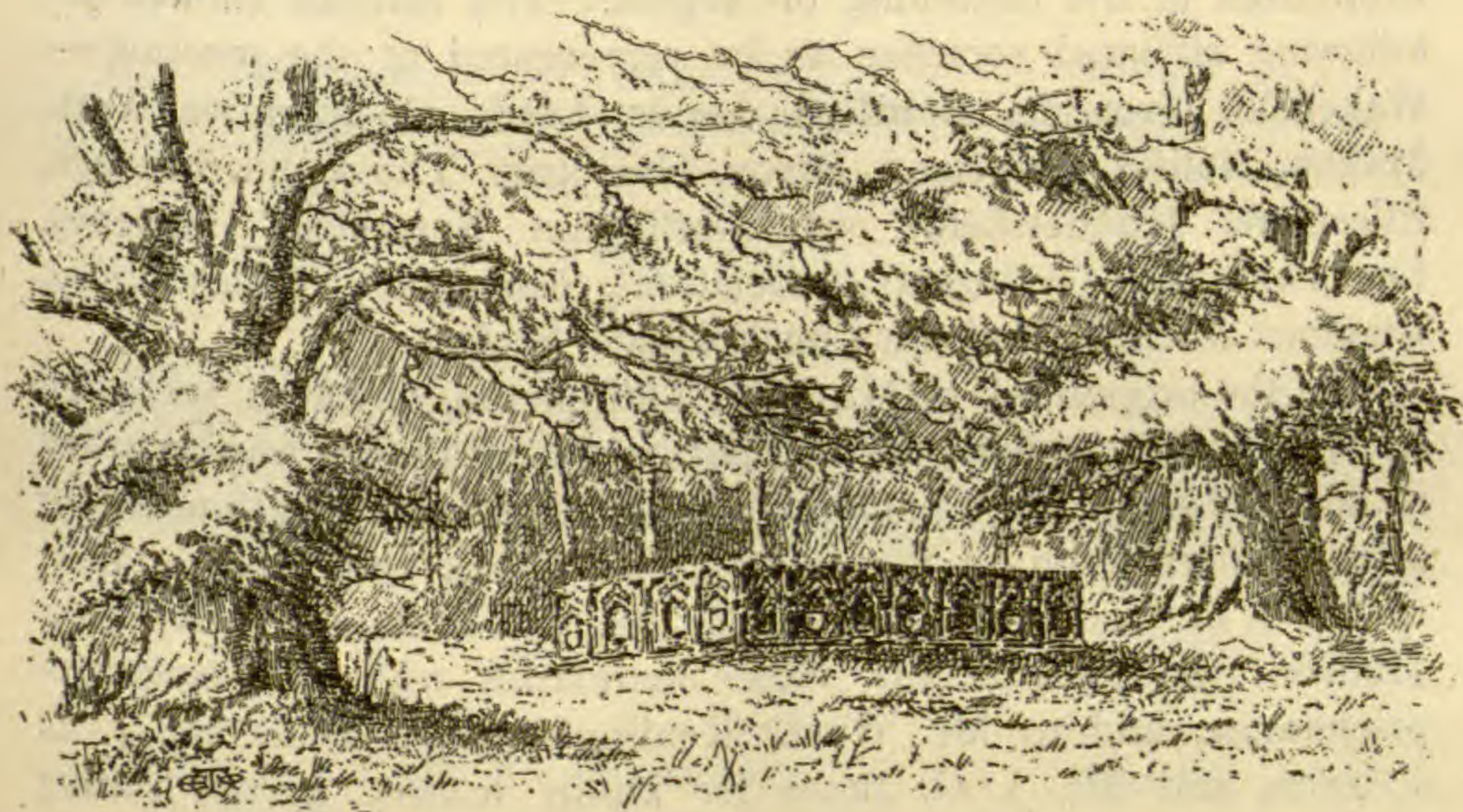
Clear of the town, the right bank of the Tees was taken, the geologists keeping to the water's edge in order to examine the bed of the river, and the other members following the road to Thorsgill, which the bryologists made the scene of their operations. 'Egliston's grey ruins' stand at this point, and the various loose stones lying within its once sacred walls claimed the attention of the conchologists and others. Looking across the Tees from this point one could not but admire the palatial aspect of the Bowes Museum, erected and endowed by the late Mr. and Mrs. John Bowes for the inhabitants of Barnard Castle. The building erected at a cost stated at 'half a million,' was formally opened on June the 10th, twenty years after the laying of the foundation stone.

With the too brilliant sunshine and over-bearing heat as the only drawbacks to the otherwise delightful stroll, the way was continued over Manyfold Beck, until Rokeby Park was reached with its magnificent trees and truly welcome shade.

Before this arbour of refuge was attained, much active work was out of the question, but, as if to make up for lost time, the members spread well about, and spent all their available time under the shade of the trees, where the majority of records for the day were made. The streams being somewhat low, the meeting of the Tees and the Greta did not present that grand appearance observable in flood time. After crossing the stream

Condemn'd to mine a channell'd way
O'er solid sheets of marble grey,

the footpath was followed to Mortham Tower, which several members ascended, in order to see the view obtainable from the summit. A hundred yards further, and the beautiful tomb said to have been brought from Egglestone Abbey was reached. One member made the sketch from which he afterwards drew the following illustration:—



South of the gate an arrow-flight,
Two mighty elms their limbs unite,
As if a canopy to spread
O'er the lone dwelling of the dead;
For their huge boughs in arches bent
Above a massive monument,
Carved o'er in ancient gothic wise,
With many a scutcheon and device.

ROKEBY. Canto ii., Stanza xvii.

From the armorial ensigns with which the monument is richly carved, it is thought to have been a tomb of the Fitz-Hughs. Again crossing the Greta the site of a Roman camp was inspected. It is well preserved, and forms part of the elaborate system of earthworks erected by our first historic conquerors.

Conveyances were requisitioned at the 'Morritt Arms,' and after a much-appreciated drive, Barnard Castle was again reached by those members who did not remain in the neighbourhood for further investigation. Proceeding by train to Darlington, they assembled for tea at the North Eastern Hotel, where also the sectional and general meetings were held.

Mr. Wm. Cash, F.G.S., of Halifax, occupied the chair at the general meeting. The business included the election of four new members, viz. :—Messrs. Wm. E. Asquith, Leeds; Wm. Creaser, York; Thomas J. Morley, Beverley; and Joseph Whitaker, Halifax.

On the motion of the Chairman, seconded by Mr. Wm. Denison Roebuck, F.L.S., the Rev. E. P. Knubley, M.A. (one of the Hon. Secretaries of the Union), was unanimously re-elected delegate to the forthcoming meeting of the British Association to be held at Edinburgh in the beginning of August. The roll-call showed the following affiliated societies to be represented at the meeting :—Wakefield, Ovenden, Bradford, Leeds, Leeds Co-operative, York, Malton, Halifax, Cleveland, Ripon, Harrogate, Thirsk, Scarborough, Ellesmere, Huddersfield, and Darlington Naturalists' Societies, Leeds and Hull Geological Associations, Scarborough Philosophical, Bradford Scientific and the Conchological Society.

On the proposition of Mr. John Thrippleton, of Leeds, seconded by Mr. W. H. Stansfield, of Southport, a vote of thanks was accorded to Mrs. Morritt, Mr. G. Gilpin Brown, and Lord Strathmore, for granting permission for the exploration of their respective estates; to Mr. J. G. Goodchild, F.G.S., Mr. W. Y. Veitch, and Mr. Baker Hudson, for assisting the Hon. Secretaries with the excursion-programme, and to Mr. W. F. Kealing Stock, F.C.S., Mr. J. C. I'Anson, and Mr. J. G. Brass for kindly leading parties during the day.

The next business was the rendering of the Sectional Reports :—

For the Vertebrate Section, Mr. Edgar R. Waite, F.L.S., one of the General Secretaries of the Union, stated that he only officiated in connection with the section in the absence of all its officers. The overwhelming heat had had a marked effect upon the birds, which instead of being proverbially lively, had evinced a desire to sit still under the shade of the trees, so that together with a similar disinclination on the part of the few observers who were present, and the short time actually spent on the field, the opportunities of making anything like an adequate record were small.

Along the right bank of the Tees the Stockdove was fairly common, breeding in the nooks and crannies of the rocks in company

with Jackdaws and Starlings, which latter birds were also similarly occupied in the ruins of Eggleston Abbey. The Warblers were well represented, and included besides others, the Wood Warbler, Blackcap, and Garden Warbler. It was expected that the first named would be found nesting, but the writer did not hear that such was the case. Swifts were very numerous in the town of Barnard Castle, where they doubtless nested in some of the older buildings, and the Dipper was seen on the Greta.

The only Mammals in evidence were the Mole, Hare, and Rabbit, the latter being exceedingly numerous.

Fish were rising very freely in the streams, but the time was too short to admit of closer examination.

It was reported that a Lizard had been seen by one of the general party, but at the Sectional Meeting the evidence not being considered very satisfactory, it is not included in the following list, which is a complete record for the excursion:—

Mammals.	Sedge Warbler.	*Starling.
Mole.	*†Hedge Accentor.	Magpie.
Hare.	Dipper.	*Jackdaw.
Rabbit.	Great Tit.	Carrion Crow.
	*Blue Tit.	†Rook.
Birds.	Coal Tit.	Skylark.
†Missel Thrush.	Wren.	*Swift.
*†Song Thrush.	Pied Wagtail.	Cuckoo.
†Blackbird.	Yellow Wagtail.	Sparrowhawk.
Wheatear.	*Meadow Pipit.	*Ring Dove.
Whinchat.	Spotted Flycatcher.	*Stock Dove.
*Redstart.	*Swallow.	Pheasant.
†Redbreast.	*Martin.	Partridge.
Whitethroat.	Sand Martin.	Land Rail.
Blackcap.	Tree Creeper.	*Waterhen.
Garden Warbler.	*Greenfinch.	Lapwing.
Gold crest.	*†House Sparrow.	
Chiffchaff.	Tree Sparrow	Amphibians.
*Willow Warbler.	*Chaffinch.	Common Frog
Wood Warbler.	Corn Bunting.	and Tadpoles.
	Yellow Bunting.	

The asterisk (*) signifies that the species was found breeding, and the dagger (†) that young birds were on the wing.

Mr. Wm. Nelson, M.C.S., one of the Hon. Secretaries of the Conchological Section, presented the following Report:—

The Section was well represented, and the attendance included, in addition to himself, Messrs. Wm. Denison Roebuck, F.L.S., J. W. Geldert, T. A. Lofthouse, and others; but in spite of their being a sufficient number of investigators, and the suitability of the ground, very little was collected, which may be partly accounted

for by the fact that the time at their disposal was very limited, and that the weather was extremely fine, and hot, and the ground very dry and hard. Only three Freshwater species were found, none of which were of special interest. Of the Slugs seven species were recorded, amongst which *Arion minimus*, the latest addition to the British List, may be noted; this evidently will prove to be widely distributed, having been also found on the previous excursion of the Union to Horton-in-Ribblesdale. The Land Shells were represented by twenty species, which must be considered rather poor work, more especially as this number was made up of the commoner and most widely distributed forms, the only exceptions being *Helix sericea* and *Balia perversa*. Meagre as the list is, it would have been more so but for the exertions of Messrs. Gelderd and Lofthouse. The complete list of species taken is as follows:—

<i>Limnæa peregra.</i>	<i>Vitrina pellucida.</i>	<i>Helix rotundata.</i>
<i>Limnæa truncatula.</i>	<i>Zonites cellarius.</i>	<i>Bulimus obscurus.</i>
<i>Ancylus fluviatilis.</i>	<i>Zonites alliarius.</i>	<i>Pupa umbilicata.</i>
<i>Arion ater.</i>	<i>Zonites nitidulus.</i>	<i>Balea perversa.</i>
<i>Arion hortensis.</i>	<i>Zonites purus.</i>	<i>Clausilia rugosa.</i>
<i>Arion circumscriptus.</i>	<i>Zonites crystallinus.</i>	<i>Clausilia rugosa</i> var.
<i>Arion minimus.</i>	<i>Helix nemoralis.</i>	dubia.
<i>Limax maximus.</i>	<i>Helix hortensis.</i>	<i>Clausilia laminata.</i>
<i>Limax agrestis.</i>	<i>Helix arbustorum.</i>	<i>Cochlicopa lubrica.</i>
<i>Limax arborum.</i>	<i>Helix hispida.</i>	<i>Carychium minimum.</i>
<i>Succinea putris.</i>	<i>Helix sericea.</i>	

The report of the Entomological Section was read by Mr. Jas. H. Rowntree, one of the Secretaries of the section, and the following account is supplied by his colleague, Mr. A. E. Hall, F.E.S.:—The time at the disposal of members on the Monday being so short, and quite insufficient to do justice to the locality, we decided to make a longer stay in the district, and now include the insects noticed during our stay at Greta Bridge from Friday night, June 3rd, to Tuesday morning, the 7th. The locality appears to be a good one, and is well wooded. Wych elms are exceedingly numerous. *Thecla W-album* has never been taken so far north, I believe, or else this appeared a suitable locality, though repeated beating produced no larvæ of this species. *Xanthia ferruginea* larvæ were numerous, and it is probable that *X. gilvago* was taken also. The usual spring larvæ, such as *H. progemmaria*, *H. defoliaria*, etc., were common, and *C. brumata* a pest, as usual. No other larvæ worth recording were noticed. Sugaring was a complete failure, not attracting a single insect. The following is a complete list of the imagines taken or seen, all of them in the immediate neighbourhood of Eggleston Abbey and Greta Bridge:—

Pieris brassicæ, abundant.	Cidaria suffumata, only one taken.
Pieris rapæ, abundant.	Acronycta rumicis, one taken at rest.
Pieris napi, abundant. This species were strongly marked forms.	Plusia gamma, abundant.
Anthocharis cardamines, common.	Stenopteryrx hybridalis, very common, as it has been in all localities I have collected in this season.
Chortobius pamphilus, common.	Crambus pratellus, abundant.
Hepialus hectus, very fine, fairly common.	Tortrix ministrana, abundant.
Emmelesia affinitata, common.	Sericoris lacunana, common.
Emmelesia albulata, common.	Cnephasia musculana, abundant.
Eupithecia minutata, common at night in the garden of the Morrith Arms Hotel, Greta Bridge.	Bactra lanceolana, common.
Melanippe montanata, very common. We took one or two very pretty forms, with the bar much broken.	Ephippiphora cirsiiana, common.
	Ephippiphora turbidana, a very fine series taken amongst Butterbur.
	Plutella cruciferarum, very common.

The Section on the date of the excursion was not so well attended as might have been expected. The following were the only members present, so far as could be ascertained, and if any names are omitted it is because they were not seen by either of the Secretaries of this Section. Messrs. J. Geldart (Darlington), A. E. Hall, Hon. Sec. (Sheffield), T. A. Lofthouse (Middlesbrough), J. H. Rowntree, Hon. Sec. (Scarborough), W. Mansbridge (Horsforth), and H. B. Wilson (Leeds).

Nothing was done among the other orders, except that a specimen of the Wasp Beetle (*Clytus arietis*) was taken near Eggleston Abbey.

In the absence of the Phanerogamic Secretary of the Botanical Section, the report was presented and the following account supplied by Mr. A. H. Pawson, of Farnley:—

The Botanists of the party made their way from the town through the rich meadows and thick woods which here overhang the bed of the river, and at no time of the year could a more lovely display of flowers have been seen. The mowing-grass was a mass of colour, and among the commoner field flowers the white bells of *Saxifraga granulata* were plentiful. Overhead the Mountain Ash, Hawthorn, and Wild Crab made the woods gay, whilst in their deepest glades the White Bear's Garlic gleamed among the blue Hyacinths, and the opener spaces sparkled and shone with the white and lilac Lady's Smocks, the pink Champion, and the turquoise Forget-me-not; the walls and rocks were hung with Herb Robert, and the wild and barren strawberries, mixed with the rarer *Geranium lucidum* and *Saxifraga tridactylites*. The extreme beauty and luxuriance of the spring foliage and flowers in this favoured valley were remarked by all. The open nature of the woods, the exposed rocks—those of limestone, so dear to the lover of plants—and the moist river-banks,

make this a peculiarly happy hunting-ground for the botanist, and if no great number of rare flowers was observed, this must by no means be put down to the poverty of the district, but rather to the very limited time which was at the disposal of the searchers. Indeed, the very richness and beauty of the jewelled woods caused delay, and time was passed in admiration which ought to have been devoted to further search. After reaching the mouth of the Greta, many of the party pushed up the smaller valley for some distance. The vegetation was of a similar character, but the woods were deeper and darker. Here was found *Neottia nidus-avis*, that rare orchis which delights in shade, a suspiciously parasite-like plant, already condemned as a saprophyte by the learned and judicious Hooker. The more uncommon plants found were, *Doronicum plantagineum*, *Symphytum officinale*, *Lathræa squamaria*, *Polygonatum multiflorum*, *Listera ovata*, *Chelidonium majus*, and *Cardamine amara*. Double and monstrous forms of *Geum rivale* were noted, as is usual where this flower is abundant.

The Cryptogamic report of the Section was presented by its Secretary, Mr. Matthew B. Slater, F.L.S., who, in conjunction with Mr. R. Barnes, worked the ground very fully in the short available time, and succeeded in adding one species to the known flora of the district. The following is a full list of the cryptogams met with:—

Mosses.

Gymnostomum tenue Schrad.	Hypnum polymorphum Hedw.
Didymodon sinuosus Wils., not common.	Hypnum palustre L., in very fine fruit.
Ditrichum flexicaule Schwg.	Hypnum filicinum L.
Barbula lævipila Brid.	Amblystegium irriguum Wils., not common.
Barbula papillosa Wils., rare.	Brachythecium rivulare B. & S.
Ptychomitrium polyphyllum Dicks.	Orthotrichum cupulatum var. nudum Dicks., in very fine fruit.
Bartramia ithyphylla Brid.	Orthotrichum fastigiatum Bruch, rare.
Webera cruda Schreb., rare.	Orthotrichum lyellii H. & T.
Bryum inclinatum Swartz.	Orthotrichum obtusifolium Schrad., rare (new record for the district).
Bryum obconicum Hornsch.	
Mnium stellare Hedw.	
Anomodon longifolius Schleich., rare.	
Rhynchostegium depressum Bruch.	

The Tees valley is classic ground for botanists. It has, however, been rambled over by so many good workers that its flora is fairly well known. In so short a time it is only possible to make a cursory glance at the plants, more particularly at the smaller denizens of vegetation, which comprise the mosses. All the plants seen during the ramble have been previously recorded, with the exception of the last named.

Orthotrichum obtusiflorum Schrad.—This rare moss is given in Schimper's Synopsis, 1876, as found on the continent of Europe,

growing principally on poplar, willow, and walnut trees, and was a desideratum for Britain. It had, however, been gathered by Wilson near York in 1856, and a description is given in Braithwaite's British Moss Flora, part 12, and figured in the same work, table lv. figure A. No definite locality is mentioned for it in Yorkshire. Mr. Barnes was fortunate to meet with a few tufts of it growing on an ash tree, amongst *Leucodon sciuroides*, near Abbey Bridge, which now records it distinctly as a North Yorkshire moss. The plant is dioecious, and, as far as I am aware, has not been found with fruit in Britain; the few tufts gathered were all without fruit. It is, however, easily recognised by its broad obtuse leaves, 'slightly hyaline, and minutely serrulate at the point,' etc. It should be carefully looked for upon tree trunks in moist shady places, and from its habit of so rarely fruiting it has possibly been passed over by bryologists. A concise description of the moss is given also in Hobkirk's Synopsis of the British Mosses. 2nd edition, p. 135.

The bryologists on Monday confined themselves mostly to the exploration of Thorsgill, near Barnard Castle, as it was within the most convenient distance for the limited time at their disposal. Mr. Barnes had come up to Darlington on the previous Saturday and had been able to search over a greater portion of the district, and it is through his exertions that we are enabled to give so satisfactory a list of mosses seen, many amongst them being rare, although previously recorded.

In August 1879, I explored the Greta from its junction with the Tees near Rokeby to some distance up the stream, to determine the Hepaticæ of the district, and I add a list gathered at that time:—

Hepatics.

Frullania dilatata L., fruiting abundantly on the bark of trees.	Diplophyllum albicans L.
Lejeunea serpyllifolia Lib.	Jungermania riparia Taylor, common in damp places, with fruit.
Radula complanata L., fruiting very fine.	Jungermania ventricosa Dicks.
Porella platyphylla L.	Jungermania turbinata Raddi, very plentiful on wet stones and dripping rocks, fruiting abundantly.
Porella rivularis Nees.	Nardia emarginata Ehrh., common.
Lepidozia reptans L.	Pellia epiphylla L., common in moist places.
Lepidozia setacea Lindbg.	Metzgeria pubescens Raddi, growing abundantly on the limestone scars near Rokeby, always sterile.
Lophocolea cuspidata Limpricht.	
Kantia trichomanis L.	
Blepharostoma tricophylla Dumort., fruiting very abundantly.	

The plants in the above list are mostly of general distribution; the locality more especially in the fine shady glen near Rokeby has the moisture and shelter where this tribe flourish best. If the district was well investigated by some resident bryologist, who could

examine the locality during various seasons of the year, many interesting additions would no doubt be met with.

Mr. Benj. Holgate, F.G.S., presented the report of the Geological Section, in the absence of all its officers, and writes as follows:—

Standing on the ground above Flatt Wood, and near the old and celebrated castle the landscape, with the bright sunshine upon it, lay beneath. In the far distance were the Stang and Mickle Fell mountains. Looking nearer, the rounded forms of the hillocks showed that they were made of a soft material, while the bright verdure of the herbage told us that limestone played an important part in the richness and quantity of the grass.

We stood on what had once been the direct path of an immense glacier, which, creeping along the side of Helvelyn, over Shap, and passing slowly across the upper reach of the vale of the Eden, and over Stainmoor into the Tees valley, spread itself even into the vale of Mowbray, carrying with it rocks that it had torn from every place that it had passed over.

Abundant evidence of this was forthcoming. No less than five huge blocks of Shap granite were passed on the road side, one of which contained not only the large crystals of felspar so characteristic of this rock, but also the dark-grey Shap granite attached in the same piece. The rivulets which feed the Tees, were each to be found between deep and steep banks of the soft clayey residue left by this glacier, as it melted and receded up the valley. In some places, notably in the Deepdale beck, huge rocks might be seen among the debris, looking as if they would block up the stream.

The party passed over the crag of grit rock upon which the castle is built, descending quickly into the bed of the river.

At the place where the Deepdale beck enters the Tees, and just by the bridge, is a bed of very black shale, some six feet in thickness, which is sure to contain many fossils, lying as it does immediately over an impure limestone, which here forms the bed of the river, and which is made up almost entirely of marine animals and shells, with small pieces of floated vegetable matter among it. As the river was descended, the limestone was seen to become pure and white, and composed almost entirely of shells, for we were now on the thick mass described by Professor Phillips as the 'Main Limestone,' the uppermost member of his Yoredale group.

The view from Eggleston Bridge was lovely, whether we looked up or down the river. Here it has cut its way through the solid limestone rock, leaving its sides precipitous and jagged; in some places holes have been bored by the action of pebbles moving in a circle by the force of the water when in flood. Above the rocks the

foliage of the trees bend gracefully over, and give a vista which could not be surpassed for beauty.

The junction of the Greta with the Tees is in a mass of limestone, which is well developed, and the Greta was seen rushing and carving its way between narrow boundaries which formed a cañon-like gorge. It is to be regretted that the four hours which this excursion took up would not allow of more work being done. It was, however, made to include a passing visit to Eggleston Monastery, Mortham Tower, Rokeby, and Greta Bridge, the latter place celebrated in the immortal history of Nicholas Nickleby, and the former in the equally immortal story of Rokeby.

One of the Honorary Secretaries spoke a few words of welcome to the Darlington Naturalists' Society as a new one in the Union, and Mr. Taylor Manson having replied on their behalf, a vote of thanks passed to the Chairman, on the motion of Mr. James Spencer (Halifax), seconded by Mr. Robert Law, F.G.S. (Halifax), terminated the proceedings.

E.R.W.

NOTE—BOTANY.

Botrychium Lunaria in Wharfedale.—As this fern is not recorded in Lees' 'West Yorkshire' for the Wharfedale Drainage District, I should like to put upon record the fact of its existence there. On the 19th of June, I came across half a dozen specimens on the slopes of Rombalds Moor at Burley, and two days afterwards found two fine plants at Troller's Gill, near Appletreewick.—PERCY H. GRIMSHAW, Burley-in-Wharfedale, June 22nd, 1892.

NOTES—ORNITHOLOGY.

Sparrows Feeding on Larvæ.—On the 6th inst. Mr. John Gledhill, of Stubbin Farm, Greetland, noticed a small flock of House Sparrows (*Passer domesticus*) devouring, as he thought, the leaves of his gooseberry trees, which were fast disappearing. He shot one of the Sparrows, and found six caterpillars inside its mouth.—C. C. HANSON, Greetland, Halifax, 16th June, 1892.

[The larvæ are those of the common 'Gooseberry Sawfly' (*Nematus ribesii*).—G. T. PORRITT].

Parus cæruleus at Newton Kyme.—For several days I have seen, picking up crumbs at my window, a bird, no longer a BLUE Titmouse, but one coloured as yellow as a canary. I perhaps might shoot it, but I had much sooner let it live.—J. CHALONER, Newton Kyme, 1st March, 1892.

Flamborough Bird-notes.—Most of our summer migrants, if not all of them, have arrived this year much later than is usually the case. Whitethroats (*Sylvia cinerea*), did not arrive until about the middle of May. About the same time, the Dotterels (*Eudromias morinellus*) were seen in the neighbourhood of Arram Hill, twenty in one flock, nine in another; like the rest of our summer visitants, they are very scarce this year. Turtle Doves (*Turtus communis*), also arrived in May. Swifts (*Cypselus apus*), arrived here June 6th. Not so with the sea birds, which are very numerous this season. I suppose the sea birds' eggs are plentiful. I am glad to state that a pair of Shags (*Phalacrocorax graculus*), have shown up at the Flamborough Cliffs this season, such a thing never having occurred within memory of the oldest inhabitant of Flamborough. I hope and trust they will not be disturbed nor molested by any gunner, but allowed to breed here.—MATTHEW BAILEY, Flamborough, June 20th, 1892.

July 1892.

NOTES—LEPIDOPTERA.

Abundance of *Pachnobia leucographa* at Bishop's Wood.—This pretty moth being now considered one of our rarest species, I determined this spring to make special efforts to obtain a good series, an endeavour in which I have been very successful. I had been away from the 2nd to the 11th of April: consequently on my return the sallows were well out, and a visit to Bishop's Wood demonstrated the presence of *P. leucographa* just emerged and in the pink of condition; engagements prevented another visit before the following Saturday, April 16th, which was very cold with sharp N.E. wind. My friend, Mr. Hewett of York, met me at Hambleton, and we worked the sallows together, but without even seeing a single moth—a state of things quite unprecedented in our joint experience. The weather continued cold until the following Wednesday noon, when the wind changed to the S.W. and it became mild. A few *P. leucographa* were taken by some gentlemen from York, and on Thursday the mildness of the day decided me on going. The evening was warm with occasionally a light puff of air and a slight mist in the wood, altogether an ideal night for sallow-work, and my expectations were raised accordingly. An hour later I left, having filled all my boxes from two bushes, the captures including some two dozen *P. leucographa*. The next day, Friday, I made another journey to the wood, again in company with Mr. Hewett, our joint take on this occasion reaching the total of forty-six *P. leucographa*, besides many commoner species. Again on the Saturday we worked together, but the weather had in the meantime become colder and the sallow blossom was nearly over, so that although we stayed until 11.0 p.m. we only took some thirty *P. leucographa* between us. The Sunday was colder still and this affected the insects to such an extent that two gentlemen from York took but fourteen specimens of *P. leucographa* between them. Sunday night the wind again chopped round to the N.E., and Monday was cold with occasional snowstorms. An appointment compelled me to go again to the wood, but as I expected the object of my journey was snug at home—only one individual being hardy enough to visit the sweets; a few *Tæniocampa gothica* and *T. stabilis* made my take up to a dozen insects. This ended my doings at the sallows, and in spite of the occasional failures I was well satisfied with the result.

The observations on the weather recorded above may be of use to those who wish to take this pretty moth for themselves. An East or North-East wind is almost fatal to success even if the sallows are on the south side of the wood and consequently sheltered; while a warm South or West wind with a light breeze and sky overcast is the beau idéal of conditions. I did not observe that moonlight affected the flight of the sallow visitors in any appreciable degree, but cold was fatal.—WILLIAM MANSBRIDGE, Horsforth, June 11th, 1892.

Variation in *Diurnea fagella* at Bishop's Wood.—During the time I was at Bishop's Wood for sallows, I kept a look out for *D. fagella*, and was very interested to find two melanic specimens of this variable moth. Last year, although I saw very many examples, I did not meet with one noticeable for its darker colouring, but all wore a shade of ochreous grey more in harmony with the tint of the oak-stems on which they rest. This year, all I saw appeared much darker, and those mentioned above are quite as dark as the majority of this insect found round Leeds. It will be interesting to learn the results of the observations of other lepidopterists on this insect, as it is one of the most ready to respond to altered climatic conditions or a changed environment.

I also took a specimen of the same moth, which has the costal margin of the right side distinctly ochreous for about half its length, the other wing being normal.—WILLIAM MANSBRIDGE, Horsforth, June 11th, 1892.

Pale variety of *Melanippe fluctuata* near Barnsley.—A specimen of *Melanippe fluctuata* netted here on May 23rd shows the following departures from type:—Ground colour, very pale and shining, perhaps best described by the expression 'silvery'; the fore-wings have the basal blotch well defined but very small, median band or blotch entirely absent, leaving the discoidal spot very conspicuous upon the pale ground; the blotch near the apex is also small, and speedily shades off into the light colour of the wing; the hind-wings are practically without markings, except the spot and dotted fringe, which are prominent by contrast.—WM. E. BRADY, I, Queen Street, Barnsley, June 18th, 1892.

BIRD-NOTES FROM THE HUMBER DISTRICT.
 SPRING OF 1892.

JOHN CORDEAUX, M.B.O.U.,

Eaton Hall, Retford.

- Larus ridibundus. Brown-headed Gull.** March 15th. First return to their nesting quarters at Twigmoor.
- Crex pratensis. Corncrake.** April 25th. One picked up at Kilnsea, probably injured against wire. Are numerous this season.
- Ruticilla titys. Black Redstart.** April 29th. Mr. G. E. Clubley, of the Warren Farm, Kilnsea, saw a fine adult male on the beach, near his house. Several Common Redstarts (*R. phœnicurus*) were seen about the same date.
- Lanius excubitor. Great Grey Shrike.** April 30th. One was seen on a hedge near the coast at Out-Newton, in Holderness.
- Regulus cristatus. Golden-crested Wren.** A few appeared at the Spurn in the last week in April on migration.
- Sylvia atricapilla. Blackcap.** May 1st. One, a female, at early morning, observed in the gooseberry bushes in garden at Easington.
- Squatarola helvetica. Grey Plover.** May 1st. Hundreds, in various stages of plumage, on the coast near Kilnsea. Some of these were very fine birds, in perfect summer plumage.
- Tringa alpina. Dunlin.** May 1st. Thousands, in summer plumage, on the coast. I have rarely seen them in greater numbers, the flocks covering a considerable extent of the Humber foreshore, opposite Kilnsea, at half-tide.
- Calidris arenaria. Sanderling.** May 1st. In small numbers at Kilnsea, on the sea side of the warren.
- Tringa canutus. Knot.** May, first week. Fairly common up to this date on Humber foreshores.
- Sterna minuta. Lesser Tern.** May 1st. First observed. A pair seen on coast near the warren.
- Haliaëtus albicilla. Sea Eagle.** May 2nd. Mr. David Pye, of Easington, and two others, when to-day driving near Roos rabbit-warren, saw an eagle on a bank top. When one of their

number alighted and attempted to approach, it rose slowly and very heavily; it was last seen by them beating to and fro over a field containing some ewes and lambs. Mr. Pye said the tail was nearly white. It was about this date, as Mr. G. H. Caton Haigh informs me, that his keeper in Lincolnshire observed a large bird of prey, much larger than a heron, on the wing near Grainsby Hall.

Larus glaucus. Glaucous Gull. May 3rd. I saw one early this morning at Easington, lying very low from the Humber to the sea coast. It appeared to be nearly white, very faintly marked above and below with pale brown.

Turtur communis. Turtle Dove. May. This species, I am informed by Mr. Hewetson, has been fairly plentiful in the Spurn district during the month.

Endromius morinellus. Dotterel. May 18th. These most charming Spring visitors were this year later in coming to their old quarters in the Great Cotes marshes. Last year they came May 11th, and this year it was a week later. The shepherd in the marsh told me that he had seen large numbers on the afternoon of the 18th, on the Humber 'fitties,' and near to the open pasture fields which they have now continued to frequent for so many years. He said they were very tame and that he could walk within five or ten yards before they would rise. They appeared both tired and hungry, and kept constantly searching for something in the short herbage, and often elevating their wings, keeping together in distinct 'trips' or flocks, although collectively, over a comparatively circumscribed area, amounting to several hundreds. All had left the locality before the morning of the 19th. In former years, Dotterel came early in May, in small 'trips' and at irregular intervals, remaining for days and weeks in some chosen locality. In recent years they appear to have quite changed their habits, now, certainly coming in greater number than formerly, and all at the same time, and renewing their migration again within a few hours—a change in habit I am at a loss how to account for, unless it has been brought about by the division of some of our larger pastures, which they used most to frequent, and the putting down of fences and quick hedges, thus contracting their old favourite feeding-grounds, for Dotterel above everything love wide open spaces and will not alight or feed in small fields or enclosures.

June 11th, 1892.

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GEOLOGY AND PALÆONTOLOGY, 1891.

THE present instalment has been compiled and arranged by

ALFRED HARKER, M.A., F.G.S.

Previous instalments of the Bibliography of Geology and Palæontology have appeared as follows:—

For 1884, in 'Naturalist,'	Dec. 1885	... pp. 394-406.
„ 1885, „	Nov. 1886	... pp. 349-362.
„ 1886, „	June, 1888	... pp. 178-188.
„ 1887, „	Feb. 1889	... pp. 61-77.
„ 1888, „	Apr. May, 1890,	pp. 121-138.
„ 1889, „	Nov. 1890	... pp. 339-350.
„ 1890, „	Oct. Nov. 1891,	pp. 313-330.

The present instalment includes a few entries omitted in earlier lists: all papers not dated belong to 1891. The titles only are cited of papers published in 'The Naturalist.' Abstracts of papers read before the Geological Society of London appear in the 'Geological Magazine,' 'Nature,' 'Philosophical Magazine,' and 'Annals and Magazine of Natural History': these are not cited in our list when the paper has been published in full in the Quarterly Journal of the Society. Papers read before the British Association are frequently published verbatim in some provincial journal, or in the 'Geological Magazine,' before appearing (in the following year) in the official Report. When practicable, we cite these under the earlier date, and supply the reference to the Report.

The following abbreviations are employed in referring to the publications most frequently cited:—

Q.J.G.S. = Quarterly Journal of the Geological Society, vol. xlvii.

G.M. = Geological Magazine, dec. 3, vol. viii.

Rep. B.A. = Report of British Association Meeting for 1890, at Leeds.

Nat. = Naturalist.

Research = Research, vol. iv.

Tr. Leeds G.A. = Transactions of Leeds Geological Association, part vi.

Pr. Yorks. G.P.S. = Proceedings of the Yorkshire Geological and Polytechnic Society, new ser., vol. xi. part 3.

Tr. Manch. G.S. = Transactions of Manchester Geological Society, vol. xxi.

Pr. Liv. G.S. = Proceedings of Liverpool Geological Society, vol. vi. part 3.

Mem. Pr. Manch. L.P.S. = Memoirs and Proceedings of Manchester Literary and Philosophical Society, ser. 4, vol. iv.

Abstracts of many of the papers cited appear in the 'Year-Book of Science,' edited by Prof. T. G. Bonney, and (with critical comments) in Mr. J. F. Blake's 'Annals of British Geology,' both designed to be annual publications. In the following list the compiler offers no opinion on the value of papers referred to.

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 Feb. 10th, 1889 [affecting a nearly circular area 55 miles in diameter with
 epicentrum about 2 miles N.N.E. of Bolton; full details given, with map].
 G.M., July and August, pp. 306-316; pl. x.
- CHARLES DAVISON. York Mid W.
On the British Earthquakes of 1890, with the exception of those felt in the
 neighbourhood of Inverness [describing the earthquakes of the night of June
 25-26 in a small area N.E. of Leeds, the epicentrum being near Walton].
 G.M., Oct., pp. 450-455.
- CHARLES DAVISON. Northumberland.
On the Amount of Sand brought up by Lobworms to the Surface [as a
 geological agent: observations on Holy Islands Sands gave an average of
 1,911 tons of sand per acre brought up annually, equivalent to a layer 13
 inches thick]. G.M., Nov., pp. 489-493.
- W. BOYD DAWKINS. Lanc. S. and W., Cheshire.
The Geography of Lancashire in the Pleistocene Period [briefly
 described; a public lecture]. Journ. Manch. Geogr. Soc., vol. 2, Nos.
 1, 2, 3, Jan.—March 1886, pp. 107-108.

- W. BOYD DAWKINS. Isle of Man.
The British Association.—Visit to the Isle of Man.—[Described].
 Reprinted from 'The Isle of Man Times' of September 17th, 1887. Brown
 & Sons, Printers, Douglas [8vo., 68 pp.].
- T. CUTHBERT DAY, Hon. Sec. of Section. Derbyshire.
Report of the Geological and Chemical Section [of the Burton-on-Trent
N. H. S.], 1887-88 [describes excursion to Boothorpe, Woodville, and
 Swadlincote]. Ann. Rep. Burton-on-Trent N. H. & Arch. Soc. 1887-88, p. 19.
- C. E. DE RANCE [Sec.] Lancashire, Cheshire, Notts, Yorks. N.E.
Sixteenth Report of the Committee consisting of . . . [18 names]
 . . . appointed for the purpose of investigating the Circulation of Under-
 ground Waters . . . [with details of borings at various places in
 Lancashire and Cheshire, in the Trent Valley, and near Middlesbrough].
 Rep. B.A., for 1890, pp. 352-375.
- CHAS. E. DE RANCE. Yorkshire.
Notes on Underground Water-Supply and River Floods [noting the
 distribution of rain-fall in Yorkshire, and its percolation through rocks of
 various kinds]. Pr. Yorks. G.P.S., pp. 200-216.
- C. E. DE RANCE. Yorkshire.
Notes on Borings for Water and Salt in the County of York [treating
 the formations in order as sources of water-supply, etc.]. Pr. Yorks. G.P.S.,
 pp. 424-440.
- C. E. DE RANCE. Lanc. S.
On Deep Borings in Keuper Marls [the marls are variegated, being
 sometimes green on one side of a gypsum bed and red on the other: this is
 attributed to alteration of the contained iron-compounds]. Mem. Pr. Manch.
 L.P.S., p. 181.
- [C. E.] DE RANCE. Lanc. S.
Borings in the Keuper Marls [describing some cores from borings near
 Liverpool]. Tr. Manch. G.S., p. 169.
- [C. E.] DE RANCE. Cheshire.
Subsidence at Wybunsbury, near Crewe [ascribed to removal of salt from
 beneath by pumping, though the nearest salt-workings are seven miles
 distant]. Tr. Manch. G.S., pp. 197-199.
- T. H. EASTERFIELD. York S.W.
The Yorkshire Naturalists' Union in Edlington and Wadworth Woods
 [Geology]. Nat., Nov., pp. 335, 336.
- T. W. EMBLETON. Northumberland.
Notes of Reports on the winning of the High Main Coal at Gosforth
Colliery . . . [etc., with a section of the 'drift']. Trans. N. Eng.
 Inst. Mining Mech. Engin., vol. xxxviii. pp. 189-200, plate xxiv.
- R. ETHERIDGE. Northern Counties.
Fossils of the British Islands Stratigraphically and Zoologically
Arranged: Vol. i. Palæozoic [a catalogue of 6,022 species from Cambrian
 to Permian.] 4to. pp. 475, 1888.
- J. J. FITZPATRICK. Lanc. S.
Report on the Field Meeting of the Society at a Section in the Middle
Coal-Measures, between Garswood and St. Helen's [exposed in widening the
 main line of the L. and N.W.R.] Pr. Liv. G.S., pp. 289-293.
- A. H. FOORD. Westmorland.
On some Cephalopoda from the Cross Fell Inlier [appendix to paper by
 Nicholson and Marr, describing species of *Orthoceras* (including *O. pusgillense*
 nov. sp. from the Corona-beds of Pusgill, near Appleby]. Q.J.G.S., Nov.,
 pp. 526-528, with woodcut.

- ARTHUR H. FOORD. Lanc. S.
On Pleuromutilus (Nautilus) nodosocarinatus, Römer, sp. [from the Millstone Grit of Caton]. G.M., Nov., pp. 481, 482, with woodcut.
- C. FOX-STRANGWAYS AND G. W. LAMPLUGH. York N.E. and S.E.
La Géologie de l'Est du Yorkshire [prepared for excursion: see 1888 list].
 Congrès Géol. Internat., Compte Rendu de la 4me Session, à Londres, 1881,
 pp. 371-415, with folding map.
- E. J. GARWOOD. Durham.
On the Origin and Mode of Formation of the Concretions in the
 Magnesian Limestones of Durham [arguing in favour of a purely concretionary
 origin; the nodules contain on an average 86·14 per cent. of carbonate of
 lime, and 9·5 of carbonate of magnesia, while the figures for the matrix of the
 nodules are 46·07 and 30·68]. G.M., Oct., pp. 433-440, pl. xii, xiii.
- S. GASKING. Isle of Man.
On the Geology of the South of the Island [of Man; a popular sketch].
 Yn Lioar Manninagh, vol. i. pp. 119-122; Oct. 1890.
- S. GASKING. Isle of Man.
The so-called Old Red Sandstone of the Isle of Man. Yn Lioar
 Manninagh, vol. i. pp. 135 et seq.
- A. GEIKIE. Lake District.
[Volcanic Action in the Lake District] [describing the distribution and
 general succession of the volcanic rocks of this district (andesites, felsites,
 etc.), and pointing out possible vents of the lavas and ashes at several
 points]. Q.J.G.S., May, Proc., pp. 137-146.
- H. B. GEINITZ. Lanc. S.
Ueber die rothen und bunten Mergel der oberen Dyas bei Manchester
 [for translation see 1890 Bibliography; mentions, with synonymy and
 remarks, species of *Schizodus* (5), *Edmondia*, *Pleurophorus*, *Clidophorus*,
Aucella, *Avicula*, *Gervillia*, *Natica*, *Turbo* (2), *Rissoa*, *Dentalium*, *Vermilia*,
Filograna, *Voltzia*, ? *Ulmannites*, *Gulielmites*, and *Spongillopsis*]. Abh. d.
 naturwiss. Ges. Isis in Dresden, pp. 48-57; 1890.
- J. G. GOODCHILD. York N.W.
The Yorkshire Naturalists' Union in Upper Swaledale [August 2nd to
 4th, 1890; geology]. Nat., July, pp. 203-208.
- J. KENNETH GUTHRIE. Northumberland.
Pumping Appliances at Eltringham Colliery [near Prudhoe-on-Tyne;
 with details of a section showing the Brockwell Seam, etc.]. Tr. N. Engl.
 Min. Mech. Engin., vol. xl. pp. 113-119.
- JAMES HARDY. Cheviotland.
Report of the Meetings of the Berwickshire Naturalists' Club for the
 year 1889 [with brief geological notes of Ebbs Nook and North Sunderland].
 Proc. Berw. Nat. Club for 1889, vol. 12, No. 3 (pub. 1890), pp. 502-503.
- ALFRED HARKER. Westmorland and Cumberland.
The Bala Volcanic Series of Caernarvonshire and Associated Rocks
 [with various references to the similar rocks of the Lake District; pp. 29,
 46, 47, 55, 57, 70, 72, 105, 113, 123]. 8vo. 130 pp. and vi. plates;
 Cambridge, 1889.
- A. H[ARKER]. Cumberland and Westmorland.
Minerals in Cumberland and Westmorland. Nat., Jan., p. 15.
- A. H[ARKER]. Westmorland, York N.W.
[Review of Balderston's] Cambrian and Silurian Rocks of Ewcross,
 Dufton, and Shap. Nat., Feb., pp. 63-64.
- ALFRED HARKER. Westmorland and York N.W.
The Basement Conglomerate of the Carboniferous in Westmorland and
 Yorkshire. Nat., Feb., p. 38.

- ALFRED HARKER. Lake District.
The Ancient Lavas of the English Lake District. Nat., May, pp. 145-147.
- ALFRED HARKER. York S.E.
Petrological Notes on some of the Larger Boulders on the Beach South of Flamborough Head [describing their microscopical structures, and tracing some to their homes in Norway, Teesdale, the Lake District, etc.]. Pr. Yorks. G.P.S., pp. 409-423.
- ALFRED HARKER AND J. E. MARR. Westmorland.
The Shap Granite and its Associated Igneous and Metamorphic Rocks [describing the general structure of the district, the petrology of the granite, of the dark patches in the same, and of numerous dykes supposed to be of cognate origin: also tracing the metamorphism produced by the granite intrusion in the adjacent rocks, which include andesitic and rhyolitic lavas and ashes, the calcareous beds of the Coniston Limestone group, and the Coniston Flags and Grits]. Q.J.G.S., Aug., pp. 266-327, pl. x.-xii.
- ALFRED HARKER. Westmorland.
Petrological Notes on Rocks from the Cross Fell Inlier [including the metamorphosed Skiddaw Slates, the volcanic rocks in the Skiddaws, the basic lavas of Melmerby (Eycott group), the rhyolitic rocks, the acid intrusives, the lamprophyre dykes and bosses, and the intrusive diabase of Cunsfell. Appendix to paper by Prof. Nicholson and Mr. Marr]. Q. J. G. S., Nov., pp. 512-525.
- ALFRED HARKER Westmorland, etc.
Thermometamorphism in Igneous Rocks [with special reference to the volcanic rocks metamorphosed by the Shap granite, describing the new minerals set up in the zone of alteration]. Bull. Geol. Soc. America, vol. iii. pp. 16-22.
- FREDERICK H. HATCH. North of England.
An Introduction to the Study of Petrology: the Igneous Rocks [with numerous references to north-country rocks]. 8vo., 128 pp., London.
- EDWIN HAWKESWORTH. York N.E.
From Kettleworth to Saltburn [giving a geological sketch of that part of the coast]. Tr. Leeds G.A., pp. 55-59.
- J. HERON [Hon. Sec. of Committee]. Derbyshire.
Catalogue of Ancient Remains found at Stapenhill, Derbyshire, February to June, 1881 [giving names of Exploration Committee, and enumerating objects found; these include human bones, and those of *Bos longifrons*, *Equus*, *Sus scrofa*, and Sheep or Goat]. 12-page appendix to 7th Ann. Rep. Burton-on-Trent N. H. and Arch. Soc. for year ending March 31st, 1883.
- W. C. HEY. York N.E.
Boulders at Guisborough. Nat., June, p. 182.
- BERNARD HOBSON. Isle of Man.
On the Igneous Rocks of the South of the Isle of Man [the diabase dykes of Langness, etc., the micro-granite dyke of Crosby, the volcanic series of Scarlet Point (breccias, lavas, etc., with apparently the remains of an old vent), and the later olivine-dolerite dykes: petrological descriptions are given]. Q.J.G.S., Nov., pp. 432-450, pl. xiv.
- B. H[OLGATE]. York Mid W.
Excursion to Castleford [describing a fossil tree at Whitwood Mere]. Tr. Leeds G.A., pp. 73-75.
- B. H[OLGATE]. York Mid W.
Excursion to Laisterdyke [describing the boulder-clay there]. Tr. Leeds G.A., pp. 75-77.

- B. HOLGATE. York M.W.
The Yorkshire Naturalists' Union at Grassington [Geology]. Nat. Sept., pp. 266-268.
- B. H[OLGATE]. York M.W.
Leeds Geologists at Grassington [with account of the Craven faults, the 'knoll-reefs,' etc.]. Yorkshire Weekly Post, June 27th.
- THOMAS VINCENT HOLMES and C. DAVIES SHERBORN [Editors].
Northern Counties.
A Record of Excursions made between 1860 and 1890 [by the Geologists' Association; mainly reprinted from the Proceedings: Derbyshire (by J. M. Mello), pp. 474-479; Grantham and Nottingham (by A. Irving), 479-487; Lincoln (by W. D. Carr and A. Strahan), 488-494; East Yorkshire (by W. H. Hudleston), 495-505; West Riding of Yorkshire (by W. H. Hudleston), 505-521; Lake District (by various writers), 522-536]. 571 pp. 8vo., with many maps and sections; London, 1891.
- W. MAYNARD HUTCHINGS. Northumberland.
Further Notes on Fireclays, etc. [from the Coal-Measures at Seaton, describing the minute structure of these rocks, which consist largely of a micaceous mineral of secondary origin, with little needles of rutile]. G.M., April, pp. 164-169.
- W. MAYNARD HUTCHINGS. Northumberland.
Rutile in Fireclays—Reply to Major-General MacMahon [maintaining that the rutile needles in the Seaton clays have been formed in situ]. G.M., July, pp. 304-306.
- W. MAYNARD HUTCHINGS. Westmorland.
Notes on the Altered Coniston Flags at Shap [noticing especially the production of tremolite and minute garnets in the flags at some distance from the granite]. G.M., October, pp. 459-463.
- W. MAYNARD HUTCHINGS. Cumberland and Westmorland.
Petrological Notes on some Lake District Rocks [dealing chiefly with important types among the lavas; these are described microscopically, with notes of silica-percentages and specific gravities]. G.M., Dec., pp. 536-544.
- OSMUND W. JEFFS [Sec.]. Cheshire, Isle of Man, Lancashire, Northumberland, Notts, Yorkshire.
Report of the Committee consisting of . . . [7 names] . . . to arrange for the collection, preservation, and systematic registration of Photographs of Geological Interest in the United Kingdom [containing first list of photographs]. Rep. B.A. for 1890, pp. 429-444.
- E. JONES. York Mid W.
Discovery of the Remains of Neolithic Man in the Elbolton Cave [with notices also of the bones of *Equus*, *Bos*, *Ursus arctos*, *U. ferox*, and *Lepus variabilis*]. Midl. Nat., Oct. 1890, xiii. 222-223.
- E. JONES [Sec.]. York Mid W.
Report of the Committee, consisting of . . . [7 names] . . . to complete the Investigation of the Cave at Elbolton, near Skipton, in order to ascertain whether remains of Palæolithic Man occur in the Lower Cave Earth [descriptions of the cave and of its contents as hitherto explored]. G.M., Nov., pp. 525-528; Rep. B.A. for 1891, pp. 351-353 (1892). Abstract in Nature, Sept. 17th, 1891, xlv. p. 480.
- T. RUPERT JONES. Cheshire.
On some more Fossil Estheriæ [noting *E. minuta* var. *brodieana*, found by Mr. DeRance in the upper part of the Keuper Marls at Alderley Edge]. G.M., pp. 49-57, pl. ii.
- A. J. JUKES-BROWNE. Durham.
Concretions in Magnesian Limestone [brief letter on Mr. Garwood's paper]. G.M., Nov., p. 528.

- P. Q. KEEGAN. Cumberland, Westmorland.
The Geology of the Lake District [briefly described]. Science Gossip, Nov., p. 260.
- P. F. KENDALL. Isle of Man.
The Glacial Phenomena of the Isle of Man [The distribution of boulders indicates a south-westerly direction of transport, which agrees with the trend of the striæ; boulders of Foxdale granite have been lifted 800 feet in two miles; among the mollusca occur some characteristic Red Crag species]. Rep. B.A. for 1890, p. 807.
- P. F. KENDALL. North-western Counties.
On the North-west of England Boulder Committee [inviting co-operation: a collection has been made of type-rocks taken in situ for comparison]. Mem. Pr. Manch. L.P.S., p. 412.
- PERCY F. KENDALL. Isle of Man.
On the Source of some remarkable Boulders in the Isle of Man [especially a rock containing riebeckite, traced to Ailsa Craig]. Mem. Pr. Manch. L.P.S., pp. 217-220.
- P. M. C. KERMODE. Isle of Man.
[Discovery of *Tellina proxima* Brown, in considerable numbers, etc., in a bed of clay, about 12-15 feet below the surface of the Mooragh, Ramsey]. Yn Lioar Manninagh, No. 3, July 1889, i. 69.
- P. M. C. KERMODE. Isle of Man.
Fossil Elk [copy of circular and list of subscriptions promised for searching for the remains of a gigantic Deer (*Cervus megaceros*) said to be buried in a marl bed at Ballalough, German]. Yn Lioar Manninagh, No. 3, July 1889, i. 87.
- P. M. C. KERMODE. Isle of Man.
Address by the Retiring President . . . Delivered . . . March 11th, 1886 [gives a detailed list of papers on the Geology, Mineralogy, and Palæontology of the Isle of Man]. Back Transactions of the Isle of Man N.H.S., i. 68-70; published with No. 4 of Yn Lioar Manninagh, Oct. 1889.
- ROBERT KIDSTON. Yorks, Lancs., etc.
On the Formation and Internal Structure of Carboniferous Ferns in their relation to existing genera, with special reference to British Palæozoic Species [citing numerous localities: a good bibliography given]. Trans. Geol. Soc. Glasgow, vol. ix. pt. 1, pp. 1-56, pl. i.-iv.
- ROBERT KIDSTON. Lanc. S.
On the Fossil Plants in the Ravenhead Collection in the Free Library and Museum, Liverpool [describing the geological relations of the Carboniferous rocks of S.W. Lancashire, and noting the fossil plants, most of which are from the Middle Coal Measures; a synopsis of species is given, and a number of specimens are figured]. Trans. Roy. Soc. Edinb., vol. xxxv. pt. ii. pp. 391-417; pl. i. and ii.; 1889. Abstract in Neu. Jahrb. f. Min., etc., 1892, vol. i. pp. 192-194, Ref.
- G. W. LAMPLUGH [Sec.]. York S.E.
Final Report of the Committee consisting of . . . [seven names] . . . appointed for the purpose of investigating an Ancient Sea-beach near Bridlington Quay [with list of fossils, and particulars of the pebbles in the old beach]. Rep. B.A. for 1890, pp. 375-377.
- G. W. LAMPLUGH. Yorks. S.E. and Lincolnshire N.
On the Speeton Clays and their Equivalents in Lincolnshire [the Spilsby Sandstone and Claxby Ironstone of Lincolnshire are correlated with the *Belemnites lateralis* zone; the Tealby Clay with the *B. jaculum* zone; the Tealby Limestone with the *B. semicanaliculatus* zone; and the Carstone with the marls of *B. minimus*]. Rep. B.A. for 1890, pp. 808, 809.

- G. W. LAMPLUGH. Yorks. S.E.
The Drifts of Flamborough Head [classified thus: (i.) Infra-glacial, the Buried-Cliff beds of Sewerby and the Estuarine Shell-bed of Speeton; (ii.) Chalky Rubble; (iii.) Basement Boulder-Clay; (iv.) Intermediate Series, Stratified beds with bands of Boulder-Clay; (v.) Upper Boulder-Clay; (vi.) Late Glacial gravels; (vii.) Alluvial wash, fresh-water marls, etc. (Recent). The Basement Clay is a continuation of that of Holderness; the Intermediate Series passes laterally into the Purple Clays of that district: the Upper Clay includes the Hesse Clay of Holderness: none of these are of marine origin]. Q.J.G.S., Aug., pp. 384-429, pl. xiii.
- G. W. LAMPLUGH and E.M. COLE. Yorks. S.E., N.E.
Excursion to the East Coast of Yorkshire, Monday, August 3rd, to Saturday, August 8th, 1891 [a report of the Geologists' Association excursion, giving notes on the geology of Flamborough Head, Speeton, Filey, Gristhorpe, Scarborough, Pickering, the Peak, and Whitby]. Proc. Geol. Assoc., Nov., vol. xii. pt. 5, pp. 207-222.
- [G. A.] LEBOUR. Durham.
[Notes on the Seaton Carew Boring, the Dunston excavations, and the recent publications of the Geological Survey for Northern Northumberland]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 10, part 2, 1890, p. 406.
- G. LEWIS. Notts.
A Geological Sketch of the town and district of Nottingham. Trans. Chesterfield and Midl. Counts. Inst. Engin., vol. ii. pp. 22 et seq. (1890).
- JOHN LEVLAND. Derbyshire.
The Peak of Derbyshire [with only a few geological notes]. 8vo. pp. x + 340; London.
- J. LOMAS. Lanc. S.
Report on Excursion to Ship-Canal Works at Warburton, and to Slade Lane, Fallowfield [noting at the former locality Keuper marls surmounted by boulder-clay, with erratics of L. Doon, Eskdale, and Criffel granites, Buttermere granophyre, and Borrowdale volcanic rocks: the Slade Lane cutting shows a succession from Carboniferous to Trias]. Pr. Liv. G.S., pp. 336-338.
- FRANK E. LOTT. Derbyshire.
[Geology of the Neighbourhood of Burton-on-Trent briefly described in the introduction to a list of] the Lepidoptera of Burton-on-Trent and Neighbourhood. Trans. Burton-on-Trent Nat. Hist. and Arch. Soc., vol. 1, 1889, pp. 115-117.
- C. A. MACMAHON. Northumberland.
Note on the Alleged Genesis of Rutile in Fire-clays [criticising Mr. Hutching's paper on the fire-clays of Seaton]. G.M., June, pp. 259-262.
- J. MARLEY. Durham.
Sketch of the Rise and Progress of the Clercean South Durham Salt Industry. Trans. Fed. Inst. N. Engl. Inst. Engin., vol. 1, pp. 339 et seq.
- JOHN E. MARR. Westmorland.
Geology [of Appleby District; treating of the Slate Rocks, the Coniston Limestone, Carboniferous, and New Red Sandstone, and the superficial deposits: pp. 71-75 of 2nd Ed. of Canon Mathews' Guide Book to Appleby]. Appleby [1891].
- J. E. MARR. Westmd., Cumbd., Lanc., Yorks.
The Backbone of England [the history of the elevation of the Pennine Chain, etc.]. Tr. Leeds G.A., pp. 51-53.
- J. E. MARR AND R. H. TIDDEMAN. York W.
La Géologie de l'Ouest du Yorkshire [prepared for excursion; see 1888 list]. Congrès Géol. Internat., Compte Rendu de la 4me. Session, à Londres, 1888; pp. 303-346, with folding map.

[— MILLER.]

Yorks. S. W.

The Coal adjoining Barnsley [paper dealing with local development of known coal-seams; reported in abstract under title 'The South Yorkshire Coalfield']. Colliery Guardian, May 1st, vol. lxi. p. 747.

G. H. MORTON.

Lanc. S. and Cheshire.

The Geology of the Country around Liverpool, including the North of Flintshire, 2nd ed. [the Carboniferous beds are carefully described, and allusion made to the Permians seen at certain localities and not easily separated from the Trias; the Bunter and Keuper series are minutely treated with descriptions and plates showing the footprints in the Storeton quarries; some attention is given to the economic geology, and the Glacial deposits are described with notes on some of the boulders by Mr. J. G. Goodchild; Mr. R. Kidston furnishes a list of plants from the Coal-measures of Ravenhead, near St. Helens]. 287 pp., xx plates, London. [Review by Prof. W. B. Dawkins, Nature, June 25th, vol. xlv. pp. 172-173.]

G. H. MORTON.

Lanc. S. and Cheshire.

Faulted Areas in the Country around Liverpool [viz., Hilbre Is. and Hilbre Point, Bidston, Storeton, south-end of Liverpool, and centre of Liverpool]. Pr. Liv. G.S., pp. 294-296.

JOHN NEVIN.

York Mid W., S.W.

On the Difference between the Seams in the Northern and Southern Parts of the Yorkshire Coal-field, as shown in some of the deeper sinkings [giving particulars of the sections at various collieries and the probable correlations of some of the seams]. Proc. Mid. Inst. Mining, Civ. and Mech. Engin., pp. 123 et seq. and plates i-iii. 1890.

R. BULLEN NEWTON.

Yorks. S.W., Derbyshire.

On the Genus *Léveillia* (*Porcellia*, *Léveillé*), with a Notice of a New Species from the Carboniferous Limestone of Ireland [noting *L. puzo*, *verneuili*, and *woodwardi* from Bolland, and the last from Winster]. G.M., May, pp. 202-208, pl. vi.

H. A. NICHOLSON AND J. E. MARR.

Westmorland.

The Cross Fell Inlier [describing the Lower Palæozoic rocks faulted up between the Carboniferous of the Cross Fell Range and the New Red Sandstone of the Eden Valley; these are Skiddaw Slates, Bala series (volcanic and calcareous rocks), Stockdale Shales, Coniston Flags, and Coniston Grits. The Bala series include a basic volcanic group, a rhyolitic group, the *Corona* beds, the Dufton Shales with the Keisley Limestone, the *Staurocephalus* Limestone, and the Ashgill Shales]. Q.J.G.S., Nov., pp. 500-512, pl. xvii.

HORACE PEARCE.

Westmorland, Cumberland, York N.E. and N.W.

Personal Observations of Glacial Action among British Mountains. Midl. Nat., April 1891, xiv. 77-83.

H. M. PLATNAUER.

Yorkshire.

List of Figured Specimens in York Museum [an annotated catalogue of 'type' and other figured specimens, including many plants from the Middle Estuarine of Gristhorpe, sponges from Danes' Dyke, mollusca figured by Phillips, Carboniferous fishes described by Davis, etc.]. Ann. Rep. Yorks. Phil. Soc. for 1890, pp. 56-89, 1891.

JOHN POSTLETHWAITE.

Cumberland.

The Deposits of Metallic and other Minerals surrounding the Skiddaw Granite [a geological account of the district, with special reference to the mineral veins. The rich veins in the Cadbeck Fells yield many rare minerals, the sulphides having there mostly been converted into decomposition-products: the veins on the S. and W. sides of the Skiddaw mountains are practically barren]. Trans. Cumb. Westm. Assoc., No. xv., pp. 75-86, with folding map.

- JOHN QUINE. Isle of Man.
Geological Section [of Isle of Man]. Secretary's Report, March 1888 to March 1889 [given to Isle of Man Na. Hist. Society]. *Yn Lioar Manninagh*, July 1889, i. 73-74.
- T. MELLARD READE. York Mid W.
The Perched Blocks of Norber Brow and their Levels relative to their Place of Origin [maintaining that the blocks have not been derived from a lower level than their present sites]. *G. M.*, July, pp. 291, 292.
- T. MELLARD READE. Lanc. S.
Notes on a Section of the Trias and Boulder Clay in Chapel Street, Liverpool [with rotten greenstone boulders, as if pressed into hollows in the underlying sandstone]. *Pr. Liv. G.S.*, pp. 316-321.
- T. MELLARD READE. Lanc. S.
A further note on the Decomposed Boulder and underlying Red Sandstone in the Chapel Street Section, Liverpool [the boulder is cemented to the sandstone, with an intervening film of indurated clayey sand]. *Pr. Liv. G.S.*, pp. 333, 334.
- CHARLES RICKETTS. North-western Counties.
Some Phenomena which Occurred during the Glacial Epoch [chiefly of local application]. *Pr. Liv. G.S.*, pp. 225-247.
- CHARLES ROEDER. Lanc. S.
Further Notes on the Upper Coal Measures at Slade Lane, Burnage [giving section to south of railway cutting; also some notes on the boulder-clay]. *Tr. Manch. G.S.*, pt. vii. pp. 199-203; discussion, pp. 203-206.
- A. W. RÜCKER. Linc. and York S.E.
On the Relation between the Magnetic Permeability of Rocks and Regional Magnetic Disturbances [giving particulars of the remarkable area of high vertical force in Lincolnshire and South Yorkshire]. *Proc. Roy. Soc.*, xlviii. pp. 505-535 [528-530], 1890.
- A. W. RÜCKER AND T. E. THORPE. Yorkshire and Lincolnshire.
A Magnetic Survey of the British Isles for the Epoch January 1st, 1886 [with full details of observations, summary of the results, and considerations correlating them with the geological structure of the country. In particular, special centres of magnetic attraction have been recognised south of Thirsk, between Hull and Gainsborough, between Lincoln and Mablethorpe, and in the Wash near Spalding]. *Phil. Trans. Roy. Soc.*, vol. 181 (A), pp. 53-328, plates 1-14.
- W. SEMMONS. Cumberland.
Some Recent Additions to British Mineralogy [noting Mr. Miers' heart-shaped twins of calcite from Egremont]. *Trans. Liverp. Geol. Assoc.*, vol. x. pp. 9-10; 1890.
- W. A. SHUFFREY. York. N.W.
The Flowering Plants and Ferns of Littondale [with brief geological description]. *Nat.*, Feb., pp. 51-61.
- THEODORE SINGTON. Lanc. S.
On Carboniferous Rocks exposed in the new Railway Cutting at Levenshulme [a measured section exhibited and described; see entries under name Brockbank]. *Mem. Pr. Manch. L.P.S.*, pp. 9, 10.
- J. P. SMITH. Lanc. S.
On Dunald Mill Hole [a cave in the hills above Carnforth; with section and plan, also map and section of the country]. *Barrow Nat. Field Club*, paper read Nov. 11th, 1889, printed 1890.
- H. SPEIGHT [signed 'JOHNNIE GRAY'] York W.
Through Airedale from Goole to Malham [with chapter on Geology]. 8vo. pp. lxiv. + 302, with illustrations and map.

- JOHN STEARS. York S. W.
Coal and its Formation [a general account but with special reference to South Yorkshire and section of the Barnsley Coalfield: map of English coalfields after E. Hull]. 16 pp., 8vo., Hull.
- MARK STIRRUP. York. S. W.
Note on a Boulder from the Coal of Aldwarke Main Colliery, near Rotherham, Yorkshire [a dark grey quartzite, found in the lowest portion of the 'Parkgate Seam']. Tr. Manch. G.S., pp. 170-172.
- M. STIRRUP. Lanc. S.
Granite Pebble from the Sand-rock Mine, Bacup, Lancashire [found in a thin coal-seam in the Rough Rock of the Millstone Grit; petrological note on the granite by Prof. Bonney]. Tr. Manch. G.S., pp. 172-174.
- H. S. STREATFEILD. Durham.
Durham Coal Mining. Proc. Amateur Sci. Soc., vol. i. pp. 28-31.
- T. TATE. York Mid W.
On the so-called Ingleton Granite [Brit. Assoc. paper; see 1890 Bibliography]. Pr. Yorks. G.P.S., pp. 480, 481.
- THOS. TATE. York Mid W.
A Geological Episode as recorded in the 'Ingleton Granite' [the so-called granite being an impure volcanic tuff]. Tr. Leeds G.A., pp. 54, 55.
- R. H. TIDDEMAN. York Mid W.
Physical History of the Carboniferous Rocks in Upper Airedale [see 1890 Bibliography]. Pr. Yorks. G.P.S., pp. 482-492.
- JAMES TONGE. Lanc. S.
Notes on the Collection now being formed of the Fossils of the Lancashire Coalfield [with exhibition of specimens from various localities]. Tr. Manch. G.S., vol. xxi. pt. x. pp. 260, 261; discussion, pp. 261-263.
- GEORGE R. VINE. York S.E.
Notes on the Polyzoa and Microzoa of the Red Chalk of Yorkshire and Norfolk [a critical catalogue; many species from Speeton]. Pr. Yorks. G.P.S., pp. 363-396, pl. xvii.
- C. F. WEBB. Lanc. S.
A Visit to Greenhill and Hawkstone Park [a general sketch]. Tr. Liv. G. A., vol. x. pp. 11-15; 1890.
- CHAS. T. WHITMELL. Cumberland, Lincolnshire, Lanc. S.
Communication [on the Bore of the Severn; with notes as to its being observed on the Solway, Humber, Witham, Trent, Mersey, and as to Jean Ingelow's poem 'The high tide on the coast of Lincolnshire' being a remarkable eagre observed on the Witham in 1571]. Cardiff Nat. Soc., Rep. and Trans., vol. 22, part 2, 1890, pub. 1891, p. 126.
- G. P. WIGHT. York N.E.
Notes on some of the Oolitic and Cretaceous Rocks of N.E. Yorkshire. Proc. Amateur Sci. Soc., vol. i. pp. 58.
- J. WILDING. Northern Counties.
The Building-Stones used in Liverpool [including Shap Granite, Carboniferous Limestone, Coal-Measure Sandstones from Preston, Bradford, etc., Magnesian Limestone from Mansfield, Triassic Sandstone from Everton, Runcorn, etc., Storeton, the Lincolnshire Limestone of Ancaster, and others]. Trans. Liverp. Geol. Assoc., vol. ix. pp. 25 et seq., 1890.
- J. WILDING. Cheshire.
The Sandstones used in Birkenhead Priory [probably Bunter from Tranmere and Storeton]. Trans. Liverp. Geol. Assoc., vol. ix. pp. 59 et seq., 1890.

- WM. C. WILLIAMSON. Lancashire.
On the Organisation of the Fossil Plants of the Coal-Measures, Part xvii [including *Lyginodendron oldhamium* and *Calamites* from Oldham]. Phil. Trans. Roy. Soc., vol. 181 (B), pp. 89-106, plates 12-15.
- H. WOODS. Northern Counties.
Catalogue of the Type Fossils in the Woodwardian Museum, Cambridge [with localities and references; among special collections in the Museum are the Aitken collection from the Coal-measures and Millstone Grit, the Burrows Collection from the Carboniferous Limestone of Settle, the Kinsey-Dover Collection from the Skiddaw Slates, and the Leckenby Collection from the Yorkshire Jurassic, etc.]. pp. xvi+180, 8vo., Cambridge.
- ARTHUR SMITH WOODWARD. Lancashire.
On a Microsaurian (*Hylonomus Wildi*, sp. nov.) from the Lancashire Coal-field [found in a nodule three inches long in the roof of the 'Bullion Coal' at Trawden, near Colne, in the Burnley coal-field; described, with woodcut]. G.M., May, pp. 211-213.
- A. SMITH WOODWARD. York N.E.
Pholidophorus germanicus: an Addition to the Fish Fauna of the Upper Lias of Whitby [a lepidosteoid fish long known from the Lias of Würtemberg; specific characters briefly described]. G.M., Dec., pp. 545, 546.
- H. A. WOODWARD. Lancashire.
Notes on the Finding of Natural Grease in the Cannel Mine at the Newtown Collieries of the Clifton and Kersley Coal Company, Limited [a substance containing 71.13 of fatty matter; analysis by Mr. W. H. Collins]. Tr. Manch. G.S., pp. 175-178; discussion, pp. 178-180.
- G. FREDERICK WRIGHT. N. of England.
The Ice Age in North America [discussing also the conditions in the North of England during the Glacial Period, and giving the position of Carvill Lewis' terminal moraines and 'extra-morainic lakes'; pp. 394-400, etc., and figs.]. 8vo. pp. xv+622, London, 1890.
- J. YOUNG. Derbyshire.
On Mammalian Remains from Cresswell Crag Bone Caves [jaw of spotted hyæna, ulna of *Rhinoceros tichorhinus*, horns of reindeer, and bones of horse]. Trans. Glasgow Geol. Soc., vol. ix. part 1, pp. 210-212.

NOTE—COLEOPTERA.

Pelobius tardus Herbst, in Yorkshire.—In my 'Coleoptera of the British Islands,' vol. i., p. 159, I have given the following note on this insect:—"Local, but common in some districts, it is widely distributed and common in the London district, and has been recorded as plentiful in autumn at times in stagnant waters near Swansea, but it is a southern insect and the northern records are few and doubtful. It has occurred once at Repton (near Burton-on-Trent), is doubtful as a Yorkshire species, and the one record from Northumberland "once near Newcastle by Mr. Hewitson," is especially commented on by Mr. Bold as "probably erroneous, as it has never since been met with; it has not been taken in Scotland." I have, however, just received a specimen from Mr. Walter H. Baker, of Hull, who says that it is fairly common in the stagnant ponds near Withernsea. The unauthenticated Yorkshire record is, therefore, probably correct, and the insect is evidently much more widely distributed in England than is at present known. The genus is a very interesting one as forming in itself a small though important family (formerly known as *Hydrachna* F.). It only contains three species, one from Europe and two from Australia; our species stridulates very loudly, and in some parts of the country goes by the name of the 'Screech Beetle.' It is often sold in London for aquariums together with *Hydrophilus piceus* and other species.—W. W. FOWLER, Lincoln, July 11th, 1892.

In Memoriam.

WILLIAM REED.

IN the death of Mr. William Reed, of York, which took place on the 9th May last, the geological department of the Yorkshire Philosophical Society has lost its greatest benefactor, and, indirectly, the loss must be mourned by the scientific men of the county at large, as through the energy and free-hearted liberality of the deceased gentleman the geological collection preserved in the Museum at York has become one of which not only the county, but even the kingdom, may justly be proud. Mr. Reed was born at Malton, on the 21st December, 1810. Educated at York and at the Grammar School of Thornton, near Pickering, he subsequently selected the medical profession as the sphere of his life's labours, and, in accordance with the usage of the time, was apprenticed to Mr. Ness, of Helmsley, under whom he served for six years. Thence passing on to Leeds, he studied at the School of Medicine there during 1835-6, and the two following years were spent at St. George's Hospital, London. Whilst in London, Mr. Reed attended four courses of lectures and demonstrations on chemistry at the Royal Institution, under the celebrated Michael Faraday. In 1838 he was enrolled a member of the Royal College of Surgeons, London, and of the Apothecaries' Society. From 1839 to 1842 he was house surgeon of the York County Hospital at York, and towards the close of the latter year he proceeded to Paris and attended lectures in the Faculté de Médecine of the Université de France, paying special attention to the study of diseases of the eye. Here, also, he remained during the following year. Returning to England in 1843, he commenced a country practice at Whitwell, and it is probably at this period of his life that he entered upon the systematic study of palæontology, and in the oolitic quarries of the neighbourhood, hammer and chisel in hand, formed the nucleus of a collection destined to attain historic importance, and to find a final resting-place in the Museum at York. Country practice, however, was too monotonous to satisfy the energy of one who, during the course of long life, knew not what it was to spend an idle moment, and in a short time he removed to York, rightly judging, as events proved, that there he would find a wider field for his labour.

After working in his profession for some time alone, he entered into partnership with Mr. Benjamin Dodsworth, with whom he remained about five years, and at the expiration of this time again took up general practice on his own account. For the next thirty

years Mr. Reed devoted himself, with scarcely a day's intermission, to the toilsome duty of a busy practice, mitigating the severity of the strain by the gradual accumulation (chiefly by purchase) of fossils, many of which he cleaned and dressed with his own hands during the few spare moments snatched from his hours of toil. The last few years of his business life were spent in partnership with Mr. Rose, to whom he finally relinquished his practice, and spent the rest of his days in the gradual accumulation of his splendid collection of recent and fossil shells and mammalian remains—in many cases presented, as purchased, to the Yorkshire Philosophical Society. As curator of the geological department, Mr. Reed witnessed the steady growth around him of that treasure of which both himself and the Society became so justly proud, and up to the day of his death continued to fill up gaps in the different geological formations as opportunity offered, until the 'Reed' collection has become fairly representative of British geology.

Among the different collections purchased by Mr. Reed and presented by him to the Yorkshire Philosophical Society, may be specially mentioned the following:—

1. The 'Wood' collection of Palæozoic remains, specially rich in examples from the Carboniferous Limestone of Yorkshire, and Permian fishes.
2. Part of the 'Bean' collection, consisting almost entirely of Yorkshire Jurassic fossils.
3. The 'Whincop and Baker' collections of 'Crag' remains, particularly rich in 'Red Crag' fossils.
4. The 'Elves' collection of Eocene shells of the London and Hampshire Basins.

The above-named special collections are in addition to the original 'Reed' nucleus, strong in Tertiary and Cambridge Greensand fossils and Pliocene Mammalian remains from Barnwell and Ilford.

HENRY R. MOISER.

NOTES—LEPIDOPTERA.

Lepidoptera at Horton-in-Ribblesdale.—During the Yorkshire Naturalists' Union excursion on May 14th I obtained some moss-feeding larvæ, which have hatched out, and prove to be *Scoparia muralis* and *Gelechia confinella*, as I anticipated; also a specimen of *Xylophasia rurea* var. *combusta*, from a pupa found under moss.—GEO. T. PORRITT, Huddersfield, 20th June, 1892.

Melanippe tristata and Chelonia plantaginis near Huddersfield.—I took two specimens of this pretty geometer in Harden Clough on June 15th. This is a new locality. Also one *Chelonia plantaginis* at the same place, thought to be extinct in our district.—S. L. MOSLEY, Huddersfield, 23rd June, 1892.

Naturalist,

LAKE COUNTRY ROCKS.

THOMAS TATE, F.G.S.,

Leeds; Hon. Sec. to the Boulder Committee of the Yorkshire Naturalists' Union.

To those who are anticipating in the near future a vacation tour in the English Lake District, a brief description of its geological build may be acceptable. To the north of the highway from Penrith, through Keswick to Cockermouth, lie the soft black Skiddaw slates, some of the oldest fossiliferous rocks in England. The outcrop of the Coniston limestone unites the head of Windermere with the head of Coniston Lake, south of this line consisting mainly of younger rocks of that series. Between these parallel landmarks the Ordovician Volcanic series intervenes. The pedestrian, taking the road from Ambleside to Keswick, Borrowdale, Seatoller, Honister Pass, Crummack Water, and over Black-sail to Egremont, or by Seathwaite over Scafell and southward nearly to Black Coombe, has this series all the way; indeed, most of the rugged mountainous scenery of the Lake Country has been carved out of these volcanic rocks.

These three primary groups are completely enclosed in a low-lying belt of Carboniferous and Permian rocks, and towards them certain igneous bosses behave intrusively. Three are granites: Shap, Skiddaw, and Eskdale; three are granophyres: Carrock Fell, Buttermere, and Ennerdale; and three are volcanic centres: Castle Head, Carrock Fell, and one near Elterwater.

To glacialists especially the Lake Country is interesting as being in Pleistocene times a feeding-ground whence were radially distributed numerous rocks possessing a marked individuality, by which they may be promptly recognised. That there is method in this distribution, by which the track of each tongue of ice may be mapped and defined, no longer admits of doubt.

Take three examples: A visit to any brickfield in Wigan, St. Helens, Bolton, or Manchester will suffice to show that the Lake District boulders so profusely scattered over Lancashire and Cheshire are chiefly from the west and south—Ennerdale, Borrowdale, and Coniston. On the other hand, the boulders brought to light in connection with the Tees Salt Industry, from boreholes 100 to 120 feet in depth, we find belong chiefly (omitting local rocks) to 'brockram' from Appleby; next come Shap granite, Armboth Dyke, and lastly Carrock Fell syenite, all of these being from the north or east. If with these two groups we compare the Lake District boulders met with in the lower reaches of the Calder, we are struck

by the marked absence of boulders both from the north, east, and south—Skiddaw, Carrock Fell, and Borrowdale.

Of the numerous rocks possessing distinctive characters by which they may be identified when occurring as boulders, some call for special notice. The well-known biotite granite of Wasdale Crag, near Shap Wells, has pink tabular crystals of orthoclase an inch or so long, and matrix with nests of black mica. The very coarse granite quarried at Waberthwaite and higher up Eskdale, of which there are two varieties, grey and red, is also exposed at the head of Wastwater and at the base of Scafell. Skiddaw granite, having a friable white matrix, with robust crystals of white orthoclase, is exposed near the foot of Brandy Gill, and a larger mass, coarser grained, higher up the Caldew. It is easier of access in Sinen Gill by ascending the left bank of Glenderaterra, where boulders will be seen in its bed near to the copper-mine. Two bosses of quartz-felsite flank the lovely Vale of St. John. From the chapel of St. John past Low Rigg to a quarry near Hollin Root it is red in many places; but it may be more conveniently studied at Threlkeld, where it is extensively quarried. It is nearly pure white, inconspicuous crystals of orthoclase, quartz, and yellow-green plagioclase embedded in a felsitic matrix are its components. Long lath-like crystals of biotite appear locally. The beautiful quartz-felsite of the Armboth and Helvellyn Dyke, with its bright pink oblong crystals in a red felsitic matrix, is exposed in Armboth beck, a feeder of Thirlmere Lake, a little above Armboth House; and again half a mile east of this near the ordnance cairn; but boulders are profusely scattered in the Vale of St. John, and may be collected off the wall tops on approaching Keswick. They are also abundant in the embankment of the new road skirting Thirlmere.

A visit to Carrock Fell, one of the three chief volcanic foci of the Lake Country, will amply repay the petrologist. Its structure has been variously interpreted, nor can it be said even yet to have been fully worked out. If we follow the beaten track from Mosedale to the Fell summit, after climbing over unaltered Skiddaw slates dipping sharply into the hill, we come upon what look like bedded layers of a fine-grained ferro-magnesian mineral; a little higher the basic plates enlarge into distinct crystals of diallage, with which white felspar is blended until the rock gradually assumes the appearance of a coarse gabbro. More rarely, a delicate rose-tinted felspar replaces the white plagioclase. In and about the sheep-cote the structural peculiarities of the Carrock Fell gabbro reach a maximum that in many hand specimens simulate a coarse pegmatite or graphic granite: the presence of quartz along with white felspar, and the sparse basic

ingredient represented by a chloritic mineral, give to the rock this aspect. Northward from this point the gabbro again resumes its bedded aspect, from an alternation of coarse with fine-grained varieties, until we reach the Granophyre that caps the Fell. Macroscopically, this closely resembles the Ennerdale granophyre, but under the microscope we see that the hornblende of the latter is here replaced by augite. The strike of all these rocks, as well as that of the Skiddaw granite below at the west end of the Fell, coincides with that of the rocks by which they are surrounded. A range of hills on the opposite side of the valley east of Carrock Fell is built up of bedded contemporaneous basic ashes and lavas ejected probably from the Carrock Fell vent. One of the latter has marked features by means of which its boulders, though somewhat friable, have been identified when widely dispersed. It is a porphyritic diabase, having imbedded in a compact black matrix well-defined tabular lozenge-shaped grey crystals of labradorite up to an inch across. It may be seen at Berrier or Eycott Hill. Another exposure of this rock, at Melmerby, has recently been described by Mr. A. Harker, F.G.S. (Q.J.G.S., 1891, p. 517). The Ennerdale granophyre, just adverted to, is a closely-grained dirty-pink rock, consisting mainly of an inter-growth of quartz and orthoclase, with a variable amount of chloritic ingredients scattered therein. Buttermere 'syenite' is essentially the same rock, but lighter and brighter in tint, being nearly free of the ferro-magnesian component. It can be obtained near to Scale Force, the 'Queen of Waterfalls.'

Keswick is a good centre for geological work. The wooded knoll behind St. John's Church—Castle Head—conceals two quarries in the neck of an ancient volcanic vent, and a complete series of bedded intermediate ashes and lavas poured therefrom, some 12,000 feet in thickness, forms the eastern margin of Derwentwater, and may be studied in detail with the aid of Mr. Postlethwaite's concise little book, with its map and section. The neck is an ordinary diabase (altered dolerite), of little moment for our purpose; not so the basement purple breccia of Falcon Crag; the altered andesite lava No. 1; the vesicular lava No. 5 in Cat Gill; the garnet-bearing lava of Sippling Crag in Shoulthwaite Gill, all of which are worth securing for the purposes of identification. The 'Green Slate' building-stone of Keswick is quarried near Grange, Borrowdale; that of Ambleside about Kirkstone. The upper volcanic series of pale green and striped slates near Elterwater should not be neglected when at Ambleside. The metamorphosed Skiddaw slates; chiastolite, andalusite, and mica-schist of Sinen Gill; the Sale Fell Minette (the only British rock resembling Phillips' Dyke, Ingleton);

and the Hornblende-picrite of Little Knott, are all within easy reach of Keswick. Devitrified rhyolites and rhyolitic tuffs are not to be met with in Borrowdale. These ancient acid lavas must be sought for near Coniston (Grizdale Tarn), or in Long Sleddale, where they occur as salmon or cream-tinted felstones, always associated with the Coniston limestone.

The microscopical description and the chemical analyses of these rocks are reserved for a second paper.

NOTES AND NEWS.

In the 'British Naturalist' for April, there is a capital portrait and short biography of Miss Ormerod, the well-known entomologist, and in the June number Mr. J. W. Douglas, F.G.S., author of 'A Monograph of the British species of the genus *Gelechia*', etc., etc., occupies the post of honour. Mr. Douglas is also one of the Editors of the 'Entomologist's Monthly Magazine.'

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We have received a very interesting note on the superstition concerning the 'Hair-worm' (*Gordius aquaticus*) in Ryedale, and if our readers will forward us notes of the same from as many and as widely scattered districts as possible in those Northern Counties of which we take cognizance, so as to show the variants in the popular idea, we should like to prepare and print a general account or summary.

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Mr. John W. Ellis, M.B., F.E.S., has collected into book-form a series of papers by himself which appeared in the 'Naturalist' during the years 1885 to 1890, on 'The Lepidopterous Fauna of Lancashire and Cheshire.' As now published they form a handy and useful volume of 136 pages, containing the records of some fifteen different observers, with a short introduction on the geological formations and meteorological conditions which affect the distribution of Lepidoptera in the counties dealt with.

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We have received a carefully compiled and well printed little book, entitled 'The Flora of Ashton-under-Lyne and District.' It is mainly the work of a Committee appointed by the Ashton-under-Lyne Linnæan Botanical Society, which has fulfilled its duties admirably. In less than one hundred pages are given records of all classes of plants except Lichens, Fungi, and Algæ. The Moss Flora is a revision of a list which was published in the 'Naturalist' in 1886, and compiled by Mr. J. Whitehead, of Oldham, and the Hepaticæ have been dealt with by Mr. G. A. Holt, of Manchester.

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We have never read more charming books than three which Messrs. Blackwood and Sons have sent us. They are entitled (1) 'Annals of a Fishing Village,' (2) 'On Surrey Hills,' and (3) 'Within an Hour of London Town,' written by 'A Son of the Marshes,' and edited by J. A. Owen. The first contains passages in the life of a boy-naturalist who lived on the Kentish shore, and who often accompanied the shore-shooters on their expeditions to the marshy flats. The second of these fascinating volumes is a collection of splendidly written descriptions of life in the wilder parts of Surrey, while the third, as its name implies, deals with the country within a short distance of the metropolis. All the three books contain observations which prove the author to be a remarkably keen and careful student of nature, whose notes should be read with the utmost benefit by school-boy or experienced naturalist alike. To anyone fond of nature we cannot too highly recommend these elegantly printed and delightfully readable volumes.

NOTES ON THE GLACIAL PHENOMENA OF UPPER RIBBLESDALE,

IN REFERENCE TO THE EXCURSION OF THE YORKSHIRE
NATURALISTS' UNION, MAY 1892.

J. G. GOODCHILD, H.M. GEOL. SURVEY, F.G.S., F.Z.S., M.B.O.U.

NOTWITHSTANDING the rapid strides that have recently been made in connection with Glacialography, there are still many points upon which some students are by no means clear. It may therefore serve a useful purpose if these notes are prefaced by a few general observations bearing more or less directly upon the glacial history of the area especially under notice. Foremost amongst these, should be borne in mind, that though nearly all glacial striæ, and most of the deposits of glacial origin, all over Britain, date from the climax of the Glacial Period, yet the period during which any given area of similar general relief had been previously occupied by ice, was longer in proportion to the height of its latitude. Putting the same statement into a different form, we may say that, although the vestiges of glacial action in Ribblesdale are contemporaneous on the one hand with those of Finchley, and, on the other with those of, say, Perthshire, yet in Perthshire, an ice-sheet existed many thousands of years before such a phenomenon was visible in Yorkshire; while its visit to the north bank of the Thames commenced only just before the great ice-sheet attained its maximum, and terminated almost immediately afterwards, while the ponded back-waters of the Thames were depositing the brick-earths and gravels along with their re-sorted mammalian remains (Proc. Geol. Assoc. Vol. ix, No. 3).

Then, in regard to some questions of glacial physics, a word or two may not be out of place. On the late visit of the Y.N. Union to Ribblesdale, considerable attention was given to a fine example of a *roche moutonnée* in the Midland Railway cutting just south of Horton. This showed in the clearest manner possible that the ice-sheet flowing southward against this obstacle must have moved simultaneously, at different levels in at least three different directions, two of them almost diametrically opposite to each other; so that while, a few feet above the obstacle, the march of the ice lay nearly due south, yet on one side of the rock the ice flowed to the east, on the other to the west, while in a third position its course for a short distance lay upwards. It is no uncommon phenomenon on either the small scale or the large; yet the lesson it teaches appears to have

been learnt by only a few. Obviously that lesson is, that the direction indicated by glacial striæ is not necessarily the same as that followed by the upper part of the ice. The upper part of the ice is known to have moved, in many cases, at right angles to the course taken by its lower strata. The movements of the two parts may even have been in diametrically-opposite directions. Again, land ice flows in the direction of least resistance, so that its line of movement, as J. D. Forbes showed years ago, as often as not lies from the base at one point to the surface at another point farther from its source.* This cause, combined with the effects of surface ablation, tends to elevate stones or other bodies caught up by the sole of the ice, nearer and nearer to the surface, in opposition to the force of gravity.† Another factor to be taken into account in dealing with boulder distribution is, that an impulse in a given direction imparted to ice at one point is transmitted along its upper strata for miles beyond its initial point, and may even be communicated, to some extent, to strata far below the surface. Connected with this is the larger general question of the causes of movement in large bodies of land ice. No doubt the causes are manifold, and embrace many, or all, of the causes indicated by glacial physicists during the past thirty years. But so far as the study of British glacial phenomena is concerned none of these explanations make it clear how it came about that the sole of the ice-sheet moved so steadily, and with such even motion, over large areas, as to enable it to plough out continuous glacial furrows, fifteen, twenty, or more feet in length. Yet that is one of the most important facts with which a glacialist has to deal. My own explanation‡ is a new one. I am convinced that under conditions of very low temperature a large mass of ice occupying a deep valley, will flow outward more rapidly at the *bottom* than at the surface. The reasoning is based on the fact that at all degrees below the freezing point ice contracts under a fall of temperature and expands under a rise, more than any substance known. Therefore, when but little affected by heat-waves, the upper part of a thick mass of ice undergoes contraction to an extent that may, in certain cases, be hardly more than compensated by the downflow of ice from the parent source. On the other hand, the cold waves (temperature undulations below Zero C.) do not lower the temperature of the

* See Dr. Drygalski, *Zeit. Ges. für Erdkunde zu Berlin*, Band XXVII, No. 1 (1892), for photographic illustrations of this phenomenon.

† In the *Geol. Mag.* for November, 1874, I gave this as the explanation of the occurrence of the shells on Moel Tryfaen, etc.

‡ *Geol. Mag.*, 1891, p. 19. 'Motion of Land Ice.'

bottom strata to such an extent as to neutralize the effects of *terrestrial radiation*. Earth-heat, therefore, keeps the lower strata of the ice at a higher temperature than that of the strata above; and therefore causes the ice near the bottom to expand to a larger volume than do the colder layers nearer the surface. In that way the different expansion gives rise to a differential movement of the mass, in which the parts most warmed by the earth-heat radiating from the rocks at the bottom of the valley move faster than those contracted by the lower temperature prevailing nearer the surface. Once such a differential movement is set up, part, at least, of the energy is converted into heat, and in that form accelerates the movement still more. I have long felt that, in basing our conclusions regarding glacial phenomena upon what facts can be gleaned from a study of the tiny glaciers still surviving in the Alps, we were in danger of falling into very serious error. And so we have done, and our progress towards a right understanding of our subject has been retarded accordingly.

The next point to consider brings us nearer to glacial matters of more local interest. There is now quite enough known about the direction of movement of the larger flows of ice at the climax of the Glacial Period to warrant us in coming to the following conclusions regarding these matters in the North of England:—Three or four large areas in this part appear never to have been invaded by ice carrying boulders foreign to their own drainage area. One of these areas is situated around the head-waters of the Tees, Tyne, and Wear. Another includes the greater part of the Lake District. Next is the area extending eastward from the Howgill Fells to Richmond, northward to Stainmoor, and southward to Craven. Further south comes the upland area ranging to the Peak of Derbyshire. To these may be added the Cleveland Hills. The second and the third are all that concern us in the present connection. Within these there ranged a zone of ice-shed whose general direction, as we trace it from the west eastward, may be approximately defined thus:—In South Cumberland it followed very nearly the line of highest ground up to about the head of Derwentwater, that is to say, a north-easterly direction. Thence it curved round to the south-east, passing through Wastdale Head, through the Howgill Fells, across Wilbert Fell, and eastwards by the head-waters of the Swale and Yore. Beyond this the line cannot be defined even approximately. To the north of that line of ice-shed the boulders travelled at first north-westward; and then, when the Solway ice began to flow inland and uphill, it moved in a generally easterly direction, over Stainmoor, past Barnard Castle, and out to the maritime parts of Yorkshire.

To the south of the ice-shed, the ice, almost from first to last, flowed away in a southerly direction, conforming, in the direction taken by its lower strata, to all the ins and outs of the surface; but, in the movements of the mass as a whole, it followed the direction of easiest gradient from the ice-shed. Thus, all over the western part of the Yorkshire uplands the predominant direction of flow was towards the S.S.W., as seen in the cutting at Ribblehead Station. Any deviation from that course can easily be shown to be due to purely local causes. But in the mountain areas still further west, that is to say, in the southern parts of the Lake District, the normal direction was southward in the areas around Oxenholme, etc., and S.S.E. in those further west still. This change is, of course, connected with the position of the line of highest ground in the neighbourhood of Sca Fell. But a study of the broader features enables us to go farther than this; for it is certain that, at the climax of the Glacial Period, the ice flowing southward from the Yorkshire uplands was heavily pressed in an easterly direction by ice from the congested area of the Irish Sea. These details have to be taken into account if we are to get even a general idea of the glacial geology of Upper Ribblesdale, as a glance at Mr. Tiddeman's map will show that over parts of Craven the glacial markings show a decided south-easterly set, which is quite in accordance with what is known in other parts, and which can be readily understood on the above explanation.

The ice at the climax of the Glacial Period could not have been much less than 2,000 feet in thickness in the lower part of the Eden valley, and it may have been more than that.* Now, if we accept the views held by many geologists that the earth's crust is everywhere in a state of unstable equilibrium, ready to rise over any area where the superincumbent pressure is lightened by denudation or other causes, or to sink where deposition is going on, or where a load of any kind is being put upon it, we cannot escape the conclusion that there must have resulted at least some depression of the earth's crust, commensurate with the weight of the load accumulated upon it. Thus, I conclude that the whole of Britain was gradually weighted to a level perhaps as much as one hundred feet lower than it had before the glacial burden attained its maximum dimensions. It is just possible that the depression referred to may have given rise to some alteration in the direction of flow of one of the larger ocean currents; but whether this was the case or not, it is, I think, quite certain that the growth of the ice-sheet suddenly stopped

* See upon this subject 'The Glacial Phenomena of the Eden Valley and the Western Part of the Yorkshire Dale-District,' by J. G. Goodchild. Q.J.G.S., xxxi, pp. 55—99, read June 24th, 1874.

immediately after it had reached its climax.* This could hardly have been at a period much, if any, more remote than ten or twelve thousand years from our own time. As it melted, and the unwonted load was gradually eased off the earth's crust, this began to rise towards its former elevation. That, I take it, explains how some of the raised beaches were formed. Of any other submergence there is no valid evidence, as I showed in 1874. Furthermore, the whole of the sediment, stones, sand, and mud included *within* the ice (I cannot believe that any appreciable quantity was gathered *underneath* it, as used to be thought) was gradually liberated as the ice melted; so that the whole of the rock surface covered by the ice received a coating of drift proportionate in thickness to that of the ice from which it was derived. In many localities this liberation of stones and mud went on very slowly, the water resulting from the liquefaction of the ice always taking the nearest line of low ground on its way back to the sea. But the conditions under which the melting took place must have varied much from time to time, and this was more especially the case at some distance from the line of *water-shed*. Consequently, much of the finest detrital matter was washed out and transported to levels lower still, and the water-worn residue was left behind as beds of sand and gravel, which, as the conditions changed once more, gave place to boulder clay. This will serve to explain how it happens that, at Ribbleshead, for example, water-sorted material is interstratified with the boulder clay, as it generally is elsewhere. It also explains why it is that the axes of the drift mounds nearly, or quite, coincide with the prevailing lines of movement of the ice. There were pre-existing rock mounds there, which had been shaped by long glacial erosion, and when the stony and muddy ice melted over these rock mounds the glacial sediments gradually enveloped the mounds and moulded themselves to the form of their rocky core, in much the same manner as the surface of a growing field of wheat follows the ups and downs of the field in which it was sown. I think it will be found, in the majority of cases, that every drumlin has a rocky core, and that the shape of the drumlin, in a general way, conforms to that of the rock it envelops.

It should be noted here that, as stones were melted out of the ice, they were, occasionally, transported in directions different from

* I have repeatedly emphasized this statement during the last eighteen years, and more especially so in a general summary of my views on glacial phenomena, published under the title of 'Ice Work in Edenside,' Trans. Cumb. and West. Assoc., No. xi. (1887), pp. 111—167, of which several hundred copies were distributed amongst glacialists, British and Foreign.

those in which they had been originally carried. This factor is one of much importance in connection with boulder-distribution, and should be constantly borne in mind in any speculations upon the direction of glacial transport.

Just as I believe we shall all have to give up the old belief in glacial submergence, so, too, I believe we shall have to abandon the idea that, in Yorkshire at least, any smaller glaciers followed the conclusion of the period which saw the termination of the ice-sheet. I have no doubt about the existence of very tiny glaciers even as far south as the more mountainous parts of Cumberland, but in Yorkshire there were none.

Since the conclusion of the Glacial Period the weather has been unceasingly at work restoring the surface to something like what its features were before that epoch. The boulder clay is being steadily washed away—indeed, on the limestone plateaux it has nearly all disappeared down the joints as fast as these are widened by atmospheric erosion. The glaciated surfaces, those of limestone especially, are being fast replaced by weather-worn rock of different form, and in a few thousand years there will be but little evidence remaining of the former presence of a great ice-sheet in Upper Ribblesdale.

NOTES—ORNITHOLOGY.

Peculiar Nests of Missel Thrush.—On June 18th, while investigating a plantation of scruntly trees at an elevation of 1,700 feet in S.W. Yorks., I came across several nests of Missel Thrushes (*Turdus viscivorus*), built mainly of sheep's wool, and lined with green or dry grass. They were all similar, and very peculiar.—S. L. MOSLEY, Huddersfield, 23rd June, 1892.

—Missel Thrushes very frequently make use of substances in the construction of their nests which are not usually regarded as being quite natural. Now-a-days large packs of human harriers range the country districts in all directions, and the 'scent' which they scatter broadcast generally consists of fine strips of paper. In some places, especially those bordering on country high roads, the nests are very largely composed of this material, but the writer does not remember having ever found a nest in which the grassy lining was replaced by paper, or, in fact, any other material.—E. R. W.

Birds of Derbyshire.—I venture to appeal to readers of 'The Naturalist' to afford me any information in their power respecting the Birds of Derbyshire, for a forthcoming work on similar lines to those treating of other counties.

It is a matter for regret that so few notes referring to such an interesting county are contributed to the current natural history journals. It is therefore hoped that naturalists will take an opportunity of recording any facts relating to Derbyshire birds within their own knowledge. Local lists of even the commonest species are desired, as owing to the very diversified character of the county, it is not very easy to work out the distribution of many species.

Extracts from churchwardens' accounts, referring to the destruction of the larger birds of prey, would be very welcome and would be acknowledged in due course.—F. B. WHITLOCK, Beeston, Notts.

A NEW YORKSHIRE EARTHWORM.

REV. HILDERIC FRIEND, F.L.S.,

Idle, Bradford; Author of 'Flowers and Flower Lore,' etc.

WE are constantly finding the old saying confirmed, that in natural history the largest number of species occur in the district which is most carefully worked. This is true of earthworms. One by one the mysteries surrounding this greatly-neglected group of animals are being penetrated, the veil is being lifted, and we are getting more accurate ideas respecting the specific differences, the distribution, and the uses of worms. I have recently been fortunate enough to find more than one species new to Yorkshire, but for the present I shall be content to describe the one which I have most carefully studied. So little is known about many of the worms imperfectly described by the earlier authors, that I shall not now discuss the synonymy of this species, but give it the name applied to it by the author, who alone has fully and accurately described it (*Allolobophora profuga* Rosa). To no one are we more deeply indebted than to Dr. D. Rosa, of Turin, for our present knowledge of the European *Lumbrici*. His lucid descriptions, shrewd discernment of points of value, generous recognition of the work of others, and indefatigable industry, are models which we could wish every helminthologist would imitate. In 1884 this veteran worm-hunter published a booklet entitled *I Lumbricidi del Piemonte*, in which he described four species of *Lumbricus*, and a dozen species of *Allolobophora*. Among them we find the worm which forms the subject of this paper. Dr. Rosa is the only writer whose works I have studied who notices the differences in point of size, length, and number of segments between worms collected in the South of Europe and those found in more northerly latitudes. I had already noted the fact that in some instances worms become smaller as we go southwards—a fact which will account for the differences between certain species of English worms and their Italian representatives. With us *A. profuga* Rosa, is 60 or 70 mm. when of medium size, but sometimes reaches fully twice that length, and is then about 80 mm. in alcohol, with a diameter of 5 to 8 mm. The number of segments is about 120-150. The worm is cylindrical, having much the appearance of the Turgid Worm (*A. turgida* Eisen), but the hinder part is more angular in outline, owing to the disposition of the setæ. The colour is ashy-grey, clayey, or fleshy-brown, with clay-coloured girdle. Owing to the greater transparency of the integument, the head appears rosy or

flesh-coloured, while the anal extremity is quite yellow in fresh specimens, due to the presence of a golden liquid, which it emits when placed in spirits. The segments which contain the essential organs are paler than the rest, and from these also some specimens exude a coloured fluid. As the possible connection of this exudation with sexual relationships has never yet been studied, it is impossible at present to say whether the quantity varies with the maturity of the worm. My own researches have led me to think this is the case, and that the matter should be investigated from that point of view.

The head is small, and cuts nearly one half of the first segment, whereas in the genus *Lumbricus* it forms a perfect mortise and tenon. The male pore is on segment 15, and is seated on either side on prominent, pale, opaque papillæ. The girdle extends over 6 segments (30-35), and stands well out from the body. It is closely fused on the back, but beneath the segments can be very clearly distinguished. The band which constitutes the puberty pores (*tubercula pubertatis*) stretches along the undersurface of segments 31-34, and even when the clitellum is as yet unformed the position of this band in relief serves to mark off those segments from the rest. The setæ are disposed differently from those of the true earthworm (*Lumbricus terrestris* L.) and the related species. Rosa states the arrangement thus: 'The space between the inferior and superior pair of setæ is a little less than that between the ventral setæ, but nearly (or about) double that between the dorsal. The medio-ventral space is double that between the setæ of the ventral pair; the dorsal space is double the first, and six times that between the dorsal setæ.' A diagram is necessary to make this point clear to the uninitiated. There are papillæ on the underside of segment 25 or 26, which are in some way connected with the sexual organs. Internally we find four pairs of seminal vesicles, those in segments 9 and 10 fixed to the anterior side of the septum, and in 11 and 12 on the posterior face. There are two pairs of spermathecæ in segments 10 and 11, which open in the intersegment 9-10, 10-11 in the direction of the third row of setæ; and I am able to confirm Dr. Rosa's later statement to the effect that the opening is in the segment containing the organs, and not in the preceding. I have as yet found no spermatophores on this species.

This worm emits an odour, which, on account of its suggestiveness of garlic, is anything but agreeable. I have referred to the value of the smell and mucus in aiding worms to mate, in a paper on 'Hybridity Among Worms,' published in 'Nature.' This worm is found in fields and gardens, under clods or stones, and is by no means rare. Found at Apperley in May, and near Bradford in June

1892. I have collected it in or received it from several other parts of the country as well.

Since the foregoing was sent to press I have received from Dr. Rosa specimens of the Italian worm upon which his description is based, and find that our British species corresponds in every essential with the type. I should like once more to appeal to naturalists for collections of worms, especially from mountainous districts. They should be placed in tin boxes lightly filled with soft moss, and accompanied by any data likely to be of service.

NOTE—BOTANY.

Botrychium Lunaria in Wharfedale.—I should like to point out that Mr. Grimshaw's record of *Botrychium Lunaria* in Troller's Gill (published in the 'Naturalist' of July) is by no means the first record of this plant in Wharfedale. I found it several years ago on the Arncliffe Clouders, at 1,200 feet above the sea level; and also lower down in the valley, between Arncliffe and Hawkswick. This fact I communicated to Mr. Lees, and he published it with other notes on his 'Flora,' in 'Naturalist' of Oct. 1888. Mr. T. B. Woodd also records *Botrychium Lunaria* at Oughtershaw, in his paper entitled 'Plants of Langstrothdale,' which was published in the 'Naturalist' of September 1889.—W. A. SHUFFREY, Arncliffe, Skipton, July 18th, 1892.

Moonwort only appears for a short time, and is very easily overlooked amongst the grass.—J. G. B.

BRITISH FUNGI.

British Fungi: Phycomycetes and Ustilagineæ, pp. xv. 232, 8 plates, with 137 figures. By G. MASSEE. London: Lovell Reeve & Co.

THIS book brings the British species of these two groups (so far as they have been investigated) up to date; it is well printed, and the plates are excellent. There is a capital 'general introduction,' which occupies almost one-third of the volume; it is full of such interest that when the end is reached, one wishes it had been even longer. A fungus is first of all well defined in detail, and, as the author says, they may be distinguished as 'Cryptogams without chlorophyll,' excluding, of course, the *Bacteria* and *Myxogastres*, which have been divorced from the fungi for some time. Such points as the orientation of the gelatinous substance of the *Tremel-lineæ* and *sclerotia* are lucidly explained; the well-known resemblance of *Saprolegnia* to the chlorophyllose alga *Vaucheria* is well portrayed. The importance of a biological knowledge of the plants is strongly urged, as it alone 'indicates the required evidence for a satisfactory solution of the affinities between the various sections'; no less is it impressed that a 'clear knowledge of the structure or morphology of fungi is indispensable as a preliminary to their study from the systematic standpoint.' (Advice of this kind ought to be taken to heart by some of our would-be phanerogamists,

who expect to be able to name everything before they have devoted any time to the acquisition of even an elementary knowledge of external morphology.

The enormous development of the sporophore in such groups as the Agarics and puffballs where only the asexual reproductive method is known is emphasised, these being so widely divergent from the lower fungi, which are morphologically like the Algæ as well as physiologically like them in the matter of sexual reproduction. The apogamy of *Saprolegnia* is noted though not under that name; we should like to have read a short discourse on this phenomenon by the author. We would suggest to the author that the abundant formation of calcium oxalate may be protective to the young sporophores; it is certainly protective against slugs in such plants as the aroids. The statement is made that the cystidia are chiefly concerned in transpiration, so that they are equivalent in function to the stomata of the higher plants.

We are glad to learn that the author is more sensible than the majority of lichenologists in that he does not believe in the autonomous nature of lichens. In addition to the thorough treatment of the general morphology of the fungi, that of the *Myxogastres* and *Bacteria* is also dealt with; then follow the methods of collection, preservation, and examination, before classification is dealt with. The method of the latter adopted is a modification of that of Brefeld, who does not believe in the sexuality of any of the Ascomycetes. In the descriptions the necessary measurements are given. The fossil fungi from the Halifax lower coal-measures are not forgotten, and an old but puzzling acquaintance appears as *Schinzia leguminosarum* Frank.; this will be familiar to many of our readers as causing the tuberculous enlargement on various Leguminous roots; these swellings have been shown to contain mycelium by Prof. Marshall Ward; according to this the plant cannot be longer claimed by either the bacteriologist or the myxogastrophilist; Ward considers it to belong to the *Ustilagineæ*. Still, the bacteriologists do yet lay claim to the organisms that cause these malformations, for quite recently Prof. P. F. Frankland, when speaking on these tubercles at the Royal Institution, said 'That in many cases, each particular leguminous plant is provided with its particular micro-organism.' Is it a case of symbiosis of three organisms?

The book bears the stamp of one evidently thoroughly familiar with the subject-matter, and even no advanced student of the groups of which it treats can read it without benefit; we shall be glad to see the 'other volumes dealing with the remainder of the fungi,' which 'it is hoped will not be long delayed.'

W. W.

Naturalist,

‘ESCAPES,’
 WITH A NOTE ON THE MAGELLANIC GOOSE
 IN YORKSHIRE.

EDGAR R. WAITE, F.L.S.,

The Museum, Leeds.

It is occasionally very unsatisfactory to record a ‘rare occurrence,’ for so many birds and animals, etc., are kept in captivity, the chances are that such are merely escapes, and have no claim to be genuine records for the locality in which they were re-captured. Such is said to be the case with the Red-winged Starling, Belted Kingfisher, Passenger Pigeon, Spur-winged and Egyptian Geese, and several others which have from time to time been added to our fauna on the strength of one or two occurrences alone, only to be removed from the ‘British list’ by subsequent writers. So easy is it to credit every rare record as an ‘escape’ that, on the other hand, there is the chance that a genuine occurrence may be in this way overlooked. In the case of a suspected escape every effort should be made to discover the source of the wanderer; but, unfortunately, if such source is not found, it is no evidence that the bird, or whatever it may be, has not travelled from some neighbouring or distant enclosure.

Last year a man told me, with great gusto, that he had caught and killed a Seagull in Headingley, ‘fifty miles from the sea.’ I suggested that it had been pinioned, and next day—with a somewhat lengthened face—he brought me a young Herring Gull, minus the last wing-joint. I afterwards learnt that it had been killed not more than one hundred yards from the garden whence it had strayed.

On another occasion I was told that a ‘Stork’ had been caught at Calverley, and, wishing to know what the bird really was, I went over and found that the ‘Stork’ was also a young Herring Gull which had escaped from the garden of a friend of mine, only a few streets from the place where it was picked up; but, its life having been fortunately preserved, it was returned to my friend unharmed.

Last March I heard that a ‘strange bird’ had frequented a certain garden in Leeds for several days. On visiting the garden I found the bird to be an Australian Quail, its somewhat draggled appearance proclaiming it to be an escaped example. It had never left the garden, and had subsisted upon the bread thrown out for the Sparrows. I took it to my aviary at Headingley, and some few days afterwards received a message from my friend, Mr. H. Bendelack

Hewetson, asking me if the bird he heard I had obtained was his Australian Quail which he had lost. In this case also it had only travelled a very short distance.

Among other birds I have a pair of Golden Pheasants, and during the spring of 1890, when the male bird was calling loudly, a neighbour told me to take my gun, as a hen pheasant had been attracted by the cries of the bird and was squatting under a hedge in the garden. I did so, but saw that the visitor was a female *Golden Pheasant*, so, exchanging the gun for an entomological net, I approached the bird and picked it up with my hand, for it did not offer the slightest resistance. The Pheasant must have flown some distance, as I inquired from everyone in the district whom I knew to possess an aviary or a pheasantry, but none of them had lost a bird, and no one having claimed it, it still walks the aviary at Headingley.

My main object in writing is to record the capture at Bishopthorpe, near York, of a pair ? of Upland or Magellanic Geese (*Bernicla magellanica*), which, if it could be proved were genuine occurrences, would be the first recorded examples this side of the Atlantic.

I have no wish, however, to suggest this ; for, although the fact that the plumage of the bird seen by me was perfect, and that the wings had not been interfered with, would foster the suspicion that it had never been inside a wired area, the immense improbability of it having crossed the Atlantic and landed here in safety should at once dispel any doubts on this point.

As, however, I have no clue whence the birds came, and as the female is now in the Zoological Gardens in London, some particulars as to its capture may be interesting. Moreover, in the published 'Additions to the Zoological Society's Gardens,' it is stated in 'Nature' to be from the Falkland Islands, and in 'The Field' from Patagonia, the native homes of the bird. It would naturally be inferred that the goose had been merely imported and had not been captured on British soil.

On the 9th of March last, the Rev. J. Chaloner, of Newton Kyme, wrote to me ' I have just had brought to me a small goose caught near Bishopthorpe (alive), I cannot make it out '

Mr. Chaloner several times asked me to see the bird, and as in his later letters he wrote about having it killed and mounted, I visited Newton Kyme on the 21st of May and saw the goose. I advised my friend to present it to the Zoological Society, and gleaned the following particulars as to its capture.

I have mentioned that a *pair* of geese were obtained, but I have no direct evidence to show that the birds were male and female of the same species. It is probable that they were not, and yet the rough description of the bird which was killed agrees very well with that of the male Upland Goose. Certain it is that the like of both birds had never been seen by the villagers before, and Mr. Chaloner feels certain that they were actually a pair.

Both birds in an exhausted condition joined some tame Geese in a field at Bishopthorpe, about three miles south of York, during the very severe weather which prevailed early in March. They were driven into the farm-yard along with the other geese, and remained contentedly for three or four days. Showing a tendency to fly however, they were caught and their wings were cut.

The male was killed and thrown away or otherwise disposed of, but the female was fortunately preserved. Mr. Guy Fairfax, of Bilbrough Hall, near Tadcaster, obtained the bird, and gave it to Mr. Chaloner. After remaining in his possession for three months, it was forwarded to the Zoological Society and identified as *Bernicla magellanica*.

It is to be hoped that when the bird dies it may be returned to Yorkshire and preserved in the Museum either at York or at Leeds.

21st June, 1892.

NOTE—LEPIDOPTERA.

Macroglossa stellatarum at Crossgates, near Leeds.—In the garden at the front of my house are several flowers of *Delphinium*, and at about half-past five on the 3rd of July—the day being rather cold, the sun shining for a short time—I was surprised to see a specimen of the Humming-bird Hawk-moth, hovering in front of the flowers, causing quite an audible humming sound; on procuring a net it was quickly bagged and proved to be a splendid female example, the brilliancy of its eye being most striking.—HARRY NELSON, Crossgates, Leeds, July 20th, 1892.

NOTES—CONCHOLOGY.

Amalia gagates at Withernsea, Yorkshire.—I have recently found several examples of this species on the cliff at Withernsea, among stones under somewhat dense vegetation, and in company with *Arion ater*, *Agriolimax agrestis*, and *Helix aspersa*. Mr. W. Denison Roebuck, to whom I sent them, tells me that it constitutes a new record for the East Riding of Yorkshire, also that the specimens sent, three-fourths grown, were very black in colour, and therefore belonged to the type of the species, and not to the pale variety which nearly always represents it in Britain.—J. DARKER BUTTERELL, Beverley, 28th Sept., 1891.

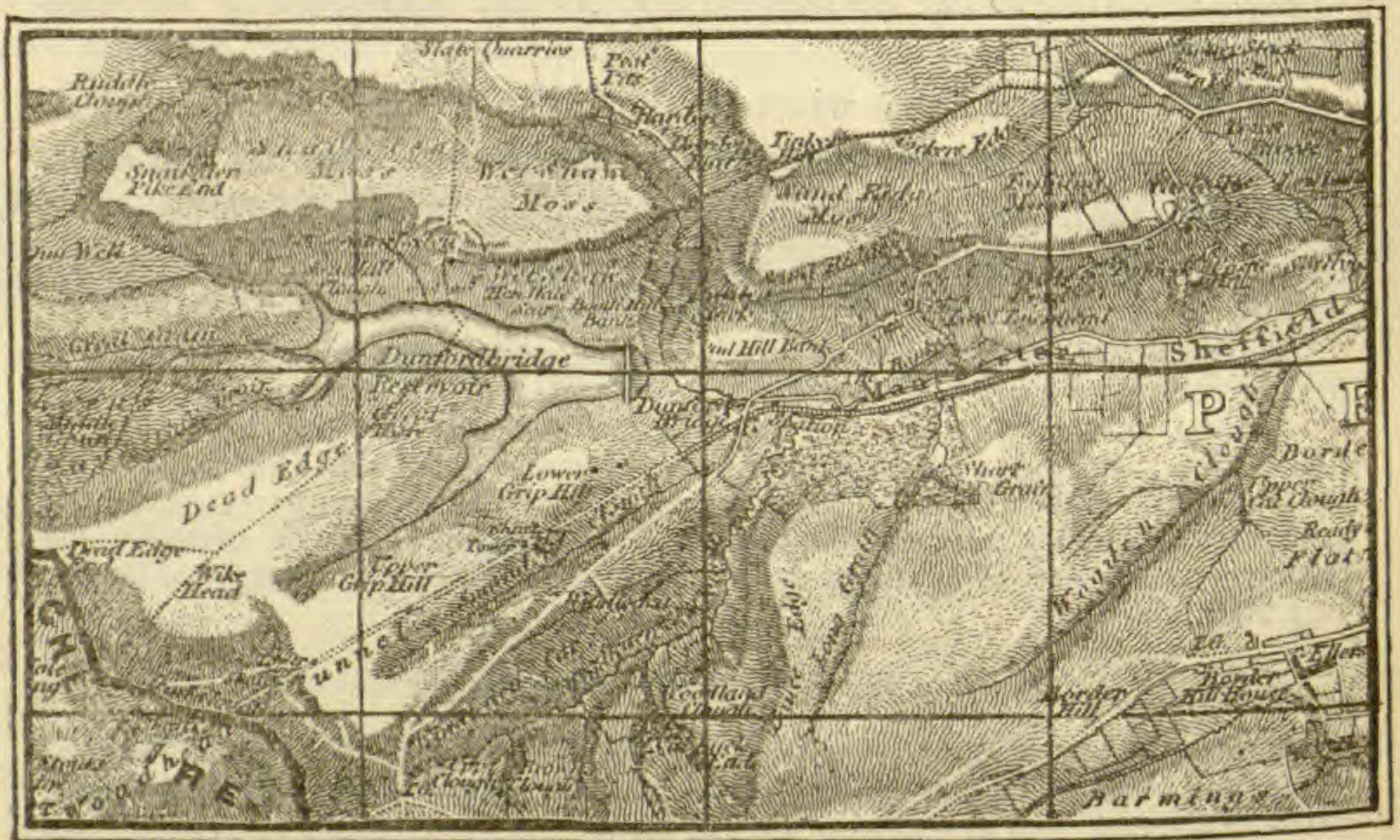
Testacella scutulum at Holgate, near York.—On the 7th of this month I received from a gardener employed in Messrs. Backhouse's nurseries at Holgate, York, seven examples of *Testacella*, which he had found on the 4th and 6th of the month, and he informs me that it was very common. It is interesting to record this animal for the first time for York. One of the examples was submitted to Mr. J. W. Taylor, F.L.S., of Leeds, who pronounced it to be *T. scutulum*. It thus turns out not to be the same species as those found in the gardens here.—EDWARD SELF, The Gardens, Ferniehurst, Shipley, June 16th, 1892.

August 1892.

THE YORKSHIRE NATURALISTS' UNION AT PENISTONE AND DUNFORD BRIDGE.

THE July excursion of the Yorkshire Naturalists' Union took place on Saturday, the 9th, to Penistone and Dunford Bridge, and owing partly to the bad weather and partly to the somewhat inaccessibility of the district, it was not up to the usual standard of success, either in point of numbers or of the amount of work achieved.

The number of members attending the excursion was not more than 30 to 35, and of these the great majority were from towns in the immediate neighbourhood, Huddersfield being specially well represented. The casual inquirer would learn that Penistone is not unknown to fame, and is to be remembered for at least two things—firstly, especially noted for its numerous and disastrous railway accidents; and secondly, for its Hounds, known since the year 1260 as the Penistone Harriers.



EXPLANATION.—The Map is divided into square miles by horizontal and perpendicular lines.

On looking at the map it will be seen that the district is close upon the Cheshire border, and as the Union confines its investigations exclusively to Yorkshire, further exploration beyond the limits of the excursion could not be indulged in. As usual the land-owners had granted full permission for the investigation of their estates, and on the present occasion facilities were afforded by Col. W. S. Stanhope, Mr. Charles Chapman, and the Dewsbury and Heckmondwike Waterworks Board.

In order to work the area as fully as possible three routes had been arranged. A fair number of 'Fault finders,' otherwise known as geologists, were under the leadership of Mr. Joseph Field, of Huddersfield, and commenced work at Dunford Bridge on the arrival of the 11.30 a.m. train.

The general body of naturalists under the guidance of Messrs. Alfred Clarke, J. N. Dransfield, S. L. Mosley, F.E.S., and R. Nash, also started from Dunford Bridge at 11.30, and first proceeded to Dunford Bridge Reservoir, after which they split up and traversed the moors and valleys in all directions.

The third party, consisting only of two conchologists, including the leader (Mr. L. E. Adams, B.A.), proceeded from Penistone to examine the mollusca of Scout Dam and Gunthwaite.

During the greater part of the day rain fell persistently, and soaked the heather and grass to such an extent as to make the condition of things decidedly unpleasant. Still having no control over the rain-fall, one could only say with Goethe—

Es regnet aber furchterlich :
Es regnet seinen lauf,
Und wenn es g'nug geregnet hat
So hört es wieder auf.

but as it did *not* 'aufhören' it was with no feeling of regret when five o'clock came round that members prepared to leave the field. So soaked were some of the party that with a vague uneasiness of possible rheumatism or something of the sort in the future, more than one made straight for home and were seen no more; however, those who did remain were somewhat comforted by the sight of tea prepared at the Wentworth Arms Hotel. After having been attended to in very commendable style, the cares of the day were somewhat if not wholly forgotten, and the meetings held also at the Wentworth Arms went cheerily on. The Sectional Meetings were followed at 7 o'clock by the general meeting, at which Mr. Thomas Bunker, of Goole, presided.

The following were elected members of the Union :—

W. H. Brittain, J.P., Ranmoor, Sheffield.

E. W. Thirkell, Stairfoot, near Barnsley.

T. Stacey Wilson, M.D., M.R.C.P., B.Sc., Edgbaston,

Birmingham (Hon. Sec. Midland Union of Natural
History Societies).

In order to be able to add the various publications of the Union to their library, the Corporation of Sheffield applied for membership and were unanimously admitted. It is to be hoped that other municipal bodies will follow such a laudable example.

Although the attendance was so small, individual members had journeyed from diverse localities and represented the following comparatively large number of affiliated societies:—Barnsley, Wakefield, Bradford, Leeds, Leeds Co-operative, Huddersfield, and Ravens-thorpe Naturalists' Societies, Goole, Bradford, Hull, and Halifax Scientific Societies, Leeds Geological Association, and the Conchological Society.

Messrs. W. Lower Carter, M.A., F.G.S., Leeds, and Jno. Gerrard, Manchester, moved the usual vote of thanks to the various land-owners for having granted permission for their estates to be explored, to the leaders of parties, and to the contributors to the excursion-programme.

The reports of the sections were next received.

In the absence of all the officers of the Vertebrate Section, the Chairman remarked that the only members attending the excursion besides himself were Messrs. Edgar R. Waite, F.L.S., Leeds, and John Gerrard, Manchester.

Something more than the bad weather would be required to account for the remarkable scarcity of bird-life, and one could only come to the conclusion that the district is a very barren one. No Mammals were seen, and the following is a complete list of the birds observed:—

Missel Thrush.	Meadow Pipit.	Yellow Bunting.
Blackbird.	Swallow.	Starling.
Ring Ouzel.	Martin.	Kestrel.
Willow Warbler.	Sparrow.	†Red Grouse.
Wren.	Chaffinch.	†Sandpiper.
Pied Wagtail.		

The dagger (†) denotes young birds seen.

Mr. F. W. Fierke (Hull), one of the hon. secretaries of the Conchological Section, writes that Mr. Lionel E. Adams, B.A. (Penistone), and himself, were at Penistone Station on the arrival of the main party, about 10.30 a.m., but no other conchologist being among the number, they proceeded by themselves to Scout Dam, which was the route set forth in the circular. As was stated by Mr. Adams, a more barren district could hardly have been selected for conchological investigation. Millstone grit, though often giving rise to pleasant scenery, is rarely productive from a naturalist's standpoint, and there is no branch, perhaps, which so much suffers as conchology in a district of this description. The only terrestrial mollusca observed on the route were *Arion ater*, *A. circumscriptus*, *Limax agrestis*, *Vitrina pellucida*, *Hyalinia alliaria* and *Helix rotundata*. Still, despite the scarcity of molluscs in general, one or two species occur in Scout Dam which could not help but interest

and give rise to considerable reflection. *Limnæa peregra* is perhaps the most ubiquitous species of our molluscan fauna, and a locality would be almost hopelessly destitute did it not number this particular one amongst its inhabitants. Owing to this hardihood and contrivance to exist under the most varying conditions, may probably be due the many different forms which give such excellent scope for the exercise of the mind of the variety-monger. However, in Scout Dam, besides finding some of the more distinct varieties of *Limnæa peregra*, such as *labiosa* and *picta*, there is such a confusion of forms that hardly two specimens which may be picked up are found alike. Mr. Adams, who has given the species considerable attention, has made a most interesting collection, showing the gradations in form taken entirely from this locality. Nor were the conchologists any less successful on this occasion, as very distinct specimens were obtained of the varieties before mentioned. Mr. Adams records the scalariform monstrosity of *Planorbis albus* also from the Dam, but this year he had not taken any specimens of it, although the ordinary form was plentiful enough. In addition the following aquatic species were recorded, *Pisidium pusillum* and *P. fontinale*. It was a pity that no more conchologists had availed themselves of the excursion, as by so doing they missed an excellent opportunity of looking over Mr. Adams' very fine collection of British land and freshwater shells, the peculiarity of which perhaps is that it consists almost entirely of his own collecting, due to extensive travelling.

The President of the Entomological Section, Mr. G. T. Porritt, F.L.S., F.E.S., reported that in consequence of the continuous down-pour of rain, scarcely any collecting could be done; and that besides himself the only entomologists present were Mr. S. L. Mosley, F.E.S., of Huddersfield, and Mr. Wm. Mansbridge, of Horsforth. He took a fine specimen of *Stenophylax alpestris* in the wood near the railway station, thus confirming the locality for the species, as two out of the previously only seven specimens recorded as having been taken in Britain had been secured by Mr. John Harrison, of Barnsley, the previous year—'possibly at Dunford Bridge,' but of this Mr. Harrison was not at all certain. *Sialis fuliginosa* also occurred, and *Plectrocnemia conspersa* commonly. The lepidoptera taken included *Venusia cambricaria*, *Larentia cæsiata* in abundance, *Larentia pectinitaria*, *Melanippe galiata*, and one or two very good forms of *Melanippe montanata*.

In the absence of all the officers of the Botanical Section, the report was rendered by Mr. T. W. Woodhead, of Huddersfield, who writes:—There is little of importance to record in this section. The more interesting parts of the moors were practically inaccessible

on account of the heavy rains, and botanising was consequently much curtailed. The only plants noticed were those usually prevalent on moorland tracts, among which may be mentioned *Ranunculus lenormandi*, *Viola palustris*, *Vaccinium oxycoccus* (abundant, though few in flower), *Lysimachia nemorum*, *Myosotis repens*, *Empetrum nigrum*, *Equisetum palustre*, *E. limosum*; and on the right bank of the Reservoir a number of specimens were found of that interesting form of *E. palustre*, var. *polystachyum*. Though occasionally met with in similar situations, I have no record of its having been previously found in this locality. *Littorella lacustris* was seen but not gathered, and it may be worthy of mention in connection with this drainage area that in 1884 I found this plant on the banks of a pond at Gunthwaite, and I have also collected it since the date of the ramble. At Penistone, *Tragopogon pratensis* was noticed. This plant is usually recorded under the type name, but this form is the more prevalent one, var. *minus*; on old garden walls here were a few specimens of that decreasing species, *Polypodium vulgare*.

In the absence of Mr. J. W. Davis, F.G.S., the guidance of the geological party was kindly taken by Mr. Joseph Field, of Huddersfield, who gave the report at the general meeting and writes:—

The geologists left Dunford Bridge Station under a slow, drizzling rain, taking the high road which leads towards Holmfirth. When opposite the east end of Snailsden Moss the party left the road, and was led by the gamekeeper across the valley to a stone quarry on the summit of the above point. Some of the flag-stone beds here were noticed to be rising at a rather high angle, as though some fault were close by. Several nodules in situ were seen, having the usual coating of soft sandstone impregnated with oxide of iron. The party next walked along the hill-side towards the water-course which divides Snailsden Moss and the hill on which Magden village is built. On the Snailsden side an old quarry was visited where the dip of the strata denoted a large slip or fault. This section gave rise to some discussion amongst the members. Higher up the valley two nice specimens of *Septaria* were found soon after the party arrived, at a pretty fault nearly opposite to Cooke's Study. The up-throw side exposed a nice section of the highest member of the Middle Grits, with about two feet of fireclay, a variable thickness of lenticular ganister, and about three or four inches of coal, the whole capped with a great thickness of black shale. The next place visited was the quarry which is being worked on the summit of the hill on which Cooke's Study stands in such a commanding position as to be seen for a great number of miles. The flag-stone here was faulted at a very high angle, some of it being almost vertical, the upper portion

being also dale-drawn. A number of small quarries on this hill were found very interesting, as they were considerably faulted in various directions. After passing through the village of Magden, the party visited a large quarry in the Rough Rock. The upper portion was seen to be parted with a band of shale about two feet thick, with about one or two inches of coal on the top. Another most interesting section was seen at Oxlee, near Hepworth, where the Halifax Hard Bed Coal and the underlying ganister and fireclay crop out. The getting of the coal here has been recently abandoned.

The above slate and flag quarries lie at the base of the Rough Rock, which has been denuded away and caps the two hills above mentioned, the valley betwixt them having been carved out of the shales which lie between the highest Middle Grit and the Rough Rock. The whole of the sections seen during the day were very interesting.

The meeting concluded with a vote of thanks to the Chairman, proposed by Mr. E. W. Thirkell, of Barnsley, and seconded by Mr. A. Clarke, Secretary of the Huddersfield Naturalists' Society, and carried unanimously, after which the members dispersed to their several homes.

E. R. W.

NOTES—BOTANY.

Botrychium Lunaria in Wharfedale.—A few weeks ago, when descending from the station for *Dryas* to Arncliffe village, I gathered a number of specimens of this interesting fern. I also noticed it in several places on the Clouder.—JOHN B. FOGGITT, Southport, August 2nd, 1892.

Gentiana Pneumonanthæ and Bartsia viscosa at Southport.—These two interesting plants were supposed to be extinct in the immediate neighbourhood of Southport. Yesterday I had the pleasure of finding both in abundance, within three miles of the town.—JOHN B. FOGGITT, Southport, August 2nd, 1892.

Solanum Dulcamara at 800 ft. in Upper Wharfedale.—I should like to place on record the existence of the above-named plant in Littondale. It is common enough in many localities, but I have never seen it mentioned at such a high elevation. Mr. Lees, in his 'Flora of the West Riding,' limits its range to 500 ft. above the sea-level; and he names Grassington (and there it is marked 'rare') as the highest point for the plant in Wharfedale. How *Solanum Dulcamara* has got into Littondale I can scarcely conjecture. Its habitat is a most unlikely one. I found it growing about a mile above the village of Arncliffe, amongst some stones which have been placed by the river-side to prevent the stream from bursting forth and doing damage to an adjacent meadow. The plant has certainly appeared during the last year or two. Can its presence in such a locality be owing to this cause? A bird—perhaps at Grassington—attracted by the bright red colour of the berries, took some of them; and after flying up into our Dale died from the poison which they contain, at the spot where the plant now appears. After the death and decadence of the bird some of the seeds found a resting-place in the ground, and germinated. I hope to be able to watch the plant from time to time that I may ascertain whether it gives birth to any other plants before disappearing from its almost subalpine situation.—W. A. SHUFFREY, Arncliffe, 9th August, 1892.

‘MORE ESCAPES.’

REV. H. A. MACPHERSON, M.A., M.B.O.U., ETC.,

Author of ‘An Introduction to the Study of British Birds,’ etc.

I HAVE read with pleasure Mr. Waite’s notice of the occurrence of the escaped *Bernicla magellanica* in Yorkshire. It is not, however, quite correct to say that these birds are ‘the first recorded examples [shot] this side of the Atlantic.’ A few years ago, I think in the late autumn of 1887, a pair of these geese were killed by someone on Mr. Assheton Smith’s yacht, the Pandora, off the island of Harris. I explained in ‘The Field’ what they were, as soon as I saw them at Mackay’s shop, at Inverness; and Mr. Buckley records them also, in a footnote to the ‘Fauna of the Outer Hebrides’ (p. lx).

About a year ago, I think, the Rev. J. G. Tuck requested me to identify a goose killed in Suffolk; *Anser indicus*, as it proved to be. Early in 1891, an example of *Cygnus nigricollis* was shot near Dumfries. In the winter of 1885-6, when I happened to be living for a short time in the North of London, a loafing gunner brought to me another *C. nigricollis*, which he had shot flying over Hampstead Heath. All these birds, like the Scottish Upland Geese, were full-winged, and showed no signs of captivity. Similarly, in the summer of 1885, I lost an adult Bluethroat Warbler. Its plumage was so perfect when it escaped, that had it been shot afterwards, it would have been put down no doubt as a voluntary visitor.

Even reptiles turn up in curious ways. A few years ago we obtained in Cumberland a large lizard, of a species which had only been known hitherto from the interior of South Africa.

The Moorish Gecko has also turned up here; just as the Arctic Fox has been imported into Scotland, except that the introduction of the *Vulpes* was intentional in the first instance. I have known of various species escaping from confinement and being afterwards captured, or shot as supposed rarities. This has often happened, for example, to the Budgerigar, and I believe to *Serinus canicollis*.

One of the prettiest sights that I ever witnessed was afforded by a pair of Ring-necked Parrakeets (*P. torquatus*), which I came across one day in Kensington Gardens. They were in perfect condition and evidently in high enjoyment of their recovered liberty, to judge from the graceful antics which they displayed as they climbed about the branches of the horse-chestnuts; these, being in flower, set off the verdant plumage of the oriental strangers to the best possible advantage.

August 2nd, 1892.

Naturalist,

NEW WEST YORKSHIRE FUNGI,
AND ADDITIONAL LOCALITIES FOR OTHERS
PREVIOUSLY RECORDED.

CHARLES CROSSLAND,
Halifax.

BEFORE the 'season' for Fungi sets fairly in, it would be well to bring up to date the records, especially of Basidiomycetes, for the West Riding, both for new finds and additional localities. With this idea in view the writer has attempted to work up the district included within the Halifax parish portion of the Calder drainage.

Since the publication of Lees' 'Flora of West Yorkshire,' there have appeared in this journal six lists of new stations and new discoveries relating to West Yorkshire, viz.—

1st. Report of the Fungus Foray, September 1888, at Bramham and Harewood Parks, in November 1888 issue, pp. 321-29, in which 42 species new to the West Riding and two new to Britain are recorded.

2nd. December 1890, p. 356, when seven new to West Riding are recorded.

3rd. January 1891, p. 20, four more.

4th. September 1891, pp. 279-282, in which Mr. Soppitt enumerates 39 more new to West Riding, besides 20 additional stations for others previously registered.

5th. Again in the Report of the Doncaster Fungus Foray of last September, detailed in the November issue, 29 species and one variety are given as new to West Riding, these including one, if not two, new to Britain.

6th. Lastly, we have the new station (Tag Lock, between Elland and Brighouse), for *Strobilomyces strobilaceus* Berk., which may be recorded as a rather rare species.

The present list deals only with the Hymenomycetes (including Tremellineæ) and the Gastromycetes.

It is proposed to let the list which deals with the Uredineæ, Ascomycetes, Ustilagineæ, and Phycomycetes, rest a little while until it becomes more fully developed. For the present it may be stated that Mr. G. L. Lister, of Brighouse, has recently turned up at Ovenden *Eurotium epixylon*, which is new to Britain.

The new ones are marked by an asterisk.

HYMENOMYCETES.

AGARICINEÆ.

- Agaricus (Amanita) mappa** Batsch. Hebden Bridge, Sep. 1891 (J. Needham, Hebden Bridge).
- Agaricus (Amanita) muscarius** Linn. Luddenden Dean (G. L. Lister, Brighouse).
- Agaricus (Amanita) rubescens** P. Stainland; North Dean Wood; several woods near Hebden Bridge.
- Agaricus (Amanita) vaginatus** Bull. Several woods about Halifax and Hebden Bridge, 1890-1.
- Agaricus (Lepiota) procerus** Scop. Elland Park Wood, Oct. 1889.
- Agaricus (Lepiota) carcharias** Pers. North Dean Wood, Oct. 7th, 1891.
- Agaricus (Lepiota) granulatus** Batsch. Very common in the woods, and often in the fields.
- Agaricus (Lepiota) amianthinus** Scop. Hebden Bridge, Oct. 5th, 1891 (J. Needham).
- Agaricus (Armillaria) melleus** Vahl. Common in all our woods, and often in the open fields near old stumps.
- Agaricus (Tricholoma) rutilans** Schæff. Hebden Bridge, Sep. 1891.
- ***Agaricus (Tricholoma) oreinus** Fr. Higher Greenwood, near Hebden Bridge, November 1891 (J. Needham).
- ***Agaricus (Tricholoma) personatus** Fr. Pastures, Park Nook, Southowram, Oct. 20th, 1891.
- Agaricus (Tricholoma) grammopodius** Bull. Pasture, Brookhouse, Ovenden, Sep. 1891.
- Agaricus (Tricholoma) melaleucus** Pers. Pasture, Luddenden Dean, Oct. 1889.
- Agaricus (Clitocybe) odoratus** Bull. Ovenden, Sep. 1891 (G. L. Lister).
- Agaricus (Clitocybe) infundibuliformis** Schæff. Hebden Bridge, Nov. 9th, 1891 (J. Needham).
- Agaricus (Clitocybe) brumalis** Fr. Plantation, Ovenden; wood, Hebden Bridge.
- Agaricus (Clitocybe) bellus** Pers. Among grass, Pecket Wood, Hebden Bridge, Sep. 27th, 1891 (J. Needham).
- Agaricus (Collybia) radicans** Rehl. North Dean Wood; Hollins, Warley, etc., Oct.

- Agaricus (Collybia) platyphyllus* Fr. North Dean Wood,
Sep. 27th, 1891.
- Agaricus (Collybia) fusipes* Bull. Ovenden, Sep. 1890
(G. L. Lister).
- Agaricus (Collybia) maculatus* A. & S. Luddenden Dean ;
Hebden Bridge ; North Dean Wood, etc.
- **VAR. immaculatus*, North Dean Wood, Sep. 27th, 1891.
- Agaricus (Collybia) butyraceus* Bull. Ovenden, Sep. 29th,
1891 (G. L. Lister).
- Agaricus (Collybia) tuberosus*. Norland Clough, Oct. 1891.
- Agaricus (Collybia) dryophilus* Bull. On dead leaves,
Luddenden Dean, Sep. 1891 (G. L. Lister).
- Agaricus (Mycena) rugosus* Fr. Woods, Elland and North
Dean.
- Agaricus (Mycena) galericulatus* Scop. Common in all the
surrounding woods.
- Agaricus (Mycena) polygrammus* Bull. Birks Wood,
Southowram ; North Dean Wood.
- Agaricus (Mycena) dissiliens* Fr. Warley ; Hebden Bridge ;
Sep. 1890.
- Agaricus (Mycena) leptcephalus* Pers. On the ground,
Ovenden, Oct. 1891 (G. L. Lister).
- Agaricus (Mycena) sanguinolentus* A. & S. On leaves,
Elland Park Wood, Sep. 1891.
- Agaricus (Mycena) galopus* Pers. North Dean Wood,
Oct. 1891.
- Agaricus (Mycena) epipterygius* Scop. Norland ; Crimsworth.
- Agaricus (Omphalia) umbelliferus* Linn. North Dean Wood,
Sep. 1891.
- **Agaricus (Omphalia) griseus* Fr. In mixed wood, pine, etc.,
near Hebden Bridge, Sep. 1891 (J. Needham).
- Agaricus (Omphalia) fibula* Bull. North Dean Wood, Oct. 1891.
- Agaricus (Pluteus) cervinus* Schæff. On stump, Elland Park
Wood, Sep. 1891.
- Agaricus (Entoloma) jubatus* Fr. Park Nook, Southowram,
Oct. 1891.
- Agaricus (Pholiota) præcox* Pers. Pasture, Ovenden, Aug.
1891.
- **Agaricus (Pholiota) aurivellus* Batsch. On dead trunk, North
Dean Wood, Nov. 8th, 1890 (T. Aspin).

- Agaricus (Pholiota) squarrosus** Müll. Frequent about the trunk-bases of ash trees, Halifax ; Ovenden, etc.
- Agaricus (Pholiota) mutabilis** Schæff. Ovenden, Sep. 1891 (G. L. Lister).
- ***Agaricus (Inocybe) calamistratus** Fr. Pecket Wood, Hebden Bridge, Sep. 1891 (J. Needham).
- Agaricus (Inocybe) rimosus** Bull. Hebden Bridge, Sep. 1891 (J. Needham).
- Agaricus (Inocybe) geophyllus** Sow. Wadsworth, Oct. 1891 (J. Needham).
- Agaricus (Flammula) spumosos** Fr. North Dean Wood, Oct. 1891.
- Agaricus (Flammula) sapineus** Fr. On the ground among burnt ling, Norland Moor Edge, Sep. 1891.
- ***Agaricus (Tubaria) inquilinus** Fr. Crimsworth Dean, Oct. 1891 (J. Needham) ; Ovenden, Oct. 1891 (G. L. Lister).
- Agaricus (Stropharia) æruginosus** Curt. Hebden Bridge, small form in pasture ; Ovenden ; Elland ; North Dean Wood, fine typical form.
- Agaricus (Stropharia) semiglobatus** Batsch. Common in all our pastures.
- Agaricus (Hypholoma) sublateritius** Fr. Luddenden Dean ; Hebden Bridge.
- Agaricus (Hypholoma) epixanthus** Fr. Midgehole Wood, Hebden Bridge, Aug. 1891.
- Agaricus (Hypholoma) candolleanus** Fr. North Dean Wood, Nov. 1891 (T. Aspin).
- Agaricus (Psathyra) spadiceo-griseus** Schæff. On dead wood, Elland Park Wood, Aug. 1891.
- Agaricus (Panæolus) separatus** Linn. Common on dung in fields.
- Agaricus (Panæolus) fimiputris** Bull. On heap of dung, Norland, Aug. 1891.
- Agaricus (Panæolus) campanulatus** Linn. On dung in pasture, Hebden Bridge (J. Needham).
- Agaricus (Psathyrella) atomatus** Fr. In pasture, Hebden Bridge (J. Needham).
- Agaricus (Psathyrella) disseminatus** Pers. On stump, Ovenden, Sep. 1891 (G. L. Lister).
- Coprinus comatus** Fr. Plentiful in three or four places round Halifax, but few people seem to care for it here, though this fungus makes a very dainty dish when properly cooked.

- Coprinus atramentarius** Fr. Norland Clough; Ovenden, Aug. 1891.
- ***Coprinus similis** B. & Br. On dead tree trunk, Norland Clough, Aug. 26th, 1891.
- Coprinus fimetarius** Fr. On dung, Ovenden, Nov. 1891.
- Coprinus radiatus** Fr. On horse dung, Elland, Sep. 1891.
- Coprinus ephemerus** Fr. On dung, Cragg Vale, Oct. 1891.
- Coprinus plicatus** Fr. Elland Park Wood, Aug. 1891.
- Cortinarius (Myxacium) collinatus** Fr. North Dean Wood, Sep. 1891.
- ***Cortinarius (Inoloma) violaceus** Fr. Ovenden, Nov. 1891 (G. L. Lister).
- ***Cortinarius (Telamonia) torvus** Fr. In mixed wood, Hebden Bridge, Sep. 1891 (J. Needham).
- Hygrophorus (Limacium) eburneus** Fr. Pasture, Greetland, Sep. 1891.
- ***Hygrophorus (Limacium) pudorinus**. North Dean Wood, Sep. 1891.
- Hygrophorus (Camarophyllus) pratensis** Fr. Norland; Mixenden; Hebden Bridge.
- Hygrophorus (Camarophyllus) virgineus** Fr. Ovenden; Hebden Bridge; Southowram.
- Hygrophorus (Camarophyllus) niveus** Fr. Norland Clough; Hebden Bridge.
- Hygrophorus (Hygrocybe) lætus** Fr. Crimsworth Dean, Oct. 1891 (J. Needham).
- Hygrophorus (Hygrocybe) coccineus** Fr. Mixenden, Oct. 1891.
- Hygrophorus (Hygrocybe) miniatus** Fr. Norland Clough; Mixenden; Hebden Bridge; Oct. 1891.
- Hygrophorus (Hygrocybe) conicus** Fr. Luddenden Dean; Hebden Bridge; Oct. 1891.
- Hygrophorus (Hygrocybe) psittacinus** Fr. Ovenden; Hebden Bridge; Elland.
- Hygrophorus (Hygrocybe) unguinosus** Fr. Norland Clough, Oct. 1891.
- ***Hygrophorus (Hygrocybe) nitratus** Fr. Small form, pasture, Halifax, Sep. 1889.
- Lactarius turpis** Fr. Norland Clough; North Dean Wood; Sep. 1891.

- Lactarius insulsus** Fr. Luddenden Dean, Oct. 1891 (G. L. Lister).
- Lactarius blennius** Fr. Norland Clough; Hebden Bridge.
- Lactarius trivialis** Fr. Ovenden, Oct. 1891 (G. L. Lister).
- Lactarius quietus** Fr. Elland Park Wood; Ovenden; Sep. 1891.
- Lactarius rufus** Fr. North Dean Wood, Sep. 1891.
- Lactarius glyciosmus** Fr. Hebden Bridge (J. Needham).
- Lactarius mitissimus** Fr. Halifax, Aug. 1891.
- Lactarius subdulcis** Fr. Elland Park Wood.
- ***Lactarius minimus** Smith. Pasture, Hebden Bridge, Oct. 1891 (J. Needham).
- Russula nigricans** Fr. Ovenden; North Dean Wood.
- Russula sanguinea** Fr. Luddenden Dean, Oct. 1889.
- Russula depallens** Fr. North Dean Wood, Sep. 1891.
- Russula rubra** Fr. Ovenden (G. L. Lister); North Dean Wood; Sep. 1891.
- Russula cyanoxantha** Fr. Norland Clough, Oct. 1891.
- Russula heterophylla** Fr. Hebden Bridge; North Dean Wood; Sep. 1890.
- Russula emetica** Fr. Norland, Aug. 1891.
- Russula ochroleuca** Fr. North Dean Wood, Sep. 1891.
- Russula granulosa** Fr. North Dean Wood, Oct. 1891.
- Russula fragilis** Fr. Ovenden, Oct. 1891.
- Russula integra** Fr. Greetland; Elland; Hebden Bridge; Sep. and Oct. 1891.
- Russula alutacea** Fr. Elland Park Wood, Aug. 1891.
- Cantharellus cibarius** Fr. Hebden Bridge, Sep. 1891.
- Cantharellus infundibuliformis** Fr. Hebden Bridge, Oct. 1891 (J. Needham).
- ***Marasmius praiosmus** Pers. On beech leaf-mould, Midgehole Wood, Hebden Bridge, Oct. 1891 (J. Needham).
- Marasmius androsaceus** Fr. On leaves, North Dean Wood, Sep. 1891.
- Panus stypticus** Fr. On decaying oak, Crimsworth Dean, Oct. 1891 (J. Needham).

POLYPOREI.

- ***Boletus varicolor** B. & Br. Crimsworth Dean, Aug. 1891.
- Boletus edulis** Bull. Luddenden Dean, Sep. 1889.

- Boletus erythropus** Pers. Luddenden Dean, Aug. 1890
(G. L. Lister).
- Boletus felleus** Bull. Luddenden Dean, Sep. 1889 (G. L. Lister).
- Fistulina hepatica** Fr. On oak tree, North Dean Wood, Sep. 1890 (J. Sutcliffe, Huddersfield).
- Polyporus squamosus** Fr. Ovenden; Cragg Vale, Hebden Bridge.
- Polyporus sulphureus** Fr. On stump, Hollins, Warley, Oct. 1890.
- Polyporus fumosus** Fr. North Dean Wood, Nov. 1890.
- Polyporus adustus** Fr. On old stump, Ovenden, Oct. 1890
(G. L. Lister).
- Polyporus annosus** Fr. Luddenden Dean; Ovenden.
- Polyporus radiatus** Fr. Hebden Bridge, Sep. 1891 (J. Needham).
- Polyporus abietinus** Fr. Fir wood, Hebden Bridge, Sep. 1891
(J. Needham).
- Polyporus sanguinolentus** Fr. Norland Clough, Sep. 1890.
- ***Polyporus blepharistoma** B. & Br. On leaf mould, Pecket Wood, Hebden Bridge, Sep. 1891 (J. Needham).
- Trametes mollis** Fr. Inside piece of oak bark, Elland Park Wood, May 1892.

HYDNEI.

- Hydnum repandum** Linn. Hebden Bridge, Sep. 1891
(J. Needham).

THELEPHOREI.

- Stereum purpureum** Pers. On prostrate trunks, North Dean Wood, Nov. 1890; Hebden Bridge, Oct. 1891.
- Stereum sanguinolentum** Fr. Hebden Bridge, Oct. 1891.
- Corticium sanguineum** Fr. North Dean Wood, Oct. 1891; Hebden Bridge, April 1892.
- Corticium sambuci** Fr. On elder, Elland Park Wood, March 1892.

CLAVARIEI.

- Clavaria muscoides** Linn. Pasture near Pecket Wood, Hebden Bridge, Nov. 1891 (J. Needham).
- Clavaria cinerea** Bull. Pecket Wood, Aug. 1891.
- Clavaria cristata** Pers. Elland Park Wood, Aug. 1891.
- Clavaria rugosa** Bull. Pecket Wood, Hebden Bridge, Sep. 1891.
- Clavaria inæqualis** Fl. Dan. Woods and fields, common; Hebden Bridge; Norland; etc.

Clavaria argillacea Fr. North Dean Wood, Oct. 1891.

Calocera viscosa Fr. Frequent where firs are. Occasionally met with on other kinds of wood.

TREMELLINEI.

Tremella fimbriata Pers. On cut surface of stump, Ovenden, Sep. 1891; Hebden Bridge, Sep. 1891.

Tremella foliacea Pers. Hebden Bridge, Oct. 1891.

Tremella lutescens Pers. Shibden, Nov. 1890 (G. L. Lister).

Hirneola auricula-judæ Berk. On elder branches, Elland Park Wood, Sep. 1891.

Dacrymyces deliquescens Dub. On dead wood, Elland Park Wood, Oct. 1891.

Dacrymyces stillatus Nees. On worked wood and decorticated logs. Common.

GASTROMYCETES.

SCLERODERMEÆ.

Scleroderma vulgare Fr. Common in woods.

NIDULARIÆ.

Sphærobolus stellatus Tode. Common on decaying elder, Elland Park Wood, Oct. 1891.

LYCOPERDEÆ.

Lycoperdon pyriforme Schæff. Hollins, Warley, and Luddenden Dean, Nov. 1891.

PHALLOIDEÆ.

Ithyphallus impudicus (L.) Fischer. Elland Park Wood, Sep. 1891.

Mutinus caninus (Huds.) Fr. Ovenden, Sep. 1891 (G. L. Lister); Hebden Bridge, Oct. 1891 (J. Needham).

Halifax, July 1892.

NOTE—FISHES.

Holibut at Redcar.—An unusually large specimen of the Holibut (*Hippoglossus vulgaris*) was captured on the 17th inst., by a Hartlepool steam-line fishing-boat, and afterwards purchased by a Redcar fishmonger. The dimensions of the fish were: length, 6 ft. 10 in.; width, 3 ft. 3 in.; extreme girth, 7 ft. 1½ in.; thickness, 5½ in.; weight, 304 pounds: the head alone weighed 48 pounds.—T. H. NELSON, Sandringham House, Redcar, August 22nd, 1892.

DAUBENTON'S BAT IN NORTHUMBERLAND
AND ON THE BORDERS,
WITH SOME REMARKS UPON THE OTHER SPECIES
RECORDED FOR THE DISTRICT.

GEORGE BOLAM,
Berwick-on-Tweed.

So little attention has been paid to the Bats of the extreme north of England, that the result of a careful search through most of the periodicals bearing upon the Natural History of the district is meagre almost beyond belief. Indeed, with the exception of an occasional remark upon 'an early bat,' or one seen abroad during the day-time, almost no allusion is made to the family, and little, if anything, appears to have been done towards identifying the species of the individuals met with. Selby, in his 'Fauna of Twizell,' includes three bats (*Plecotus auritus*, *Vespertilio pipistrellus*, and *V. emarginatus*—the latter only in one edition, and marked as doubtful); and the only other attempt at working out the Vespertilionidæ in the northern counties which I have been able to find, is contained in the admirable 'Catalogue of the Mammalia of Northumberland and Durham,' by Messrs. Mennell and Perkins, published in the 'Transactions of the Tyneside Naturalists' Field Club,' vol. vi., pp. 111-177. In that 'Catalogue' seven species are included, viz., *P. auritus*, *V. nattereri*, *V. daubentonii*, *V. emarginatus*, *V. mystacinus*, *V. serotinus*, and *V. pipistrellus*; but since its publication in 1863-64 much additional knowledge has been gained with respect to these obscure creatures, and the *V. daubentonii* and *V. emarginatus*, there alluded to, are now, I believe, generally referred to one species only, while as, with the exception of the two common species (*P. auritus* and *V. pipistrellus*), the whole of the above rest upon the capture of single individuals, the correct identification of some of which may, perhaps, be regarded as not altogether satisfactory or conclusive. This doubt is moreover strengthened by the discovery that the specimen included in the catalogue as *V. serotinus*, and which is fortunately still preserved in the Newcastle Museum, is in reality a Noctule (*V. noctula*), as pointed out by Mr. W. Denison Roebuck in 'The Naturalist,' 1884, p. 202, and referred to by Mr. T. Southwell in 'The Zoologist,' 1887, vol. xi, p. 234.

Of the species referred to by Messrs. Mennell and Perkins, three only had been recorded for Northumberland, the others having been obtained upon the Durham side of the Tyne; and,

so far as the northmost county is concerned, I cannot find that this list has been increased, either as to the number of individuals or species. The Long-eared Bat and the Pipistrelle are set down as 'common and generally distributed in both counties,' while the third Northumbrian species is included as follows:—

'*V. Daubentonii* Leis. β . Notch-eared Bat.

'*V. emarginatus* of many English authors.

'To this variety belong most of the specimens of the Notch-eared Bat hitherto recorded in Great Britain under the name of *V. emarginatus*. The claim of that species to be considered a native of these islands is somewhat doubtful. (A. N. H. (1854) xiii.)

'A single specimen of the Notch-eared Bat was caught at Long Benton, two years ago, and was taken to Mr. T. J. Bold, by whom it was carefully examined and compared with the figures and descriptions of Bell and McGillivray. It was, unfortunately, not preserved. Its ears were very large, their length considerably exceeding that of the head.'

The knowledge of our local species being thus so extremely scanty, any information regarding their distribution is valuable, and it is much to be desired that any bats that may be captured should be taken care of, and submitted to a competent authority for identification. I had not myself given any special attention to the subject, but for some years past whenever a specimen was procured (more often by accident than design), it was preserved and carefully put aside with a note of its capture, and a short time ago the collection, numbering only half a dozen individuals, was forwarded to Mr. William Denison Roebuck, who had kindly volunteered to name them for me. The result is so far satisfactory that, although the number of species may not have been added to, *V. daubentonii* may be recorded as being, at any rate, far from rare in the north-eastern parts of Northumberland, and on the borders. Out of the six specimens, three are pronounced to belong to this species, the remainder being only the common Pipistrelle. Of the former, one was knocked down by my fishing-rod near the bridge over the Till, at Weetwood, about the year 1875; the two others were kept as specimens out of a lot of fifteen, which were brought home by my young brothers from a birds-nesting expedition, in the beginning of June 1880.

At Weetwood, which is in the parish of Chatton, in North Northumberland, *V. daubentonii* must be fairly common, for I distinctly remember that most of the several bats which were killed or captured there during the 'seventies' were similar to the

one which was preserved, and at the time this specimen was put down as 'probably the common species.' Bats are very numerous there, and I suspect that those which hawk low over the river at dusk, five or six of them often following one another close together, will be found to be of this species, of which Bell (Brit. Quad.) says, 'It flies rapidly and near the ground or over stagnant waters.' I have, when fishing in the evenings, on the wooded banks of the Till, frequently knocked them into the water with my rod, and on more than one occasion have seen them hooked with the artificial fly. I do not remember, however, ever to have 'landed' one in this way, the reason being apparently that they were caught, not by the mouth, but by the hook coming in contact with the wings, from the delicate membrane of which it probably tore itself before the captive could be brought to hand. It must be mentioned, however, that the Pipistrelle has also a partiality for similar situations, and I have sometimes taken it also by the help of my fishing-rod, as it skimmed past me over the surface of a quiet pool.

The fifteen above referred to were found in a large hole, in an old tree, on the banks of the Tweed, at New Water Haugh, near Berwick; and of these, eight were adults, the remainder being 'unfledged' young ones. The hole had a very peculiar and disagreeable odour, and was 'swarming with bats,' there being two or three times as many as were brought home. The two which were preserved, were young ones, and died during the few days they remained in my possession; the others were all taken back to the tree and set at liberty again. In confinement they exhibited little or no signs of shyness, and eat flies greedily when offered to them between the fingers, but, unlike the Pipistrelles which I have sometimes kept alive, and which always seemed to prefer pieces of raw flesh to insects, the Daubentons did not appear to care for such food.

In addition to those already mentioned, I have, on at least two other occasions, taken bats in the district, which, although they were not preserved, I have no doubt, from a reference to my note-books, were really *V. daubentonii*. The first of these was on 12th June, 1883, when after a night's mothing at Paxton House, near Berwick, one was found at rest upon the face of the policy wall, at the side of the Tweed; the other was picked up in a benumbed condition, close to the water's edge, on the banks of the Whitadder, near Edrington Castle, on 3rd February, 1888. Both of these occurrences are in Berwickshire.

The Long-Eared Bat (*Plecotus auritus*) appears to be very generally distributed throughout the district, though it can hardly be called common, except perhaps in a few localities. Along the rocky

coast of Berwickshire, it is more numerous than anywhere else that I am acquainted with, and hawking along the top of the cliffs, it will often carry off a moth from a flower head, under the very nose of the lepidopterist. Mr. William Shaw, who collected moths a good deal upon the sea-banks in the neighbourhood of Eyemouth, informs me that he has occasionally been robbed of a prize in this way, 'by this bold marauder,' and that, 'though he had often succeeded in netting the short-eared species, the long-eared bat was always too quick upon the wing for him.' Specimens from the coast have always appeared to be considerably larger than the few I have met with in inland stations. An individual, captured alive, at Paxton House, on 29th May, 1881, and which appeared to be adult, was noted to be 'smaller in the body than a common bat,' but it was again restored to liberty, and no measurements were taken. While one or two, which were flying high, round the trees at Abbey St. Bathan's, just before dawn, on 29th June, 1885, were remarked as being apparently very small in comparison with the ordinary species.

The habit bats have of congregating together in large assemblies during winter is well known, sometimes apparently more than one species being found in the same retreat. In the Proceedings of the Berwickshire Naturalists' Club it is recorded that, in 1888, upwards of four hundred were counted, one evening during summer, as they emerged from a hole in the wall of a house; and a cutting from the 'Kelso Mail' of 11th January of the same year, which is before me, states that:—'A few days ago, some men were cutting up a large branch of a tree, near Bonchester Bridge, in Rule Water. While one of the logs, about a foot in length, and the same in diameter, was being sawn through, it gave signs of being hollow, and the appearance of blood, showed that some living creature was contained in the cavity. It was accordingly split open, when a colony of bats was discovered, enjoying their winter's sleep, and packed so tightly together, that it was not without some difficulty that they could be separated. As they were set free, they were counted, and were found to number no fewer than one hundred and forty-two, besides a few which had been killed by the saw.' It is a pity, however, that in neither of these cases, does any attempt seem to have been made to have the species identified.

NOTE—MAMMALIA.

Whiskered Bat at Goathland.—Whilst at Goathland on August 8th, I obtained an example of the Whiskered Bat (*Vespertilio mystacinus*). It appeared to fly much more leisurely than *V. pipistrellus*, and seemed to exhibit less fear, and although I struck at it several times with a stick it returned again and again. So measured was its flight that I fetched an entomological net and secured it at the second stroke. I have made many attempts to net *V. pipistrellus* but hitherto have always failed.—EDGAR R. WAITE, Leeds.

YORKSHIRE GALLS.

S. L. MOSLEY, F.E.S.,

Beaumont Park Museum, Huddersfield; Author of 'British Birds, Nests, and Eggs,' etc.

I AM working up the subject of Galls, particularly those of Yorkshire, and as there must be a large number still unknown to me, I append below a list of such as I have been able to discover, in the hope that it may induce persons who come across these curious vegetable excrescences to send me anything not mentioned in this list. I have included both galls and pseudo-galls—that is, those which completely enclose the inmates and those which only partly do so. I have appended an asterisk to such species as I have reared the perfect insect of, and I shall be pleased to correspond with Yorkshire or other naturalists interested in the subject.

On *Acer campestre*.

Leaf studded over on face with red pimples. Caused by a mite (*Phytoptus aceris*). Very common.

On *Alnus glutinosa*.

Brown warts in axils formed by midrib and side veins. Caused by a mite (*Phytoptus*). Generally common. This *Phytoptus* has not been named, and I purpose calling it *P. axillaris*.

On *Betula alba*.

*Leaf-buds much swollen, never expand, but develop into clusters of small twigs known as 'witch knots.' Caused by a mite (*Phytoptus betulæ*). Generally common.

Small swelling on leaf, showing on both sides. I am unable to find any description of this gall, which I find commonly in Butternab Wood, Huddersfield. Each gall contains a larva of a *Cecidomyia*?

On *Centaurea nigra*.

*Flower-head hard and woody, with several cells, each containing a larva of a two-winged fly (*Urophora solstitialis*). Whitley, near Huddersfield. Mr. Fitch very kindly named the flies for me.

On *Corylus avellana*.

*Leaf-buds much swollen, and never expand. Caused by a mite (*Phytoptus coryli*). Common.

On *Cratægus oxyacantha*.

*Rosettes of leaves at end of shoots. Caused by a midge (*Cecidomyia cratægi*). Very common.

On Fraxinus excelsior.

Leaflets folded and thick, like a pea-pod. Caused by a midge (*Cecidomyia acrophila*). Wakefield, Huddersfield, Anston.
Midrib thickened. Caused by a midge (*Diplosis betularia*). Anston.

On Galium verum.

Galls on stems and flower-stalks. Caused by a midge (*Cecidomyia galii*). Thornhill.

On Glechoma hederacea.

*Small hairy pyramidal galls on top side of leaf, falls off and leaves a hole. Caused by a midge (*Cecidomyia bursaria*). Common.

On Hypericum humifusum.

Terminal leaves swollen. Caused by a midge (*Cecidomyia serotina*). Huddersfield.

On Lamium galeobdolon.

Pouch-like hairy galls on young shoots. Caused by a midge (*Cecidomyia galeobdolonis*). Mr. Soppitt has brought me this from Bradford.

On Polygonum persicaria.

*Leaf edges thick and rolled under. Caused by a midge (*Cecidomyia persicariae*). Kirkheaton.

On Pinus abietis (Spruce).

*Cone-like galls on young shoots. Caused by an aphid (*Chermes abietis*). Generally common.

On Populus.

*Pea-like red galls on young shoots, petiole, or midrib. Caused by an aphid (*Pemphigus bursarius*). Common.

On Pyrus malus (Apple).

*Bark swollen into irregular knobs. Caused by an aphid called American Blight (*Schizoneura lanigera*). Common. Not really a gall, being solid, and the insects living outside.
Leaf edge thick, red, and folded under. Caused by an aphid (*Aphis mali*).

On Quercus robur. (All produced by insects belonging to *Cynipidæ*).

*Pea-shaped, one-celled galls on roots (*Biorhiza aptera*). Sent me from Bradford by Mr. Soppitt.

*Large woody, many-celled excrescences on exposed roots (*Aphilothrix radiceis*). Generally common.

Small silky, button-shaped galls, with centre depressed, on under side of leaf (*Neuroterus numismatis*). Generally common.

*Small flat button galls, with centre raised, under the leaves (*Neuroterus lenticularis*). Abundant.

*Cherry-like galls under the leaf (*Dryophanta scutellaris*). Very common.

Galls, like red currants, on catkins or leaf (*Spathogaster baccarum*). Wakefield.

*Edge of leaf contorted into one or more green galls size of small pea (*Andricus curvator*). Common.

*Kidney-shaped galls size of small pea, one-cell and *thick* walls, on ribs under leaf (*Dryophanta devisa*). Huddersfield, Wakefield (Parkin).

Artichoke-shaped galls in axil of leaves (*Aphithrix gemmæ*). Common.

*Large, brown, soft, many-celled galls, end of twigs (*Andricus terminalis*). Very common.

*Hard, round, marble galls on twigs (*Cynips kollari*). Very common.

*Red berry galls, like sealing wax, in cracks of bark (*Trigonaspis megaloptera*). Huddersfield.

On *Ribes nigra* (Black Currant).

*Buds swollen and never expand. Caused by a mite (*Phytoptus ribis*). Very common.

On *Rosa*.

*Red or green mossy, many-celled bosses on twigs. Caused by a Cynips (*Rhodites rosæ*). Very common.

*Hard, pea-like galls under leaf. Caused by a Cynips (*Rhodites eglantariæ*). Common.

Leaflets folded into a pod. Caused by a midge (*Cecidomyia rosariæ*). Brockholes.

On *Salix*.

*Red or green bean-shaped galls on blade of leaf of long-leaved willows, showing on *both* sides. Caused by a Sawfly (*Nematus gallicola*). Abundant.

*Green, angular, under leaf, attached to ribs, *not* showing on face of leaf. Caused by a Sawfly (*Nematus salicis-cinereæ*). Found near Huddersfield. No doubt common.

Pale, pimple-shaped galls on sallow leaf. Caused by a mite (*Phytoptus salicis*). Huddersfield.

On *Spiræa ulmaria*.

Small pyramidal gall on leaf which is sometimes quite covered. Caused by a midge (*Cecidomyia ulmaricæ*). Common.

On *Taxus baccata*.

Leaves at end of shoots formed into dense rosette. Caused by a midge (*Cecidomyia taxi*). Huddersfield, Bretton.

*Terminal buds swell and never expand. Caused by a mite (*Phytoptus taxi*). Huddersfield.

On *Tilia europæa*.

Green or red berry gall on twig or petiole. Caused by *Scira tilicola*?

Claw or nail-shaped galls on face of leaf. Caused by a mite (*Phytoptus tiliæ*). Rotherham.

On *Trifolium repens* and *T. pratense*.

Leaflets podded and red. Caused by a midge (*Cecidomyia trifolii*). Brockholes.

On *Triticum repens*.

*Shuttle-shaped, imbricate galls in leaf-axil. Caused by a dipteron (*Scatopse notata*). This gall was first given me by Mr. J. W. Carter, who found it near Bradford. Since then I have found it commonly near Huddersfield. The fly has been named for me by the kindness of Dr. Meade, who adds, 'I do not know that anything has been observed before of its life-history.'

On *Ulmus campestris*.

*Leaf thick, pale, and curled down. Caused by an aphid (*Schizoneura ulmi*). Common.

On *Urtica dioica*.

*Base of leaf and petiole swollen. Caused by a midge (*Cecidomyia urticæ*). Common.

On *Veronica chamædrys*.

*Hairy knobs of leaves at ends of shoots. Caused by a midge (*Cecidomyia veronicæ*). Common.

The above list must, necessarily, be far from complete, but the following list of plants on which additional galls or pseudo-galls have been found, may lead to the detection or recording of additional species.

Acer campestre. Leaf.

Achillea millefolium. Leaf-axil, and root-stock.

Achillea ptarmica. Flower.

Alnus glutinosa. Leaf.

Ammophila arenaria. Stem.

Astragalus hypoglottis. Leaflet podded.

Barbarea vulgaris. Leaflet thick.

Betula alba. Flower.

- Brassica oleracea*. Root, seed-pod.
Buxus sempervirens. Leaf.
Campanula rotundifolia. Capsule.
Cardamine pratensis and *C. amara*. Leaf-bud and calyx.
Carduus arvensis. Stem.
Carex pilosa. Leaf, base swollen.
Centaurea scabiosa. Mid-rib.
Cerastium vulgatum. Leaf.
Chærophyllum aromaticum. Leaf folded.
Cornus sanguinea. Leaf.
Daucus carota. Seed.
Epilobium angustifolium. Flower-bud.
Euphorbia. Terminal tuft.
Fagus sylvatica. Three species on leaf.
Festuca ovina. Stem.
Fraxinus excelsior. Flower and leaf.
Genista germanica. Bud.
Glechoma hederacea. Stem.
Heracleum sphondylium. Leaflet folded, two species.
Helianthemum vulgatum. Terminal tuft.
Hieracium pilosella. Leaf-margin.
Hieracium umbellatum. Ovary.
Inula crithmoides. Receptacle.
Juniperus. Twigs.
Lathyrus pratensis and *L. sylvestris*. Leaf thick.
Linaria vulgaris. Terminal tuft.
Lotus corniculatus. Leaflet thick, also flower and pod.
Medicago falcata. Flower and pod.
Medicago sativa. Leaflet podded.
Nasturtium. Leaflet thick.
Onobrychis sativa. Leaflet podded.
Papaver dubium and *P. rhæas*. Capsule.
Pastinaca sativa. Seed.
Pimpenella saxifraga. Seed.
Pinus sylvestris. Leaf, also resinous excrescence on branch.
Plantago lanceolata.
Plantago maritima. Flower-stem.
Polygonum avicularia.
Populus species. Twigs swollen ; petiole twisted.
Populus tremula. Twigs, also leaf-stem.
Prunus spinosa. Mid-rib.
Pteris aquilina. Pinnæ thick.
Pyrus communis. Leaf, several species.

Quercus. A large number of galls are found on the oaks, some being general and others confined to special species or varieties. They should be looked for on root, bark, buds, leaves, and flowers, and anything different from those enumerated above noted.

Ranunculus repens. Radiated leaf, thick at base.

Rhododendron. Terminal tuft.

Rosa spinosissima. Stem.

Rubus fruticosus and *R. cæsius.* Stem swollen; leaflet podded.

Salix. Many species occur on the various willows, chiefly on the leaves.

Sarothamnus scoparius.

Senecio aquaticus and *S. jacobæa.* Flower-head.

Sinapis arvensis. Root, two species.

Sisymbrium. Leaflet thick.

Thymus serpyllum. Flower.

Tilia europæa. Leaf podded.

Ulex europæa. Flower-bud.

Ulmus campestris. Twigs and leaf.

Vaccinium vitis-idaea.

Veronica beccabunga.

Veronica anagallis. Capsule.

Vicia cracca. Flower and pod.

Viola canina.

Vitis. Leaf and root.

No doubt some galls already known have escaped my notice, and probably many new ones await discovery in Britain.

July 12th, 1892.

NOTES—LEPIDOPTERA.

Colias edusa at St. Anne's-on-Sea.—My children have just brought in a perfectly fresh male specimen of *Colias edusa*, which they netted on the sand-hills here this afternoon. Mr. T. Baxter, the well-known local lepidopterist, tells me several were seen in the early summer, so evidently the spring immigration extended well over England, and no doubt their progeny will be in full evidence this autumn.—GEO. T. PORRITT, St. Anne's-on-Sea, August 19th, 1892.

Colias edusa at Aberford, Yorkshire.—On Sunday, August 21st, I captured near Aberford, Yorkshire, two splendid male examples of *Colias edusa*. Both specimens were beaten from a whitethorn hedge.—EDWARD SELF, Shipley.

NOTES AND NEWS.

The Yorkshire Naturalists' Union's Fungus Foray, which will be held in the neighbourhood of Castle Howard and Malton, on Sept. 14th and 15th, promises to be a most successful affair. The Malton members are working hard, and not only will such eminent mycologists as Dr. M. C. Cooke and Mr. Geo. Masee take part in it, but the Rev. W. Fowler, M.A., Messrs. H. T. Soppitt, Charles Crossland, A. Clarke, and others are specially engaged in arranging the various investigations.

SCHOOL NATURAL HISTORY AT YORK.

York School Natural History, Literary, and Polytechnic Society. Fifty-seventh and Fifty-eighth Annual Reports: January 1891, and January 1892.

The large York Friends' School has always been to the front in the matter of endeavouring to excite and cultivate the love of natural history pursuits in the minds of its pupils. The Society named above consists wholly, in its membership, of boys and masters actually in the school, with some non-resident former scholars and a few honorary nominations. Wisely, however, the scope of the Society extends beyond natural history proper, and embraces sections devoted to meteorology, astronomy, art, photography, machine construction, and a very vigorous one whose special feature is the reading and criticism of original essays. There is also a debating society among the elder scholars, and the results of two of the debates may be cited here:—'That museums and art galleries should be open on Sundays,' ayes 20, noes 6; and 'That field sports (shooting, hunting, and fishing) are desirable as a mode of recreation,' noes 19, against ayes 11.

Our concern is, of course, specially with the work done in the various departments of natural history. We note with pleasure that the reports are critical, not wholly laudatory, as is too often the case, and that the attention of the boys to the need for thoughtful and connected observation along with their collecting is continually insisted on. It is remarked of one of the natural history diaries, which took the third place in an inter-school competition:—'Its seventy-six pages dealt entirely with birds. The judges speak of "its exquisite pen-and-ink reproductions," while regretting that these were copies only, being therefore more of mere adornment than evidence of observation.' Further on it is observed:—'Of all the diaries it may be said that there is too much random and disconnected observation and too little comparison of one entry with another, and that bare records of "finds" are in too large a proportion to *details*.' Much of Field-Club work would benefit by similar reminders, and the study of an excellent short paper of suggestions given in the January 1891 report.

Five collections of birds' eggs were made in 1890, but none in 1891: in both years many ornithological records found place in various note-books. It is stated that seven kinds of birds nested on the school premises (Bootham, York) in 1890; eight in 1891. Among these were Blue Tits, Tree Sparrows, Missel Thrushes, and (their fifteenth year, 1891) Wood Pigeons. It is noticed that 'on May-day (1891) was found, at Hob Moor, a "literary" Cole Tit's nest, the outside of which was all covered with bits of newspaper.'

Lists of the less common insects obtained by the entomologists are given each year. Among these *Attagenus pello*, met with at the Marygate Baths, is cited as a first record for York; *Mezium sulcatum* is also named, from the school itself and another locality in the city.

There are reports for Conchology, General Zoology, and Microscopy. A Vivarium is maintained in the Natural History room. Meteorology is well represented; the success of this department is evidently owing in great part to the care and enthusiasm of Mr. J. E. Clark, B.A. The remarkable *wind-rush* of March 8th, 1890, which passed through Bishopthorpe, Fulford, and Heslington, doing immense damage, has special mention. February 1891, is reported as, at York, an absolutely rainless month.

Passing some sections by, we must notice that devoted to Botany as having engaged a goodly number of workers, with excellent results. During the year 1890 alone, one pupil collected exactly 600 British species of plants; another in 1891 collected 400 species. The following notable botanical 'finds,' both made by Mr. B. B. LeTall, M.A., one of the masters of the school, marked the year 1890; *Lycopodium annotinum* L., 'within ten miles of York' (the locality is not precisely given, but we know it to be in the East Riding)—an entirely new record for the whole county, and one extending the southern British limit of this Club-moss; and *Hypochaeris glabra* L., near Allerthorpe Common, not only a first record for the East Riding, but also (see 'North Yorkshire' and 'Flora of West Yorkshire') the first unquestionable record for Yorkshire itself. Other good finds were *Caucalis daucoides* L., near Acomb, *Serratula tinctoria* L., in Skelton Wood, Oak Fern and Beech Fern at Buttercrambe Moor Wood, and *Viola hirta* L., in the unlikely home of a wood near Tilmire. *Asperula odorata* L., is named as 'still growing at Hob Moor'; the locality is not mentioned in 'Flora of West Yorkshire,' nor any other nearer than Thorp Arch. Wood Anemones with *blue* sepals, reported from Copmanthorpe in 1881, were again found there in 1891.

Much attention is paid to Phenology, especially in connection with wild and garden flowers, and for each year a good series of dates is given. *Caltha palustris* L., flowered on Tilmire from Oct. 11th to Dec. 13th, in 1890. *Ranunculus sceleratus* L. (imperfect), was in bloom at Hob Moor on Feb. 10th, 1891. It is stated that comparing 1891 with the previous fourteen years, spring flowers were on an average a fortnight behind their usual time—with three exceptions.

We have read these reports with pleasure, and heartily congratulate masters and scholars on so well maintaining and extending the honourable traditions of the School.

W.W.
Naturalist,

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BIRDS, 1889 (Continued).

THE present instalment has been compiled and edited by

WM. DENISON ROEBUCK, F.L.S.,

and is in continuation from pp. 120-136 of the current volume.

- P. M. C. K[ERMODE]. Isle of Man.
Phenological Observations [giving Manx dates for *Cuculus*, *Cotile*, *Cypselus*, and *Crex*]. Yn Lioar Manninagh, No. 2, April 1889, i. 64-65.
- P. M. C. KERMODE [and 4 others]. Isle of Man.
Preservation of Wild Birds [in the Isle of Man, being the Report of a Committee appointed to consider whether wild birds in the Isle are decreasing in numbers, and, if so, whether any and what steps should be taken to prevent or check such decrease; with proposals for legislative enactments]. Yn Lioar Manninagh, No. 3, July 1889, i. 41-42 of Back Transactions.
- P. M. C. KERMODE. Isle of Man.
Reports of Sections, 1888 . . . Zoological Section. Report read . . . March 28, 1889 [giving notes of *Dendrocopus major*, *Chrysomitris spinus*, *Certhia*, *Syrrhaptēs*, heavy *Scolopax rusticola*, *Totanus canescens*, *Colymbus septentrionalis*, *Squatarola*, and *Pyrrhula*, with dates and particulars]. Yn Lioar Manninagh, No. 3, July 1889, i. 70-73.
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Address by the Retiring President . . . Delivered . . . March 11, 1886 [giving titles of papers dealing with the Manx Fauna]. Back Trans. I. of Man N.H.S., i. 72; publ. with Yn Lioar Manninagh, No. 4, Oct. 1889.
- P. M. C. K[ERMODE]. Isle of Man.
Phenological Observations [made in the Isle of Man; dates given for *Turdus iliacus* and *Corvus frugilegus*; and notes on the Manx Bird-Preservation Acts]. Yn Lioar Manninagh, No. 4, Oct. 1889, i. 103-104.
- P. M. C. KERMODE. Isle of Man.
Manx Natural History and Antiquarian Society [note on contents of crop of *Syrrhaptēs paradoxus*, shot at Ramsey, in January, 1889; numerous plants and seeds noted]. Research, Nov. 1889, p. 115.
- BERTRAM KERSHAW. Notts.
Little Bittern [*Ardetta minuta*] in Notts [shot August 21st, close to Trent, between Dunham and Marnham; either young or female]. Field, Aug. 31st, 1889, p. 325.
- E. A. KERSHAW. Lanc. S.
Wood Pigeon [*Columba palumbus*] roosting with Dovecote Pigeons [at Middleton, Lancs.]. Zool., Oct. 1889, p. 395.
- ED. B. H. KERSHAW. Lanc. S.
Domesticated Woodpigeon [(*Columba palumbus*) at Middleton, Lancs.]. Field, Aug. 10th, 1889, p. 232.
- E. P. KNUBLEY. York Mid W.
Nightingale [*Daulias lusciniā*] at Staveley, near Boroughbridge [a pair this year; a pair in 1888 near Knaresborough]. Nat., June 1889, p. 176.

- E. P. KNUBLEY. York N.E.
The Yorkshire Naturalists' Union at Robin Hood's Bay [June 21st, 1889; *Turdus viscivorus*, *T. musicus*, *T. merula*, *Erithacus*, *Sylvia cinerea*, *Phylloscopus trochilus*, *Accentor*, *Troglodytes*, *Motacilla lugubris*, *Anthus pratensis*, *A. obscurus*, *Hirundo*, *Chelidon*, *Passer domesticus*, *Fringilla cœlebs*, *Emberiza miliaria*, *E. citrinella*, *Alauda arvensis*, *Sturnus*, *Pica*, *Corvus monedula*, *C. frugilegus*, *Tinnunculus*, *Columba livia*, *Larus canus*, and *L. argentatus* noted]. *Nat.*, Aug. 1889, p. 229.
- E. P. KNUBLEY. York Mid W.
Wasp-Nest destroyed by Great Tits [(*Parus major*) at Farnham Lodge, near Knaresborough; details and dates given]. *Nat.*, Nov. 1889, p. 333.
- E. P. KNUBLEY. York Mid W.
Nightingales [*Daulias luscinia*] near Knaresborough [two pairs nesting within a short distance]. *Nat.*, Dec. 1889, p. 356.
- E. P. KNUBLEY. York Mid W.
Is the Starling (*Sturnus vulgaris*) **Double-brooded?** [discussed, and Staveley and Boroughbridge experience cited; note also as to feeding on strawberries in dry times]. *Nat.*, Dec. 1889, p. 369.
- T. W. LAMBERT. York S.E.
Sabine's Gull [*Xema sabinii*] at Bridlington [one shot first week in August; was in company with *Rissa* and *Larus argentatus*]. *Field*, Aug. 31st, 1889, p. 325.
- ROBERT LISLE. Cheviotland.
Grouse Prospects and Disease [referring to great mortality among *Lagopus scoticus* all along the south side of the Cheviot Range, and causes suggested, absence of rainfall in spring, etc.]. *Land and Water*, May 21st, 1887, p. 475.
- P. W. LOTEN. York S.E.
Ornithological Notes from Easington, near Spurn [anent arrival or occurrence of *Turdus torquatus*, *Ruticilla tithys*, *Cuculus*, *Totanus glareola*, *Pandion haliaëtus*, and *Muscicapa atricapilla*]. *Nat.*, June 1889, p. 182.
- F. E. L[OTT]. Derbyshire.
Calendar of Nature, 1884 [at Burton-on-Trent; date given for *Turdus musicus* (Bretby)]. 9th Ann. Rep. Burton-on-Trent N.H. and Arch. Soc., for 1884, pub. 1885, p. 23.
- H. A. MACPHERSON, per Howard Saunders. Cumberland.
Isabelline Chat (*Saxicola isabellina*) shot in Cumberland; first occurrence for Britain]. *Proc. Zool. Soc. Lond.*, Dec. 6th, 1887; *Land and Water*, Dec. 17th, 1887, p. 548.
- H. A. MACPHERSON. Cumberland, Westmorland, Furness.
Crossbills [*Loxia curvirostra*] in the Lake Counties [noting visitations in various years]. *Nat.*, Feb. 1889, p. 52.
- H. A. MACPHERSON. Cumberland, Westmorland, Furness.
Sand Grouse [*Syrrhaptes paradoxus*] in the North-West of England [asking for information of Lake District occurrences; and referring to those at Walney, on Solway, and at Bootle and Ravenglass]. *Zool.*, Feb. 1889, p. 72.
- H. A. MACPHERSON. Cumberland.
Wintering of the Ruff [(*Machetes pugnax*) and their occurrence in the Cumberland Salt-marshes annually]. *Nat.*, March 1889, p. 79.
- H. A. MACPHERSON. Cumberland.
Reported Occurrence of Sand Grouse near Carlisle [stating that the flock of 200 reported in newspapers were Golden Plover (*Charadrius pluvialis*)]. March 16th, 1889, p. 367.

- H. A. MACPHERSON. Cumberland, Westmorland.
Ornithological Notes from Cumberland [and Westmorland]; for the latter county *Botaurus stellaris*, *Colymbus arcticus* and *C. septentrionalis* noted; for Cumberland, *Spatula* (nesting), *Squatarola*, *Limosa lapponica*, *Totanus canescens*, *Machetes*, *Tringa subarquata*, *T. minuta*, *T. alpina*, *Vanellus*, *Totanus fuscus*, *Clangula glaucion*, *Fuligula ferina*, *F. cristata*, *F. marila*, *Sylvia cinerea*, *Tringa maculata* Vieillot, *Larus glaucus*, *Oidemia fusca*, *Cygnus bewicki*, *Larus marinus*, *Lanius excubitor*, *Limosa melanura*, *Larus melanocephalus?*, *L. minutus*, *Anser albifrons*, *Colymbus arcticus*, and *Podiceps auritus* noted]. *Zool.*, May 1889, pp. 175-177.
- H. A. MACPHERSON. Cumberland.
Shoveller [*Spatula clypeata*] nesting in Cumberland [giving particulars for 1886, 1887, and 1888 of nesting on the Cumbrian Solway]. *Zool.*, May 1889, p. 187.
- H. A. MACPHERSON. Cumberland.
Sand Grouse [(*Syrrhaptes paradoxus*) appearing on the Solway, May 11th, on a 'return wave']. *Field*, May 18th, 1889, p. 687.
- H. A. MACPHERSON. Cumberland.
The Firecrest [*Regulus ignicapillus*] in Cumberland [in defence of the accuracy of the record, and in reply to J. H. Gurney, Jun.]. *Zool.*, June 1889, p. 228.
- H. A. MACPHERSON. Cumberland.
The Dipper [(*Cinclus aquaticus*) in Cumberland; W. Duckworth's observations on its nidification quoted]. *Field*, June 8th, 1889, p. 801.
- H. A. MACPHERSON. Cumberland.
Long-tailed Duck [*Harelda glacialis*] in Cumberland [gives details of the Renwick example, and particulars as to previous records for the county]. *Field*, June 15th, 1889, p. 865.
- H. A. MACPHERSON. Cumberland.
The Pied Flycatcher [(*Muscicapa atricapilla*), its distribution, nesting, habits, etc., in the Lake District, treated of at length]. *Field*, June 22nd, 1889, p. 885.
- H. A. MACPHERSON. Cumberland, Westmorland.
The Dunlin (*Tringa alpina*) [treating of its nesting haunts on the Pennine Range, and on the mosses and salt marshes of the coast of Cumberland]. *Field*, June 29th, 1889, p. 926.
- H. A. MACPHERSON. Westmorland, Cumberland.
On the former nesting in England of the Osprey, *Pandion haliaetus* [at Whinfield Park, Westmorland, where it was noted by Francis Willughby, in 1676, and by Clarke in 1787; other evidence given, and for Cumberland also]. *Zool.*, July 1889, pp. 256-258.
- H. A. MACPHERSON. Cumberland.
Early arrival of the Scaup Duck [(*Fuligula marila*) on the Solway and near Carlisle; dates given; *F. cristata* also noted]. *Field*, Oct. 12th, 1889, p. 524.
- H. A. MACPHERSON. Furness, Westmorland, Cumberland.
Bonaparte's Gull [*Larus philadelphia*] in the Lake District [inquiring for information as to an example said by Yarrell (3rd ed.) to have been obtained on one of the English Lakes; also as to present whereabouts of the Walney example of the Spotted Eagle (*Aquila clanga*)]. *Field*, Dec. 21st, 1889, p. 888.
- JAMES A. MANN. Durham.
The Great Northern Diver [*Colymbus glacialis*] at Hartlepool [captured by a fishing boat, Feb. 26th, 1889]. *Young Nat.*, Ap. 1889, p. 84.

- JAS. EARDLEY MASON. Linc. N.
Pallas' Sand-Grouse [*Syrrhaptes paradoxus*] near Skegness [three, shot near Ingoldmells, Jan. 1889]. *Nat.*, March 1889, p. 78.
- JAS. EARDLEY MASON. Linc. N.
Black-throated Diver [*Colymbus arcticus*] near Alford, Lincolnshire [shot at Hogsthorpe, May 1888]. *Nat.*, March 1889, p. 79.
- JAS. EARDLEY MASON. Linc. N.
Nightingale [*Daulias luscinia*] near Alford, Lincolnshire [five birds within three miles this season ; an unusually large number]. *Nat.*, July 1889, p. 212.
- FREDERICK A. MILBANK. York N.W.
Sir F. A. Milbank's Big Grouse [*Lagopus scoticus*] Bag [at Wemmergill Moor in 1872 ; statistics given]. *Land and Water*, Sep. 29th, 1888, p. 391.
- F. S. MITCHELL. Lanc. S. and W., York Mid W.
Is the Starling [*Sturnus vulgaris*] Double-brooded [with notes from near Clitheroe]. *Nat.*, April 1889, p. 112.
- F. S. MITCHELL. Lanc. S., York Mid W., Notts.
Is the Starling (*Sturnus vulgaris*) Double-brooded? [discussed, and Thos Altham's Clitheroe, and J. Whitaker's Rainworth experience cited]. *Nat.*, Dec. 1889, p. 367.
- E. L. MITFORD. Northumberland S.
A White Snipe [(*Gallinago cælestis*) shot at Throphile, Mitford Hall estate, Morpeth, Sep. 1888 ; colour pale grey]. *Zool.*, Jan. 1889, p. 35.
- S. L. MOSLEY. York S.W.
Observations at Anston Stones, May 1889 [*Daulias luscinia* a regular visitor ; *Phylloscopus rufus* heard]. *Nat.*, Aug. 1889, p. 225.
- J. NEALE. York S.W.
Ackworth School Natural History [Notes : *Hirundo rustica* last seen, Oct. 13th, 1889]. *Nat. Hist. Journ.*, Nov. 15th, 1889, p. 148.
- T. H. NELSON. York N.E.
Pallas' Sand-Grouse [*Syrrhaptes paradoxus*] in Cleveland [at Kirkleatham, 13th Nov., a pair, male and female]. *Nat.*, Feb. 1889, p. 52. [Three instances near Redcar, 14th, 15th, and 16th February]. *Nat.*, March 1889, p. 78.
- T. H. NELSON. York N.E.
Sand Grouse [*Syrrhaptes paradoxus*] in North Yorkshire [at Kirkleatham, near Redcar, pair, 13th Nov., 1888]. *Zool.*, Feb. 1889, p. 72.
- T. H. NELSON. Durham, York N.E.
Ornithological Notes from Redcar and Tees Mouth for 1887 and 1888 [The season notable for great abundance of *Tringa subarquata*, *T. minuta*, *T. canutus*, *Squatarola*, and *Harelda* ; there were also noted a white *Lomvia troile*, *Sula*, *Ægialitis hiaticula*, *Totanus calidris*, *Puffinus anglorum*, *Colymbus glacialis*, *C. septentrionalis*, *Alca torda*, *Fratercula*, *Tadorna cornuta*, *Falco peregrinus*, *Circus cyaneus* (these two at Egton Bridge, near Whitby), *Numenius phæopus*, *Calidris*, *Strepsilas*, *Hydrochelidon nigra*, *Puffinus major* or *griseus*, *Limosa lapponica*, *Anas boschas*, *Querquedula crecca*, *Hæmatopus*, *Sterna fluviatilis*, *S. minuta*, *Stercorarius crepidatus*, *S. catarrhactes*, *S. pomatorhinus*, *Sterna macrura*, *Tringa alpina*, *Alauda arvensis*, *Plectrophanes nivalis*, *Otocorys*, *Sterna cantica*, *Corvus cornix*, *Mareca*, *Regulus cristatus*, *Mergus merganser*, *Scolopax rusticola*, *Asio accipitrinus*, *Ædemia fusca*, *Æ. nigra*, *Fulmarus glacialis*, *Vanellus*, *Fringilla cælebs*, *Turdus merula*, *T. torquatus* (Bilsdale), *T. iliacus*, *T. pilaris*, *Erithacus rubecula*, *Dendrocopus major*, *Anser segetum*, *Tringa striata*, *Columba palumbus*, *Puffinus anglorum*, *Larus canus*, *L. glaucus*, *L. ridibundus*, *Charadrius pluvialis*, *Columba œnas*, *Bernicla brenta*, *Saxicola œnanthe*, *Machetes*, *Somateria mollissima*, *Fuligula marila*, *Mergus serrator*, *Larus minutus*, and *Tachybaptus fluviatilis*]. *Nat.*, March 1889, pp. 81-86.

- T. H. NELSON. York N.E.
Shooting of Sand Grouse [*Syrrhaptus paradoxus*] in the Close Season [several killed near Redcar, in February; particulars given]. Field, March 2nd, 1889, p. 308.
- T. H. NELSON. York N.E.
Sand Grouse [*Syrrhaptus paradoxus*] near Redcar [details of three occurrences on February 14th, 15th, and 16th, 1889]. Zool., April 1889, p. 146.
- T. H. NELSON. Cumberland, Cheviotland.
Nesting of the Lesser Black-backed Gull [(*Larus fuscus*) at the Farnes and at a moss about 2 miles inland, N.W. Coast of England; at latter place *Lagopus scoticus* and *Numenius arquata* also]. Zool., Aug. 1889, p. 312.
- ALFRED NEWTON. Northumberland.
On the Irruption of *Syrrhaptus paradoxus* [referring also to the Northumberland Coast occurrence of 1872]. Rep. 58th meeting of Brit. Ass., Bath, 1888, pub. 1889, p. 703.
- DIGBY S. W. NICHOLL. Notts.
Black-winged Stilt [*Himantopus candidus*] in Nottinghamshire [shot on banks of Trent, near Nottingham, January 1888]. Zool., Oct. 1889, p. 387.
- FRANCIS NICHOLSON. Lanc. S.
Notes on the Ornithology of the [Manchester] District [citing numerous birds, but not in systematic order, and treating more particularly of what may be seen in the city and its immediate vicinity]. Handbook of Manchester.—Prepared by the Local Committee for the members of the British Association at the Manchester Meeting, 1887, pp. 41-49.
- J. E. NOWERS [Sec.]. Derbyshire.
Comparative Calendar of Nature [for 1877, 1878, and 1879, about Burton-on-Trent; *Turdus musicus*, *Erithacus*, *Accentor*, *Hirundo*, *Cuculus*, *Fringilla caelebs* and *Crex*, are the species noted]. 4th Ann. Rep. Burton-on-Trent Nat. Hist. and Arch. Soc., 1880, p. 71.
- J. E. NOWERS. Derbyshire.
Calendar of Nature, 1886 [at or near Burton-on-Trent; dates given for *Hirundo* (Drakelow), and *Turdus musicus* (Repton Shrubs)]. 11th Ann. Rep. Burton-on-Trent Nat. Hist. and Arch. Soc., for 1886, pub. 1887, p. 23.
- J. E. NOWERS. Derbyshire.
Calendar of Nature, 1887 [for Burton-on-Trent; dates given for *Corvus frugilegus* (Drakelow), *Hirundo rustica* (Derby Road), *Chelidon* (Stapenhill), *Motacilla flava* (Stapenhill), and *Cypselus* (Burton)]. Ann. Rep. Burton-on-Trent Nat. Hist. and Arch. Soc., for 1887-88, pub. 1888, pp. 31-32.
- F. W. PAPLE. Lanc. S., York S.W.
***Buteo lagopus* (Rough-legged Buzzard)** [at Gnarlton, Nov. 1888, at Lobstock Flats, 1852, and Blackstone Edge, 1868]. Sci. Gos., May 1889, p. 116.
- A. PEILE. Cumberland.
York, Bootham. Natural History Club [young *Corvus corax* and two *Buteo vulgaris* near Crummock Water]. N.H.J., Oct. 15th, 1889, p. 128.
- G. H. PHILIPSON. Cumberland.
Address to . . . the Tyneside Naturalists' Field Club, read . . . 19th May, 1885 [*Charadrius pluvialis* noted on Cross Fell summit, 25th June, 1884]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 8, part 2, 1886, p. 282.
- E. CAMBRIDGE PHILLIPS. Notts.
The Great Black Woodpecker [*Picus martius*] in England [pointing out that the two shot at Nottingham seem to have been certified by the person who procured them]. Zool., Nov. 1889, p. 431.

- J. HOLMER POULTON. Cheshire.
Arrival of Summer Birds [at High Leigh, Cheshire ; *Saxicola oenanthe*, March 30th ; he also reports *Cuculus* seen (with field-glass) same day]. Field, April 13th, 1889, p. 506.
- HERBERT PRODHAM. York N.E.
Dotterell [*Eudromias morinellus*], etc. [*Charadrius pluvialis* and *Turdus torquatus*] on the Pickering Moors [between Allerston Warren and Lockton]. Nat., June 1889, p. 176.
- THOMAS RATCLIFFE. York S.W., Notts.
Sheffield Folk-Lore [also Notts—relating to Magpies (*Pica caudata*) and Gabriel-hounds]. Yorksh. Folk-Lore Journ., Part 6, Jan. 1887, pp. 96-98.
- A. RAWSON. Westmorland and Furness.
"Gravyes" : What were they ? [Burn and Nicholson, in their History of Cumberland and Westmorland, speak of birds on Windermere called Gravyes, which are larger than ducks, and build in hollow trees ; writer is anxious to have them identified, and throws out a suggestion that they are the Common Merganser (*Mergus serrator*)]. Westm. Note-Book and Nat. Hist. Record, Vol. 1, Part 5, March 1889, p. 107.
- F. G. S. RAWSON. York S.W.
Is the Starling (*Sturnus vulgaris*) Double-brooded ? [discussed from observations made at Thorpe, near Halifax]. Nat., Dec. 1889, p. 373.
- ROBERT H. READ. Durham.
The Great Auk [*Alca impennis*] in Britain [paper read to Clydesdale Nat. Soc., Apl. 17th, 1889 ; brief reference to the remains found near Marsden Rocks in co. Durham]. Research, May 1889, p. 203.
- GEO. ROBERTS. York S.W.
Hawfinches [*Coccothraustes vulgaris*] and Crossbills [*Loxia curvirostra*] at Stapleton Park [in Went Vale ; Hawfinch nests annually ; flock of Crossbills seen winter of 1888-89]. Sci. Goss., May 1889, p. 117.
- A. S. ROWNTREE [Sec.]. York Mid W.
York, Bootham [May 9th, excursion to Knaresborough, eggs of *Alcedo ispida* and *Accipiter nisus* ; Thorparch, June 1st, eggs of *Columba livia* and *Tringoides*]. Nat. Hist. Journ., June 15th, 1889, xiii. 88.
- HOWARD SAUNDERS. All the Counties.
An Illustrated Manual of British Birds . . . with illustrations of nearly every species [in monthly parts ; Parts 10 to 20, Jan. to Nov. 1889, from *Ardea garzetta* to *Oceanites oceanicus*, and appendix ; the limited space for each species, two pages only, precludes more than the briefest of indications as to distribution, and only in the case of the very rarest occurrences are localities given]. London : Gurney and Jackson, 1, Paternoster Row, . . . 1889 [8vo. pp. 361-754].
- T. H. C. SCRATCHERD. York Mid W.
Collision between Grouse [*Lagopus scoticus*] and Partridge [(*Perdix cinerea*) noted 27th Sept., 1889, during a grouse drive in Nidderdale]. Field, Oct. 5th, 1889, p. 503.
- HENRY SEEBOHM. Lanc. W.
[Exhibition of *Vanellus gregarius* shot some time between 1860 and 1866 at Whitehall, about two miles from St. Michael's-on-Wyre, and erroneously recorded in Mitchell's 'Birds of Lancashire' as *Cursorius isabellinus* ; new to British list ; full details given]. Proc. Zool. Soc., Nov. 20th, 1888, p. 416 ; Zool., Jan. 1889, p. 37.
- R. BOWDLER SHARPE. York Mid W., Linc. N.
Notes on Starlings [*Sturnus vulgaris*]. No. V. A Second Form of Starling in England [with comparative notes on examples from Otley, Tetney, Great Cotes, etc.]. Land and Water, Nov. 16th, 1889, p. 644.

- R. H. SIKES. Cumberland.
York, Bootham. Natural History Club [eggs of *Tringa alpina*, Cumberland].
 N.H.J., Oct. 15th, 1889, xiii. 128.
- HENRY H. SLATER. York S.E.
The Two-barred Crossbill [*Loxia bifasciata* C. L. Brehm]: an Addition
 to the Yorkshire Avifauna [shot near Easington in Holderness, Aug. 12th,
 1889; details of specimen given]. Nat., Oct. 1889, p. 314.
- C. W. SMITH. York N.E.
Is the Starling [*Sturnus vulgaris*] **Double-brooded?** [discussed from obser-
 vations made at Harum, near Nawton; notes also on *Columba oenas* and
Muscicapa grisola]. Nat., Dec. 1889, p. 373.
- CHRISTOPHER W. SMITH. York N.E.
Notes on [and list of 127 of] the Birds of Central Ryedale, North-east
 Yorkshire [giving faunistic status, localities, a few dates, and local names].
 Nat., Nov. 1889, pp. 325-333.
- JOHN STEARS. York S.E.
Missel-Thrush [*Turdus viscivorus*] and **Waterhen** [*Gallinula chloropus*]
 near Hull [the first breeding in the very centre of Hull and close to the
 Railway Dock, the second at Roos]. Nat., June 1889, p. 182.
- THOS. STEPHENSON. York N.E.
Ruff [*Machetes pugnax*] and **Goshawk** [*Astur palumbarius*] near **Whitby** in
 Winter 1888-9 [at Ruswarp, 2nd Dec., and near Levisham, 14th Feb.
 respectively]. Nat., March 1889, p. 78.
- ALEXANDER S. STEVENSON. Cumberland.
Address to . . . the Tyneside Naturalists' Field Club, read . . .
 May 23rd, 1884 [*Cypselus*, *Hirundo*, and *Chelidon* noted in Brampton streets,
 May 28th, 1883]. Nat. Hist. Trans. Northumb. Durh. and Newc., Vol. 8,
 Part 2, 1886, p. 227.
- WM. STOR[E]Y. York Mid W.
Golden Eye Ducks [(*Clangula glaucion*); occurrences on Swinsty Reservoir
 noted]. Research, Nov. 1889, p. 120.
- C. E. STOTT. Lanc. S., York Mid W.
Rough-legged Buzzard [*Archibuteo lagopus*] in **Lancashire** [near Bolton, in
 Nov. 1888; recorded in newspapers as Golden Eagle; occurrence of two
 near Leeds about same time noted]. Zool., Feb. 1889, p. 77.
- C. STOTT. Lanc. S.
The Preservation of Rookeries [of *Corvus frugilegus*, near Bolton]. Field,
 April 20th, 1889, p. 567.
- C. E. STOTT. Lanc. S.
Arrival of Summer Birds [at **Bolton-le-Moors**; *Sylvia atricapilla*, April
 25th; *Phylloscopus rufus*, April 10th; *Cuculus*, April 26th; *Crex*, May 1st;
Hirundo, April 24th]. Field, May 4th, 1889, p. 640.
- C. E. STOTT. ? Lanc. S.
Colourless Eggs of the Twite [(*Linota montium*) presumably near Bolton,
 whence note is dated]. Zool., Oct. 1889, p. 389.
- R. A. SUMMERFIELD. York Mid W.
Goldfinch [*Carduelis elegans*] near **Ripon** [at North Stainley, 21st May].
 Nat., June 1889, p. 182.
- R. A. SUMMERFIELD. York Mid W.
Is the Starling (*Sturnus vulgaris*) **Double-brooded?** [discussed and North
 Stainley (near Ripon) observations cited]. Nat., Dec. 1889, p. 369.

- JAMES SUTTON. Cheviotland.
Diving Powers of Gannets [(*Sula bassana*) described as observed at the Farne Islands]. Zool., April 1889, p. 151.
- JAMES SUTTON. Durham.
Nesting of the Black Redstart [*Ruticilla tithys*] in Durham [quoting Hancock's record of an instance in 1845]. Zool., April 1889, p. 183.
- E. TANDY. Cumberland.
Assumption of Male Plumage by the Female Crossbill [(*Loxia curvirostra*) at Edenhall, near Penrith; the species numerous all the summer of 1888]. Zool., May 1889, p. 182.
- THOMAS THOMPSON. Durham, Northumberland S., Cheviotland.
[Nesting of Hawfinch (*Coccothraustes vulgaris*) at Winlaton in 1884; and details of several occurrences in Northumberland and Durham in 1837, 1860, 1862, etc.]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 8, part 2, 1886, p. 281.
- C. F. THORNEWILL. ? Derbyshire.
[Hirundo rustica first seen 2nd April and *Cuculus* first heard 26th April, near Burton-on-Trent]. 2nd Ann. Rep. Burton-on-Trent N. H. Soc., March 26th, 1878, p. 18.
- CHAS. F. THORNEWILL. Derbyshire.
Calendar of Nature for 1882 [near Burton-on-Trent; giving dates for *Corvus frugilegus*, *Motacilla flava*, *Chelidon*, *Phylloscopus trochilus*, *Ph. rufus*, *Cuculus*, and *Crex*]. 7th Ann. Rep. Burton-on-Trent N.H. and Arch. Soc., for year ending 31st March, 1883, p. 15.
- C. F. THORNEWILL. Derbyshire.
Calendar of Nature, 1883 [at Burton-on-Trent; dates given for *Turdus musicus*, *Corvus frugilegus*, *Phylloscopus rufus*, *Cuculus* (Brizlincote), *Phylloscopus trochilus* (Henhurst), *Chelidon*, *Hirundo*, *Acrocephalus phragmitis* and *Crex*]. 8th Ann. Rep. Burton-on-Trent Nat. Hist. and Arch. Soc., year ending 31st Dec., 1883, pub. 1884, pp. 20-21.
- C. F. T[HORNEWILL]. Derbyshire.
Calendar of Nature, 1884 [for Burton-on-Trent; dates given for *Turdus musicus*, *Chelidon*, *Phylloscopus rufus* (Repton Shrubs), *Gallinula chloropus*, *Phylloscopus trochilus*, *Motacilla raii*, *Crex*, *Acrocephalus phragmitis*, *Troglodytes*, *Locustella*, and *Cypselus*]. 9th Ann. Rep. Burton-on-Trent Nat. Hist. and Arch. Soc., for 1884, pub. 1885, pp. 23-25.
- C. F. THORNEWILL. Derbyshire.
Calendar of Nature, 1885 [near Burton-on-Trent; dates given for *Phylloscopus rufus*, *Ph. trochilus*, and *Acrocephalus phragmitis*]. 10th Ann. Rep. Burton-on-Trent Nat. Hist. and Arch. Soc., for 1885, pub. 1886, pp. 21-24.
- C. F. THORNEWILL. Derbyshire.
Calendar of Nature, 1886 [at Burton-on-Trent; dates given for *Turdus musicus*, *Corvus frugilegus*, *Phylloscopus rufus*, *Cotile*, *Acrocephalus phragmitis*, *Fringilla coelebs* (Henhurst), *Gallinula chloropus*, *Crex*, *Cuculus*, and *Muscicapa grisola*]. 11th Ann. Rep. Burton-on-Trent Nat. Hist. and Arch. Soc., for 1886, pub. 1887, pp. 22-26.
- C. F. THORNEWILL. Derbyshire.
Calendar of Nature, 1887 [for Burton-on-Trent; dates given for *Corvus frugilegus*, *Sylvia rufa* (Rangemore), *Cotile*, *Motacilla raii*, and *Acrocephalus phragmitis* (Burton)]. Ann. Rep. Burton-on-Trent Nat. Hist. and Arch. Soc., for 1887-88, pub. 1888, pp. 29-30.
- C. F. THORNEWILL. Derbyshire.
Calendar of Nature, 1888 [near Burton-on-Trent; dates given for *Hirundo rustica*, *Motacilla raii*, *Acrocephalus phragmitis*, *Cuculus*, *Crex* (Repton), and *Acrocephalus streperus*]. Ann. Rep. Burton-on-Trent N. H. S. for 1889, p. 22.

H. G. TOMLINSON.

Derbyshire, Cumberland.

Birds and their Habits, with special reference to the Birds found in the neighbourhood of Burton-on-Trent [Part 2; mentions *Lanius collurio*, five *Pari*, both *Muscicapæ*, *Alcedo*, three *Corvi*, *Pica*, *Garrulus*, *Certhia*, *Gecinus*, *Cuculus*, *Caprimulgus*, 4 *Hirundines*, 3 *Motacillæ*, 2 *Alaudæ*, 2 *Anthi*, 3 *Emberizæ*, 6 *Fringillæ*, *Linota cannabina*, *L. rufescens*, *Sturnus*, *Cinclus*, 2 *Passeres*, 6 *Turdi*, *Accentor*, *Erithacus*, *Ruticilla phœnicurus* (Cumberland notes also given), *Pratincola rubicola*, *P. rubetra*, *Saxicola œnanthe*, *Locustella nævia*, 2 *Acrocephali*, *Daulias*, 6 *Sylvia*, *Troglodytes* and *Regulus cristatus*, noted as in the district; elaborate general notes given of many of them]. Fourth Ann. Rep. Burton-on-Trent Nat. Hist. Society, 1879, pub. 1880, pp. 26-36.

SIGISMUND C. DE TRAFFORD.

Lanc. S. & W.

The Hawfinch [*Coccothraustes vulgaris*] in Lancashire [a pair killed against a window of Croston Hall, near Preston; Yarrell mentions it for Ormskirk; Ed. Field adds Leagram Hall, Claughton, Chorley, Whalley, Knowsley, and Worden Hall, Preston, as nesting localities]. Field, Apl. 20th, 1889, p. 567.

H. B. TRISTRAM.

York S.E.

[Occurrence of *Emberiza cioides* Brandt at Flamborough in Oct. 1887 noted; the specimen, a male, now in coll. R. W. Chase]. P.Z.S., Jan. 15th, 1889, Part I, pub. Apl. 1889, p. 6; Field, Jan. 19th, 1889, p. 94.

EDGAR R. WAITE.

York S.W.

The Yorkshire Naturalists' Union at Holmfirth [10th June, 1889; nests of *Turdus torquatus*, *T. musicus*, and *T. merula*; *T. viscivorus*, *Saxicola*, *Pratincola rubetra*, *Ruticilla*, *Erithacus*, *Sylvia cinerea*, *Phylloscopus trochilus*, *Accentor*, *Cinclus*, *Parus major*, *P. cœruleus*, *Troglodytes*, *Motacilla lugubris*, *M. raii*, *Anthus pratensis*, *A. trivialis*, *Hirundo*, *Chelidon*, *Cotile*, *Ligurinus*, *Passer domesticus*, *Fringilla cœlebs*, *Linota cannabina*, *L. rufescens*, *L. flavirostris*, *Emberiza miliaria*, *E. citrinella*, *Sturnus*, *Pica*, *Corvus monedula*, *C. frugilegus*, *Alauda arvensis*, *Cuculus*, *Accipiter*, *Tinnunculus alaudarius*, *Columba palumbus*, *Lagopus scoticus*, *Crex*, *Vanellus*, *Gallinago cœlestis*, and *Tringoides*, also noted]. Nat., July 1889, p. 202.

EDGAR R. WAITE.

York Mid W.

The Yorkshire Naturalists' Union at Harrogate [13th July 1889; *Ligurinus*, *Accipiter nisus*, *Turdus musicus*, *T. viscivorus*, *T. merula*, *Pratincola rubetra*, *Ruticilla phœnicurus*, *Erithacus*, *Sylvia curruca*, *Phylloscopus rufus*, *P. trochilus*, *Acrocephalus phragmitis*, *Accentor modularis*, *Cinclus*, *Parus major*, *P. ater*, *P. cœruleus*, *Troglodytes*, *Motacilla lugubris*, *M. melanope*, *Anthus pratensis*, *Muscicapa grisola*, *Hirundo*, *Chelidon*, *Cotile*, *Passer domesticus*, *Fringilla cœlebs*, *Linota cannabina*, *Pyrrhula*, *Emberiza miliaria*, *E. citrinella*, *Sturnus*, *Pica*, *Corvus monedula*, *C. frugilegus*, *Alauda arvensis*, *Cypselus*, *Anas boschas*, *Columba palumbus*, *Crex*, *Gallinula*, *Gallinago cœlestis*, and *Tringoides* noted]. Nat., Aug. 1889, pp. 236-237.

EDGAR R. WAITE.

York Mid W.

Richardson's Skua [*Stercorarius crepidatus*] at Settle [a male shot Sept. 26th, 1889, in second year's plumage]. Nat., Nov. 1889, p. 333.

EDGAR R. WAITE.

York Mid W.

Is the Starling (*Sturnus vulgaris*) **Double-brooded?** [discussed from Headingley and Leeds observations]. Nat., Dec. 1889, p. 370.

W. WALTERS.

Derbyshire.

Calendar of Nature, 1886 [near Burton-on-Trent; dates given for *Cuculus* (Outwoods) and *Crex* (do.)]. 11th Ann. Rep. Burton-on-Trent N.H. and Arch. Soc. for 1886, pub. 1887, p. 23.

JOHN WARD.

York S.W.

Is the Starling [*Sturnus vulgaris*] **Double-brooded?** [discussed from observations made during forty years at Lofthouse, near Wakefield; note also on a Rook's nest with three incubated and four fresh-laid eggs of *Corvus frugilegus*]. Nat., May 1889, p. 130; and Dec. 1889, p. 373.

M. G. WATKINS.

Yorkshire.

The Water Ouzel [*Cinclus aquaticus*] treated of in a chatty manner, with but a passing reference to 'Yorkshire and the Northern Counties'. *Field*, May 25th, 1889, p. 753.

JOHN WATSON.

Cumberland, Westmorland, Furness, Cheviotland.

A List of the Birds of the Lake District [the present instalment treats in detail of *Aquila chrysaetos*, *Haliaëtus albicilla*, *Aquila clanga*, and *Pandion haliaëtus*]. *Westm. Note Book and Nat. Hist. Record*, Vol. 1, part 2, June 1888, pp. 45-48.

JOHN WATSON.

Westmorland.

The Extinct Animals of the Lake District [with brief references to the present existence of *Tetrao tetrix* a very few miles from Kendal, and the former abundance of *Aquila chrysaetos*, *Haliaëtus albicilla*, *Milvus*, etc.]. *Westm. Note Book and Nat. Hist. Record*, Vol. 1, part 3, Sept. 1888, pp. 59-60.

JOHN WATSON.

Westmorland, Furness, Cumberland.

A List of the Birds of the Lake District [*Falco candicans*, *F. islandus*, *F. peregrinus* treated of in this instalment, to which is appended reprint of H. A. Macpherson's criticism (from 'The Naturalist') and J. Watson's rejoinder]. *Westm. Note Book and Nat. Hist. Record*, Vol. 1, No. 4, Dec. 1888, pp. 88-90.

JOHN WATSON.

York N.E.

Bird Problems [quoting T. H. Nelson's anecdote as to the arrival at South Gare Breakwater at the Tees mouth of *Regulus cristatus* on the back of *Asio accipitrinus*]. *Westm. Note Book and Nat. Hist. Record*, Vol. 1, part 5, March 1889, p. 107.

JOHN WATSON.

Westmorland, Cumberland, Lanc. W. and S.

Westmorland Heronries [are three in number, at Dallam Tower, Killington Reservoir, and at Rydal; these are all described at length; the two Lancashire heronries and six Cumberland ones are also enumerated; notes on *Botaurus stellaris* and *Machetes pugnax* as extinct, and on *Corvus frugilegus*, *Accipiter nisus*, as well as on *Ardea cinerea*]. *Westm. Note Book and Nat. Hist. Record*, Vol. 1, part 6, June 1889, pp. 125-128.

W. WATTS.

York S.W.

The Swallow [*Hirundo rustica*] in the Saddleworth district, at Piethorne; table of dates of arrival and departure in 1873-1882; four species occur, *Hirundo*, *Chelidon*, *Cotile*, and *Cypselus*; their comparative frequency stated; detailed notes on habits, nidification, etc., of *Chelidon* in particular, as being the most abundant of the four species]. *Trans. Rochdale Lit. and Sci. Soc.*, vol. 1, 1878-1888 (publ. 1888), pp. 19-24.

E. W. WEST.

Derbyshire.

The Kestrel [*Falco tinnunculus*] a Mole-killer [in North Derbyshire]. *Field*, Dec. 14th, 1889, p. 862.

J. A. WHELDON.

York N.E.

Nightjar [*Caprimulgus europæus*]; a pair at Heslington Hall, Nov. 1888]. *Sci. Goss.*, Jan. 1889, p. 22.

J. A. WHELDON.

York N.E.

Strensall Common [and the disappearance of *Larus ridibundus*, *Querquedula crecca*, *Anas boschas*, *Tachybaptus*, *Gallinago cælestis*, and *Totanus* (Redshank)]. *Sci. Goss.*, Jan. 1889, p. 23.

J. A. WHELDON.

'York.'

Bearded Tit [*Panurus biarmicus*] on banks of Ouse near York, one observed Nov. 1888]. *Sci. Goss.*, April 1889, p. 93.

J. A. WHELDON.

York N.E.

Clutches of Birds' Eggs [a protest, with incidental mention of a clutch of seven eggs of *Gecinus viridis* from near Helmsley, in York Museum]. *Sci. Goss.*, July 1889, p. 167.

- J. WHITAKER. Notts.
The Kingfisher [*Alcedo ispida*] and its habits as observed in Notts]. Land
 and Water, Dec. 17th, 1887, p. 547.
- J. WHITAKER. Notts.
Pied Variety of the Coot [*Fulica atra*] shot in March 1888, near Southwell].
 Zool., April 1889, p. 153.
- J. WHITAKER. Notts.
Arrival of Summer Birds [at Rainworth ; *Hirundo*, April 16th ; *Phylloscopus*
rufus, April 11th ; *P. trochilus*, April 16th]. Field, April 20th, 1889, p. 567.
- J. WHITAKER. Notts.
Arrival of Summer Birds [at Rainworth ; *Pratincola rubetra*, Apl. 24th ;
Phylloscopus sibilatrix, Apl. 23rd]. Field, Apl. 27th, 1889, p. 590.
- J. WHITAKER. Notts.
Arrival of Summer Birds [at Rainworth ; *Muscicapa grisola*, May 7th ;
Turtur communis, May 4th]. Field, May 11th, 1889, p. 653.
- J. WHITAKER. Notts.
Sand Grouse [*Syrrhaptes paradoxus*] in Notts [one seen in May by the
 keeper ; the only one in 1889]. Field, July 13th, 1889, p. 45.
- J. WHITAKER. Notts.
Stone Curlew [*Ædicnemus scolopax*] breeding in Notts [near Rainworth
 Lodge ; two pairs, one of them successful]. Zool., Aug. 1889, p. 312.
- J. WHITAKER. Notts.
Goldeneyes [*Clangula glaucion*] at Rainworth, Notts. [Feb. 1889, a pair,
 immature]. Zool., Aug. 1889, p. 312.
- J. WHITAKER. Notts.
Sand Grouse [*Syrrhaptes paradoxus*] in Nottinghamshire [the flock of 70 or
 more which arrived at Rainworth last week of April 1888, remained till end
 of October, and have not returned ; a pair nested ; others noted elsewhere
 in Notts]. Zool., Sep. 1889, p. 351.
- J. WHITAKER. Derbyshire.
Golden Oriole [*Oriolus galbula*] in Derbyshire [a male shot 13th May, 1889,
 at Creswell]. Zool., Sep. 1889, p. 352.
- J. WHITAKER. Notts.
Grey Shrike [*Lanius major*] in Nottinghamshire [at Rainworth] in April
 [1889 ; female]. Zool., Oct. 1889, p. 394.
- F. B. WHITLOCK. Notts.
Autumn and Winter Notes from Notts [anent *Totanus glareola*, *Tringoides*
hypoleucos (departure), *Motacilla melanope*, *Hirundo* (departure), *Turdus*
iliacus (arrival), *Bernicla brenta*, *Fuligula cristata*, *T. viscivorus*, *T. pilaris*
 (arrival), *Corvus cornix* (arrival), *C. corone*, *Phalaropus fulicarius*, *Tringa*
alpina, *Procellaria leucorrhœa*, *Gallinago gallinula*, *Regulus cristatus* (arrival),
Rallus aquaticus, *Charadrius pluvialis*, *Gallinago caelestis*, *Vanellus*, *Alcedo*,
Porzana maruetta, *Mergus merganser*, *Anas boschas*, *Querquedula crecca*,
Tringa canutus, *Alauda*, *Podiceps fluviatilis*, *Columbus palumbus* (102 beech-
 nuts in crop), *Mareca*, *Emberiza schœniclus*, *Anthus pratensis*, *Helodromas*,
Fulica, *Falco peregrinus*, and *Syrrhaptes* noted]. Nat., April 1889, pp.
 113-114.
- F. B. WHITLOCK. Notts.
Is the Starling (*Sturnus vulgaris*) Double-brooded? [discussed from South
 Notts observations]. Nat., Dec. 1889, p. 370.
- W. WORTHINGTON. Lanc. S.
Bittern [*Botaurus stellaris*] in Lancashire [shot on Bryn Moss, near Wigan,
 26th Dec. 1888 ; account given of the capture, and of a previous occurrence
 28 years ago]. Zool., Feb. 1889, p. 75.
- S. H. WRIGHT. Notts.
Golden Oriole [(*Oriolus galbula*), fine adult male shot near Cresswell Craggs,
 Notts, early in May 1889]. N.H.J., Sep. 15th, 1889, xiii. 112.

A REAL SUMMER'S DAY.

WEST AYTON, JUNE 9th, 1892.

REV. W. C. HEY, M.A., M.C.S..

Vice-President of the York Philosophical Society, West Ayton, near Scarborough.

LIGHT, "marvellous light," on meadows that are sheets of burnished gold, so thickly grow the buttercups; light, "marvellous light," falling in a myriad dancing points upon the rippling river; light, "marvellous light," on the fluttering leaves, and the hedges loaded with the summer snow of hawthorn bloom, and the fields of young corn, and the golden waterfalls of laburnum dripping from the cottage gardens over the white roads. I pass into the pastures, where the cattle-ponds are slowly being absorbed by the glowing heat, and again the marvel of the sunlight is everywhere—on the purple satin of the hawking swallow, and on the glittering gauze of the dragon-fly's wing, and on the twinkling flowers of white crow-foot that nearly hide the water where they grow, and on the dazzling coppery beetles that dart, and pause, and dart again on the wet margin of the pool. I climb the hill where the cattle are grazing, and again the marvel of the light—on the red-backed cows, and the black horses, and the white sheep; on the thousand swift-borne flies that glance and pass; on the vibrating wings of Painted-Lady butterflies, and the silver cups of the saxifrage flowers. I steal on into the wood, and again the marvel of the light, seen through the yet transparent leaves of the oak and the maple, silvering the white tufts of the garlic flowers, elaborating a wondrous dance in the twinkling shadows of the thin foliage upon the mossy ground beneath, drawing pungent odours from the shooting pines and idle perfume from the hawthorn and fading bluebells. I stray back into the garden, and again the marvel of the light on scarlet poppy-petals and blue-black poppy-stamens, on sheets of rosy sea-pinks, and a thousand waving Pyrethrums, on glowing Pæony and waving Iris, on every insect that hovers poised above the flowers, or stops to rifle their honey. I move on into the paddock, where the Umbellifers rise breast high against the old stone walls, and speedwell-flowers twinkle innumerable—blue stars in a lush green sky—foot-gilt, as I walk, with the pollen of innumerable buttercups; and whether I look up or down or around, everywhere the marvel of the light. All earth and all the air full of light—Nature's Grand Illumination Day.

THE YORKSHIRE NATURALISTS' UNION AT WITHERNSEA.

ON the occasion of this year's visit to the coast-line, Withernsea being the centre of operations, the Union were much indebted in every way to their Hull members, both as regards the assistance they rendered to the Secretaries in making the preliminary arrangements and as regards their taking a full share in the excursion itself. The excursion was planned for the investigation of that portion of the Holderness coast which extends from Sand-le-Mere southward to Dimlington High Land. The day being Bank Holiday Monday, the 1st of August, and there being but one way of access to the district, all members had to mingle at Hull and its suburban stations with many thousands of day trippers travelling by a number of relief trains which did not stop at intermediate stations. One unexpected result of this was that it was found impracticable to carry out the arrangements for a party to investigate the woods at Old Winestead, it being impossible to ascertain in the crowded stations at Hull either what members wished to join that party or which of the trains was the ordinary one which was to stop at Winestead station.

On arrival at Withernsea station the other two parties which had been arranged set off after a short delay. One of these was as customary the geological one, and was in charge of Mr. Alfred Harker, M.A., F.G.S., who conducted his followers southward to Holmpton, and thence along the cliff to Dimlington, returning from thence to Withernsea along the beach, the tide being favourable, low water being at 2 p.m. A small party of naturalists followed them at a respectful distance and on the return accompanied them for a portion of the distance. Both of these parties were alike interested in the sections of the lacustrine beds shown in the cliffs of Boulder Clay, evidencing the former existence of a chain of lakes of which Hornsea Mere is now the only one left, and in which, thousand of years old as they are, are to be found in great profusion the shells of various freshwater mollusca and the remains of fish of species now to be found alive in that Mere.

The second main party, consisting of botanists, conchologists, and entomologists, under the energetic leadership of Messrs. F. W. Fierke and T. Petch, B.A., of Hull, and Mr. Charles Waterfall, of Welton, went northward in the direction of Tunstall, and was strong and numerous. They worked along the top of the cliff as far as Sand-le-Mere, and then dredged the Keyingham Drain

and various ponds as far inland as Roos, returning over Thirtle Bridge and along the Waxholme Road to Withernsea.

All parties, including various late-comers who were unable to reach Withernsea in time to join the main parties, congregated about half-past four in the afternoon, in the large refreshment room attached to the Pier Hotel, Withernsea. Here, after a substantial though plainly-served meat tea, the sectional, and afterwards the general, meetings were held.

At the general meeting, in the absence of the President and Vice-Presidents, Mr. John James Stead, of Heckmondwike, was voted to the chair. The minutes having been taken as read, the roll of Societies was called over, when it was found that the fifty or sixty members present were representatives from the following Societies, fifteen in number:—Barnsley, Wakefield, Liversedge, Goole, Leeds Naturalists' Club, Conchological Society, Leeds Geological Association, Bradford Scientific Association, Halifax, Huddersfield, Ravensthorpe, and all the three Hull Societies. A couple of new members having been duly elected, Mr. John Stears, the Secretary of the Hull Field Naturalists' Society, proposed, Mr. J. J. Marshall, of Market Weighton, seconded, and the meeting cordially accepted, a vote of thanks to the various leaders of parties and contributors of information to the excursion-programme, as well as to Messrs. Walter Bailey, James Reckitt, G. W. Dickinson, Thomas Holden, George Clark, Edward Clark, and J. Biglin, for allowing members to pursue investigations on their lands. The spokesmen of the various sections were then called upon for their reports upon the day's results.

For the Vertebrate Section, in the absence of all its officers, Mr. Thomas Bunker, of Goole, reported that, not being aware that he was the only member of the Section present, he devoted his attention to botany. Consequently the notes he made were but casual ones, only 12 species of Birds, all common ones, and the Frog was also noted, while Messrs. Butterell and Roebuck mentioned seeing a dead Hedgehog by the road-side near Holmpton.

For the Conchological Section, the report was given by one of its Secretaries, Mr. Frederick William Fierke, of Hull, who stated that the Section was well represented on the excursion, the members taking both lines of route. Mr. W. Denison Roebuck, F.L.S. (Leeds), Mr. J. Darker Butterell, M.C.S. (Beverley), and Mr. Charles Rowson (Hull) followed in the trail of the geological party on their route south to Dimlington. Passing by the village of Holmpton they proceeded to the beach, with a view to the examination of the lacustrine deposits exposed in the cliffs opposite that

place and at Out Newton. These deposits, virtually the remains of ancient meres which at one time studded the whole of the Holderness Coast, but have since become silted up, are of exceeding interest to the conchologist, inasmuch as by a consideration of them he hopes to trace the relationship that exists between the molluscan inhabitants of those ancient meres with the species now found in the ditches and dykes of the immediate vicinity, as well as obtaining some idea of the past condition of Holderness before it was converted into an agricultural district through the agency of man. It is very singular that the shells taken from these deposits are restricted to a few common forms, such as *Sphærium corneum*, *Pisidium pusillum*, *Valvata piscinalis*, *Limnæa peregra*, *L. stagnalis*, the shells of which are extremely abundant throughout. The only mere still existing unencroached upon by the sea is the one at Hornsea, with which these lacustrine deposits remarkably correspond, excepting in this particular, the small range of molluscan fauna they contain. Hornsea Mere possesses a rich variety of mollusca, but the deposits examined on this occasion gave no evidence of such having been the case with them. It appears that this paucity in the variety of the molluscan fauna has been observed in all the lake-deposits examined on the coast.

Messrs. F. W. Fierke, T. Petch, B.A., and J. Coltman (Hull) were concerned in the investigation of the district north of Withernsea. A strong wind blowing at the time prevented any great success among the terrestrial species, but as much time was spent in examining the cliffs and the banks on the roads as the day would comfortably allow. Waxholme Road, in sheltered places, produced a few common shells, and Waxholme Cutting, a deep hollow running inland from the direction of the cliff, proved a happy retreat for the larger helices, *Helix nemoralis* being represented by a fair number of very beautifully coloured and banded varieties. The careful examination of moss growing on the sides of the Cutting near the cliff resulted in the discovery of *Vertigo pygmæa*. A little march further on the cliff brought the party to two or three ponds, the first of which (already being overhauled by the coleopterists) contained some fine specimens of *Planorbis nautilus* and variety *crista* and numerous *Pisidia*, whilst the pond a little further off appeared to be in the sole occupation of *Sphærium lacustre*.

Leaving the ponds for a while, the conchologists proceeded to Sand-le-Mere, where the foreshore is separated from the low valley which drains inland by a high sand bank. Here the tall grasses and thistles rise from the sandy soil, quite besieged by a vast army of that pretty, seaside-loving shell, *Helix virgata*, with the variety

submaritima? almost as common as the type and stray specimens of *Helix caperata* to give a little more variety to the scene. Down in the valley the marshes proved to be a favourite locality for the *Succineæ*, both *S. putris* and *S. elegans* occurring. The party then proceeded in a westerly direction by the side of Keyingham Drain up to Thirtle Bridge, dredging the drain and the numerous dykes which intersect it. On reaching the bridge a pond on the Roos Road was finally investigated, the most noteworthy species being *P. anorbis carinatus* in abundance, and the Waxholme Road was selected for the return journey to Withernsea, thereby terminating a most pleasurable if not exactly a record-making conchological ramble. The following is a complete list of the mollusca recorded during the day:—

Aquatic.

Sphærium corneum.
Sphærium lacustre.
Pisidium fontinale.
Pisidium pusillum.
Bythinia tentaculata.
Valvata piscinalis.
Planorbis nautilus and var. crista.
Planorbis vortex.
Planorbis carinatus.
Planorbis complanatus.
Physa fontinalis.
Limnæa peregra.
Limnæa truncatula.

Terrestrial.

Arion ater.
Arion minimus.

Limax maximus.
Agriolimax agrestis.
Succinea putris.
Succinea elegans.
Vitrina pellucida.
Hyalinia cellaria.
Hyalinia alliaria.
Hyalinia crystallina.
Helix nemoralis.
Helix concinna.
Helix hispida.
Helix virgata and variety.
Helix caperata and var. ornata.
Helix rotundata.
Helix pulchella.
Pupa umbilicata.
Vertigo pygmæa.
Cochlicopa lubrica.
Carychium minimum.

For the Entomological Section, in the absence of all its officers, Mr. Walter F. Baker, of Hull, reported as regards the Coleoptera that, although a strong wind blew from the sea, yet the day was as suitable for beetle-collecting as could be desired, being neither too hot nor too cold, and therefore the captures were fairly numerous, considering that it is the time of year when many of them are in the larval state.

Operations commenced before the members were fairly out of Withernsea, *Carabus violaceus*, the large violet ground-beetle, and *Ocytus olens*, commonly called the 'Devil's Coach Horse,' both found under some loose stones by a farmhouse, being amongst the first captures, whilst the various species of *Pterostichus*, together with *Harpalus ruficornis*, and *Notiophilus biguttatus* were in abundance. *Xantholinus fulgidus* and *X. glabratus* were found in a similar situa-

tion a little further on, together with *Anchomenus dorsalis*. A pond on the summit of the cliff, about a mile further on, proved most productive, *Haliphus obliquus*, *Hydroporus palustris*, *Agabus bipustulatus*, and *Ilybius fuliginosus*, being in abundance, whilst *Acilius sulcatus* and *Agabus nebulosus*, neither of which are common in Holderness, together with *Pelobius tardus*, or the 'Squeaker' beetle (a very rare beetle for the Yorkshire district) were also obtained. *Dytiscus marginalis* was seen several times, but eluded all attempts to capture. On the sandhills at Sand-le-Mere, *Anomala frischii* and a solitary specimen of *Silpha rugosa*, besides others, were taken. Keyingham drain produced the common water-beetles in abundance, but time was too short for anything but a cursory inspection. From the long grass by Tunstall road side were obtained *Telephorus fulvus*, *Apion violaceus*, *A. niger* and *Sitones lineatus*. Another specimen of *Carabus violaceus* was found, crossing the road near Rimswell. Thirty-seven species were taken or seen altogether, twenty-three being land and fourteen aquatic, the following being a complete list:—

Land Beetles.

Carabus violaceus L.
Notiophilus biguttatus F.
Pterostichus cupreus L.
Pterostichus picimanus Duft.
Pterostichus niger Schall.
Pterostichus vulgaris L.
Pterostichus madidus F.
Anchomenus dorsalis Müll.
Anchomenus albipes F.
Harpalus ruficornis F.
Cercyon hemorrhoidalis F.
Silpha rugosa L.
Quedius cruentus Ol.
Ocypus olens Müll.
Xantholinus glabratus Grav.
Xantholinus fulgidus F.
Anomala frischii F.
Athoüs hemorrhoidalis F.
Telephorus fulvus Scop.

Apion violaceum Kirb.
Apion apricans Herbst.
Sitones lineatus L.
Longitarsus jacobææ Wat.
 (= *tabidus* Ol.).

Aquatic Beetles.

Pelobius tardus Herbst.
Haliphus obliquus F.
Hydroporus palustris L.
Deronectes depressus F.
Ilybius fuliginosus F.
Agabus bipustulatus L.
Agabus guttatus Payk.
Agabus nebulosus Forst.
Platambus maculatus L.
Dytiscus marginalis L.
Acilius sulcatus L.
Gyrinus natator Scop.
Hydrobius fuscipes L.
Anacæna globulus Payk.

Mr. J. Porter, of Hull, stated that the following species of Lepidoptera were noted:—

Imagines.

Pieris rapæ.
Hipparchia hyperanthus.
Epinephile janira.
Vanessa urticæ.
Lycæna icarus.
Sesia bembeciformis.
Zygæna filipendulæ.
Eubolia mensuraria.

Larvæ.

Pieris rapæ.
Pyrameis atalanta.
Pyrameis cardui.
Dicranura vinula.
Notodonta ziczac.
Orgyia antiqua.
Plusia gamma.
Gonoptera libatrix.

For the Botanical Section, in the absence of all its officers, Mr. A. Clarke, of Huddersfield, reported that considering the limited time at their disposal, the botanists were fairly successful in obtaining specimens of many of the plants recorded for the district. Notwithstanding that only a limited area was investigated, the following were exhibited at the meeting of the section:—*Hottonia palustris*, *Stellaria media* var. *neglecta*, *Silaus pratensis*, *Centaurea nigra* (rayed form), *Lemna gibba*, *Ononis spinosa*, *Linum catharticum*, *Convolvulus soldanella*, and *Psamma arenaria*; in addition to which were also found:—*Myosotis palustris* var. *strigulosa*, *Sparganium ramosum*, *Sagina apetala*, *Filago germanica*, *Trifolium fragiferum*, *Agropyron acutum*, and a number of other more commonly occurring coast plants. The specimens brought as *Carex punctata* turn out upon further examination to be *C. distans*. *Hordeum maritimum* was found very plentifully distributed on the cliffs. None of the members reported any noteworthy finds of cryptogamic plants, though doubtless if more time had been available they would have found it a productive district.

Mr. Alfred Harker, M.A., F.G.S., who reported in the absence of all the officers of the Geological Section, writes that the geological contingent found in the cliffs south of Withernsea ample opportunities for seeing something of the Glacial and Post-glacial history of the Holderness district, although time did not permit of a sufficiently detailed study of all the points of interest, and it would be difficult in a day's excursion to add anything material to what is known of this much-explored tract. The bulk of the party made their way by road to Out Newton, and, descending to the beach, examined the base of the cliffs at Dimlington High Land. This is one of the few places where the lowest or Basement Boulder-clay is exposed. The peculiarities of this clay, and especially the evidences of the grinding action of the ice as seen in the crushing and rolling out of boulders, were here studied. The general character of the boulders themselves was noted. Besides the rocks found in place along the coast to the north, the Carboniferous beds of Teesdale and the higher districts were well represented, while such rocks as the augite-syenite and 'Rhombenporphyr' of the Christiania district, with gneisses, garnetiferous mica-schists, and granites, indicated the foreign origin of part of the material. Shell-fragments were found occurring frequently in this Basement-clay, and Mr. Stather, who had come down at an earlier hour, found good specimens of several shells, such as *Astarte borealis*, *A. compressa* (?), *A. sulcata*, fragments of *Cyprina islandica*, *Tellina baltica* (?), *Dentalium*, and *Balanus*. Waterworn *Cardium echinatum* (?), *Saxicava rugosa*, and

Turritella erosa, were also among the finds. The Basement-clay occupies about 20 ft. of the cliff at Dimlington, and is succeeded by well-bedded loam and gravel, reaching an unusual thickness up to 20 ft. Above this come the Purple Clays and higher deposits which are better studied farther north, and were well seen as the party returned to Withernsea by the coast. The Basement-clay sinks below the beach at Out Newton, and for most of the way the lower part of the cliffs is occupied by the Purple Clay. The chalky base of this was studied at several points, and the division into an Upper and Lower Purple Clay, marked usually by a more or less laminated band, was also noted. Here the Norwegian boulders are perhaps less abundant, while the coming-in of occasional Lake District rocks seems to be another point of difference from the Basement Clay. The Shap granite and the porphyritic lava of Eycott were found. Above the Purple Clay the Hessle gravels and sands seem to be fairly constant along this line, while the red Hessle Clay generally forms the uppermost part of the cliffs. In several places, however, the well-known lacustrine deposits belonging to a much more recent date were observed. A fine example occupies the low cliffs for some distance to the north of Out Newton. Here occur fresh-water marls to a thickness of eight or ten feet, crowded with shells. *Sphærium corneum*, *Pisidium* sp., *Valvata piscinalis*, *Limnæa peregra*, etc., were found, besides fish-vertebræ. Above the marl come peaty layers to a thickness of two or three feet, the lower bands being largely compacted masses of leaves and wood. Another large lacustrine deposit, showing a somewhat similar section, was examined immediately north of Nevill's Drain. Here too were found abundant *Limnæa peregra*, besides occasional *L. stagnalis* (?), *Planorbis complanatus*, etc.

Throughout the day's journey the evidences of the waste of the cliffs was prominently exhibited. The defences erected at Withernsea some twenty years ago, seem to have accelerated the destruction of the coast-line to the immediate south, by cutting off the supply of beach-material travelling from the north, which should constitute to some extent a natural protection to the cliffs.

The meeting then concluded with a unanimous vote of thanks to the chairman, proposed by Mr. Edwin Hawkesworth, of Leeds, and an announcement of the Fungus Foray at Malton, and meeting at Coxwold in September, after which the members made their way to the railway station, and proceeded by the 6.28 train to Hull, en route for their various destinations.—W. D. R.

NOTES AND NEWS.

In 'Nature,' June 16th, 1892, is an account (with plan) of the opening of the Liverpool Marine Biological Station at Port Erin, Isle of Man, on the 4th of June.

NOTES—LEPIDOPTERA.

Colias edusa near Doncaster.—On May 29th last I captured a fine female specimen of *Colias edusa* in Edlington Wood, near Doncaster.—E. G. POTTER, 19, Price Street, York, August 26th, 1892.

Colias edusa in Holderness.—Mr. Tom Petch, B.A., and I were on a tour on the Holderness coast from Spurn to Bridlington the other week, and whilst at Kilnsea (25th ult.) we caught a specimen of *Colias edusa*.—FRED. W. FIERKE, 52, Francis Street West, Hull, September 4th, 1892.

Lepidoptera at Greta Bridge.—With reference to the excursion of the Yorkshire Naturalists' Union to Teesdale, on June 6th, I unfortunately missed my train and was not, in consequence, able to attend the meeting at Darlington. In addition to the species reported in the 'Naturalist,' page 211, I took *Selenia lunaria* near the Tees, and Mr. Wm. Mansbridge, of Horsforth, and myself obtained many larvæ of *Epunda viminalis* from the willows.—E. G. POTTER, York, August 25th, 1892.

Acherontia atropos near Bradford.—At the last meeting of the Bradford Naturalists' Society (Sept. 5th), Mr. B. Illingworth showed a beautiful example of the Death's Head Moth, taken at Heaton in August last.—J. W. CARTER, Bradford, Sept. 5th, 1892.

NOTES—BOTANY.

Outline Flora of Lincolnshire.—Messrs. White, the well-known directory publishers, of Sheffield, are to be most heartily congratulated on their intention to include in the 1893 edition of their 'Lincolnshire Directory' a condensed botanical account (to occupy about 34 quarto pages) of Lincolnshire from the earliest times to the present day, showing the successive changes in the vegetation, with a full bibliography and a list of the 1476 species of which the Flora is made up, the dates of earliest notices for each division (N. and S.) of the county being given in every case, the whole from the competent pen of Mr. F. Arnold Lees.

Andromeda polifolia in West Yorkshire.—In Lees' 'Flora of West Yorkshire,' p. 319, the statement occurs that *Andromeda polifolia* L. 'is a decreasing species, certainly gone from its Adel and Halifax stations, but only within the last 30 years.' It may be worth while to mention, therefore, that a few barren plants of it were seen early in September by my father and myself, and also by my brother and Mr. E. J. Lumb, on the east part of Oxenhope Moor, within two miles of Denholme. This locality is probably within two miles if not less of the Ogden Clough one mentioned in the 'Flora,' but it was certainly in the Aire drainage district.—W. WEST, Junr., Bradford, Sept. 5th, 1892.

Occurrence of Viburnum lantana in North Lincolnshire.—Mr. B. B. LeTall, late of York, has kindly sent me fruiting specimens of *Viburnum lantana* L., from 'The Springs,' Rothwell House, near Caistor, where he found it growing (apparently quite wild) on a recent visit. This appears to be the first record of its occurrence in Lincolnshire. The description of the spot given by Mr. LeTall is as follows:—'It was with a few willows (I think *caprea*), and I think I remember a poplar (*P. nigra*); it was amongst these small trees and bushes at the far end and far side of the pool, away from the village and road. It is far from a house, and not in a definitely-made plantation, as far as I could tell.' Mr. LeTall writes me that 'Mr. W. A. Burkinshaw, on whose farm the shrub is growing, "thinks it has not been planted [there], but has seen several like it in Lincolnshire, although not in a wild state."'

Mr. J. G. Baker suggests the probability of such a frequently-cultivated and bright-berried shrub having been bird-sown; and he tells me he has found it under similar circumstances in North Yorkshire, apparently quite wild, but probably bird-sown. Being a chalk-loving shrub, one would think that, if really indigenous to Lincolnshire, *Viburnum lantana* would be frequently met with on the wolds. Unless more conclusive proof of its nativeness be forthcoming—if such is ever likely to be found—it must, for the present at least, be treated as an 'alien' in Lincolnshire.—J. BURTT DAVY, Royal Gardens, Kew, 23rd August 1892.

ON HYBRIDITY AMONG WORMS.

REV. HILDERIC FRIEND, F.L.S.,

Idle, Bradford; Author of 'Flowers and Flower Love,' etc.

THIS is a subject upon which, as far as I can recollect, I have never seen a single remark in print. The explanation is simple. No one in England has been sufficiently familiar with the different species of earthworms in the past to enable him to detect a case of Annelid courtship which would result in the production of a hybrid. When two individuals have been observed in the act of love-making, it has been assumed that they were both members of one and the same species, and there the matter has ended. On one occasion a student of earthworms suggested to me that a specimen which he had dissected appeared abnormal, and might possibly be a hybrid; but he gave no case which he had observed, or of which he had heard, which would lead him to such a conclusion. Yet it must be admitted, when we come to look carefully into the matter, that unless worms are possessed of some peculiar instinct by means of which they can infallibly distinguish members of their own particular species from all others, there is a tremendous risk of their forming unnatural alliances, and paying their addresses to strangers.

Let us remember, for example, that worms are destitute of eyes, and all such modifications of other organs as may be taken to supply the place of eyes in other low forms of life. Many experiments have been scientifically conducted with a view to ascertain to what extent earthworms are affected by, or capable of realising, the action of light. The results have not been wholly satisfactory, for the simple reason that the experiments have not been conducted with strict reference to specific differences; and I find that there is a great difference between the sensitiveness of one species and that of another. But even if we proved that worms were affected by light in a very marked degree this would not prove that they could detect their mates, as many higher animals do, by the aid of light and vision. It is true that two worms may frequently be seen embracing each other above ground, but this is simply because their burrows do not meet beneath the surface, and they are therefore compelled in many instances to search for their mates on the surface of the soil, while their posterior extremities still cling tenaciously to the sides of their burrows. But I have many times had occasion to note that light is altogether unnecessary for the operation. Last year when I was on a short visit to the Dukeries in Nottinghamshire, a friend took me to a heap of decaying matter to dig for brandlings, and in the very middle of the heap we unearthed

a pair of unusually fine specimens, so securely locked in each other's embrace that it was some time before they could dissociate themselves and crawl about. Very frequently they are found mating under heavy stones, where not a particle of light can possibly penetrate, but the densest darkness prevails. Add to this the further fact that when they pair above the ground the process is commenced at night, and usually terminates when the light returns, that the worms may hie to their burrows ere the proverbial early bird picks them off, and the evidence is complete on that score. Worms have no eyes, and do not need light to enable them to complete their round of sexual duties.

It must be borne in mind that earthworms, like many other animals, and the majority of plants, are hermaphrodite. There is, however, more than one form of hermaphroditism. A plant may bear flowers which yield both stamens and pistils, and if the pollen from the former falls on a style of the same blossom, the ovules may be fertilised and the seeds rendered capable of germination. In other plants, however, like the primrose, one flower yields up its pollen for that brought from a different plant, and self-fertilisation is either impossible, or will be resorted to only in case of emergency. Some hermaphrodite flowers, again, are absolutely incapable of self-fertilisation, and these may be taken to represent the earthworm. The ovules of one must be brought into vital contact with the spermatozoa of another. In the case of flowers, insects are the chief agents for the transport of the pollen, but worms must themselves go in search of other worms in order that the life-germs may successfully coalesce.

Some forms of animal life, which are either destitute of the sense of vision, or cannot use it for these purposes even when possessed, are able to employ other methods for the accomplishment of their ends. Thus we find the organs of smell so fully developed in some insects that they depend entirely upon this sense for detecting the whereabouts of their mates. Others make a variety of sounds, depending upon the organs of hearing for securing the attention of those they wish to charm. So far as we can gather, however, earthworms are destitute of hearing, and their sense of smell is only in a very elementary stage of development so far as we can judge by ordinary tests. Yet, if they do not possess some peculiar sense of touch, or a sixth sense whose action we mortals are incapable of appreciating, it must be largely by means of taste organs, or the ability to detect certain scents, that worms identify one another.

At this point we are led to inquire whether the power possessed by certain species of worms to secrete a variety of fluids may not

have something to do with the question of sexual intercourse. Not one of the many writers whose works I have been able to consult has given a satisfactory reason why the brandling, and several other species, pour out at certain times from their dorsal pores a peculiar, and in some cases highly pungent, fluid. I have been able, by the careful study of this subject, to do something towards a solution of certain problems which this fact involves. I have also found that our indigenous species fall naturally into certain groups or divisions, and that each division is marked by its own peculiarity in the matter of secretions. No true *Lumbricus* secretes turbid, highly-coloured, or foetid fluids. In the genus *Allolobophora* several species of the Dendrobænic group exude such a secretion, but the mucus differs from that of the earthworms, while the Lumbricoid *Allolobophoras* more nearly approach the typical genus. Another group is capable of secreting offensive fluids—such, at any rate, they prove to most anthropoid nasal organs—while yet another secretes fluids which are destitute of any strong odour. Since the worms can smell and taste, they can detect the presence of anything peculiar which affects these organs, and thus, without doubt, each group can identify its own members.

Here, however, the identity seems to end. How can one *Lumbricus* determine whether another *Lumbricus* does or does not belong to the same species? There are at present four known species* of *Lumbricus* in Britain, and what is to prevent these species intermingling? This is a very natural question. It may be answered, in the first place, that there is so wide a difference in size between the largest species (*L. terrestris* Linn.) and the smallest (*L. purpureus* Eisen), that the two are as unlikely to mate as the tiger and the cat might be if living in the same forest. In the next place it may be asserted that the largest species usually affects rich garden or arable soil, while the medium-sized species are found chiefly in fields, and therefore are seldom coming in each other's way. We must admit the truth of these replies, and still there is room for at least three forms of hybridity. Thus we find in the same localities three species of *Lumbricus*, any two of which may pair. This would give us the following results:—

- (1) *Lumbricus rubellus* + *rubescens*.
- (2) *Lumbricus rubellus* + *purpureus*.
- (3) *Lumbricus rubescens* + *purpureus*.

*I exclude *Lumbricus eiseni* Levinsen, because, though it occurs freely in England, it does not properly belong to this genus, and may yet prove to be a type of a new genus altogether. At present I class it among the *Dendrobænae*.

If we add that the common species is capable of copulating with two of the foregoing, we get in addition :—

(4) *Lumbricus terrestris* + *rubellus*.

(5) *Lumbricus terrestris* + *rubescens*.

The next question is—Do such crosses ever occur in nature? I have been fortunate enough to observe recently a very interesting case, which enables me to give an affirmative answer.

I was walking during Easter week through some fields in the suburbs of Bradford, when my eye alighted on an old piece of sackcloth decaying in a ditch. The worm-hunter should never pass a thing of this kind indifferently: I have found my richest treasures under such materials. This was the case here. Suddenly lifting the rotten sackcloth, I observed a pair of worms in close juxtaposition. I had sufficient time to observe the nature of their relationship before they withdrew into their burrows, from which I instantly abstracted them both. Judge of my surprise when I found them to belong to two distinct species. They were so nearly of a size, colour, shape, and general appearance, that they would inevitably have passed as one and the same species had I not recently worked out their characters, and identified them before they withdrew. On exhuming their bodies, I found them not only sexually mature, but one (*L. rubescens* Friend), representing a species new to science, had on its ventral surface three spermatophores filled with life-germs.

The two species are closely allied, and yet perfectly distinct. Their differences are few, but well-marked, and may be thus expressed:—

L. rubellus Hoffm.

L. rubescens Friend.

Male pore hidden.

Male pore on papillæ.

Girdle, 27-32.

Girdle, 34-39.

Tubercula pubertatis, 28-31.

Tubercula pubertatis, 35-38.

No preclitellian papillæ.

Papillæ on segment 28.

In all other respects, whether we study the external or the internal features, the two worms may be said to appear identical. How, then, could one detect the other's specific difference? I am unable to affirm that worms possess an instinct, or a means of determining relationships, which is infallible, and feel convinced that the observation I have recorded will be capable of frequent verification, if only the observer possesses sufficient knowledge of specific differences to determine a case when observed. I am further convinced that patient research in this direction will yield results of the utmost importance in their bearing upon the evolution of those indigenous species of worms which are now usually placed under the genus *Allolobophora*. I have side-lights on this subject from another quarter, which I must not at this moment introduce.

In Memoriam.

ALEXANDER NORMAN TATE, F.I.C.

WHEN a man so well known, so universally esteemed, as the late Mr. A. Norman Tate passes away from among us, it is impossible at once to realise the full extent of our loss. Those who have ever been brought in contact with him will feel that it is a real calamity to have him removed from their midst in the very prime of life; and, apart from the public usefulness of his profession, in which he had attained



so well deserved an eminence, his loss as a citizen, ever active in self-sacrificing labours in the cause of popular education, will be felt far and wide. Many a young man owes both position and livelihood to Mr. Tate's help and teaching; while his valued counsel and friendly aid will long be missed by those who were privileged to enjoy his friendship or to associate with him in one direction or another of his public work. Mr. Tate's death (which occurred, after a long illness, on the 22nd July) leaves a distinct void in the intellectual life of Liverpool. In the commercial world, too, his

services as an able and reliable analyst had gained for him a reputation extending over a far wider circle, reaching even to the Continent.

In the limits of this notice it is only possible to allude to the more salient points of his energetic career. Mr. A. Norman Tate was born in 1837 at Wells, Somerset, and educated at the Chapter Grammar School of that city, where his father, the late Mr. James Tate, was an alderman. He early evinced a taste for chemistry, and engaged for a few years in the study and practice of pharmacy. Coming as a young man to Liverpool, he entered the laboratory of the late Dr. Sheridan Muspratt, devoting himself to practical analysis and general chemistry. His researches were, even then, marked by unusual ability; several of his papers being read before the Chemical Society of London and the Royal Society of Dublin. On leaving the laboratory he held the appointment of chemist to Messrs. John Hutchinson & Co., of Widnes, and was afterwards charged with the superintendence of the details of the various manufacturing processes and the construction and working of the chemical plant.

At the time of the original importation of petroleum into this country from America, Mr. Tate devoted special attention to the matter, and soon became a recognised leading authority, a memoir on 'Petroleum and its Products,' which he published, being translated and re-issued in France and Germany. His study of the oil question led to other appointments, in the course of which he superintended the working of an oil refinery in the Isle of Man, and, later, the designing and erection of a manufactory for the refinement of coal and shale oils in Flintshire. He then recommenced his analytical practice in Liverpool, which has, by his efforts and those of his brother, Mr. Frank H. Tate (now head partner of the firm), grown into one of the largest practices of the kind in the country. Mr. Tate was a specialist in the examination of oils and fats and in water analysis, and his firm holds several 'retainers' as consultant chemists and chemical engineers to Corporations and other public bodies, besides several large chemical manufactories.

His public educational work commenced soon after he settled in Liverpool, and both by teaching and lecturing he did much to popularise science. In 1870, in conjunction with Mr. James Samuelson, he initiated the Liverpool Science and Art Classes, and for a long series of years he not only superintended the classes as honorary principal, but devoted four or five evenings a week, after the business of the day was over, to personally teaching several of the subjects, such as chemistry, hygiene, physiology, botany, and general biology. In this work he was aided by Mr. W. Narramore, F.L.S.,

and other teachers, who were impelled by love of the cause rather than any pecuniary emoluments. In addition to these classes, Mr. Tate devoted much time and money to his own School of Technology and Chemistry in Hackin's Hey, Liverpool, where he has trained some hundreds of useful chemists, physiologists, and sanitarians.

The various scientific and learned societies of Liverpool found an ardent supporter in Mr. Norman Tate. He established the Liverpool Science and Art Teachers' Association, and took the liveliest interest also in the Geological Association, as well as in the Science Students' Association, founded by him on a basis which has enabled it to pursue—notwithstanding some minor vicissitudes—a flourishing career of usefulness and success. He did not spare himself in placing at the service of these Societies his own time (always valuable to a professional man), and was ever ready with assistance in organising and carrying on their operations. In giving information or assistance to those who were preparing papers of their own he took often as much interest and trouble as for himself, lending books, specimens, or microscopes, in order that the expositions should be as complete as possible. Mr. Tate had been president of all the above mentioned societies, and also of the Society of Chemical Industry (Liverpool section) and Microscopical Society; having been an active officer, too, of the local Geological, Biological, and Physical Societies. He was a Fellow of the Society of Chemical Industry (London) and of the Society of Public Analysts, Chemical and Geological Societies of London, and member of council of the Institute of Chemistry of Great Britain and Ireland.

To geology he did good service in analysing many of the rocks in the neighbourhood of Liverpool. He discovered the mineral *iserine* in the decomposed greenstones of the boulder clay in the valley of the Mersey, and showed that the colour of certain black bands in the local Triassic sandstones was due to the presence of manganese.

His love of all out-door sports and of botany was evinced from boyhood. In later years he was never so happy as when conducting or accompanying a party of students in a country ramble. On such occasions his characteristic restless energy would assert itself; every leafy nook or quiet pond would be explored, while his geniality and ready wit would always enliven the more arduous labours of the day. An excursion with Mr. Norman Tate was no mere introduction to the 'dry bones' of science, but a real pleasure and enjoyment not easily forgotten.

Mr. Tate's capacity for work was enormous. At a time of life when few men care to increase their engagements and responsibilities,

but rather wish to retire and enjoy the fruits of the fame they have won, he, in 1888, established and personally conducted *Research*, a monthly scientific journal. Added to the already heavy professional demands upon his strength, and his other educational work, this task was a remarkable one to undertake. The conduct of a journal nowadays involves an amount of personal labour which can, perhaps, be only properly appreciated by those who have tried it. Although the experiment met with a considerable amount of support, the health and increasing private engagements of its editor necessitated its withdrawal after a short career of two years. As one closely connected with this venture from its inception, I have pleasure in bearing testimony to the cordial appreciation which Mr. Tate's editorial efforts received not only from his many contributors, but from the conductors of journals which were friendly rivals to his own.

A career which has developed so many schemes of usefulness affords a valuable stimulus to similar spirited efforts. If I have dwelt too little on his public labours, and too greatly on the man himself, it is because Mr. Norman Tate's own personality—his innate kindness of disposition—has been so strongly impressed upon me, as it has been on many others, to whom his friendship will always be one of the most pleasurable recollections.

OSMUND W. JEFFS.

NOTES—ORNITHOLOGY.

Food of Dipper.—The gizzard of a water-ouzel (*Cinclus aquaticus*), recently shot at the fish-ponds here, contained a caddis-worm, four grubs, portions of aquatic larvæ, and remains of two spiders. These birds are seldom molested although they have been seen to take trout fry from the ponds. Never, however, in any instance has the remains of a fish been found on dissection. They nest here regularly.—J. J. ARMISTEAD, Solway Fishery, Dumfries, Aug. 13th, 1892.

Baillon's Crake near Pocklington, and White Varieties of the Jay near York.—Year by year numbers of birds fall victims to the telegraph-wires, and if these 'patent guillotines' continue to multiply as they are doing at present, many more casualties will doubtless occur. The number of scarce birds already on the 'list of killed' by wires in our county is considerable, and the last which has come to my knowledge is among the scarcest. An adult male Baillon's Crake (*Porzana bailloni*) was picked up under a wire between Pocklington and Wilberfoss last Whitsuntide, and was sent to Mr. Allen, bird-stuffer, of York, to preserve, who, notwithstanding a great wound in the breast, has made a respectable specimen, and very shortly it will appear (where all scarce Yorkshire birds should) in the new British bird collection in York Museum. Previously some half-dozen specimens only of Baillon's Crake appear to have been recorded from Yorkshire.

Whilst writing I may record two varieties of the Jay (*Garrulus glandarius*) which were recently acquired within a few miles from York. In one some of the primaries and greater coverts (mostly inner webs) are dusky tipped, also nearly all the tail feathers; otherwise snow-white. Bill, pale horn-brown.

The second specimen was whiter still, having a few dusky marks on the wings only. Both birds were quite young when killed, and purport to have come from two different nests.—J. BACKHOUSE, Harrogate, Sep. 8th, 1892.

THE AVI-FAUNA OF ARKENGARTHDALE, SWALEDALE, AND THE NEW FOREST.

JOHN E. TINKLER,

Caunton, Newark.

IN the following notes I have tried to give as exact an account as possible of the observations and enquiries made by myself in the above district during the past twelve years. It comprises the entire drainage area of the Swale and Arkle to within a mile or two of Richmond. Arkengarthdale and High Swaledale are mainly composed of a lofty group of fells, reaching their highest point in Great Shunnor Fell, 2,346 feet above sea-level, and seldom reaching a lower elevation than 1,600 feet. They are mainly cragless, treeless sweeps of moorland, their surface composed of peat bog, ling, coarse grass and bents, mixed with swamp, with here and there a small tarn or reservoir, the latter constructed for lead-mining purposes. These are succeeded by lower ranges of hills varying in altitude from upwards of 1,600 feet, until at Applegarth and the Red Scars at the extreme limit of my district, the heights of 950 and 965 feet respectively are reached. The highest point of the New Forest is Kexwith Moor, 1,450 feet. The tops of these lower hills much resemble the higher fells as to their surface, but many of their edges are margined by fine limestone precipices, the most notable being Kisdon, Winterings, Ellerton, Downholme, Red, Garnless, Clints and Applegarth Scars in Swaledale; the Fell End Scars in Arkengarthdale, and Casey Green Scar in the New Forest. Besides the two main valleys containing the rivers Swale and Arkle, the hills and fells are intersected by numerous deep ravines called Gills, containing smaller streams or becks, often well wooded on their lower slopes with mountain ash, birch, hazel, juniper, yew, holly, thorn and other trees and bushes, and many of them having small but beautiful waterfalls. Some of these gills are margined by fine limestone crags, notably, East Stonesdale, Swinnergill, Gunnerside Gill and Oxnop Gill in Swaledale, and Little Punchard Gill in Arkengarthdale. Cotterby and White Wallis Scars are fine examples of wood-clothed crags by the Swale near Keld.

The largest sheet of water is Birkdale Tarn, about half a mile in circumference, on an elevated moorland not far from the source of the Swale. There are also Summer Lodge, Frith and Whitaside Tarns in Swaledale, and Hoove Tarn in Arkengarthdale, all at an elevation of over 1,600 feet. The largest reservoir is Moss Dam,

above Gunnerside, and there are many others scattered over the district wherever there are lead-workings.

The chief woods in Swaledale are found below Reeth, near Grinton, Marrick, Ellerton, Marske, Applegarth (noted for its yews), and Downholme. Above Reeth, beyond large patches of thorn, wild briar, and hazel bushes (chiefly on the hill slopes between Keld and Low Row), scattered clumps of trees here and there, and fir plantations on Whitaside, Crackpot, Kisdon, and at Thirnswood, there is very little woodland. Scar and Eskeleth are the chief woods in Arkengarthdale, and there are besides several smaller plantations and scattered groups of trees, together with patches of thorn, hazel, etc., here and there in the lower part of the valley, but by far the greater part of the dale is without wood. The New Forest is fairly well wooded, Rispey and Hollin Woods being a fair sample of the woods which formerly clothed the hill slopes and valley bottoms of the whole district. Hedges are almost unknown, stone walls taking their place. The enclosed and cultivated part of the district lies mainly on the slopes of the hills and in the valleys. In Arkengarthdale and Higher Swaledale it consists entirely of pasture and meadow land; in Swaledale, below Reeth, there is some arable land, but of no great extent.

There are several species of birds which I have little doubt occur, but I have never seen them myself, and have no information respecting them. For instance, the Grasshopper Warbler, Tree Sparrow, Hawfinch, and Little Grebe are all found in Teesdale and Wensleydale, on either side of my district, while the Quail and Redshank both breed in Wensleydale. Wild geese often pass over in winter, and have been shot from time to time, but never having had an opportunity to examine any I cannot determine the species. The Tufted Duck, Goldeneye, Goosander, and Whooper have all been obtained on the Swale near Richmond, on the outskirts of my district, and I have no doubt that stray specimens of these and others of the Anatidæ occur most winters within its limits, but are not distinguished by those who see or obtain them, being simply classified as 'wild duck' or 'teal.' In the early years of this century the Hen and Marsh-Harriers must have been found all over our moors, for on the Teesdale moors, a very few miles away, they were then very abundant, as mentioned by the late Mr. Hancock in his 'Birds of Northumberland and Durham.' About ten years ago, Mr. M. Willey saw, near the Roe Beck, in Arkengarthdale, a large white hawk, slightly spotted with black, carry off a grouse a few yards away from him. He had no gun with him, or could easily have obtained it. This was most probably a specimen of the Iceland Falcon.

My best thanks are due to my friends Mr. J. G. Goodchild, F.G.S., etc., and Mr. M. Willey, of Scar House, Arkengarthdale, for much valuable information, and especially to the latter for every possible facility afforded me in carrying on my ornithological investigations. I have also to thank Mr. V. Coates, of Booze, Mr. Croad, of Ellerton, Mr. M. Cherry, of Ivelet, Mr. E. Broderick, of Summer Lodge, and Mr. John Wilson and Mr. J. Waggit, of Keld, for much useful information. To make my list as complete as possible, I have laid under contribution all notices of the occurrence of rare birds I have been able to find in the 'Zoologist,' 'Naturalist,' 'Field,' etc.

Turdus viscivorus. Missel Thrush. Local name, Jay Throstle.

An abundant resident. Nests in solitary trees in the most remote gills and on the ledges of stone walls and sheep folds in the higher parts of the district. Towards winter congregates in small parties, and in very severe weather entirely leaves the higher parts of Arkengarthdale and Swaledale.

Turdus musicus. Song Thrush. Local name, Bell Throstle.

A common resident, confined to the valleys. Leaves the higher parts in very severe weather, but speedily returns.

Turdus iliacus. Redwing. A regular winter visitor to Swaledale below Reeth. In Arkengarthdale and Upper Swaledale it only occurs in small numbers. Arrives early in October, and has usually gone again by the end of the first week in April.

Turdus pilaris. Fieldfare. Local name, Felfaw. A regular winter visitor to Swaledale below Reeth. Only found in very small numbers in Arkengarthdale and Upper Swaledale. Arrives early in October, and has gone again by the end of the first week in April.

Turdus merula. Blackbird. Local name, Black-wuzel. A common resident, confined chiefly to the valleys, though I have found it straying far out on the moors, and it is occasionally caught in the pole-traps.

Turdus torquatus. Ring Ouzel. Local name, Rock-wuzel.

A common summer visitor throughout the district, arriving towards the end of March and leaving at the end of September, at which time the mountain ash and other berries begin to fail. It nests among the ling and on ledges of rock right up to the gill heads, and at all elevations. Juniper and other bushes, plantations of young firs, and among roots on a bank side are often chosen; ivy-covered rocks, especially those near a stream, are very favourite sites, while far out on the moors the ledges of a stone wall or sheepfold serve the purpose.

Cinclus aquaticus. Water Ouzel or Dipper. Local names, Water Crow, Bessie Douker. A very common resident, being found by every stream throughout the district up to the gill heads. No weather seems too severe for it, and it is one of our very earliest nesters, frequently having fledged young early in April. Two broods are invariably reared. Year after year a pair will be found nesting on the same site, and very often utilising the old nest. On suddenly coming upon a nest on a rock by a beck side full of fledged youngsters, it is amusing to see the way they will tumble into the water, dive, reappear some yards further down, and swim away. I have seen the same thing happen with an adult bird when suddenly aroused from her nest.

Saxicola œnanthe. Wheatear. Local name, Stonechat. A common summer visitor throughout the district, arriving about the end of March and staying until about the middle of September. Breeds both in the valleys and on the tops of the highest fells.

Pratincola rubetra. Whinchat. Local name, Utick. An abundant summer visitor to the pastures and meadows of the district. Arrives early in April and stays until September is well advanced. Much more plentiful in some years than in others. For instance, from 1883 to 1888 it was very common, while in 1889 and 1890 hardly any were to be seen.

Pratincola rubicola. Stonechat. I have never observed this species myself, though in Arkengarthdale I kept a sharp look-out for it. However, I am assured it occurs in Upper Swaledale. Mr. Goodchild in his list ('Naturalist,' August 1890) says it is there a 'less common resident.' The dalesmen always speak of the Wheatear by the name of Stonechat.

Ruticilla phœnicurus. Redstart. Local name, Firetail. A regular summer visitor, arriving from the middle to the end of April and leaving again in September. Common about stone walls (especially in the vicinity of houses if ivy-covered or moss-grown), also by the borders of woods.

Erithacus rubecula. Redbreast. Local name, Robin. An abundant resident throughout the valleys of the district.

Sylvia cinerea. Whitethroat. A summer visitor to the valleys, arriving about the third week in April and leaving in September. Below Reeth, towards Richmond, and in the New Forest it is common. In Arkengarthdale and Upper Swaledale it is only found in small numbers.

- Sylvia curruca. Lesser Whitethroat.** A summer visitor to the New Forest, and about Marske and Ellerton in Swaledale. I have never seen it in Arkengarthdale or Upper Swaledale.
- Sylvia atricapilla. Blackcap.** A summer visitor to the woods and cultivated parts of the district. Decidedly rare in Arkengarthdale. More numerous below Reeth and in the New Forest.
- Sylvia hortensis. Garden Warbler.** The remarks made upon the last species will apply equally well to this.
- Regulus cristatus. Goldcrest.** A common resident wherever there are fir plantations throughout the district.
- Phylloscopus rufus. Chiffchaff.** A common summer visitor to all the valleys, arriving about the end of March or early in April.
- Phylloscopus trochilus. Willow Wren.** The same remarks will apply as to the last named species.
- Phylloscopus sibilatrix. Wood Warbler.** A very local summer visitor to the valleys. I have noticed it in the lower portion of Arkengarthdale, in the New Forest, and about Ivelet and Marske in Swaledale.
- Acrocephalus schœnobœnus. Sedge Warbler.** Local name, Grey Bird. A summer visitor, arriving about the end of April. Rare in Arkengarthdale and Upper Swaledale.
- Accentor modularis. Hedge Sparrow.** A common valley resident throughout the district. Found to the very verge of the enclosed lands.
- Acredula rosea. Long-tailed Titmouse.** Resident in Lower Swaledale and the New Forest. I have never seen it in Upper Swaledale or Arkengarthdale.
- Parus major. Great Titmouse.** Local name, Black-cap. A common valley resident throughout the district.
- Parus britannicus. Cole Titmouse.** Resident and abundant in all the woods.
- Parus palustris. Marsh Titmouse.** A common valley resident.
- Parus cœruleus. Blue Titmouse.** Local name, Blue-cap. A common valley resident.
- Certhia familiaris. Creeper.** A scarce resident in woods throughout the district. Occurs more frequently in Lower Swaledale.
- Troglodytes parvulus. Wren.** A very abundant valley resident.

Motacilla lugubris. Pied Wagtail. A common summer visitor to Arkengarthdale and Upper Swaledale up to the gill heads. I cannot call it a resident as, although I have seen odd birds about during the winter from time to time, the great bulk of those that nest there depart in late autumn, and do not return until the following March. Resident in Lower Swaledale and the New Forest.

Motacilla melanope. Grey Wagtail. A common summer visitor to the valleys and gills throughout the district, being found nearly up to the gill heads. Arrives towards the middle of April and leaves again in early autumn. Like the Dipper they resort year after year to the same spot to nest. In Farn Gill, Arkengarthdale, I know one piece of rock where for ten years there has been a nest, and always on the same ledge. There are two broods, the first hatched early in May, the second in June. On 7th June, 1882, I found the hen sitting upon three eggs in Farn Gill, and was allowed to lift her off the nest before she would move. On 1st June, I had pulled out the old nest, consequently this one had been built and the eggs laid in six days.

Motacilla raii. Yellow Wagtail. A common summer visitor to the meadows and pastures all over the district, arriving towards the end of April.

Anthus pratensis. Meadow Pipit. Local names, Moor Lark, Ling Squeaker. A very abundant resident, though during the winter it leaves the high moors and upper parts of Swaledale and Arkengarthdale. Nests among the ling to an altitude of 2,000 feet.

Anthus trivialis. Tree Pipit. A common summer visitor to the valleys, especially frequenting pastures and meadows on the outskirts of woods. Arrives towards the end of April.

Lanius excubitor. Great Grey Shrike. One shot near Whitcliffe Scar, 8th November, 1865. Probably an irregular winter visitor.

Lanius collurio. Red-backed Shrike. A rare and very local summer visitor. Two pairs nest every year among the thorn bushes between Ivelet and Low Row, and it also nests near Marske. I have never seen or heard of it in Arkengarthdale or the New Forest.

Ampelis garrulus. Waxwing. An irregular winter visitor. During the winter of 1866-67 large numbers were seen near Grinton, and several shot.

- Muscicapa grisola. Spotted Flycatcher.** A common summer visitor, arriving early in May and leaving about the beginning of September. Found up to the very verge of the moors.
- Muscicapa atricapilla. Pied Flycatcher.** A rare and very local summer visitor to Lower Swaledale, a few pairs nesting annually near Marske. I have no note of its occurrence higher up the valley than Reeth, near which place a male was shot 29th April, 1858.
- Hirundo rustica. Swallow.** A common summer visitor, arriving about the end of April and leaving in October. I often find it nesting in shepherds' huts high on the moors.
- Chelidon urbica. House Martin.** A common summer visitor to the valleys, arriving at the end of April.
- Cotile riparia. Sand Martin.** A summer visitor, arriving about the end of April and leaving about the end of September. I only know of three colonies in Arkengarthdale, neither is it very abundant in Swaledale.
- Carduelis elegans. Goldfinch.** Now a very scarce resident. A few may be found on the hill slopes near Gunnerside, and about Ellerton and Marske. I have never seen it in Arkengarthdale.
- Carduelis spinus. Siskin.** An autumn and winter visitor to the valleys, occurring at times in large flocks.
- Ligurinus chloris. Greenfinch.** A common resident in Swaledale, especially below Reeth. Less abundant in Arkengarthdale.
- Passer domesticus. House Sparrow.** A very abundant valley resident. Occasionally I come across colonies nesting along with the starling and jackdaw, in crevices of the limestone crags, far away from any dwellings.
- Fringilla cœlebs. Chaffinch.** Local names, Scobbie, Bull-spink. A very abundant valley resident, and found to the edge of the moors.
- Fringilla montifringilla. Brambling.** A rare winter visitor to the valleys.
- Linota cannabina. Linnet.** Local name, Brownie. A resident. Most abundant between Keld and Low Row, and about Ellerton and Marske in Swaledale, and in the New Forest. Less numerous in Arkengarthdale, where I have only seen it in Eskeleth, Scar and Booze woods, and near Castle.
- Linota linaria. Mealy Redpole.** On 16th March, 1856, a pair were seen by the late Mr. R. Dakyn, near Hurst, and stayed in the neighbourhood several days.

Linota rufescens. Lesser Redpole. A resident in small numbers in all the valleys.

Linota flavirostris. Twite. A resident in small numbers. It nests on the high fells among the deepest ling, but is very local in its distribution. The higher slopes of Pin Seat, Water Crag, Anniside, Scollit, Cleasby, Hoove, and Booze Moor, in Arkengarthdale, and High Seat, Shunnor Fell, Nine Standards, Rogan Seat, Lovely Seat, Muker Moor, Hurst Moor, Harker Side, and near Summer Lodge Tarn, in Swaledale, are places where I have come across it. As soon as the nesting season is over, it comes into the valleys.

Pyrrhula europæa. Bullfinch. A common valley resident throughout the district, very partial to plantations of young firs for nesting purposes. In autumn and winter goes about in small flocks.

Loxia curvirostra. Crossbill. An irregular winter visitor to the larger fir woods. Probably nests with us, and before the large fir plantations between Cogden and Ellerton were cut down, I believe regularly did so. Nine were obtained near Reeth in October 1856, out of a flock of eleven which had frequented the fir plantation in which they were killed since the previous February.

Emberiza miliaria. Common Bunting. A scarce resident in the meadows of Upper Swaledale; more abundant between Grinton and Marske. I have not noticed it in Arkengarthdale.

Emberiza citrinella. Yellow Bunting. A common valley resident throughout the district.

Plectrophanes nivalis. Snow Bunting. Local names, Snow Bird, Sleighholme Throstle. A regular winter visitor. Most abundant in the higher portion of the district. At times it comes in very large flocks. Generally appears early in November and sometimes stays until the end of April, though the beginning of that month is the usual time for their departure. In Arkengarthdale Head the dalesmen call them Sleighholme Throstles, and it is a local saying that when they come winter may be expected. Exceptionally numerous in the East Gill near Keld, and on Boldershaw, Arkengarthdale, 4th January, 1882.

Emberiza schœniclus. Reed Bunting. A common summer visitor in the pastures and meadows throughout the district.

Alauda arvensis. Skylark. Local name, Lavrock. An abundant resident all over the district, though it leaves the higher grounds during winter. Nests to a considerable elevation among the ling.

- Sturnus vulgaris. Starling.** Local name, Sheepster. A resident, and now very common throughout the district. Most of those with us from spring till autumn leave during the winter months, but even then small parties may be seen from time to time. Quite unknown forty years ago.
- Garrulus glandarius. Jay.** Resident in the woods of Lower Swaledale, but, owing to constant persecution, in much smaller numbers than formerly. Very rarely occurs above Reeth. I have never seen or heard of it in Arkengarthdale.
- Pica rustica. Magpie.** Local names, Pyannot, Pyet. In spite of great persecution it still maintains its hold in Swaledale and the New Forest, and on the slopes of Fell End in the lower part of the Arkle valley. In Arkengarthdale proper it is now a very occasional visitor, and has not nested for over ten years. The last nest known was in the Scars. It is also becoming rare in Upper Swaledale.
- Corvus monedula. Jackdaw.** Local name, Jack. A common resident in Swaledale and the New Forest, breeding in large numbers in the clefts of many of the limestone scars; more rarely about buildings. Curiously enough, though parties pay daily visits to Arkengarthdale on feeding expeditions, I have never known it to nest within the dale.
- Corvus corone. Carrion Crow.** Local names, Dowp, Corbie. Fast becoming a casual visitor instead of a common resident. I have only known of one nest in Arkengarthdale within the space of nine years, namely, in 1882, when a pair built in Little Punchard Gill. There is usually a nest or so in one or other of the many gills of Upper Swaledale, and in the woods between Grinton and Marske. In the higher portion of the district, where woods are scarce, it almost always builds its nest in some mountain ash or other tree sticking out of the side, or in the bottom of some lonely gill, and I have often found it in a thick holly bush.
- Corvus cornix. Hooded Crow.** Common on the fells during the winter, arriving about the end of October, and departing about the end of March. Less often seen in the valleys. In December 1884, a party of thirty were seen about a dead sheep, in Farn Gill, Arkengarthdale.
- Corvus frugilegus. Rook.** There are only three rookeries in the district, namely, at Marske, Fremington, and Healaugh, the two latter of small size. Before the trees were cut down, there used to be one at Ruecroft, in the lower part of the Arkle valley,

but at the present time it is only known in Arkengarthdale while on feeding expeditions, and the same is the case in Swaledale, above Healaugh.

Corvus corax. Raven. Was a common resident throughout the district until the middle of the present century, and to within the last twenty years there were three regular breeding-places in Upper Swaledale; namely, on the Buzzard Scar in Swinnergill, on Oxnop Scar, and on Raven Crag near Summer Lodge. On the first-named crag it nested regularly up to 1879, and on the Oxnop site until 1881. On the latter there was said to have been a nest in 1884, and certainly a pair were seen about all the autumn and winter previously. Constant persecution has, however, quite banished it, and now it is only a passing visitor, save to the fells at the extreme head of Swaledale, where birds breeding in the adjoining county may often be observed. Many years ago it used to nest in the New Forest, and on several of the scars in Lower Swaledale. One was shot on Water Crag in 1877; a pair were seen near Keld in 1881; two were trapped on Bowes Moor in the autumn of 1882; and a pair were seen on the West Moors, Arkengarthdale, in the summer of 1883.

Cypselus apus. Swift. A common summer visitor to the valleys, arriving early in May, and leaving early in September. It is most abundant in the little town of Reeth. About the end of July it leaves the valleys, and betakes itself to the fell tops, and hence is often thought to have gone before it has really done so.

Caprimulgus europæus. Nightjar. Local name, Night Hawk. A summer visitor, arriving in May. Common in Eskeleth and Craig Woods, Arkengarthdale, and in most of the Swaledale woods.

Picus major. Greater Spotted Woodpecker. Has been obtained in the woods of Lower Swaledale. I have never seen or heard of it in Upper Swaledale or Arkengarthdale.

Picus minor. Lesser Spotted Woodpecker. The remarks on the last species will apply equally well to this.

Gecinus viridis. Green Woodpecker. Resident in Lower Swaledale but far from common.

Alcedo ispida. Kingfisher. A scarce resident. Found along the Swale up to Keld. I have not observed it in Arkengarthdale or the New Forest.

Coracias garrula. Roller. A specimen has been obtained at Marske.

- Upupa epops. Hoopoe.** One was shot near Low Row in Swaledale about 1877.
- Cuculus canorus. Cuckoo.** Local name, Gouk. A very abundant summer visitor, being found high on the moors as well as in the valleys. Arrives at the end of April.
- Strix flammea. Barn Owl.** A scarce resident in Lower Swaledale. A specimen shot in Oxnop pasture is the only note I have of its occurrence in Upper Swaledale. In Arkengarthdale it is unknown.
- Asio otus. Long-eared Owl.** Resident and not uncommon in the larger fir-woods. Often taken in pole-traps on the moors. One shot at Hope, 24th December, 1888, and one found in the dale head trap, Arkengarthdale, 27th June, 1883.
- Asio brachyotus. Short-eared Owl.** Local name, Woodcock Owl. An autumnal visitor, usually arriving with the Woodcock, whence it obtains its local name. Occasionally breeds upon the moors.
- Syrnium aluco. Tawny Owl.** Local name, Jennie Hewlet. Resident, but in no great numbers; just managing to hold its ground under the severe persecution it undergoes. Breeds throughout Swaledale as far as Keld, and in the New Forest, varying its choice of a site, between a hollow tree or a hole in a rock. In Arkengarthdale it almost ceased to be a resident, and for some years I never heard one; however, in the winter of 1888, a pair took up their abode again in Scar Wood. Often taken in pole-traps on the moors.
- Circus cineraceus. Montagu's Harrier.** One shot in Rash Gill, near Muker, in Upper Swaledale, in the spring of 1870.
- Buteo vulgaris. Common Buzzard.** Now a casual visitor, chiefly occurring in autumn and winter. It bred regularly on the Buzzard Scar in Swinnergill, until 1870. The last recorded instance of its nesting in Lower Swaledale was in 1853, when the unusual number of five young ones was found on the Red Scar, near Marske. The father of the present Mr. Wood, of Ellerton, remembered when a boy, both buzzard and raven nesting on the scars on the outskirts of Richmond, and fierce battles used to take place between the two species for possession of the nesting sites. I have no note of its breeding in Arkengarthdale or the New Forest, but doubtless it did so some forty or fifty years ago, and that not uncommonly. Has been obtained within recent years at Ellerton. One seen near Keld, in August 1880, and again in 1881. One trapped on Scollit, in the winter

of 1881, and another in October, 1886. One seen near Scar Wood, in September 1886, another in December 1888, and one near Booze, Arkengarthdale, 27th December, 1882. One seen near Helwith, in the New Forest, 15th March, 1882.

Archibuteo lagopus. Rough-legged Buzzard. A fairly regular autumn and winter visitor to the moors. One shot at Ellerton about 1876; another trapped in Arkengarthdale in October 1887.

Accipiter nisus. Sparrow-hawk. A resident and still common species throughout the district, few plantations of any size being without a pair, and this in spite of very great persecution.

Milvus ictinus. Kite. Has not occurred within recent years. Mr. Goodchild in his list ('Naturalist,' August 1890) says it was common thirty years ago.

Falco peregrinus. Peregrine Falcon. Local name, Great Blue Hawk. A pair usually breed on some crags not far distant from the head of Swaledale, consequently it is observed on the moors in the upper part of the district at all seasons of the year, and may fairly be called a resident species. During the autumn and winter months it becomes more common, owing to migratory individuals making a passing stay. In the spring of 1881 one was shot near Kisdon Force, in Swaledale, and in the December following another was obtained from the same locality. In January 1886 one was picked up dead in William Gill, Arkengarthdale, and in the autumn of the same year one was seen to carry off a grouse on Blakethwaite Moor, in Swaledale. In December 1888 one was seen near Shaw Farm, Arkengarthdale, and another on the West Moors on the 31st of the same month.

Falco æsalon. Merlin. Local name, Little Blue Hawk. Resident on the moors for the greater part of the year, leaving us towards October and returning again about the middle of March. Occasionally a straggler is observed in winter, generally in Lower Swaledale. It still breeds not uncommonly on the high moors, the favourite sites being Low Scollit, and either Booze Moor, Cleasby, Hoove, or Anniside in Arkengarthdale, Kexwith Moor in the New Forest, and Little Pin Seat, Friarfold Moss, Blakethwaite, High Seat, Shunnor Fell, and Grinton and Hurst Moors in Swaledale. There are also regular nesting-sites on Bowes and Scargill Moors and near Tanhill, all in the immediate neighbourhood. Sixteen years ago it used to breed on Ellerton and other moors in Lower

Swaledale. The following notes may be of interest, if only to show the great amount of persecution it undergoes :—

1881, June 18th. Nest containing five young ones destroyed on Low Scollit, and six adults either shot or trapped in Arkengarthdale and the New Forest during the year.

1882, June 5th. Nest containing five eggs taken on Kexwith Moor and the male bird shot. A brood got safely away from Cleasby, and a family of young ones was seen near Lad Gill on August 7th.

1883, May 21st. Nest containing five eggs taken at the back of Cleasby, and the hen shot. Ten either shot or trapped in Arkengarthdale and the New Forest during the year.

1884. No nests discovered on the Arkengarthdale or New Forest moors, but four were taken in the pole traps as they arrived in spring. Two nests destroyed on Bowes Moor, and two males and one female killed. A nest destroyed on Blakethwaite, where, since 1870, it has never missed breeding, and has as regularly been destroyed.

1885. No nest found in Arkengarthdale or the New Forest, and only two birds trapped in spring. A nest was destroyed on Blakethwaite and another on High Seat.

1886. No nest found in Arkengarthdale or the New Forest, and only one bird trapped in spring. A nest on High Seat and another on Blakethwaite destroyed, and in each case both birds killed.

1887. No nest found in Arkengarthdale or New Forest, but four birds trapped in spring. Nest on Blakethwaite destroyed and another on Burnt Moor, and in each case both birds killed.

1888. Nest containing young and both parents destroyed on Kexwith Moor and another on Bowes Moor. No nest found in Arkengarthdale.

1890. Nest destroyed on Booze Moor and both birds killed, and another on Pin Seat. No nests on Blakethwaite, Bowes, or the New Forest moors.

Tinnunculus alaudarius. **Kestrel.** Local names, Jack Hawk, Little Red Hawk, Yellow-backed Hawk, Steangall. Resident and still abundant, though much persecuted. During the months of July and August 1883, twenty-four were either shot or trapped on Bowes Moor alone. During the breeding-season hardly any of the limestone scars in Swaledale, the lower portion of the Arkle Valley, and the New Forest are without one or more pairs, though in the higher part of the district it is very seldom that a brood gets safely away. In Arkengarthdale

proper, though commonly seen, it no longer nests. It used many years ago to breed on a small scar in Lad Gill, and on the crags in Little Punchard Gill. Occasionally it has been known to nest in a tree, but in this district, where suitable rocks abound, it prefers their ledges. About the end of July a migration sets in from the large woods round Barnard Castle and Richmond, and at this season of the year it is no uncommon thing to see eight or ten hovering at one time over some favourite patch of ground.

Pandion haliaëtus. Osprey. A very rare visitor. One was seen about the Swale near Ellerton several years ago, and stayed in the locality for several days, resisting all attempts to shoot it, and roosting at night in a large fir plantation, since cut down.

Ardea cinerea. Heron. Local name, Hershew. Often observed on the moors and by the larger streams, though the nearest heronry is that at Gainford-on-Tees. Odd pairs occasionally breed in some of the woods. In 1888 there was a nest by the Greta near Rutherford Bridge, and in 1887 a pair probably nested in Marrick Park, being observed about there all through the spring and summer.

Platalea leucorodia. Spoonbill. One was shot early in 1867 near Reeth.

Anas boschas. Wild Duck. A few pairs breed upon the moors. Becomes more abundant in winter.

Spatula clypeata. Shoveller. Has been shot at Marske.

Querquedula crecca. Teal. More abundant as a resident than the wild duck. Two pairs usually breed at the head of Farn Gill, and it also nests on Faggergill Moss and near Hoove Tarn, in Arkengarthdale. In Swaledale it breeds near Summer Lodge Tarn, Birkdale Tarn, at the East Gill head, and on Blakethwaite.

Mareca penelope. Wigeon. Frequently occurs during autumn and winter.

Fuligula ferina. Pochard. Occurs, but less commonly than the last.

Columba palumbus. Ring Dove. Local name, Cushat. A common resident in all woods throughout the district.

Columba œnas. Stock Dove. Local names, Blue Rock, Rock Dove. Resident throughout the district, breeding in holes in the rocks. There is now hardly a scar in the district where one or more pairs of this bird cannot be found. Owing to some

doubt having been expressed in Messrs. Clarke and Roebuck's Handbook as to the occurrence of this species in Swaledale, I have taken particular pains to settle the matter, with the result that I am in a position to positively assert that the only two species of wild dove occurring in this district are the ring and stock doves. The notion that *C. livia* occurs has arisen from the stock dove being invariably called by the keepers, and dalesmen generally, either rock dove or else blue rock.

Phasianus colchicus. Pheasant. Resident in small numbers in the woods about Ellerton and Marske. Not known in Arkengarthdale or Upper Swaledale.

Perdix cinerea. Partridge. Resident in the valleys and up to the edge of the moors, but not abundant. More numerous in Lower Swaledale.

Lagopus scoticus. Red Grouse. Local name, Moor Game. Found in great abundance on all the moors. In very severe winters they sometimes gather into large flocks and come down into the valleys in search of food, and many for a time leave the district altogether. In 1885 a nest was found on Routh Head, in Arkengarthdale, containing seventeen eggs.

Tetrao tetrix. Black Grouse. A very local resident, being almost confined to Kexwith in the New Forest, where a few pairs breed yearly, and I believe their numbers are increasing steadily. An attempt to introduce them into Upper Swaledale some years ago, failed. In 1883 a pair nested on Hurst Moor.

Rallus aquaticus. Water Rail. Occasionally seen along the banks of the Swale. I have never seen it in Arkengarthdale.

Porzana maruetta. Spotted Crake. A male was found dead near Ellerton, in September 1858.

Crex pratensis. Corncrake. Local name, Daker Hen. A common summer visitor to the valleys, arriving about the end of April.

Gallinula chloropus. Moorhen. Occasionally seen by the Swale. In 1890 one was seen by the Arkle, near Scar House.

Fulica atra. Coot. Has been seen on Moss Dam, in Swaledale, but is very rarely observed in this district, there being so few places suited to its habits.

Charadrius pluvialis. Golden Plover. An abundant resident upon the moors, breeding regularly upon them throughout the district. About the end of July, old and young gather into large flocks and come down into the meadows and pastures for a time, before taking their departure to the coast for the winter. They return again in March. Although thus deserted by our

home-breeding birds, their place is taken by large flocks which arrive from the north about October, and remain until spring, when they split up into small parties and gradually disappear; though most years I have seen some of them about far on into April, when our own birds have returned and are busily employed in their family duties.

Eudromias morinellus. Dotterel. Thirty years ago it used to breed on the tops of the fells round the heads of Swaledale and Arkengarthdale. Now only a casual visitor during migration. Common about Surrender up to 1850, and on Whitaside up to 1863. Used to frequent the meadows near Oxnop. The last obtained in Swaledale was shot several years since, near Haverdale Mill. One seen on Water Crag about 1882.

Vanellus vulgaris. Lapwing. Local name, Tewfit. A common resident in Lower Swaledale. A summer visitor to the moors and upland pastures of Upper Swaledale and Arkengarthdale, arriving early in March. Has greatly decreased in numbers during late years.

Scolopax rusticola. Woodcock. Chiefly an autumn visitor, appearing in October and departing again in March. Occasionally an odd pair stay behind to breed. A nest was found at Ellerton several years ago, and I believe it has nested in Scar Wood.

Gallinago major. Great Snipe. One was shot in Swaledale in the autumn of 1884.

Gallinago cœlestis. Common Snipe. A common resident, breeding on the moors and in rushy pastures in most parts of the district.

Gallinago gallinula. Jack Snipe. A regular winter visitor in small numbers, arriving about the end of October and leaving again in March.

Tringa alpina. Dunlin. Local names, Judcock, Little Snipe. A summer visitor to the higher fell tops, where it regularly breeds. A pair or two may usually be found on Water Crag, Punchard Head, Anniside, Cleasby, Hoove, Stang, and Booze Moor, in Arkengarthdale; Kexwith Moor, in the New Forest; and on Hurst, Grinton, Summer Lodge, and Blakethwaite moors, and Lovely Seat, Shunnor Fell, High Seat, Nine Standards, and Rogan Seat, in Swaledale.

Tringoides hypoleucos. Common Sandpiper. An abundant summer visitor, being found by the side of almost every stream up to the gill heads. Arrives about the middle of April, and leaves again early in September.

Totanus ochropus. Green Sandpiper. A casual visitor.

There is a specimen at Ellerton Priory which was shot there several years ago.

Numenius arquata. Curlew. An abundant summer visitor to the moors, arriving about the end of March.

Sterna fluviatilis. Common Tern. An accidental visitor of rare occurrence. Two were shot near Ellerton about 1876, and another in Oxnop Gill about 1877.

Larus canus. Common Gull. Occurs sometimes during very stormy weather.

Larus argentatus. Herring Gull. Often observed passing through Arkengarthdale and Swaledale. Two seen in the New Forest, 20th April, 1881, one near Grinton, 29th April, 1882, and one on 28th July and another on 7th August, 1883, in Arkengarthdale.

Larus ridibundus. Black-headed Gull. There is a small colony of four nests by Summer Lodge Tarn in Swaledale. Until 1865 a number used to breed on the peat bogs on Punchard Head, in Arkengarthdale.

The total number of birds I am able to include in the list is 122. I may add that the local name for the Hooded Crow is 'Grey-back.'

NOTES—HYMENOPTERA.

Sirex gigas at Crossgates.—On the 15th of September, whilst collecting Lepidoptera in a small plantation of young poplars, I took a fine female example of this Sawfly.—HARRY NELSON, Crossgates, Leeds, September 20th, 1892.

Sirex juvencus near Ripon.—I have just caught an example of this insect in my garden here, and, as usual, it is a female.—R. A. SUMMERFIELD, North Stainley Vicarage, Ripon, September 17th, 1892.

Sirex juvencus at Pickering.—On the 18th July, 1890, I received from Mr. William Fletcher, of the Post Office at Pickering, an example of this insect, which had been found in a box of Swiss bricks (toys) in his shop, and which had eaten through at least three inches of solid wood, and through the box-lid.—W. DENISON ROEBUCK, Sunny Bank, Leeds, October 13th, 1892.

Sirex juvencus in Leeds.—I have to record the capture of a female specimen of *Sirex juvencus* in Leeds, on 22nd August last. I found it in a lively condition amongst a quantity of waste paper in a fireplace, in the heart of Leeds. The thorax and abdomen are of a bluish black colour, the legs fuscous, and the antennæ blue black. The under side of the thorax and abdomen is pilose. The wings are fulvous, with a strong costal margin. Donovan, in his 'British Insects,' mentions that the only specimen known in his day to have been caught in Britain was captured on the window of the upper storey of a house in Cheapside, London, occupied by Mr. Milton, the engraver.—H. B. WILSON, Westfield, Armley, Leeds, 28th September, 1892.

NOTES—ORNITHOLOGY.

Great Snipe in Derbyshire.—I have just had an opportunity of examining a Great Snipe (*Gallinago major*) which was shot by Mr. T. E. Vickers, near Bolsover, on the 12th inst. The bird is being set up by Webster, of Sheffield.—CHARLES OLDHAM, Ashton-on-Mersey, October 15th, 1892.

Common Buzzard in Derbyshire.—On Sept. 29th, I saw a female Buzzard (*Buteo vulgaris*) in the flesh, which Webster the Sheffield taxidermist had in hand for preservation. It had been shot on the previous day, during a grouse drive on the Derwent moors, near Ashopton.—CHAS. OLDHAM, Ashton-on-Mersey, October 12th, 1892.

Pomerine Skua in Wensleydale, North Yorkshire.—I have just had through my hands for preservation a Pomerine Skua (*Stercorarius pomatorhinus*). The bird, which is one of the dark variety and a young specimen in first year's plumage, was shot on September 2nd on the moors above Carperby, by Mr. Nuttall, whilst grouse shooting. It is now in the possession of Mr. T. King, of Edgeley, and is the first of its kind ever obtained in the neighbourhood.—E. CHAPMAN, Carperby, Wensleydale, September 27th, 1892.

Flamborough Bird-notes.—During the last few days I have observed a great many Swallows (*Hirundo rustica*), Wheatears (*Saxicola oenanthe*), Wagtails, and Redstarts (*Ruticilla phoenicurus*) making for the Headland, ready to take their departure from our shores. Amongst the great number of Swallows was seen a pure white one. The last week in September I had brought in a pied Blackbird (*Turdus merula*) also the Grey Shrike (*Lanius excubitor*), shot by one of our farmers. Mr. Samuel Barkley, of Bridlington Quay, informs me of shooting, a few days ago, two splendid Egyptian Geese (*Chenalopex aegyptiacus*) and a Sabine's Gull (*Xema sabinii*) on the sands near Bridlington Quay. Mr. George Emmerson, fisherman, who is a shooter and great observer of birds, informs me that when out fishing, October 3rd, he saw immense flocks of Skuas passing Headland, going south, and several Gulls and Terns. I was very much surprised yesterday to see a Swift (*Cypselus apus*) so late in the season.—MATTHEW BAILEY, Flamborough, Oct. 5th, 1892.

Flamborough Bird-notes.—Since last writing I have to report that on October 9th I observed three more Swifts (*Cypselus apus*) flying south-west against a strong head wind. October 13th, I do not suppose there ever were more sea birds along the coast at this time of the year, Gannets (*Sula bassana*), Gulls, Sea Swallows, and hundreds of flocks of Kittiwakes (*Rissa tridactyla*) passing the Headland. For several days we have had a severe north-east breeze which has brought a great many autumnal visitors to our coast. Woodcocks (*Scolopax rusticola*), Grey Shrikes (*Lanius excubitor*), several large flocks of Larks (*Alauda arvensis*), Blackbirds (*Turdus merula*), Thrushes (*T. musicus*), Redwings (*T. iliacus*), and swarms of Golden-Crested Wrens (*Regulus cristatus*). Just now a fisherman coming from the point of the Headland says it is a grand sight to see the thousands of Kittiwakes, hundreds in a flock, passing north.—MATTHEW BAILEY, Flamborough, October 17th, 1892.

Woodcock Breeding in South-East Yorkshire; also noted near York. Whilst egg-collecting, May 18th, 1889, in a large wood in South-East Yorkshire, I flushed four young Woodcocks (*Scolopax rusticola*). One of them flew slowly away in a direct line from me, and I thus obtained a full view of it, and noticed especially the barred markings across the back, which were plainly visible. My companion (Mr. E. G. Potter, of York) at once shouted out 'A Woodcock!' and said he distinctly noticed the long beak and thick form of the bird, as well as its mottled plumage. The birds flew heavily for a short distance only, and then settled down, and although we searched well, we did not succeed in again flushing them. I may also mention that while on Sandburn Common, six miles from York, in June 1884, about 2.0 p.m., I flushed a Woodcock, evidently a mature bird, from under a young pine tree, but although I searched the immediate neighbourhood, I failed to discover either eggs or young.—WILLIAM HEWETT, 6, Howard Street, York, May 6th, 1890.

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LAND AND FRESHWATER MOLLUSCA, 1888 and 1889.

THE present instalment has been compiled and edited by

WM. DENISON ROEBUCK, F.L.S.

The previous instalments of the Bibliography of Land and Fresh-water Mollusca have appeared as follows:—

For 1884-85—in 'Naturalist,' May 1886, pp. 144-149.

„ 1886-87— „ August 1888, „ 247-263.

The present instalment, containing 106 titles published in 1888 and 1889, does not reveal so much conchological activity as in the preceding two years, for which about 160 titles were published.

The counties and vice-counties of which cognizance is taken are the following, as named and numbered in the Watsonian scheme:—

53, Lincoln S.; 54, Lincoln N.; 56, Notts.; 57, Derby; 58, Cheshire; 59, Lancashire S.; 60, Lancashire W.; 61, York S.E.; 62, York N.E.; 63, York S.W.; 64, York Mid W.; 65, York N.W.; 66, Durham; 67, Northumberland S.; 68, Cheviotland; 69, Westmorland with Furness; 70, Cumberland; and 71, Isle of Man.

The titles relating to Marine Mollusca are reserved for separate publication, practical convenience dictating this course for the future.

Among the districts for which Lists of a more or less exhaustive nature are included are the Isle of Man (Adams), Ingleton (Collier), Derby (Hey), Harrogate (Fitzgerald), Stockton (Hogg and Hudson), Manchester (Melvill), Cheviotland (McMurtrie), Upper Airedale (Soppitt and Carter), and Huddersfield (Whitwham).

LIONEL E. ADAMS.

Isle of Man.

Isle of Man Natural History and Antiquarian Society [recording *Limax arborum*, *Zonites 'aliarius'* (? sp.), *Planorbis 'nautilus'* v. *crispata*, and *Pisidium roseum* (? *pusillum*) as new to the Isle of Man]. Research, Dec. 1888, p. 97.

L. ADAMS.

Isle of Man.

List of Manks Land and Fresh-water Shells taken by Lionel E. Adams [enumerating 3 slugs, 10 freshwater and 14 land shells, with localities; to this P. M. C. Kermode adds the names of 2 slugs, 15 land and 9 freshwater shells previously recorded, and 5 species expressly recorded *not* to occur]. Vannin Lioar, No. 1, Jan. 1889, i. 9-11.

ANON. [not signed].

York S.W.

Ackworth (Boys') Reports [*Zonites alliarius* by the Mill Dam; *Helix lapicida* and *H. concinna* at Hampole; *Ancylus oblongus* at Nostell (or Wragby) brick-ponds; *Limnæa stagnalis*, *Planorbis corneus*, *P. albus*, *P. complanatus*, both *Valvata*, and both *Physæ* at Thorne Waste]. Nat. Hist. Journ., Oct. 15th, 1888, p. 158.

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[Cumberland, Westmorland.
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Hogg's List of the Mollusca of the Neighbourhood of Stockton-on-Tees [list with remarks by John Hogg, and annotations by Baker Hudson; the species are *Neritina*, *Valvata piscinalis*, *Bythinia tentaculata*, *Planorbis contortus*, *P. vortex*, *P. marginatus*, *Ancylus* (both), *Limnæa palustris*, *L. truncatula*, *Physa* (both), *Succinea putris*, *Helix hispida*, *Sphærium corneum*, *S. lacustre*, *Pisidium amnicum*, *Unio pictorum*, *U. margaritifera* (queried by B. Hudson as likely to be *Mya arenaria*), and *Anodonta* (both)]. Journ. of Conch., Oct. 1887—Jan. 1888, Vol. 5, pp. 256-260.
- BAKER HUDSON. York N.W.
The Yorkshire Naturalists' Union in Lower Wensleydale [at Leyburn, 21st May, 1888; *Helix rotundata*, *H. rufescens*, *Pupa umbilicata*, *Arion ater*, *Limax agrestis* and v. *nigra*, *H. arbustorum*, *H. lapicida*, *H. rupestris*, *Zonites crystallinus*, *Z. purus* and v. *margaritacea*, *Balea*, *Bulimus obscurus*, *Zua*, *Vitrina*, *H. hispida*, *H. hortensis*, *H. pulchella*, *H. ericetorum*, *Clausilia rugosa*, *Limax cinereo-niger*, *Z. radiatulus*, *H. nemoralis*, *Arion hortensis*, *Limnæa truncatula*, *Clausilia laminata*, *Z. nitidulus*, *Azeca*, *Arion bourguignati*, *H. aspersa*, *Succinea elegans*, *Z. cellarius*, *Z. alliarius*, *Ancylus fluviatilis*, *Anodonta anatina*, and *Limnæa peregra*, noted]. Nat., June 1888, pp. 172-3.
- BAKER HUDSON. York N.E.
Shells at Kilton Castle, Cleveland [*Arion hortensis*, *A. bourguignati*, *A. ater*, *Limax maximus*, *L. arborum*, *L. agrestis*, *L. levis*, *Helix aculeata*, *H. nemoralis*, *H. hortensis*, *H. rotundata*, *H. hispida*, *H. sericea*, *H. pygmæa*,
Naturalist,

H. arbustorum, *Zonites fulvus*, *Z. alliarius*, *Z. purus* and var. *margaritacea*, *Z. cellarius*, *Z. nitidulus*, *Z. crystallinus*, *Pupa umbilicata*, *Clausilia rugosa*, *Cl. laminata*, *Bulimus obscurus*, *Carychium*, *Azeca*, *Zua*, and *Vittrina* found 22nd April]. Nat., July 1889, p. 212.

J. T. IRWIN.

York S.W.

The Revival of Natural History at Ackworth, 1873 [mention of *Zua*, '*Physa fontinalis* var. *acuta*,' and *Ancylus fluviatilis*]. Nat. Hist. Journ., March 15th, 1888, xii. 31-35.

H. WALLIS KEW.

Linc. N.

Lincolnshire Marsh Drains [and their Mollusca: *Arion ater*, *Limax flavus*, *L. agrestis*, *Succinea pfeifferi*, *Zonites glaber*, *Helix aspersa* and var. *exalbida*, *H. nemoralis* and numerous varieties, *H. hispida*, *H. caperata* and var. *ornata*, *H. ericetorum*, *H. pulchella*, *Pupa umbilicata* var. *albina*, *P. marginata*, *Zua*, *Limnæa ovata*, *Planorbis complanatus*, *Sphærium corneum*, *Paludina contecta*, *Byth. tentaculata*, *B. leachii*, *Valvata piscinalis*, *Planorbis spirorbis*, *Pl. vortex*, *Pl. carinatus*, *Pl. corneus*, *Pl. contortus*, *Limnæa auricularia* v. *acuta*, *L. stagnalis*, *L. palustris*, *Physa fontinalis*, noted for Mablethorpe, Trusthorpe, and Saltfleetby]. Nat. World, Oct. 1886, pp. 181-183.

H. WALLIS KEW.

Linc. N.

Limnæa truncatula floating [at Authorpe in Lincolnshire]. Journ. Conch., July 1888, v. 329.

H. WALLIS KEW.

Linc. N.

Sphærium corneum upon the tarsus of *Dytiscus marginalis* [at West Barkwith, Lincs., Aug. 27th, 1888]. Journ. Conch., Oct. 1888, v. 363.

H. WALLIS KEW.

Linc. N. and S.

Notes made in 1888 upon *Arion ater* and some other slugs [*Arion ater* in the Lincolnshire marshes and fens, at Tetney, Bourn, Gosberton, Quadring, Grisel-bottom, Burwell Wood (var. *brunnea*), Donington-on-Bain]. Nat., April 1889, p. 103.

G. W. LAMPLUGH.

York S.E.

Fossils from the Sewerby Cliff-beds [tabulated; *Helix hispida*, *H. pulchella*, *Pupa marginata* and *Zua lubrica*]. Report of 58th Meeting of Brit. Assoc., Bath 1888 (pub. 1889), p. 334.

T. A. LOFTHOUSE.

York N.W.

Clausilia rugosa var. *dubia* with Double Mouth in Wensleydale [at Aysgarth, June 29th, 1889; *Succinea putris*, *Vittrina*, *Zonites nitidulus*, *Z. alliarius*, *Helix arbustorum*, *H. sericea*, *H. caperata*, *H. lapicida*, *H. rufescens*, *H. rotundata*, *H. rupestris*, *Pupa umbilicata*, *Clausilia rugosa* v. *dubia*, *C. laminata*, *Zua*, *Pisidium fontinale*, *Neritina* (the two latter being new records for Wensleydale), *Limnæa peregra* and *Ancylus fluviatilis* all found at same place and time, the water shells in the river Yore]. Nat., August 1889, p. 244.

F. C. LONG.

Lanc. S.

A Queer Place for Shells [the engine-cistern at Gannow Weaving-shed, Burnley, 60 feet above the canal, containing *Sphærium corneum*, *S. lacustre*, *Valvata piscinalis*, *Bythinia tentaculata*, *Limnæa peregra*, *Planorbis albus*, *Pl. corneus*, *Pl. nitidus*, *Pl. glaber*, and thousands of *Pl. dilatatus*]. Sci. Goss., Dec. 1888, p. 281.

J. MCMURTRIE.

Cheviotland, Durham.

The Land Shells and Freshwater Shells of the Coast of North Northumberland from Alnmouth to the Tweed [a list of 23 species (of which one is a bivalve, two are *Limnæa*, and four slugs, all the rest land shells), with localities, and a prefatory note on *Helix virgata*, which is here common at its northern limit in Britain; *Limnæa truncatula* v. *elegans* noted as also plentiful near the sea at South Shields]. Journ. of Conch., July 1889, vi. 106-109.

- J. MADISON. York N.E.
 [**Planorbis nautilus** from Scarborough]. Midl. Nat., Oct. 1887, p. 267.
- J. MADISON. Westmorland, Cumberland.
Notes on *Limnæa peregra* vars. *burnetti* and *lacustris* [from Lakes Windermere and Derwent, etc., with remarks on the localities]. Journ. of Conch., Jan. 1888, Vol. 5, pp. 260-261.
- JAS. EARDLEY MASON. Linc. N
***Helix virgata* in Lincolnshire** [at South Ormesby, Aug. 6th, 1888]. Nat., Jan. 1889, p. 11.
- GEO. W. MELLORS. Notts.
***Balea perversa* in Nottinghamshire** [several localities stated]. Midl. Nat., Aug. 1889, p. 195.
- J. COSMO MELVILL. Lanc. S., Cheshire, Derbyshire.
Mollusca [of Manchester District, enumerated in systematic order, with localities, to the number of 83 species, all within 12 miles from the centre of the city]. Handbook of Manchester—prepared by the Local Committee for the members of the British Association at the Manchester Meeting, 1887, pp. 78-87.
- J. COSMO MELVILL. Derbyshire.
***Helix laticosta* (L) var. *albina* (Menke)** in Derbyshire [two in author's collection; found by Thomas Glover at Matlock, Aug. 16th, 1879]. Journ. of Conch., April 1888, v. 316.
- J. G. MILNE. Cheshire.
***Amalia gagates* in Cheshire** [at Bowdon, 5th September, 1887; typical black in colour]. Nat., Feb. 1888, p. 48.
- H. MILNES. Derbyshire.
***Helix laticosta* monst. *scalaris* Charp. in Derbyshire** [found 1887 at Matlock Bath, by J. Allen Howe]. J. of Conch., April 1888, v. 316.
- H. MILNES. Derbyshire.
 [Exhibition of varieties of *Helix arbustorum* from Derbyshire; Conch. Soc., June 5th, 1889]. J. of Conch., July 1889, vi. 101.
- W. NARRAMORE. Lanc. S.
A Phenomenon [with a passing reference to *Limnæa stagnalis* at Huyton, South Lancs.] Research, July 1888, p. 11.
- W. NELSON. York S.E.
A Day's Collecting near Howden, Yorks. [on May 30th, 1887; *Limnæa auricularia*, *L. peregra*, *L. truncatula*, *L. stagnalis*, *L. glabra*, *L. palustris*, *Physa* (both), *Helix nemoralis*, *H. cantiana*, *Planorbis spirorbis*, *Pl. marginatus*, *Pl. nautilus*, *Pl. carinatus*, *Pl. vortex*, *Pl. corneus* and *Paludina contecta* taken; pleasantly written narrative]. Journ. of Conch., Jan. 1888, vol. 5, pp. 262-267.
- JNO. PHILIPSON. Durham, Cheviotland.
Address to the . . . Tyneside Naturalists' Field Club . . . May 9th, 1888 [*Helix virgata* found on sand-banks at Roker, Oct. 7th, 1887; *Limax arboreus* (sic) at Yeavinger Bell, nr. Wooler, Sep. 16th and 17th, 1887]. Nat. Hist. Trans. Northumb. Durh. and Newc., vol. 10, part 1 (1888), pp. 194 and 203.
- H. E. QUILTER. ?Linc. S.
Note on the occurrence of *Testacella scutulum* Sow. in Leicestershire [at Belvoir, which may possibly be actually in South Lincoln; details given]. J. of Conch., April 1888, v. 320.
- H. E. QUILTER. ?Linc. S.
Note on a parasitic mite of *Testacella scutulum* Sow. [from Belvoir; mite described, but not named]. Journ. of Conch., April 1888, v. 314.

- T. MELLARD READE. Lanc. S.
Notes on a Bed of Fresh Water Shells and a chipped flint lately found at the Alt Mouth [the shells including *Limnæa peregra*, *Cyclas cornea* and *Planorbis spirorbis*]. Proc. Liverp. Geol. Soc., 1886, vol. v. pp. 137-139.
- F. RHODES. York S.W.
[Exhibition of *Anodonta cygnea* from Pudsey]. J. of Conch., April 1889, vi. 89.
- ALFRED RIDGWAY AND FREDK. W. RIDGWAY. York Mid W.
Ramble from Sherburn Station to Cawood, Yorkshire [Aug. 1st, 1887; *Anodonta cygnea*, *Sphærium corneum*, *Bythinia tentaculata*, *Valvata piscinalis*, *Planorbis corneus*, *P. complanatus*, *P. vortex*, *Limnæa peregra*, *L. auricularia*, *L. stagnalis* and *L. palustris*, all in Bishop Dyke, and *H. nemoralis*, *H. hortensis* and *H. cantiana* in hedges]. Nat. Hist. Journ., May 15th, 1888, xii. 92.
- GEO. ROBERTS. York S.W.
***Helix hispida* with adherent Tentacles** [found by J. Wilcock, presumably near Wakefield, in company with *H. rufescens*; description of deformity]. Sci. Goss., Nov. 1886, p. 259.
- GEO. ROBERTS. York S.W.
***Limax maximus*, var. *Strobeli*, Pini, near Wakefield** [at Haur (sic, = Haw) Park, September 12th, 1886; description given]. Sci. Goss., Nov. 1886, p. 259.
- GEO. ROBERTS. York S.W.
The Snails and Slugs of my garden [at Lofthouse, near Wakefield; all four British species of *Arion*, *Limax agrestis*, *L. flavus*, *L. maximus*, *Zonites cellarius*, *Z. nitidulus*, *Zua lubrica*, *Helix hispida*, *H. rotundata*, *H. rufescens*, *H. nemoralis*, *H. hortensis*, and *H. aspersa* treated of in some detail]. Nat. Monthly, Sept. 1887, pp. 14-15.
- GEO. ROBERTS. ? York S.W.
***Helix hortensis* [var. *fusco-labris* Kregl., one found last summer, locality not stated]**. Science Gossip, April 1888, p. 91.
- GEO. ROBERTS. York S.W.
Limnæa Palustris*, var. *albida, Nelson [two found with type last year in a pond near Doncaster]. Sci. Goss., April 1888, p. 91.
- GEO. ROBERTS. 'Lancashire.'
Sphærium Rivicola*, var. *flavescens, Pascal [from Lancashire]. Science Gossip, April 1888, p. 91.
- GEO. ROBERTS. York Mid W., S.W., and N.E.
Observations on the Unionidæ [detailed notes on the variation of *Anodonta cygnea* and *A. anatina* in various Yorkshire localities]. Sci. Goss., June 1888, pp. 127-129.
- GEORGE ROBERTS. York S.W.
***Helix hortensis* and its variation** [at Lofthouse, near Wakefield]. Nat., Aug. 1888, p. 232.
- GEO. ROBERTS. York S.W.
Reappearance of Canal Shells at Agbrigg near Wakefield [*Unio tumidus* and *Paludina vivipara*, scarce for ten years back, found in some numbers in June 1888, with *Anodonta anatina*, *Bythinia leachii*, *Neritina*, and *Sphærium rivicola*]. Nat., Aug. 1888, p. 232.
- GEO. ROBERTS. York Mid West.
Variation in *Helix nemoralis* and *H. hortensis* at Rothwell, Mid-West Yorks. [described]. Nat., Oct. 1889, p. 320.
- W. D. ROEBUCK. York S.W.
[*Vertigo alpestris* from Bingley exhibited to Conch. Soc., Nov. 3rd, 1887]-
 Journ. of Conch., Jan. 1888, v. 271.

- W. D. ROEBUCK. York S.W.
The Yorkshire Naturalists' Union at Hatfield Chace [Sept. 21st, 1887; *Limnæa glabra*, *Sphærium lacustre* and *Valvata cristata* noted]. *Nat.*, March 1888, p. 85.
- W. DENISON ROEBUCK. York S.W.
Yorkshire and Lancashire Naturalists at Saddleshworth [June 16th, 1888; *Arion bourguignati*, *Limnæa peregra* and *L. auricularia* noted]. *Nat.*, July 1888, p. 212.
- W. DENISON ROEBUCK. Notts.
Arion ater var. nov. cinerea at Nottingham [found by G. W. Mellors, June 25th, with *A. ater* type, *Limax maximus* var. *fasciata*, *L. agrestis* type and var. *sylvatica*, *Arion hortensis* and *A. bourguignati*; description of the var. given]. *Nat.*, Sep. 1888, p. 284.
- W. DENISON ROEBUCK. Lanc. W.
Limax flavus var. rufescens in West Lancashire [at Avenham Lane, Preston, not uncommon]. *Journ. of Conch.*, Jan. 1889, vi. 52.
- WM. DENISON ROEBUCK. York Mid W. and N.W.
Up Buckden Pike with the Aneroid [the altitudinal range of *Arion ater*, *A. bourguignati*, *Limax agrestis*, *Zonites cellarius*, *Vitrina*, *Zua*, *Clausilia rugosa*, *Helix hispida*, *Pupa umbilicata*, *H. rupestris*, *Balea*, *Cl. dubia*, *Limax arborum* on the West side, and at Coverdale head, *H. arbustorum* var. *alpestris*, *Cl. rugosa*, *Cl. dubia*, *H. rupestris*, *H. hispida*, *Zonites crystallinus*, *Limax agrestis* and *Arion bourguignati*]. *Nat.*, May 1889, p. 144.
- W. DENISON ROEBUCK. Linc. S.
Slugs, &c., in South Lincolnshire [at and near Fulbeck Grange, sent by J. B. Davy and Theod. Burtt; *Limax lævis*, *Arion subfuscus*, *L. agrestis* with vars. *sylvatica* and *reticulata*, *L. maximus*, *Limnæa ovata* and *Helix nemoralis*]. *Nat.*, May 1889, p. 130.
- W. DENISON ROEBUCK. Isle of Man.
Helix fusca an Addition to the Manx Fauna [found Sep. 12th, 1887, at Malew, by J. E. Mason, with *H. hispida*, *Zonites cellarius* and *Z. nitidulus*; in Colby Stream was found *Ancylus fluviatilis*, and in Colby Glen *Helix aspersa*, *H. rufescens* and *H. hispida*; the record given for Athol Bridge, near Castletown, by Yn Lioar Mann.]. *Nat.*, July 1889, p. 212; repeated in Yn. Lioar Manninagh, No. 3, July 1889, i. 88.
- W. DENISON ROEBUCK. York S.W.
The Yorkshire Naturalists' Union at Holmfirth [June 10th, 1889; *Zonites cellarius*, *Limax agrestis* and *Arion bourguignati* noted, the last an addition to the recorded Huddersfield list]. *Nat.*, July 1889, p. 203.
- W. DENISON ROEBUCK. Durham.
Orange-coloured Arion ater at Durham [one, nearly adult, sent by H. E. Fox]. *Nat.*, July 1889, p. 212.
- W. DENISON ROEBUCK. Lanc. S.
Limax agrestis var. albida near Preston [one nearly adult at Walton-le-Dale, with abundance of the type and var. *sylvatica*; *Arion bourguignati* and *Limax maximus* also]. *Nat.*, July 1889, p. 212.
- W. DENISON ROEBUCK. York Mid W.
[Exhibition of unusually large Limax flavus, taken in Leeds; Conch. Soc., 5th June, 1889]. *J. of Conch.*, July 1889, vi. 101.
- W. DENISON ROEBUCK. York N.E.
The Yorkshire Naturalists' Union at Robin Hood's Bay [21st June, 1889; *Arion ater*, *Limax lævis*, *L. agrestis*, *Zonites cellarius*, *Helix nemoralis*, *H. hortensis*, and *H. arbustorum* noted]. *Nat.*, Aug 1889, p. 229.

- W. DENISON ROEBUCK. Durham, York N.W.
The Yorkshire Naturalists' Union in Upper Teesdale [in Aug. 1889; *Helix fusca* at Holwick and near High Force, *Limnæa peregra* at 1,200 ft. alt., Cronkley Scar, and, on the Durham side, all four British *Arions*, and *Helix rupestris*]. Nat., Sep. 1889, p. 282.
- W. D. ROEBUCK. York N.W.
[*Helix fusca* from near Winch (misprinted Wind) **Bridge, Teesdale,** exhibited to Conch. Soc., Sep. 4th, 1889]. J. of Conch., Oct. 1889, vi. 160.
- THOS. ROGERS. Lanc. W.
[Pearl mussels (*Unio margaritifera*) from river Lune, where first discovered about forty years ago by David Dyson, and re-discovered 1887 by Robert Standen]. Proc. Manch. Lit. and Phil. Soc., Feb. 13th, 1888, Series 4, vol. 1., 1886, p. 99.
- H. T. SOPPITT AND J. W. CARTER. York Mid W. and S.W.
Land and Freshwater Mollusca of Upper Airedale, Yorkshire [enumerating and giving details and localities and other useful remarks for 93 species and numerous varieties]. Nat., March and April 1888, pp. 91-102.
- GEO. SWAINSON. Isle of Man.
Sponge Hunting on the Manx Coast. Peel and Port St. Mary [*Limax maximus* also noted at White Strand Bay]. Wesl. Nat., Oct. 1889, iii. 194.
- A. H. TAYLOR. York S.E.
The Yorkshire Naturalists' Union at Kirkham Abbey and Acklam Brow [on Sep. 4th; *Limnæa peregra*, *Planorbis vortex*, *Pl. complanatus*, *Helix fusca* (not found), *Limax arborum* (new to East Riding), the four *Arions*, *Limax maximus*, *L. agrestis*, *Succinea putris*, *Vitrina*, *Zonites cellarius*, *Z. alliarius*, *Z. nitidulus*, *Z. crystallinus*, *Helix nemoralis*, *H. arbustorum*, *H. sericea*, *H. rotundata* and var. *alba*, *H. hispida*, *Clausilia rugosa*, *Cl. laminata*, *Zua*, *Limnæa palustris*, *Sphærium corneum*, *Pisidium pusillum*, *Bithinia tentaculata* and *Ancylus lacustris* noted, with localities]. Nat., Nov. 1889, p. 342.
- JOHN W. TAYLOR. York Mid W.
On the Variation of British Land and Freshwater Mollusca [with a passing reference (p. 300) to the Malham Tarn examples of *Limnæa stagnalis*, and (p. 303) to irregularly spiral forms of *Planorbis* in warm water reservoirs in Yorkshire]. Journ. of Conch., April 1888, v. 300 and 303.
- JNO. W. TAYLOR. Lanc. S.
***Unio pictorum* var. *latior* Jeffr. in Lancashire** [one found in the canal at Burnley by F. C. Long]. Journ. of Conch., July 1888, v. 331.
? Linc. S., Notts, Cheshire, York Mid W. and S.E.,
Durham.
- JOHN W. TAYLOR.
On the Specific Distinctness and the Geographical Distribution of *Testacella scutulum* [giving details of localities in Notts, Cheshire, Yorkshire, Durham, and possibly South Lincolnshire (Belvoir)]. Journ. of Conch., July 1888, v. 345.
- J. W. TAYLOR. York Mid W., Lanc. W. and S.
Proceedings of the Conchological Society [Nov. 7th, 1888, exhibition of *Helix rupestris* containing young, from Ingleton (for E. Collier); of *Dreissena*, *Neritina*, and *Ancylus fluviatilis* from near Preston (for R. Standen); and of *Sphærium ovale* and *Planorbis dilatatus* from a new locality near Blackburn (for W. H. Heathcote)]. Journ. of Conch., April 1889, vi. 86.
- J. W. TAYLOR. Lanc. S.
[Exhibition of *Helix aculeata* from Farington near Preston, sent by W. H. Heathcote; Conch. Soc., 1st May, 1889]. Journ. of Conch., July 1889, vi. 99.

- J. W. TAYLOR. York S.E.
 [Exhibition of *Paludina contecta* from East Yorkshire, sent by Albert [? Alfred] Harker; Conch. Soc., 5th June, 1889]. Journ. of Conch., July 1889, vi. 101.
- J. A. WHELDON. York N.E.
 Strensall Common [and its destruction by drainage; the large *Limnaea stagnalis* and *Planorbis corneus* not now to be found, though *L. glabra* and *L. truncatula* are still very fine and abundant]. Sci. Goss., Jan. 1889, p. 23.
- JOSÉPH WHITWHAM. York S.W.
 A List of the Land and Fresh-water Shells found in the neighbourhood of Huddersfield [localities given for 62 species, viz., 23 freshwater shells, 6 slugs, and 33 land shells, besides numerous varieties]. Trans. Huddersfield Nat. Soc., part 2 (pub. 1885), pp. 24-29.
- J. RUSSELL WILDMAN. Lanc. S.
H. nemoralis var. *scalariforme* [near Burnley]. Sci. Goss., Sept. 1888, p. 209.
- J. RUSSELL WILDMAN. Lanc. S.
Planorbis dilatatus [in a pond and in the canal at Burnley, associated in the pond with *Planorbis glaber*, *P. albus*, and *Bythinia leachii*, and a growth of *Potamogeton crispus* and *Elodea canadensis*; details of habitats and opinions on the 'introduction' question given at length]. Sci. Goss., Sept. 1888, pp. 209-210.
- J. W. WILLIAMS. Northumberland S.
 Slugs and their Varieties [repeating the Allansford record for *Limax tenellus*]. Young Nat., Feb. 1888, ix. 30.
- J. W. WILLIAMS. Lanc. S.
 The Shell-Collector's Handbook for the Field. London: Roper & Drowley; 29, Ludgate Hill, E.C.—1888 [8vo, cloth, 148 pages. *Planorbis dilatatus* referred to at p. 70 as in the canals round Manchester, introduced from America in cotton bales].
- JOSEPH W. WILLIAMS. Notts.
Balea perversa (Linn.) in Nottinghamshire [at Staunton near Newark, and at Kirkby; also *Pupa ringens* from Kirkby; all collected by G. W. Mellors]. Midl. Nat., April 1889, p. 94.
- J. W. WILLIAMS. Notts.
 Nottinghamshire Shells: a correction [as to priority of record of *Balea*; localities given for *Helix rotundata* and var. *turtoni*, *H. aculeata*, *Zonites fulvus*, *Z. crystallinus*, *H. virgata* and v. *subalbida*, *Ancylus fluviatilis*, *H. ericetorum* and v. *alba*, *Achatina*, *H. caperata*, *Paludina contecta* and *Bythinia leachii*]. Midl. Nat., June 1889, p. 144.
- ROBERT WRIGGLESWORTH. Lanc. S.
 Discovery of *Pupa cinerea* in Lancashire [near Accrington, where it has been taken four times in 12 years, in a well-wooded, out-of-the-way place, unlikely for introduction]. Sci. Goss., Dec. 1889, p. 281.

NOTE—MAMMALIA.

Whiskered Bat at Ingleby Greenhow.—The Rev. John Hawell, M.A., Vicar of Ingleby Greenhow, near Middlesbrough, has forwarded to me a bat for identification. He found it flying about the kitchen of the vicarage when he returned on the evening of Saturday, October 22nd, after a fortnight's absence.

It is a female Whiskered Bat (*Vespertilio mystacinus*), and as if to fit it for its winter hibernation, there is a layer of fat developed between the skin and the flesh, this substance being particularly abundant about the inguinal region.—EDGAR R. WAITE, The Museum, Leeds, 26th Oct., 1892.

ADDITIONAL YORKSHIRE GALLS.

S. L. MOSLEY, F.E.S.,

Beaumont Park Museum, Huddersfield; Author of 'British Birds, Nests, and Eggs,' etc.

SINCE my last account of Yorkshire Galls (p. 273), I have been favoured by Mr. Peter Inchbald, F.L.S., with a number of records, from which, together with my own observations, and odd galls sent in from other quarters, I am able to compile the following additional list:—

On *Acer campestre*. Maple.*

Petiole swollen, containing the larva of a *Cecidomyia*. In a quarry on the road-side between Womersley and Knottingley, Aug. 1st, 1892. I only obtained a few galls, and did not rear the flies.

On *Achillea millefolium*. Yarrow.

Clusters of galls at base of stem close to ground. Caused by a two-winged fly (*Carphotricha guttularis*). Recorded by Mr. Inchbald, from Storthes Hall. I have also found it at Lepton.

On *Achillea ptarmica*. Sneezewort.

Contorted florets. Caused by a midge (*Cecidomyia ptarmicæ*). Recorded from Storthes Hall by Mr. Inchbald.

On *Ammophila arenaria*. Marram grass.

Mr. Inchbald says '*Nematus* forms knots in stem. Spurn.'
The only gall known to me on *Ammophila* is the large imbricate one said to be caused by a chalcid (*Eurytoma hyalipennis*).

On *Betula alba*. Birch.

Seed-cases in female catkins swollen. Caused by a gnat (*Cecidomyia betulæ*). Recorded from Storthes Hall by Mr. Inchbald.

On *Cardamine pratensis* and *C. amara*. Cuckoo Flower and Bitter Cress.

Calyx swollen. Caused by a gnat (*Cecidomyia cardamines*).
'Bred in abundance from each species. Storthes Hall. P. I.'

On *Lychnis diurna*. Red Campion.

'In flower-knobs and capsules. Caused by a gnat (*Cecidomyia*

* Erratum:—The first record in my previous paper should be *Acer pseudo-platanus*. I have not yet found the similar gall on *Acer campestre* in Yorkshire.

lychnidis). Loew thinks them inquilines. P. I.' I had no previous knowledge of a gall on *Lychnis*, and shall be glad to have specimens sent.

On Populus tremula. Aspen.

Swellings on the twigs. Caused by a beetle (*Saperda populnea*).

Recorded by Mr. Inchbald, but no locality given. [This is observable near Meanwood Hall, in the borough of Leeds (W. Denison Roebuck)].

On Prunus spinosa. Blackthorn.

Edge of leaf folded under in places, thickened and yellow.

A number were sent me from Forge Valley, by Mr. T. W. Woodhead. Each gall was tenanted by a *Cecidomyia* (?) larva, but I have not yet been able to ascertain that the gall was previously known.

On Quercus robur. Oak.

Size of large pea, in axils of leaves covered with bristly projections, each with a red papilla at the end. Caused by a cynips (*Aphilothrix lucida*). Mr. A. Clarke gave me three specimens of this gall, which, I believe, has not before been recorded as British. They were brought to one of the botanical meetings, and he thinks they were gathered in Whitley Woods.

Kidney-shaped galls attached to ribs under leaf. Caused by a cynips (*Biorhiza renum*). Woodsome and Honley Woods.

On Rosa spinosissima. Spiny Rose.

Smooth, round, or irregular pea gall, on leaf. Caused by a cynips (*Rhodites spinosissimæ*). Recorded by Mr. Inchbald, but no locality given.

On Rosa canina. Dog Rose.

Pea gall with projecting spines, on leaf. Caused by a cynips (*Rhodites rosarum*). I have found what I take to be this species at Shepley. This makes the four British species of *Rhodites* all found in Yorkshire. But it would be desirable to have additional localities.

On Rubus fruticosus. Bramble.

'Swollen bosses, and often pierced, give forth their tenants, occasionally a small *Nematus*. P. I.' This I take to be the gall of *Diastrophus rubi*. Mr. Inchbald does not give a locality.

On Salix alba. White Willow.

Edge of leaf rolled down, by a gnat (*Cecidomyia clausilia*). Recorded by Mr. Inchbald.

On *Tanacetum vulgare*. Tansy.

Irregular or bottle-shaped galls on stem or leaf. Mr. G. Parkin has sent me this gall from Wakefield, and Mr. F. Netherwood a good supply from Huddersfield, but I have not been able to rear the flies, and they do not seem to be known.

This brings the number of Yorkshire species up to 63, and I have several others that await determination, as well as many additional localities for recorded ones, but these must await a future paper. On October 10th I read a paper on Galls before the Lancashire and Cheshire Entomological Society, and it was accepted that I should act as Recorder for the two counties. I shall be pleased, therefore, to receive galls from persons residing in Lancashire or Cheshire. Botanists have ample opportunities for observing galls, and now is a time when many may be found. Persons who have sent me galls not acknowledged in the above list must not think that their assistance has been overlooked or not appreciated. If their help has not been acknowledged it is because I am in some doubt yet as to the identity of the species; but every little bit is valuable, and will be used in due course.

NOTES—LEPIDOPTERA.

***Chærocampa celerio* at Halifax.**—On Saturday, October 1st, 1892, I had brought to me alive and in good condition a fine specimen of that rare and beautiful insect, the Silver-striped Hawk Moth (*Chærocampa celerio*). It was taken at rest on the scaffolding by some joiners, who were making alterations to a shop in Northgate, Halifax, and it is now in my cabinet.—EDWARD HALLIDAY, Akroydon, Halifax, October 10th, 1892.

***Acherontia atropos* at Scarborough.**—I notice in the 'Naturalist' for October that the Death's Head Moth (*A. atropos*) has occurred recently near Bradford. This insect has been unusually abundant during the past summer at Scarborough. I have had four splendid specimens brought to me, two of which were taken on the North Cliff, one at rest on a wall at Irton, a few miles inland, and one flew into a boat a little distance out to sea in the North Bay. The larva, and also the perfect insect, is occasionally found on the potatoes near here, but I never before remember four examples occurring during the same season.—WILLIAM J. CLARKE, 44, Huntriss Row, Scarborough, Oct. 2nd, 1892.

***Colias edusa* in Holderness and at Leeds.**—I see in this month's 'Naturalist' there are two notes on single occurrences of the Clouded Yellow (*Colias edusa*) in Holderness. I should like you to publish the fact that there has been this August and September, a very large eruption of this species in Holderness. I think I must have seen on the wing, or captured, upwards of 50 specimens, mostly males. My son Reginald captured one in the Leeds Grammar School playground, a fortnight ago; and Mr. Walker Joy tells me, whilst engaged in taking specimens with me at Kilnsea, that he saw one this summer in the streets of London. I have seen 3 specimens of the 'Pale' Clouded Yellow, two on the wing, and one secured by Master Hamish Nicol, of South Kensington, all occurring at Kilnsea. In the last few weeks they have entirely disappeared.—H. BENDELACK HEWETSON, 11, Hanover Square, Leeds, October 4th, 1892.

[We expect Mr. Hewetson has mistaken the variety *helice*, which nearly always occurs where *Colias edusa* is plentiful, for the 'Pale Clouded Yellow.' *Colias hyale* is not likely to have wandered so far north as Kilnsea.—G.T.P.]

NOTES AND NEWS.

A portrait and short biographical sketch of our colleague, Mr. G. T. Porritt, F.L.S., F.E.S., is given in the August number of the 'British Naturalist,' particular mention being made of the melanic forms of various Lepidoptera which he has at various times turned up at Huddersfield.

Mr. W. E. Collinge, who has been till now one of Prof. McIntosh's assistants at St. Andrews, and is known to our readers as being editor of 'The Conchologist,' has now left that place on his appointment to the Demonstratorship in Zoology at the Mason Science College at Birmingham.

The 'Pall Mall Gazette,' of August 1st, contains a letter from Mima Addison, calling attention to the fact that the library and ornithological collection of the late celebrated Prideaux J. Selby, of Twizell House, are being catalogued for sale, and ending with an appeal to some north country gentleman of means to purchase them *en bloc* and present them to the towns of Alnwick and Berwick.

In the Bulletin de la Société des Naturalistes de Moscou, 1891, Nos. 2 and 3, is a paper by Mr. G. W. Lamplugh, written in French, on the Speeton Clays and their Lincolnshire equivalents, and which is accompanied by a paper from the pen of Prof. A. Pavlov on the Cephalopods found in these clays, comparing them with other countries, particularly Russia.

The members of the Conchological Society of Great Britain and Ireland spent an enjoyable and most instructive day, on the 19th of August, in the inspection of the wonderfully complete collections of their President, the Rev. Canon Alfred Merle Norman, M.A., D.C.L., F.R.S., at his residence, Burnmoor Rectory, Fencehouses, co. Durham. The Society's annual meeting is to be held about the end of September, at some northern or midland town, not yet decided, when the Canon will deliver his address as President for the year.

We learn with great pleasure that 'Grevillea' will in future be the property of Mr. E. A. L. Batters, F.L.S., whose list of the Marine Algæ of the Berwick district is well known, and that its editorship will devolve upon our old friend and contributor, Mr. George Masee, F.R.M.S., of Kew. We are sure a more worthy successor to Dr. Cooke could not be found. Mr. Masee is well known as the author of several important works on that branch of Botany to which 'Grevillea' is devoted, and we can with confidence prophecy that the journal will at least not suffer by the change.

The September number of the 'Annals and Magazine of Natural History' contains some articles of interest to North of England naturalists. Mr. Walter E. Collinge has a note on the 'Preservation of Teleostean Ova,' giving results of experiments made at the St. Andrews' Marine Laboratory, the Rev. Canon A. M. Norman, M.A., D.C.L., F.R.S., continues his paper on the 'British *Mysidæ*, a family of Crustacea Schizopoda,' and Mr. James Cosmo Melvill, M.A., F.L.S., writing in conjunction with Mr. Ponsonby, gives 'Descriptions of Thirteen New Species of Terrestrial and Freshwater Mollusca from South Africa.' Canon Norman's and Mr. Melvill's papers are accompanied by plates.

We have received a copy of Mr. J. G. Goodchild's 'Observations on the New Red Series of Cumberland and Westmorland, with especial reference to Classification,' printed in the Transactions of the Cumberland and Westmorland Association. The author specially emphasises the unity of the whole series and its separation by a great unconformity from the underlying rocks. If a division into Permian and Trias be held necessary, he would draw the line just above the Magnesian Limestone, but the discordance at that horizon is not one of great importance. He gives reasons for including the St. Bees' Sandstone in the Bunter Sandstone group, which must have a total thickness of 2,000 ft. A detailed section of the succession in the New Red is given and a diagram to show the correlation with other areas in England. Many geologists will be pleased to learn that the Geological Survey has at last arrived at the classification here indicated, and finally abandoned that inspired by the Murchisonian myth of a tripartite Permian.

THE SUPPOSED INTER-BREEDING OF THE
 MERLIN AND KESTREL
 IN NORTHUMBERLAND, IN 1886.

F. B. WHITLOCK,

Beeston, Notts.

DURING a visit to Harbottle in Upper Coquetdale in May of the present year, I heard for the first time the story of a supposed case of the inter-breeding of the Merlin (*Falco aesalon*) and Kestrel (*Tinnunculus alaudarius*) in 1886.

I have not seen the printed report, but I understand that it was communicated by the late Mr. Thompson, of Rothbury, to a member of the Berwickshire Naturalists' Field Club, on the visit of the Society to Harbottle in 1887.

I was visiting Harbottle at the time the occurrence is supposed to have taken place, and I made the acquaintance of Mr. Thompson, who then kept an inn in the village, and also of Mr. Peter Taylor, the gamekeeper who shot both the birds. Messrs. Thompson and Taylor, I understand, being the authorities on whom the record rests. As the report attracted some attention, Mr. Thompson, I hear, even receiving a letter from abroad requesting confirmation, I propose to shed a little light on the subject.

On hearing that a Merlin and a Kestrel had been shot, the latter from off her nest, I called on Taylor, the keeper, to see what had become of the birds. He told me that he had given them to a gentleman who was fishing in the neighbourhood, and that he had taken them away with him to be stuffed. He also told me that he had not destroyed the eggs, and if I liked we could walk over to the nest and take them. I agreed to go, and accordingly on the following morning accompanied him to a moderately high escarpment overlooking Linnshiels Loch. The nest was in a little recess on the face of the cliff near to the summit, and the two highly-incubated eggs were easily reached. No Falcons were seen in the neighbourhood at the time. On packing the eggs I remarked that they were very much like Merlins', but my companion appeared to be certain that the bird he had killed was a Kestrel. Near to the nest was the stump of a tree which the Falcons had used as a feeding-place. Strewed around were the usual castings, which appeared to be principally composed of Meadow Pipits' feathers. On returning home I compared the two eggs with others in my collection, and was then certain they were true Merlins' eggs.

I have since learnt that the two birds were given to an innkeeper at Alwinton, who in turn passed them on to Mr. Thompson, who did a little bird-stuffing in his leisure time. The weather being warm at the time, however, both were allowed to lie too long before being skinned, and had to be thrown away.

Before I left Harbottle I had many a chat both with Mr. Thompson and Mr. Taylor, the keeper, and though both took an interest in birds, especially the former, I do not think that either were sufficiently experienced in ornithology to prevent them mistaking a female Merlin in the brown stage of plumage for a Kestrel.

I have little doubt that such a mistake was the foundation for their belief that this Merlin was breeding with a female Kestrel. I may state that the two eggs are still in my possession, and are at the service of anyone who still credits the accuracy of the original report.

I have written this paper in the hope that it may catch the eye of some member of the Berwickshire Naturalists' Field Club.

August 17th, 1892.

NOTES—BOTANY.

Extinction of *Jasione montana* near Ripon.—This plant may now be pronounced extinct. It was gathered near Hutton Conyers by Mr. T. Simpson, twenty years ago, and has not been found there since, and it was the only place where it grew in this neighbourhood.—THOS. C. HESLINGTON, No. 2, North Road, Ripon, October 3rd, 1892.

Casuals near Ripon.—I have to report a number of plants gathered in this district during August and September last. On the banks of the Skell, *Xanthium strumarium* (a plant which I believe is a dangerous one where sheep are) and *Setaria viridis*. I suppose these are but casuals, but they seem hardy and flourishing, like the beautiful two-flowered rose-pink *Geranium*, which I believe is *G. endressii*, and which has supplanted the indigenous vegetation and established itself in large patches like a weed in one of our lanes. As to how these casuals have been introduced, not much doubt can be entertained. They cart the scutchings and combings of the flax they spin at the Bishopton Mill and tip them down the high bank of the river Skell near to it. From thence they are blown with various plant seeds imported with the flax, all over the neighbourhood, and the seeds find a home on the banks of the Skell and the Laver and where their waters meet. Specimens of the following ones have been collected there during the last five years, but the two first mentioned seem now to have disappeared, as they have not been seen the last two seasons :—

Gilia achillefolia.

Centaurea solstitialis.

The others are :—

Melilotus parviflora.

Chenopodium vulvaria.

Hesperis matronalis.

Chenopodium hybridum.

Linaria minor.

Chenopodium polyspermum.

Anmi majus.

Setaria viridis.

Cichorium Intybus.

Phalaris canariensis.

Trifolium incarnatum.

Bromus secalinus.

Xanthium strumarium.

Bromus velutinus.

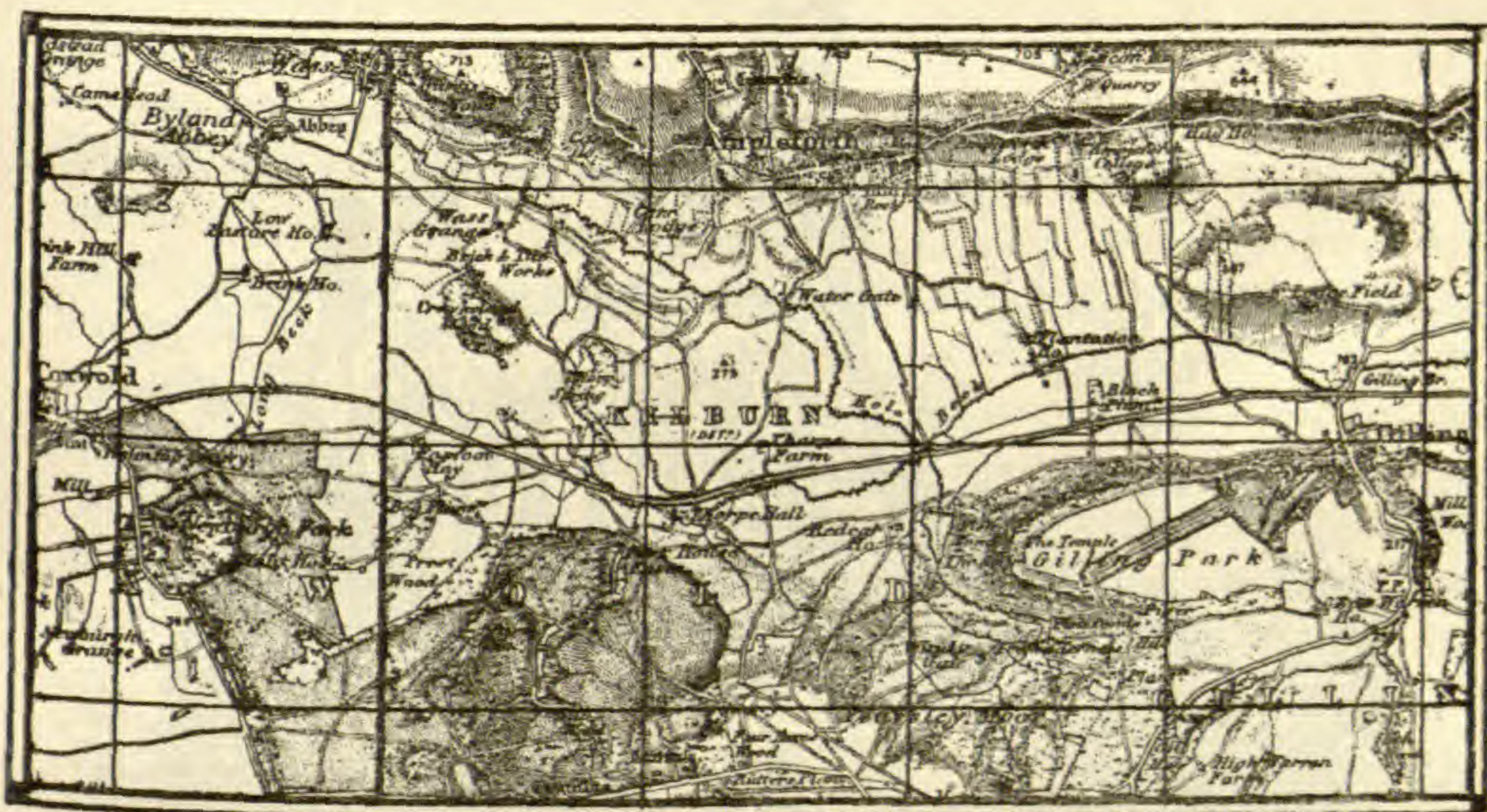
—THOS. CLARKE HESLINGTON, No. 2, North Road, Ripon, October 12th, 1892.

Naturalist,

THE YORKSHIRE NATURALISTS' UNION AT COXWOLD AND BYLAND.

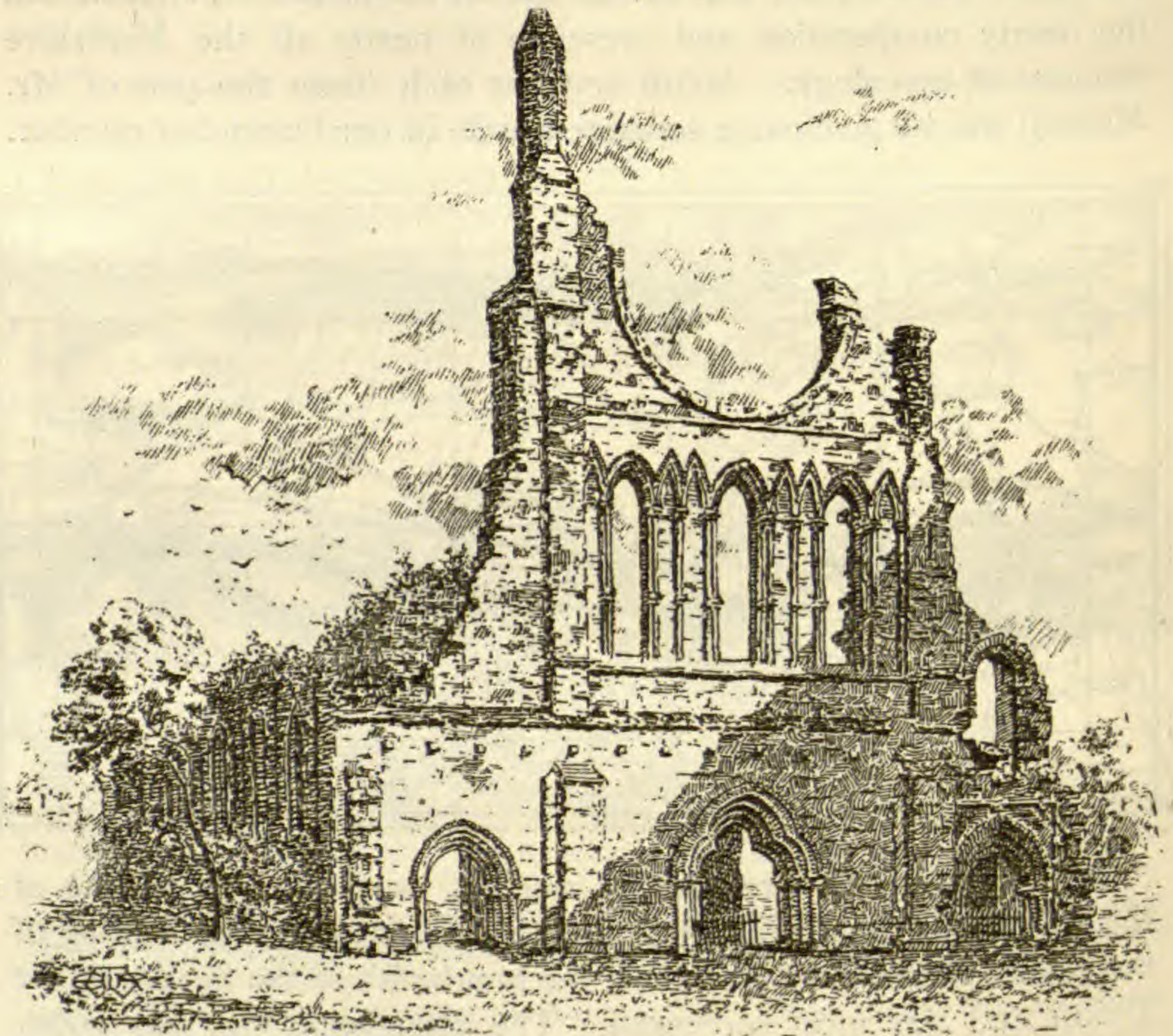
THE closing excursion of the year extended over two days, the first being specially devoted to the Fungus Foray, now an annual event in Yorkshire, and the second day to the ordinary excursion.

The Fungus Foray, held on the Castle Howard estate, by kind permission of the Earl of Carlisle, proved the most successful which has been yet held in Yorkshire, thanks to the favourable character of the weather, the invaluable presence and assistance of Mr. George Masee, F.R.M.S., and Mr. M. C. Cooke, M.A., LL.D., A.L.S., and the hearty co-operation and presence of nearly all the Yorkshire students of mycology. A full account of it (from the pen of Mr. Masee) will be given as a separate article in our December number.



The second day's proceedings were as usual devoted to one of the ordinary excursions of the Union, and formed the last outing of the year. This meeting was also the hundredth in the history of the Union, and was most successful. The attendance was very good, and nearly all departments of Natural Science were efficiently represented; altogether the excursion was to be regarded as much above the average in point of results achieved. The locality selected was stated by one member to be about as well known as Central Africa, but at the close of the day's proceedings this reproach was hardly so applicable. Coxwold (the birthplace of Sterne's immortal work 'Tristram Shandy') had been fixed as the rendezvous, the district under investigation extending to the nearest summits of the Hambleton Hills and the woods clothing their slopes, together with the parks at Newburgh and Gilling, and included Byland Abbey.

Permission for the examination of their respective estates had been generously granted by Sir George Wombwell, Bart., Mr. Hugh C. Fairfax-Cholmeley, and the Prior of Ampleforth College (the Rev. T. A. Burge), the latter gentleman also giving the benefit of his local experience and knowledge, and very hospitably entertaining the geological party at the College. This party, which formed 'Route 1' of the excursion-programme, with Mr. S. Chadwick, F.G.S., and Mr. J. W. Stather in charge, left the early train at Gilling Station, where they were met by Mr. Burge, and made their way to the quarries of calcareous grit and coral rag capping the hills behind the



College. The rev. gentleman graphically described the geological features of the district en route, with special reference to several local faults. They collected fossils vigorously, and obtained upwards of 25 species, some of them being of a rare and interesting character. They proceeded to Coxwold by way of Ampleforth and Byland. A second party, whose programme did not attract many followers and composed chiefly of botanists, also left Gilling Station and worked through Gilling and Newburgh Parks westward to Coxwold. The third party was a very large one, and was attended by all classes of naturalists and not a few photographers. The road was

first taken to Byland Abbey, where work commenced in earnest. The fallen stones lying about the ruins were eagerly overturned with varying success. The botanists, not being satisfied with the products of mother earth, went to the length of procuring a ladder for the further investigation of the flora of the walls, and it was understood that their labours had been well rewarded. It soon became evident, however, that there was very little to be done by members interested in Vertebrate Zoology. A set of cyclone traps was put down for the benefit of small mammals, to be examined later. A few Starlings and hosts of domestic pigeons appeared to be the only birds about the ruins. Cameras were well employed, and several members of an artistic turn of mind betook themselves to sketching. Mr. Waite has elaborated the sketch which he made, and a photograph taken by Mr. Godfrey Bingley from near the same spot, has enabled him to supply some of the minor details (see opposite page).

On leaving the Abbey it was soon found that Mr. A. B. Hall, of Thirsk, was well acquainted with the locality, and under his guidance the members made a careful examination of the woods and ravines on Wass Bank. Some very good and interesting mollusca, and the Common Lizard, were obtained. The botanists also did some very good work. Several members continued their researches to the Hambletons, where, among other things, a Slow-Worm was obtained. All parties finally returned to Byland, where they effected a junction with the geologists, and the traps on being inspected yielded an example of the Common Shrew. The parties gathered at the Fauconberg Arms, where the good fare provided was fully appreciated.

The sectional meetings having been held, and their several reports prepared, members assembled for the general meeting, which was presided over by Mr. W. N. Cheesman. The proceedings included the election of two new members:—Mr. Walter F. Baker, of Hull, and Mrs. Emmeline Hebden, of West Ayton, York.

The following affiliated Societies were represented on the excursion:—Wakefield, Leeds, York, Malton, Harrogate, and Thirsk Naturalists' Clubs; Hull Scientific Club; Hull Geological Society; and the Conchological Society.

On the motion of Mr. M. B. Slater, F.L.S., seconded by Mr. J. Willows, a cordial vote of thanks was passed to Sir Geo. O. Wombwell, Bart., Mr. Hugh C. Fairfax-Cholmeley, and the Rev. T. A. Burge for allowing their holdings to be examined, also to the latter gentleman, and to Messrs. S. Chadwick, F.G.S., J. W. Stather, and A. B. Hall for leading parties, and to Messrs. C. Fox-Strangways, F.G.S., and Wm. Hewett for contributions to the excursion-programme.

The sectional reports were next received, as follows:—

The Vertebrate Section was well represented, the members including among others, Messrs. Edgar R. Waite, F.L.S., Harold Raeburn, K. McLean, and the two hon. secretaries of the section, Messrs. James Backhouse, F.Z.S., who presented the report to the meeting, and Riley Fortune, F.Z.S., who supplies this account.

Nothing worthy of special mention was recorded among the birds, the most noticeable fact being the almost entire absence of migrants, the Swallow and Martin being the only two species met with, for as yet it was too early for the winter visitors. Referring to the statement in the circular that nothing seemed to be known about the fauna of the district, Mr. Backhouse remarked that for some time he had paid particular attention to it, and also gave the interesting information that the Woodcock nests regularly in the vicinity. The general route followed was that of the main body, already detailed. Messrs. Waite and Raeburn, who investigated Wass Woods, noticed that Rabbits were feeding very freely upon a large fungus (*Agaricus procerus*), and secured a Common Lizard, while Mr. Baker, who writes the report on the Coleoptera, captured a Slow Worm at the base of the Hambletons. The following is the complete list of species met with during the excursion:—

Mammals.

Mole.
Shrew.
Weasel.
Stoat.
Water Vole.
Hare.
Rabbit.

Birds.

Missel Thrush.
Song Thrush.
Blackbird.
Redbreast.
Goldcrest.
Hedge Accentor.
Long-tailed Tit.
Great Tit.
Blue Tit.
Wren.
Pied Wagtail.
Meadow Pipit.
Swallow.
Martin.
Greenfinch.
House Sparrow.
Chaffinch.

Linnet.
Yellow Bunting.
Starling.
Jackdaw.
Rook.
Skylark.
Sparrow Hawk.
Kestrel.
Mallard.
Ring Dove.
Stock Dove.
Pheasant.
Partridge.
Moorhen.
Coot.
Lapwing.

Reptiles.

Common Lizard
Slow Worm.
Frog.

Fishes.

Trout.
Minnow.
Bullhead.
Perch.
Roach.

For the Conchological Section Mr. F. W. Fierke, Hull, one of the secretaries of the section, reported that the excursion to Coxwold might be appropriately described as having been a 'red-letter day' for the conchologists, although as is too often the case, the attendance was meagre, the only members of the Section present being Mr. W. Denison Roebuck, F.L.S. (Leeds), and himself. Mr. Roebuck, who accompanied the mycologists, was the sole representative on the Wednesday's investigation, when a brief hour's collecting by the side of the Derwent, near Castle Howard Station, yielded *Helix fusca*, *H. arbustorum*, *H. granulata (sericea)*, *Succinea putris*, *Clausilia rugosa*, *Cl. laminata*, *Zua*, and various slugs and commoner shells, as the result of turning over a few logs and examining a patch of vegetation in a damp spot.

On Thursday he was joined by Mr. Fierke at Coxwold, a district which was to all appearance conchologically a virgin tract. There was, however, an impression that it would be of a promising character, a prognostication which proved correct; and it was with much elation on their return that the two collectors delivered their tubes and boxes of their contents in response to the often repeated question, 'What luck have you had to-day?' No little amusement was caused by the friendly rivalry displayed on the part of some geologists as to their right to a gold medal for the most successful sectional work during the day, but it is superfluous to add that as is usual with naturalists when they enter into controversies, peace and concord were maintained between the two rival sections.

On arrival at Coxwold Station in the morning an immediate start was made for Byland, along a lane which presented some attractive banks and hedges, overgrown with mosses and other forms of vegetation. It was in the hedge-rows that *Helix sericea* was alighted upon. Having reached the ruins of Byland Abbey, the whole party, of which the conchologists were but a small portion, were constrained to halt awhile, pondering over the noble pile which still bears witness to the past architectural grandeur of the place. But reverence for the past soon gave way for the realities of the present, and the stones strewn over the ground in the interior of the Abbey were forthwith discovered to be productive of the slimy slug to a high degree. The place was literally besieged by them; in fact, every stone turned over revealed the haunts of these ubiquitous creatures, most of them being examples of the common *Agriolimax agrestis* and its varieties.

The route was now taken for Wass Bank, as the adjacent slopes of the Hambleton Hills are called. Arrived at the summit of this a descent was made at a bridge into a deep lateral ravine, through

which, however, there was no stream. Here the first important discovery of the day was made, Mr. Roebuck finding *Hyalinia excavata* under a stone, in company with *H. rotundata* and other species. So interesting a find caused careful and diligent turning over of stones along the whole ravine, with the result that the same collector was so fortunate as to find a fine example of that rarity, *Limax cinereo-niger*, which was the deepest coloured specimen of that species which he had ever seen. Indeed, so black was it, that most conchologists unaccustomed to slugs in particular would have passed it by for *Arion ater*. However, a second glance revealed the light-coloured dorsal keel, and the identity was speedily confirmed by the characteristic trifasciated foot-sole. Nothing else turned up in this ravine, and the track was now across the moor to the S.W., and into another ravine of much greater depth, and with a rough stony bottom and its upper slopes crowned with wood, which trended towards Wass village. Despite the difficulty of picking one's way down so rough a course, difficulty enhanced by the luxuriance and unusual virulence of the growth of nettles, search was kept up, and rewarded by the capture of such species as *Helix lapicida*, *Azeca tridens*, and numerous commoner things.

Not far from the village of Wass, at the base of Hambleton Hills, an interesting pond was visited, which contained an abundance of *Sphaerium lacustre* and *Pisidium fontinale*, mostly of the variety *cinerea*, and an odd specimen of variety *henslowana* was also taken from it. The pond was supplied by a stream descending the slope of the hill, and was singularly suggestive of the way freshwater deposits may be formed on a small scale. A very distinct deposit of a whitish clay was seen on the partially dried-up banks, which contained numerous shells throughout its whole thickness. A smaller pond by a farmhouse, which had a marshy outflow down the rugged hill-side, suggested during a brief halt that the Marsh Slug (*Agriolimax lævis*) should be looked out for, and it was at once found.

In the wood at the end of this road, all the time remaining at disposal was spent, and proved exceedingly productive, *Azeca tridens* occurring there in considerable numbers; in fact, hardly a stone or branch was overturned without observing some kind of mollusc upon it. Unhappily the party had not gone far before it was found necessary to retrace steps for want of time, and in consequence some of the most promising localities had to be skipped. Altogether were found 3 aquatic species and 33 terrestrial, but there can be little doubt that with further investigation this list will be materially increased.

Arion ater.	Helix pygmæa.
Arion minimus.	Helix pulchella.
Arion hortensis.	Helix lapicida.
Arion circumscriptus.	Helix aspersa.
Limax maximus var. fasciata.	Helix hortensis.
Limax cinereo-niger.	Helix arbustorum.
Limax marginatus (arborum).	Helix rufescens.
Agriolimax agrestis and vars.	Helix hispida.
sylvatica and lilacina.	Helix granulata (sericea).
Agriolimax lævis.	Vertigo pygmea.
Vitrina pellucida.	Clausilia perversa.
Hyalinia cellaria.	Azeca tridens.
Hyalinia alliaria.	Cochlicopa lubrica.
Hyalinia nitidula.	Succinea elegans.
Hyalinia pura.	Carychium minimum.
Hyalinia crystallina.	Limnæa peregra.
Hyalinia fulva.	Sphærium lacustre.
Hyalinia excavata.	Pisidium fontinale and vars.
Helix rotundata.	henslowana and cinerea.

For the Entomological Section Mr. G. C. Dennis reported that together with Mr. E. G. Potter he had worked the district around Coxwold and Byland, and had also investigated Wass Woods, their captures including among others, *Hadena protea*, *Xanthia silago*, *Peronea comparana*, *P. sponsana*, *Teras caudana*, *Chelaria hübnereella*, and others; while Mr. G. T. Porritt, the President of the Section, had worked the woods and river at Castle Howard, where the following Neuroptera and Trichoptera occurred:—*Chrysopa flavifrons*, *Hemerobius marginatus* and *H. micans*, *Leuctra fusciventris* (common), *Halesus radiatus* (not uncommon), *Anabolia nervosa* (in profusion all along the river), *Limnophilus lunatus* (not uncommon), *Micropterna sequax*, and *Rhyacophila dorsalis* (common).

Mr. M. L. Thompson reported on the Coleoptera, and the following account is written by Mr. W. F. Baker.

Good hopes were held out in the circular that the district around Coxwold would prove a 'happy hunting-ground,' and these hopes were most certainly realised with regard to the Coleoptera. The day was all that could be desired, and the captures were very satisfactory both in quantity and quality, the Adephaga being well represented. On shaking some heaps of thorns by the road-side, a most lively selection of small life was brought to view, spiders, scolopendræ, *Julus* and *Oniscus* rushing hither and thither, tumbling over each other in their eagerness to escape, whilst *Tachyporus hypnorum* and *T. chrysomelinus*, with *Leistus ferrugineus* and *Apion apricans* represented the Coleoptera. A solitary specimen of the Green Weevil (*Phyllobius urticæ*)—a beetle which, though in the greatest abundance in early spring, seems to disappear altogether in autumn—

was obtained on some nettles, together with *Chrysomela staphylea*. The stone-heaps by the road-side, as usual, well repaid the trouble of investigation, *Anchomenus oblongus* and *A. dorsalis*, *Pterostichus vulgaris*, *P. madidus*, *Bembidium monticola*, *Anchomenus parumpunctatus* and *Philonthus marginatus* being found there, whilst the pretty and lively little *Bembidium quadrimaculatum* was unusually common. *Sitones lineatus*, *Apion æneum*, *A. violaceum*, *Phædon cochleariæ*, *P. tumidulus*, and a variety of *Halysia 22-punctata*, only showing 20 spots (one on each elytron being confluent with an adjacent spot), were obtained by sweeping the long grass, etc., by the road-side, between Coxwold and Byland Abbey. Under a stone by the side of 'Long Beck,' *Notiophilus aquaticus* was found, but the beck itself was too swift for any of the ordinary aquatic beetles. By the stone wall at Byland, *Anchomenus dorsalis*, *Calathus melanocephalus* and *Loricera pilicornis* were found.

In the grounds of Byland Abbey were found *Xantholinus glabratus* and *Medon brunneus*. Dung-beetles, in the fields surrounding the Abbey, were the next to attract attention, a little heap of mould, by some cow-dung, showing where the common Dor-beetle (*Geotrupes stercorarius*) had made its burrow. Digging it out proved an easy task, as owing to the stony nature of the ground, the hole was not more than four inches deep. *Aphodius ater*, *A. fimetarius*, *A. inquinatus*, *Philonthus æneus*, *Sphæridium scarabæoides* and *S. bipustulatum* were also found in dung, the *Philonthus* being, perhaps, one of the swiftest beetles we have, whilst the *Sphæridium* has a most peculiar waddling kind of walk. On the road-side between Byland and Wass was a specimen of *Geotrupes stercorarius*, blinded by the daylight and vainly endeavouring to climb a small shrub. How it had got there at that time of the day must be left to the imagination, for it is a nocturnal beetle.

Leaving Wass to the right hand and going up the Hambleton hills, a very swift little beck yielded several *Dianois cærulescens*, clinging to the under side of some moss-covered stones, although the stream was very rapid indeed. This stream empties itself into a pond at the bottom of the hill, but the pond hardly repaid the trouble of searching; *Agabus guttatus*, *Deronectes depressus*, *Ilybius fuliginosus* and *Haliphus ruficollis* being all that were found there. *Apion æneum* and the blue variety of *Haltica pusilla* were obtained by sweeping near the pond. In the wood on the left-hand side, was a rabbit, freshly killed, probably by a stoat, as it had no other marks on it besides a hole at the back of the neck, through which its slayer had doubtless sucked its blood. In the cavity thus made, although the body was scarcely

cold, were *Pterostichus madidus* and *Leistotrophus nebulosus*. In some fungi were *Bolitobius trinotatus* and *B. exoletus*, whilst *Pterostichus picimanus* was found under a piece of wood, and *Adalia obliterated*, with *Stenus similis*, were obtained by sweeping the undergrowth in the wood. At Cawton (on the previous day), Gilling, and Byland, Mr. Thompson also met with success. The following is a total list of the Coleoptera captured on this excursion :—

Cychrus rostratus L.	Aleochara mœsta Grav.
Notiophilus aquaticus L.	Tachyporus obtusus L.
Notiophilus biguttatus F.	Tachyporus chrysomelinus L.
Leistus spinibarbis F.	Tachyporus hypnorum F.
Leistus rufescens F.	Tachinus rufipes DeG.
Leistus ferrugineus L.	Tachinus humeralis Grav.
Nebria brevicollis F.	Bolitobius trinotatus Er.
Loricera pilicornis F.	Bolitobius exoletus Er.
Clivina fossor L.	Bolitobius pygmæus F.
Harpalus æneus F.	Quedius fulgidus F.
Harpalus ruficornis F.	Quedius molochinus Grav.
Pterostichus madidus F.	Quedius impressus Pz.
Pterostichus vulgaris L.	Quedius fuliginosus Grav.
Pterostichus niger Schall.	Quedius cruentus Ol.
Pterostichus picimanus Duft.	Leistotrophus nebulosus F.
Amara aulica Pz.	Ocypus morio Grav.
Patrobus excavatus Payk.	Ocypus brunnipes F.
Calathus cisteloides Pz.	Philonthus splendens F.
Calathus piceus Marsh.	Philonthus æneus Rossi.
Calathus melanocephalus L.	Philonthus marginatus F.
Anchomenus dorsalis Müll.	Philonthus puella Nord.
Anchomenus albipes F.	Xantholinus glabratus Grav.
Anchomenus oblongus Sturm.	Xantholinus linearis Ol.
Anchomenus parumpunctatus F.	Lathrobium fulvipenne Grav.
Bembidium obtusum Sturm.	Medon brunneus Er.
Bembidium monticola Sturm.	Dianois cœrulescens Gyll.
Bembidium quadrimaculatum Dej.	Stenus speculator Er.
Bembidium æneum Germ.	Stenus similis Herbst.
Trechus minutus F.	Oxytelus laqueatus Marsh.
Dromius linearis Ol.	Oxytelus tetracarinated Block.
Haliplus ruficollis DeG.	Adalia obliterated L.
Deronectes depressus F.	Coccinella hieroglyphica L.
Agabus guttatus Payk.	Halyzia 22-punctata L.
Ilybius fuliginosus F.	Meligethes viridescens F.
Helephorus nubilus F.	Nitidula bipustulata L.
Sphæridium scarabæoides F.	Lathridius lardarius DeG.
Sphæridium bipustulatum F.	Aphodius ater DeG.
Cercyon hæmorrhoidalis Herbst.	Aphodius fimetarius L.
Cercyon melanocephalus L.	Aphodius depressus Kug.
Cercyon flavipes F.	Aphodius inquinatus F.
Cercyon unipunctatus L.	Geotrupes stercorarius L.
Silpha rugosa L.	Rhagium bifasciatum F.
Silpha atrata L.	Chrysomela polita L.
Aleochara fuscipes Grav.	Chrysomela staphylæa L.

Chrysomela didymata Scriba.	Cassida viridis L.
Phædon tumidulus Germ.	Apion trifolii L.
Phædon cochleariæ F.	Apion æneum F.
Lochmæa suturalis Thoms.	Apion apricans Herbst.
Haltica pusilla Duft. v. montana.	Apion violaceum Kirby.
Crepidodera transversa Marsh.	Apion radiolus Kirby.
Phyllotreta nemorum L.	Polydrusus pterygomalis Boh.
Longitarsus jacobææ Wat.	Phyllobius urticæ DeG.
Longitarsus pusillus Gyll.	Sitones lineatus L.
Longitarsus melanocephalus All.	Sitones hispidulus F.
Sphæroderma testaceum F.	Hypera nigrirostris F.

From notes furnished by Mr. Charles Waterfall the following particulars as to the work of the Botanical Section have been obtained. Leaving Coxwold at an early hour, the party set out for Byland Abbey, and collected between the station and the Abbey *Salix pentandra* and *Berberis vulgaris*. The following plants were also noticed: *Valeriana officinalis*, *Capsella bursa-pastoris*, *Geranium robertianum*, *Ilex aquifolium*, *Cytisus scoparius*, *Vicia sativa*, *Spiræa ulmaria*, *Fragaria vesca*, *Potentilla fragariastrum*, *P. tormentilla*, *Cratægus oxyacantha*, *Epilobium parviflorum*, *E. montanum*, *Angelica sylvestris*, *Heracleum sphondylium*, *Caucalis anthriscus*, *Galium aparine*, *Pulicaria dysenterica*, *Senecio vulgaris*, *S. jacobæa*, *Lapsana communis*, *Crepis virens*, *Prunella vulgaris*, *Stachys sylvatica*, and *Polygonum aviculare*. On the top of an old wall, just before reaching the Abbey, were seen *Arenaria serpyllifolia* and *Trifolium procumbens*. On the walls of the Abbey *Lactuca virosa* was seen, and, with the aid of a stick and a ladder, some specimens secured. *Verbascum nigrum* was also collected here, and inside the Abbey were growing *Sisymbrium officinale*, *Sagina procumbens*, *Geranium molle*, *G. dissectum*, *Medicago lupulina*, *Sedum acre*, *Hedera helix*, *Sambucus nigra*, *Galium cruciata*, *Cnicus palustris*, *Sonchus oleraceus* and *Carex glauca*. From the banks of a neighbouring stream *Eupatorium cannabinum* was collected, and two species of *Epilobium*, *hirsutum* and *palustre*, grew there as well. In the vicinity of Byland village were collected *Veronica agrestis*, *V. arvensis* and *Vicia hirsuta*, the latter probably an escape from an oat-field adjoining the road. Other plants seen at Byland were *Lamium purpureum*, *Chenopodium album* and *C. bonus-henricus*. From Byland the members proceeded up Wass Bank and met with *Cardamine hirsuta*, *C. flexuosa*, *Lotus corniculatus*, *Fragaria vesca*, *Potentilla fragariastrum*, *P. tormentilla*, *Pyrus Saucuparia*, *axifraga tridactylites*, *Æthusa cynapium* and *Lactuca muralis*. Wass Moor was next traversed, and a variety of *Hieracium boreale* collected, possessing light green leaves and a very hairy stem. *Rubus idæus* was noticed and its fruit enjoyed, and such common plants as *Calluna erica*, *Erica tetralix*, *E. cinerea*, and *Scabiosa succisa* seen.

Many ferns were collected here, including *Lastræa filix-mas*, *L. oreopteris*, *L. spinulosa*, *L. dilatata*, *Lomaria spicant*, and a crested variety of *Athyrium filix-fœmina*. The party then made towards a small gate which opened on to a cart-road. Following the road, a charming rocky ravine was entered, and soon acquaintance was made (by the sense of touch) of a virulent form of *Urtica*. Further in the ravine were found *Primula vulgaris* (still in flower), *Chrysosplenium oppositifolium*, *Hieracium tridentatum*, *Myosotis arvensis*, *Teucrium scorodonia*, and the ferns *Scolopendrium vulgare*, *Polystichum aculeatum*, and *Polypodium vulgare*. Wass Woods were then examined, yielding *Hypericum hirsutum*, *H. pulchrum*, *Oxalis acetosella*, *Circeæ lutetiana*, *Sanicula europæa*, *Asperula odorata*, *Arctium minus*, *Cnicus palustris*, *Campanula latifolia* (fruiting), *Lysimachia nemorum*, *Scrophularia nodosa*, *Stachys betonica*, *Polypodium vulgare*, *P. phegopteris*, *Mercurialis perennis*, *Luzula maxima*, and both the barren and fertile stems of *Equisetum maximum*. During the return to Coxwold were noticed *Pimpinella magna*, *Raphanus raphanistrum*, and, in a garden hedge, *Humulus lupulus*. All the foregoing plants were seen by Mr. Waterfall himself, and, in addition, other members came across the following:—*Sisymbrium thaliana*, *Hypericum quadrangulum*, *Ulex europæus*, *Vicia sepium*, *Galium saxatile*, *G. palustre*, *Tussilago farfara*, *Petasites vulgaris*, *Mentha hirsuta*, *Juncus bufonius*, and *Polystichum angulare*.

For the Geological Section Mr. J. W. Stather writes:—Geologists were present from Malton, Leeds, York, Hull, and other parts of Yorkshire; and the leaders were the Rev. T. A. Burge, Prior of Ampleforth College, and Mr. S. Chadwick, F.G.S., of Malton. As the party proceeded across the low ground dividing Gilling from Ampleforth College, it was explained that the Coxwold and Gilling Valley is remarkable for the presence of two large faults, which cut off the Kimeridge Clay floor of the valley from the Hambleton Hills on the North, and the Howardian Hills on the South, and is succinctly described by Mr. Hudleston as 'A great valley, the result of erosion acting upon a complicated dislocation.' The practical effect of this dislocation being that the coralline oolite (Lower Oolite) caps the two ranges of hills, while hundreds of feet below, in the intervening valley occurs the Kimeridge Clay (Upper Oolite). Mr. Burge pointed out, on the lower slopes of the valley, several minor landslips, which he said were of constant occurrence after heavy rains. These slips, which occasioned the local agriculturists much inconvenience, were caused by the beds of drift moving forward on the slippery shales beneath them. In the neighbourhood of Ampleforth College a short detour was made in

order to see an excavation in the Kimeridge Clay, which, however, was found to be much obscured. But enough was seen to determine the horizon. At the College the members of the party were hospitably entertained by Mr. Burge, and were also shown the museum and the beautiful little church connected with the Institution.

After this agreeable interlude the more serious work of the day began. Leaving the College, the party soon found themselves on the line of one of the great faults before alluded to, and in another few yards the spring which supplies the College with water was reached. Prior to the sinking of this well, which is a very good one, Mr. Burge said the College authorities had been at much trouble and expense in boring for water in different parts of their grounds, but without success. As a last resource, a local celebrity with his 'divining rod' was called in, and he, to the everlasting confusion of scientific scoffers, without hesitation indicated the spot where the present well now is. A stiff climb of ten minutes brought the party to a large quarry of calcareous grit, which proved fairly fossiliferous. A fine specimen of the genus *Astropecten* occurred here, which Mr. Chadwick regarded as the 'find' of the day, and *Ammonites plicatilis*, *Rhynchonella thurmanni*, *Gryphæa*, etc., were noted. After a further ascent the brow of the hill was reached, and another quarry inspected. This proved to be a good section of coralline oolite, and resting on the top of it three or four feet of coral rag. This exposure, says Mr. Hudleston, marks the highest elevation attained by the coralline beds in Yorkshire, viz., 675 feet above sea-level. A halt was there made, and many good specimens were obtained from its weathered walls. The list includes: spines and plates, *Cidaris florigemma*, *Thamnastræa*, *Belemnites abbreviatus*, *Chemnitzia heddingtonensis*, *Exogyra nana*, *Pecten*, *Lima*, *Pseudodiadema versipora* (?) *Lucina*? *Phasianella striata*, and others not yet determined. From the top of the hill close by, atmospheric conditions being exceptionally favourable, extensive views were obtained of the region of Tabular hills, the vale of Pickering, and also of the Howardian range to the South—the whole forming a panorama of hill and dale not easily forgotten by students of denudation. Near Ampleforth village one or two sections lower down in the series were visited and yielded fine specimens of oolitic chert. Here the Rev. T. A. Burge, who had proved such a capable and courteous guide, was obliged to leave the members, but not before they had expressed to him their warmest thanks for his services.

The usual votes of thanks to the landowners and leaders of parties terminated the business.—E.R.W.

FUNGUS FORAY AT CASTLE HOWARD AND MALTON.

GEO. MASSEE,

Editor of 'Grevillea'; Author of 'British Fungi,' etc.; Kew.

THIS year's Fungus Foray of the Yorkshire Naturalists' Union was held under the favourable combination of fine weather, abundance of fungi, and a good attendance of enthusiastic mycologists.

It has been said that no person is a true student of nature who cannot sympathise with the work done by others in subjects outside his own special sphere of study; and, presuming the members of the Y.N.U. are not lacking in this essential, it must be a source of satisfaction to all to find that a hitherto somewhat neglected study is being vigorously and persistently carried on in a systematic manner, with the result that the Mycologic Flora of Yorkshire is already as rich numerically, and also in the great variety of interesting and rare species, as any other equal area in Great Britain; and when it is taken into consideration that only a very small proportion of the county has been investigated, it may safely be inferred that important additions will yet be made, not only by the discovery of species at present met with in other parts of Britain, but also by additions to the Flora of the country. As a matter of fact, even since the foray of which I now write a very interesting discovery of this kind has fallen to the lot of Mr. C. Crossland, of Halifax, who has also, to my mind, been yet more fortunate in collecting a very beautiful species established by Bolton, the pioneer of Yorkshire mycology, and which, not having previously been met with since Bolton's time, was by some considered as a doubtful species. However, on these matters Mr. Crossland must be left to tell his own tale, these facts being mentioned to show Yorkshire mycologists that there is yet work to be done, and also to demonstrate to the members of the Union generally that the work done by their mycological members fully justifies the facilities afforded by the Union.

The days fixed for the foray proper were Wednesday and Thursday, the 14th and 15th of Sept., but Dr. M. C. Cooke, A.L.S., and the writer of this arrived at Malton on the Monday evening previous, for the purpose of having a preliminary ramble on the Tuesday, on which day, in company with three or four members from the West Riding, the woods in the neighbourhood of Castle Howard Station were worked. Among the interesting finds made here may be mentioned the Earth-Star (*Geaster hygrometricus*). In the evening the specimens found were named, and arranged in the Corn Exchange at Malton.

On Wednesday morning, after the full complement of workers had arrived—with the exception of the Rev. Wm. Fowler, M.A., of Liversedge, whose absence was universally regretted—two distinct routes were taken. One party, led by the writer of this notice, started from Castle Howard Station, and, passing through the village of Welburn, explored the woods in the vicinity of Castle Howard. A second party, led by Mr. M. B. Slater, F.L.S., of Malton, with whom was Dr. Cooke, drove to Terrington Carr—a bit of classic ground, botanically—and explored the district, both parties meeting at Coneysthorpe, where, before starting back for Malton, a few of the members paid a brief visit to the celebrated botanist, Dr. Spruce, of whom all Yorkshiremen are justly proud.

On arriving at Malton, after compensating for the loss of substance experienced during the ramble, the fungi were examined and added to those already arranged, and during the evening the exhibition of specimens was open to the public.

A short meeting was organised, with Mr. M. B. Slater, F.L.S., in the chair. Dr. Cooke then gave a brief and most interesting address upon 'Edible Fungi,' his remarks being illustrated by specimens taken from those on exhibition, and enlivened with many a humorous touch. The writer followed with an address on some points in the structure of certain fungi, after which thanks were voted on the motion of Mr. A. H. Taylor, seconded by Mr. A. W. Walker, both of Malton. Another vote of thanks to the Malton members, and to Lord Fitzwilliam for allowing the use of the Corn Exchange for the Show, was proposed by Messrs. C. Crossland and A. Clarke, and unanimously adopted. Mr. H. T. Soppitt gave the meeting some statistics on the number of species observed and noted at each of the Union's forays.

On Thursday the general body of members proceeded to Coxwold, but the fungus-men, being desirous of paying more attention to the specimens already collected, elected to remain at Malton, and during the day paid a short visit to the woods on the Welham estate, situated in the East Riding, and made up a list of over seventy species; argued out several knotty points in connection with specific differences, talked over matters in general, and finally said good-bye until the next merry meeting.

The fungus season, as a whole, has been poor, but exceptional seasons often furnish exceptional fungi, and a noteworthy feature of the present season was the abundance of individuals, if not of species, peculiar to open pastures, and probably no mycologist present had before seen so many specimens of *Leptonia* and *Hygrophorus* in one pasture as on the present occasion. As a rule,

white-spored Agarics were rare, many genera that are usually common being altogether absent, or represented by one or two unusual species.

Among the rarities may be mentioned *Inocybe adequata* Britz., a large and beautiful species new to Britain, and only previously found in Bavaria. *Boletus porphyrosporus* Fries., brought from near Halifax by Mr. Crossland, and from near Pickering by Mr. Chadwick, has only previously been found in Britain at Burnham Beeches. *Psalliota elvensis* B. & Br., a large and well-marked species, first found in North Wales, then in Dr. Cooke's garden at Highgate; occurred in abundance in Castle Howard Park. This species is edible, and much superior to the common mushroom (*Psalliota campestris*) in flavour. *Clitocybe bella* Fr., *Cortinarius bolaris* Fr., and *Tilletia rauwenhoffii* Fisch. de W., found by Mr. Soppitt, were also rarities.

For the list of species which follows we are indebted to Mr. A. Clarke, of Huddersfield, who has drawn it up, with the assistance of Mr. C. Crossland, of Halifax, and Mr. H. T. Soppitt, of Bradford.

HYMENOMYCETES.

AGARICINI.

- Agaricus (Amanita) muscarius** L. Castle Howard. A large specimen, pileus 11 inches diameter, from Grindale near Malton, by S. Chadwick.
- Agaricus (Amanita) pantherinus** DC. Castle Howard.
- Agaricus (Amanita) rubescens** Pers. Castle Howard; Welham Park.
- Agaricus (Amanitopsis) vaginatus** Bull. Castle Howard; also var. *rufus* from Hebden Bridge.
- Agaricus (Lepiota) procerus** Scop. Castle Howard; Wass Bank; Pickering, sent by Mr. J. A. Place.
- Agaricus (Lepiota) cristatus** A. & S. Castle Howard; Welham Park.
- Agaricus (Lepiota) licmophorus** B. & Br. From a greenhouse, Huddersfield, sent by J. Sutcliffe.
- Agaricus (Lepiota) carcharias** Pers. Castle Howard.
- Agaricus (Lepiota) granulosis** Batsch. Do.
- Agaricus (Tricholoma) portentosus** Fr. Do.
- Agaricus (Tricholoma) rutilans** Schæff. Do.
- Agaricus (Tricholoma) scalpturatus** Fr. Do.
- Agaricus (Tricholoma) imbricatus** Fr. From Ingham Park, Mirfield, sent by Mr. H. Parkinson.

- Agaricus* (*Tricholoma*) *terreus* Schæff. Welham Park, near Malton.
- Agaricus* (*Tricholoma*) *saponaceus* Fr. Castle Howard.
- Agaricus* (*Tricholoma*) *cuneifolius* Fr. Do.
- Agaricus* (*Tricholoma*) *sulphureus* Bull. Do.
- Agaricus* (*Tricholoma*) *carneus* Bull. Castle Howard; Welham Park, near Malton.
- Agaricus* (*Tricholoma*) *arcuatus* Bull. Castle Howard.
- Agaricus* (*Tricholoma*) *nudus* Bull. Do.
- Agaricus* (*Tricholoma*) *melaleucus* Pers. Do.
- Agaricus* (*Tricholoma*) *humilis* Fr. Do.
- Agaricus* (*Tricholoma*) *sordidus* Fr. Do.
- Agaricus* (*Clitocybe*) *clavipes* Pers. Do.
- Agaricus* (*Clitocybe*) *odorus* Bull. Do.
- Agaricus* (*Clitocybe*) *infundibuliformis* Schæff. Do.
- Agaricus* (*Clitocybe*) *inversus* Scop. Do.
- Agaricus* (*Clitocybe*) *fragrans* Sow. Do.
- Agaricus* (*Laccaria*) *bella* Pers. Do.
- Agaricus* (*Laccaria*) *laccatus* Scop., including also the dark violaceous form (*Agaricus amethystinus* Bolt.). Castle Howard; Welham Park.
- Agaricus* (*Collybia*) *radicatus* Rehl. Castle Howard; Welham Park.
- Agaricus* (*Collybia*) *platyphyllus* Fr. Castle Howard.
- Agaricus* (*Collybia*) *fusipes* Bull. Do.
- Agaricus* (*Collybia*) *maculatus* A. & S. Do.
- Agaricus* (*Collybia*) *distortus* Fr. Do.
- Agaricus* (*Collybia*) *confluens* Pers. Do.
- Agaricus* (*Collybia*) *dryophilus* Bull. Do.
- Agaricus* (*Collybia*) *muscigenus* Schum. Halifax.
- Agaricus* (*Mycena*) *pelianthinus* Fr. Castle Howard.
- Agaricus* (*Mycena*) *elegans* Pers. Do.
- Agaricus* (*Mycena*) *gypseus* Fr. Do.
- Agaricus* (*Mycena*) *galericulatus* Scop. Castle Howard; Ingleby Greenhow, sent by Rev. John Hawell.
- Agaricus* (*Mycena*) *ammoniacus* Fr. Castle Howard.
- Agaricus* (*Mycena*) *vitalis* Fr. Castle Howard; Welham Park.
- Agaricus* (*Mycena*) *galopus* Pers. Castle Howard; Welham Park.

- Agaricus (*Mycena*) *eipterygius* Scop. Do.
 Agaricus (*Omphalia*) *rusticus* Fr. Do.
 Agaricus (*Omphalia*) *griseus* Fr. Castle Howard ; also from
 Welham Park.
 Agaricus (*Omphalia*) *fibula* Bull. Castle Howard.
 Agaricus (*Volvaria*) *gloiocephalus* Dec.Fl. Do.
 Agaricus (*Pluteus*) *cervinus* Schæff. Do.
 Agaricus (*Entoloma*) *sinuatus* Fr. Do.
 Agaricus (*Entoloma*) *sericellus* Fr. Do.
 Agaricus (*Entoloma*) *sericeus* Bull. Castle Howard ; Welham
 Park.
 Agaricus (*Clitopilus*) *prunulus* Scop. Castle Howard.
 Agaricus (*Clitopilus*) *orcella* Bull. Castle Howard ; Welham
 Park.
 Agaricus (*Leptonia*) *lampropus* Fr. Castle Howard ; Welham
 Park.
 Agaricus (*Leptonia*) *incanus* Fr. Castle Howard ; Welham
 Park.
 Agaricus (*Nolanea*) *pascuus* Pers. Castle Howard ; Welham
 Park.
 Agaricus (*Claudopus*) *variabilis* Pers. Hebden Bridge.
 Agaricus (*Pholiota*) *erebius* Fr. Castle Howard.
 Agaricus (*Pholiota*) *squarrosus* Müll. Do.
 Agaricus (*Pholiota*) *mutabilis* Schæff. Do.
 Agaricus (*Pholiota*) *marginatus* Batsch. Do.
 Agaricus (*Pholiota*) *unicolor* Fl.Dan. Do.
 Agaricus (*Inocybe*) *pyriodorus* Pers. Castle Howard ; Welham
 Park.
 Agaricus (*Inocybe*) *fastigiatus* Schæff. Castle Howard.
 Agaricus (*Inocybe*) *rimosus* Bull. Do.
 Agaricus (*Inocybe*) *asterosporus* Quel. Castle Howard ;
 Welham Park.
 Agaricus (*Inocybe*) *descissus* Fr. Castle Howard ; Welham
 Park.
 Agaricus (*Inocybe*) *geophyllus* Sow. Welham Park ; Ingleby
 Greenhow, sent by Rev. John Hawell.
 Agaricus (*Inocybe*) *adequata* Britz. Castle Howard.
 Agaricus (*Hebeloma*) *claviceps* Fr. Castle Howard.
 Agaricus (*Hebeloma*) *crustuliniformis* Bull. Do.
 Agaricus (*Hebeloma*) *truncatus* Schæff. Do.
 Agaricus (*Flammula*) *carbonarius* Fr. Do.
 Agaricus (*Flammula*) *inopus* Fr. Do.

- Agaricus (Flammula) sapineus** Fr. Halifax.
Agaricus (Naucoria) semi-orbicularis Bull. Castle Howard.
Agaricus (Galera) tener Schæff. Castle Howard.
Agaricus (Galera) ovalis Fr. Do.
Agaricus (Crepidotus) mollis Schæff. Do.
Agaricus (Psalliota) elvensis B. & Br. Do.
Agaricus (Psalliota) arvensis Schæff. Castle Howard ; Welham Park.
Agaricus (Psalliota) campestris L. Castle Howard.
Agaricus (Psalliota) sylvicola Vitt. Do.
Agaricus (Psalliota) sylvaticus Schæff. Do.
Agaricus (Stropharia) æruginosus Curt. Do.
Agaricus (Stropharia) inunctus Fr. Castle Howard ; Welham Park.
Agaricus (Stropharia) semiglobatus Batsch. Ingleby Greenhow, sent by Rev. John Hawell ; and with var. *minor* on rabbits' dung, Hebden Bridge.
Agaricus (Hypholoma) sublateritius Schæff. Castle Howard.
Agaricus (Hypholoma) elæodes Fr. Do.
Agaricus (Hypholoma) fascicularis Huds. Castle Howard ; Ingleby Greenhow, sent by Rev. John Hawell.
Agaricus (Hypholoma) velutinus Pers. Castle Howard ; Welham Park.
Agaricus (Hypholoma) appendiculatus Bull. Castle Howard.
Agaricus (Psilocybe) udus Pers. Do.
Agaricus (Psilocybe) semilanceatus Fr. Do.
Agaricus (Psilocybe) cernuus Fl. Dan. Do.
Agaricus (Psilocybe) fœniseccii Pers. Do.
Agaricus (Psathyra) corrugis Pers. and var. **gracilis**. Castle Howard.
Agaricus (Psathyra) semivestitus B.&Br. Castle Howard.
Agaricus (Panæolus) separatus L. Castle Howard ; Welham Park.
Agaricus (Panæolus) fimiputris Bull. Castle Howard.
Agaricus (Panæolus) phalænarum Fr. Do.
Agaricus (Panæolus) campanulatus L. Do.
Agaricus (Panæolus) papilionaceus Fr. Castle Howard ; Welham Park.
Agaricus (Psathyrella) disseminatus Pers. Castle Howard.
Coprinus comatus Fr. Castle Howard ; Welham Park.
Coprinus atramentarius Fr. Do. Do.
Coprinus niveus Fr. Castle Howard.

- Coprinus micaceus* Fr. Castle Howard.
Coprinus deliquescens Fr. Do.
Coprinus ephemerus Fr. Castle Howard; Welham Park.
Bolbitius fragilis Fr. Castle Howard.
Cortinarius (Phlegmacium) calochrous Fr. Castle Howard.
Cortinarius (Phlegmacium) decolorus Fr. Do.
Cortinarius (Myxacium) elatior Fr. Do.
Cortinarius (Dermocybe) ochroleucus Fr. Do.
Cortinarius (Dermocybe) caninus Fr. Do.
Cortinarius (Dermocybe) cinnamomeus Fr. and var. **semi-sanguineus**. Castle Howard.
Cortinarius (Telamonia) torvus Fr. Hebden Bridge.
Cortinarius (Telamonia) hinnuleus Fr. Castle Howard.
Cortinarius (Telamonia) paleaceus Fr. Do.
Paxillus involutus Fr. Do.
Hygrophorus pudorinus Fr. Hebden Bridge.
Hygrophorus pratensis Fr. Castle Howard; Welham Park.
Hygrophorus virgineus Fr. Do. Do.
Hygrophorus niveus Fr. Castle Howard.
Hygrophorus clarkii B.&Br. Do.
Hygrophorus colemannianus Blox. Castle Howard; Welham Park.
Hygrophorus lætus Fr. Castle Howard.
Hygrophorus ceraceus Fr. Do.
Hygrophorus coccineus Fr. Castle Howard; Ingleby Greenhow, sent by Rev. John Hawell.
Hygrophorus obrusseus Fr. Castle Howard; Ingleby Greenhow, sent by Rev. John Hawell.
Hygrophorus conicus Fr. Castle Howard; Welham Park.
Hygrophorus chlorophanus Fr. Castle Howard; Welham Park; Ingleby Greenhow, sent by Rev. J. Hawell.
Hygrophorus psittacinus Fr. Castle Howard; Welham Park.
Lactarius turpis Fr. Castle Howard.
Lactarius insulsus Fr. Castle Howard; Welham Park.
Lactarius blennius Fr. Castle Howard; Ingleby Greenhow, sent by Rev. John Hawell; Welham Park.
Lactarius exsuccus Smith. Castle Howard.
Lactarius deliciosus Fr. Do.
Lactarius quietus Fr. Do.
Lactarius theiogalus Fr. Do.

- Lactarius helvus* Fr. Huddersfield; sent by J. Sutcliffe.
Lactarius glyciosmus Fr. Castle Howard.
Lactarius serifluus Fr. Castle Howard; Welham Park.
Lactarius mitissimus Fr. Hebden Bridge.
Lactarius subdulcis Fr. Castle Howard; Ingleby Greenhow,
 sent by Rev. John Hawell; Welham Park.
Lactarius camphoratus Fr. Hebden Bridge.
Lactarius subumbonatus Fr. Do.
Russula nigricans Fr. Halifax.
Russula adusta Fr. Castle Howard.
Russula semicrema Fr. Do.
Russula sardonias Fr. Do.
Russula depallens Fr. Castle Howard; Welham Park.
Russula drimeia Cke. Castle Howard.
Russula virescens Fr. Hebden Bridge.
Russula lepida Fr. Castle Howard; Welham Park.
Russula rubra Fr. Castle Howard.
Russula xerampelina Fr. Do.
Russula vesca Fr. Do.
Russula cyanoxantha Fr. Do.
Russula heterophylla Fr. Castle Howard; Ingleby Greenhow,
 sent by Rev. J. Hawell.
Russula consobrina Fr., and var. **sororia**. Hebden Bridge.
Russula fellea Fr. Castle Howard; Welham Park.
Russula emetica Fr., and var. **fallax**. Castle Howard.
Russula ochroleuca Fr. Castle Howard.
Russula fragilis Fr. Castle Howard; Welham Park.
Russula barlæ Fr. Castle Howard.
Russula lutea Fr. Do.
Cantharellus cibarius Fr. Do.
Cantharellus aurantiacus Fr. Do.
Marasmius peronatus Fr. Do.
Marasmius oreades Fr. Castle Howard; Welham Park.
Marasmius ramealis Fr. Castle Howard.
Marasmius rotula Fr. Castle Howard.
Marasmius androsaceus Fr. Do.
Lentinus cochleatus Fr. Hebden Bridge.

POLYPOREI.

- Boletus luteus* L. Castle Howard.
Boletus flavus With. Do.
Boletus granulatus L. Welham Park.
Boletus badius Fr. Castle Howard.
Boletus variegatus Sw. Do.
Boletus chrysenteron Fr. Do.
Boletus subtomentosus L. Do.
Boletus edulis Bull. Castle Howard ; Welham Park.
Boletus luridus Schæff. Do. Do.
Boletus laricinus Berk. Castle Howard.
Boletus scaber Fr. Do.
Boletus felleus Bull. Do.
Boletus porphyrosporus Fr. Pickering ; Hebden Bridge.
Fistulina hepatica Fr. Castle Howard.
Polyporus rufescens Fr. Do.
Polyporus squamosus Fr. Do.
Polyporus chioneus Fr. Do.
Polyporus spongia Fr. Castle Howard ; Welham Park.
Polyporus fumosus Fr. Castle Howard.
Polyporus adustus Fr. Do.
Polyporus hispidus Fr. On an Ash tree, Castle Howard.
Polyporus betulinus Fr. Castle Howard.
Polyporus annosus Fr. Castle Howard ; Welham Park.
Polyporus versicolor Fr. Castle Howard.
Polyporus abietinus Fr. Do.
Polyporus micans Fr. Do.
Polyporus vulgaris Fr. Do.
Polyporus quercina Pers. Do.
Polyporus vaporarius Fr. Ingleby Greenhow, sent by Rev. John
Hawell.

HYDNEI.

- Hydnum repandum* L. Hebden Bridge.
Hydnum viride Fr. Do.
Radulum epileucum B.&Br. Halifax.

THELEPHOREI.

- Corticium sulphureum* Fr. Hebden Bridge.

CLAVARIEI.

- Clavaria fastigiata* L. Castle Howard.
Clavaria cristata Pers. Do.
Clavaria rugosa Bull. Do.
Clavaria purpurea Fr. Do.
Clavaria fragilis Holmsk. Do.
Calocera viscosa Fr. Do.
Typhula erythropus Fr. Hebden Bridge.

TREMELLINEI.

- Tremella foliacea* Pers. Hebden Bridge.
Tremella tubercularia Berk. Do.
Hirneola auricula-judæ Berk. Halifax.

GASTEROMYCETES.

SCLERODERMEÆ.

- Scleroderma vulgare* Fr. Castle Howard; Welham Park.

LYCOPERDEÆ.

- Lycoperdon gemmatum* Fr. Castle Howard.
Lycoperdon pyriforme Schæff. and var. *exculptiforme*. Castle Howard.
Lycoperdon bovista Fr. Castle Howard.
Bovista nigricans Pers. Do.
Geaster hygrometricus Pers. Do.

PHALLOIDEÆ.

- Ithyphallus impudicus* (L.) Fischer. Castle Howard.
Mutinus caninus Huds. Do.

UREDINEÆ.

- Uromyces valerianæ* Schum. Castle Howard; Welham Park.
Uromyces alchemillæ Pers. Hebden Bridge.
Puccinia bistorta DC. On *Polygonum bistorta* at Hebden Bridge.
Puccinia lychnidearum Link. Castle Howard.
Puccinia betonica Alb. & Schw. Halifax.
Puccinia glomerata Grev. Hebden Bridge.
Puccinia veronicæ Schum. Castle Howard.
Melampsora vacciniorum Link. Do.
Coleosporium sonchii Pers. Do.

ASCOMYCETES.

DISCOMYCETES.

- Helvella crispa* Fr. Hebden Bridge.
Helvella lacunosa Afz. Do.
Leotia lubrica Pers. Do.
Peziza onotica Pers. Castle Howard.
Peziza aurantia Æd. Castle Howard ; Welham Park.
Peziza badia Pers. Castle Howard.
Lachnea umbrorum Fckl. Do.
Chlorosplenium æruginosum Fl.Dan. Castle Howard.
Rhytisma acerinum Fr. Plentiful on fallen leaves of Sycamore,
 Castle Howard.

PYRENOMYCETES

- Hypomyces chrysospermus* Tul. Castle Howard.
Nectria cinnabarina Fr. Do.
Xylaria hypoxylon Grev. Do.

PHYCOMYCETES.

- Sporodinia aspergillus* Schröt. Castle Howard.
Sporodinia dichotoma. Welham Park.

MYCOMYCETES.

- Schinzia alni* Frank. On roots of Alder, Castle Howard ;
 Welham Park.

USTILAGINEÆ.

- Ustilago longissima* Sow. Castle Howard ; Welham Park.
Tilletia rauwenhoffii F.de W. On *Holcus mollis*, Castle Howard.

MYXOGASTRES.

- Reticularia lycoperdon* Rost. Castle Howard.
Leocarpus fragilis Rost. Do.
Fuligo varians Rost. Do.

Messrs. J. Needham and H. Pickles forwarded about seventy species collected around Hebden Bridge, near Halifax, and those in the foregoing list marked for that district were not represented by specimens collected in the Malton district.

Mr. Charles Crossland, of Halifax, collected those which are marked for that locality.

DR. JOHNSTON'S LETTERS.

Selections | from the | Correspondence | of | Dr George Johnston | . . . | . . . |
 collected and arranged by his daughter | Mrs Barwell-Carter | Edited by
 James Hardy, LL.D. | Hon. Secretary to the Berwickshire Naturalists'
 Club | Edinburgh | David Douglas, 10 Castle Street | 1892 [8vo. cloth,
 547 pages and portrait].

It is a peculiar pleasure to have the opportunity of noticing this most interesting volume, a worthy tribute to the memory of one to whom natural history, and particularly field natural history, owes so much as it does to the founder of the Berwickshire Naturalists' Club, and through it, of all similar associations in the United Kingdom. Its pages teem with multifarious items of information, and autobiographical details which reveal to us the genial character, active zeal, and scientific worth of Dr. George Johnston, of whom this superbly brought out volume will form a lasting memorial. The book, however, does more than this, and we owe to the editorial care of Dr. Hardy, himself a worthy and fitting successor to Dr. Johnston in the Secretaryship of the Club, a number of interesting footnotes giving brief biographical particulars of the eminent personages to whom the letters were addressed. These include the names of Joshua Alder, Prideaux J. Selby, David Landsborough, William Thompson (Belfast), Robert Hislop, John Fleming, C. W. Peach, C. C. Babington, Archibald Hepburn, Leonard Jenyns, John Price (Chester), William Baird, George Tate, John Edward Gray, and Mrs. Margaret Gatty, as well as Dr. Hardy himself; with incidental references to such distinguished naturalists as John Gwyn Jeffreys. The interest is by no means, however, confined to persons, but extends to things as well. The early history of the various Societies and journals with which Dr. Johnston was intimately associated, such as the *Annals of Natural History*, the *Ray Society* and the *Berwickshire Club*, is here illustrated by many references. Then again, we have innumerable items relating to the numerous branches of natural science which claimed a share in Dr. Johnston's attention, for there were few, especially of the more recondite and less popular branches, which he did not touch at one time or other, and to him the old saying was most applicable that he touched nothing which he did not adorn. This will not be the last time on which we shall have occasion to refer to this book, for in nearly every branch of our 'Bibliography' it will be for some time necessary to quote it as authority for items of considerable local interest. For Dr. Johnston was a naturalist who could appreciate the local aspect of natural history, and far removed from the degenerate school which affects to slight the value of those numerous and detailed and careful observations on which ultimately rests the superstructure of generalisation in natural science.

BOTANY AND OUTLINE FLORA OF LINCOLNSHIRE.

Botany and Outline Flora of Lincolnshire. By F. ARNOLD LEES,
M.R.C.S., L.R.C.P. Lond.

By all botanists, but especially by those of Lincolnshire, the above Outline Flora will be gladly welcomed, coming as it does, from the pen of one who has for several years been editor of the Botanical Locality Record Club Reports. After a short introduction, showing how the soils and position of Lincolnshire cause it to be a meeting-ground of diverse species, and giving interesting particulars of the Flora past and present, a list of works containing references to Lincolnshire follows (beginning with A.D. 1596), and also of Herbaria consulted and quoted; so that the student can trace back references for himself, and know where to look for further information than can be given in the Outline Flora, which occupies 22 of the 29 pages of which the paper consists. Here we have every species known to exist in Lincolnshire, in the sequence and according to the nomenclature of the London Catalogue of Plants, 8th Edition, 1886, those not indigenous or doubtfully indigenous, being marked as such. In the second column the year of first record is given; in the third, the authority; and in the fourth, the occurrence in North or South Lincolnshire, or both, thus:

*Inula helenium** 1688. Plukenet MS. (1834 Bailey), N. S.

To the list of Phanerogams, Vascular Cryptogams, and Mosses, no very numerous additions will probably now be made, but to those of Hepaticæ, Lichens, Fungi, and Algæ, additional species will be quickly added, as students and observers of these lower plants increase. In this 'Outline Flora' we have at once a careful record of what has been already done, and a strong stimulus to further exertion. If we mistake not, Lincolnshire botany will soon reach a point at which a Flora of the county may be written, containing a large amount of interesting matter, which could not possibly be given in the comparatively short space allowed to the author, by the editor of the work in which the 'Outline Flora' appears. We notice two or three printer's errors, and in so long a list others as to matter of fact, will doubtless be found, in spite of all the care which has evidently been expended on it, but it is far ahead of any previous list, and the mark ! appended to a very large number of the species (showing that the author has seen the so-marked species growing in the county), makes it far more valuable than any list can be, which is merely a compilation of records, many of which may be, and often are, incorrect, and therefore misleading. Altogether, the 'Outline Flora' is a contribution to the botany of Lincolnshire, for which all

interested in its plant-life may well be grateful, and we are sure that they will best show their gratitude, in the eyes of its author, by pointing out any errors which may have crept into it, and by supplementing it with further records as time goes on. In this connection we are sorry to be informed by the author that in the haste of compilation *Festuca pseudo-myurus* was omitted from the list, although included in the arithmetical total given; and that *Medicago minima* inserted on faith of a specimen in Herb. Peacock ('spn. not seen') was erroneously inserted by the compiler, thus involving a diminution of the total number by one.

NOTES—MAMMALIA.

Water Shrew near Penistone.—At the end of last month (Oct. 1892), I found a specimen of this rather uncommon species (*Crossopus fodiens*), dead in the road near Penistone. Whether the mysterious autumnal epidemic is common to this as well as to the other shrews I cannot say; in this instance I found a spot of extravasated blood on the top of the skull under the skin, which pointed to a knock on the head before death.—LIONEL E. ADAMS, Rose Hill, Penistone, Nov. 17th, 1892.

Occurrence of the Lesser Shrew near Masham: an Addition to the List of Yorkshire Mammals.—On Sept. 25th I picked up a Lesser Shrew which had been drowned in a galvanized trough, placed in a paddock in front of Burton House, for cattle to drink out of. Not being quite sure of its identity, I sent it up to Mr. Eagle Clarke, The Museum, Edinburgh, who has several times urged me to try and discover it, and he has kindly identified it for me.—BASIL CARTER, Burton House, Masham, Oct. 1892.

I was extremely pleased to receive and examine this undoubted specimen of *Sorex minutus*. It is the first Yorkshire example that either Mr. Roebuck or I have seen, though we have both endeavoured to obtain the species for over eleven years. At the same time we are not inclined to regard it as rare, but rather as having escaped attention.—W. E. C.

NOTE—MOLLUSCA.

Conchological Notes from West Ayton and Scarborough.—During the past season I have met with the following land and freshwater shells in the neighbourhood of West Ayton:—*Valvata piscinalis*, abundant and fine in the Derwent near the Upper Mill; *Planorbis nautilus*, Castle Moat; *P. albus* and *P. contortus*, river Derwent; *Limnæa peregra* and *L. auricularia* var. *acuta*, river Derwent; *L. truncatula*, floodings in pastures; *Ancylus fluviatilis*, Brompton; *Succinea putris*, boggy places in Forge Valley, west side; *Vitrina pellucida*, Yedmandale, on decaying Sycamore leaves; *Zonites cellarius*, *Z. nitidulus*, *Z. alliarius*, *Z. crystallinus*, *Z. fulvus*, all fine and plentiful in Forge Valley; *Z. purus*, old wall at Ayton; *Helix aspersa*, *H. rotundata*, *H. hispida*, *H. virgata*, common everywhere; *H. nemoralis* and *H. hortensis*, not so plentiful as one would expect; *H. caperata*, Betton Farm Quarry; *H. fusca* and *H. sericea*, Forge Valley, particularly on dog-mercury; *H. arbustorum*, Forge Valley; *H. pygmæa*, quarry near Seamer Moor; *H. pulchella* and var. *costata*, Yedmandale, Brompton, etc.; *Bulimus obscurus*, Forge Valley, etc.; *Pupa muscorum*, Betton Farm Quarry, Yedmandale, Brompton; *P. umbilicata*, very common on walls; *Vertigo pygmæa*, quarry near Seamer Moor; *V. pusilla*, old wall at Ayton; *Balia perversa*, abundant on a wall near Spiker's Hall; *Clausilia rugosa*, plentiful in stony places; *C. laminata*, very common in Forge Valley and Yedmandale; *Cochlicopa lubrica*, common; *Carychium minimum*, wet wood in the valley; *Cyclostoma elegans*, both sides of Forge Valley, but seems to be growing less plentiful.—W. C. HEY, West Ayton.

NOTE ON
 'THE SUPPOSED INTER-BREEDING OF THE
 MERLIN AND KESTREL
 IN NORTHUMBERLAND IN 1886.'

GEORGE BOLAM,
Berwick-on-Tweed.

I HAVE just read Mr. F. B. Whitlock's paper under the above heading in 'The Naturalist' of this month, and as he says that he has not himself seen Mr. Thompson's original communication, but penned his article in the hope that it might catch the eye of some member of the Berwickshire Naturalists' Club, I venture to send him, through you, a copy of the statement.

This will be found in a short paper entitled 'Natural History Notes from Upper Coquetdale,' by William Thompson, Harbottle, which appears in the 'History of the Berwickshire Naturalists' Club,' Vol. xii., pp. 128-9, and reads as follows:—'Merlin and Kestrel interbreeding. In the Spring of 1886, rather an unusual, or so far as my knowledge goes, an unprecedented, thing occurred on Barra Crag. A male Merlin Hawk (*Falco æsalon*) mated with a female Kestrel (*F. tinnunculus*). The result was a progeny of four. The keeper (Taylor, residing at Angryhaugh) shot the Kestrel and found it feeding the young on mice, water-rats, etc. A few days after the Merlin was trapped, and it then appeared that he was supplying the young with grouse, partridges, etc. Mr. Mather, Alwinton, obtained three of the young birds, and kept one till it could fly.' This information was communicated to the Club in connection with its meeting at Harbottle, on 27th July, 1887, and though in detail it differs considerably from Mr. Whitlock's version, there can be no doubt that the case referred to is the same.

Apart altogether from the improbability of such inter-breeding, the discrepancies between Mr. Thompson's story and that of the keeper, as related to Mr. Whitlock, backed up as the latter was by a visit to the nest and the actual taking of the eggs, are quite sufficient to dispel any reliance which may ever have been placed in the 'record.' As Mr. Whitlock has remarked, neither Mr. Thompson nor the keeper appear to have been so well acquainted with birds as to render a mistake in identity very improbable; while even though the keeper may have been correct as to the birds he actually shot, it would still be unproved that both belonged to the nest. Both the Kestrel and Merlin breed upon the moors of Upper Coquetdale, and it might very easily happen that the keeper, looking suddenly

over the rocks upon which he knew the nest was situated, and seeing a Kestrel rise from its vicinity, might not unreasonably conclude that it was the owner of the eggs, though in reality it had only been taking a siesta upon an adjacent stem.

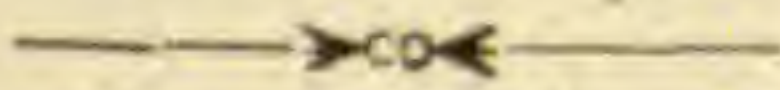
In order to see that Mr. Thompson's observations were not always scientifically reliable, we have only to read through his paper, where inter alia it is stated that 'the Dotterell (*Charadrius morinellus*)' is 'common.' No further remark is made upon the species by the author, but the paragraph is followed by the warning note of Dr. Hardy, in parentheses, 'particulars, however, would be desirable.' No doubt the designation of *Charadrius morinellus* had been applied by Mr. Thompson to some bird known to him as the Dotterell, though what that particular bird may have been it is perhaps not so easy to determine. *Endromias morinellus* is quite out of the question, while even the familiar Ringed Dotterell (*Ægialitis hiaticula*), though it nests upon some of the gravelly banks of the Coquet, is scarcely so plentiful in that district as to warrant its being called common.

Before concluding I should just like to add, lest this note should meet the eye of any friend of Mr. Thompson's (who I am sorry to learn from Mr. Whitlock's communication, is now dead) that I have not the slightest intention of questioning in any way the veracity of his statements or throwing any sort of doubt upon the good faith in which they were made. All that is intended, is to point out that a mistaken identification has led to errors being perpetuated in print, which it is desirable should be corrected.

4th November, 1892.

NOTES AND NEWS.

The July (1892) number of the 'Mineralogical Magazine' concludes the 9th volume. It contains a paper by C. O. Trechmann, Ph.D., F.G.S., on 'Twins of Marcasite in regular disposition upon Cubes of Pyrites.' The Society numbers 108 ordinary and 21 corresponding members, and 4 associates, and it includes in its list of officers various names well known in the North of England, Dr. H. C. Sorby, Mr. W. H. Hudleston, and Prof. T. G. Bonny figuring as past presidents, and Prof. A. H. Green and Mr. A. Harker on the council.



We have received from the publishers (Messrs. Simpkin, Marshall, Hamilton, Kent & Co.) a copy of a new edition of 'Wild Sports of the West of Ireland,' by W. H. Maxwell. It is a well-printed book of 337 pages, including an appendix of 45 pages, and is sold at the moderate price of 4s. 6d. The style is racy and readable, and the narrative carries the reader over a very wide field of sport, legend and anecdote. Salmon, pike, trout, perch and mullet-fishing, seal killing, grouse and wild-fowl shooting, deer stalking, and rabbit, fox, and hare shooting all have their place, with the addition of numerous legends and amusing incidents which drive away any suspicion of monotony, and render this book worthy of being recommended to the perusal of any one fond of sport. The appendix is the most scientific portion of the book, though at the same time the least original, consisting as it does of extracts from numerous sources, for the elucidation of various points in the text.

NEW AND RARE FUNGI NEAR HALIFAX.

CHARLES CROSSLAND.

Coprinus oblectus Fr. *Agaricus oblectus* Bolton. This extremely rare *Coprinus* was first discovered at Halifax, in the year 1790, by James Bolton, and is finely figured and carefully described under the name of *Agaricus oblectus* in his 'History of Funguses found growing about Halifax' (Tab. 142), from which the following quaint yet very clear description is copied.

'The root is swelled, and emits white downy fibres.

'The stem is white, of a soft silky surface, and easily splits in shining white filaments; it is hollow, but with a soft silky down in the perforation.

'The curtain is white, soft, downy, and separates from the rim of the pileus; when the stem has attained but a small part of its height, it is permanent, abiding near the bottom of the stem, till the decay of the plant.

'The gills are, while the plant is young, covered with a carnation coloured powder, changing black in decay, rolling upwards, and dissolving in a black turbid jelly.

'The pileus at first covered with a white downy eperidermis which soon disappears, and the surface becomes striated, and of a soft, downy, livid, carnation colour; which colour, both in the young and the old plants, consists of a soft powder, which at last changes black and dissolves.

'Grows on new dung-hills.' (Bolton).

No record of this fungus has been made in Britain since the time of Bolton, until a few weeks ago, when it was re-discovered in the town in which it was first found. It has evidently been considered by many mycologists in this country a doubtful British species, being excluded from Berkeley's *Outlines of Fungology* (1860); Cooke's *Handbook of British Fungi* (1871), and Stevenson's *Hymenomycetes Britannici* (1886). However, it is interesting to note that Dr. Cooke includes it in the 'Second and Revised Edition' of his 'Handbook,' the first portion of which appeared in 1883, and figures it (after Bolton) in his splendid set of illustrations, which ought to be in the possession of every working mycologist; it also finds a place in W. G. Smith's *Supplement to Berkeley's Outlines* (1891) p. 173, and in Masseur's 'British Fungus Flora,' Vol. 1 (1892), p. 307; in the latter it is accompanied by Bolton's description as above given.

During a ramble with Mr. H. T. Soppitt, of Bradford, on October 10th, after heavy and continuous rain on the previous

day, a few specimens of a strange *Coprinus* were observed growing on a newly-formed road-embankment in the vicinity of the town, the surface of which had been layered by a thick stratum of street-sweepings. The plants were collected and carefully examined and compared with the descriptions and drawings of *Coprinus oblectus* Fr., with which they agreed in every detail. No others were seen until after the forty hours' steady rainfall of the 14th and 15th. These were gathered and submitted to Mr. Masee, Kew, who confirmed their identification, stating that there was no doubt whatever about the fungus being Bolton's *oblectus*.

Hydnum fuligineo-album Schmidt, Myc. Heft. 1, p. 88.

'Pileus about 3 in. across, flesh thick, firm, white, and like that of the stem, becoming reddish-brown when cut; expanded, wavy or often excentric, rather silky, scaly at the disc, whitish, scales darker, with faint tinge of pink near the margin; stem about $1\frac{1}{2}$ in. (to 2) in. long, up to $\frac{3}{4}$ in. thick, solid, whitish, with rudimentary squamules; spines crowded, subulate or compressed, about $\frac{1}{4}$ in. long, white, then pale reddish-yellow; spores globose, 5-6 μ diam.'

Specimens of this fungus were also forwarded to Mr. Masee, who considers it a very good addition to our Fungus Flora. I am indebted to him for the above description, and the following note:—'A fine species, distinguished by the white flesh becoming reddish when broken. Taste pleasant, smell none, agreeing exactly with the description given by Schmidt, but differing widely from the figures by Fries. Icon., 3, upper figures.'

On the ground in pasture nigh a mixed wood. Hebden Bridge, Oct. 1892. James Needham and H. Pickles.

Coprinus volvaceo-minimus sp. nov. 'Pileus 3 lines broad, ovate, then campanulate, grey inclining to cinereous, disc darker, sprinkled with white squamules, membranaceous, striate, margin splitting and reflexed when old; gills almost free, narrow, attenuated at each end, becoming blackish-purple; stem $\frac{3}{4}$ to 1 in. long, less than a line thick, apex slightly swollen, fistulose, glabrous, hyaline, furnished at the bulbous base with a distinct sheathing persistent ring or collar, about half width of pileus, and which becomes reflexed; spores blackish-purple, sub-globose, minutely apiculate, 6-7 μ .

On manure heap, Wellhead, Halifax, Oct. 1892. Readily distinguished from *C. hendersonii* by the ovate pileus, distinct basal volva and collar, and sub-globose and smaller spores.

NOTES—ORNITHOLOGY.

Macqueen's Bustard near Redcar: An Addition to the Yorkshire Avifauna.—A very fine adult male example of *Otis macqueeni* was shot, on the 5th October, between Redcar and Saltburn, and has, I understand, been purchased for the Newcastle Museum. According to Mr. Howard Saunders, this is only the second instance of the occurrence of this rare Bustard in the British Isles—the first being in 1847 in Lincolnshire; it is, therefore, an addition to the list of Yorkshire birds. I had the pleasure of seeing the bird in question, in the hands of the taxidermist, before it was sent to Newcastle.—T. H. NELSON, Sandringham House, Redcar, 24th November, 1892.

Macqueen's Bustard near Marske.—A very handsome specimen of Macqueen's Bustard (*Otis macqueeni* J. G. Gray) was shot on the sea-banks near Marske, on the N.E. coast of Yorkshire, 5th October last (1892). It was preserved by Mr. Pearce Coupe, who correctly identified it as being Macqueen's Bustard—a fine male in breeding plumage. The specimen has been purchased for the Newcastle-on-Tyne Museum, where it will form an interesting addition to the other rarities in that collection. The other British-killed specimen, now in the York Museum, was shot on the 7th October, 1847.—RICHARD HOWSE, Curator, Newcastle Museum, 25th Nov., 1892.

NOTES—BOTANY.

The North Lancashire Flora: A Correction.—In my paper on this subject in the March number of this journal, I said that no confirmation was to hand of Aiton's locality for *Crocus* 'near Swarthmoor Hall.' Mr. W. Duckworth tells me he has seen *Crocus* 'still there,' *i.e.* it was there last year.—LISTER PETTY, Ulverston, 18th March, 1892.

Inula Helenium in North Lancashire.—Mr. Atkinson, of Dalton-in-Furness, recorded in the third edition of *Withering* (1796, p. 730), this plant from the neighbourhood of Dalton. So far as I can learn it has not been seen in the district since. In 1888, I found it in another part of Furness, near Aldingham. This year I again visited the locality and found five plants; the only cultivated ground in the vicinity is some potato patches, which, in 1888, were fewer and in two cases were being fenced round. The locality I give is wide enough I hope to protect the plant from the herb-gatherers, who are not always ignorant, and who have probably exterminated the plant near Dalton.—LISTER PETTY, Bortree Stile, Ulverston, Nov. 16th, 1892.

NOTES AND NEWS.

The 202nd number of the *Botanical Journal of the Linnean Society*, issued Oct. 12th, 1892, contains a paper by Dr. J. Mueller, entitled 'Lichenes Epiphylli Spruceani,' based upon the specimens collected by the illustrious Yorkshire botanical traveller during his stay in the Amazonian and Andean region.

Messrs. Blackwood and Sons have sent us a copy of a new edition of a charming book of sport by Major-General Donald Mackintyre, V.C., entitled 'Hindu-Koh: Wanderings and Wild Sport on and beyond the Himalayas.' It is beautifully printed, elegantly bound, and full of exciting adventures most graphically told. As examples of the risks undergone by the enthusiastic sportsman in pursuit of his hobby may be cited the accident related on p. 177 and the precarious plight of the author so well described on p. 295. The python-hunt (pp. 138 et seq.) is related in a style which shows that the author's sense of humour is by no means small, while the descriptions of scenery in many places show equally well that he has an eye for the beauties of nature. The last chapter gives practical hints to travellers and sportsmen, and adds considerably to the value of the book. Several beautiful full-page illustrations are given, including two groups of heads of various kinds of game, reproduced from photographs.

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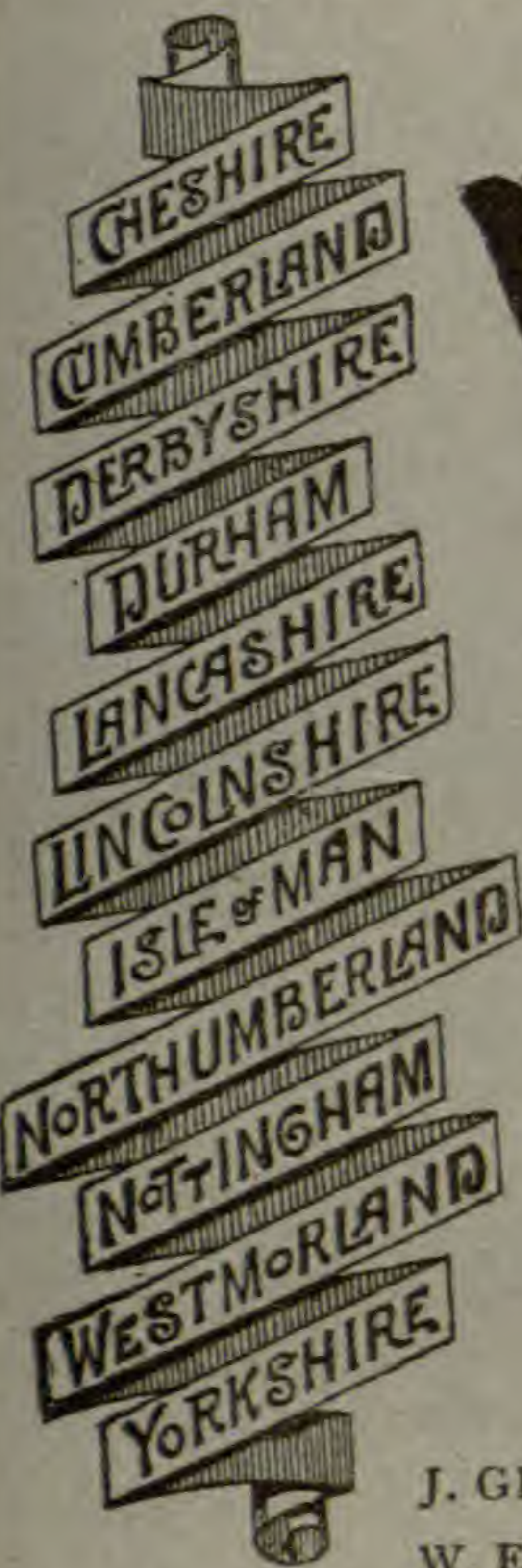
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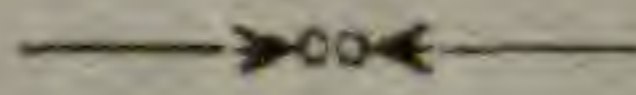


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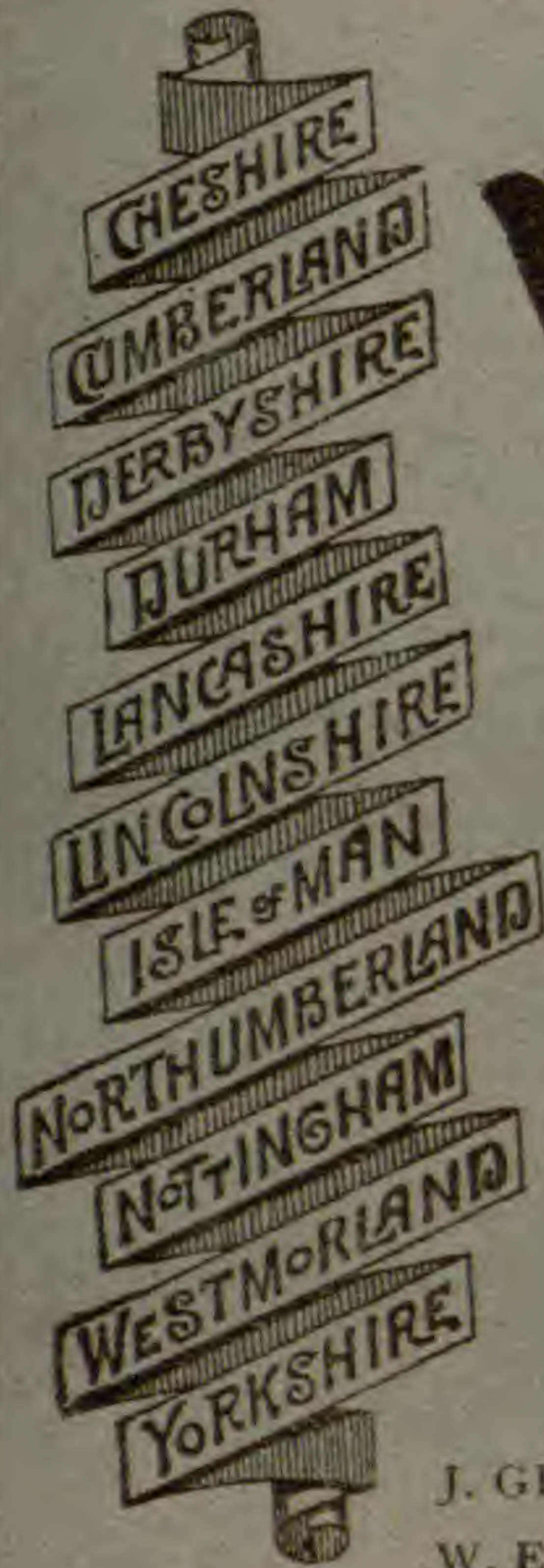
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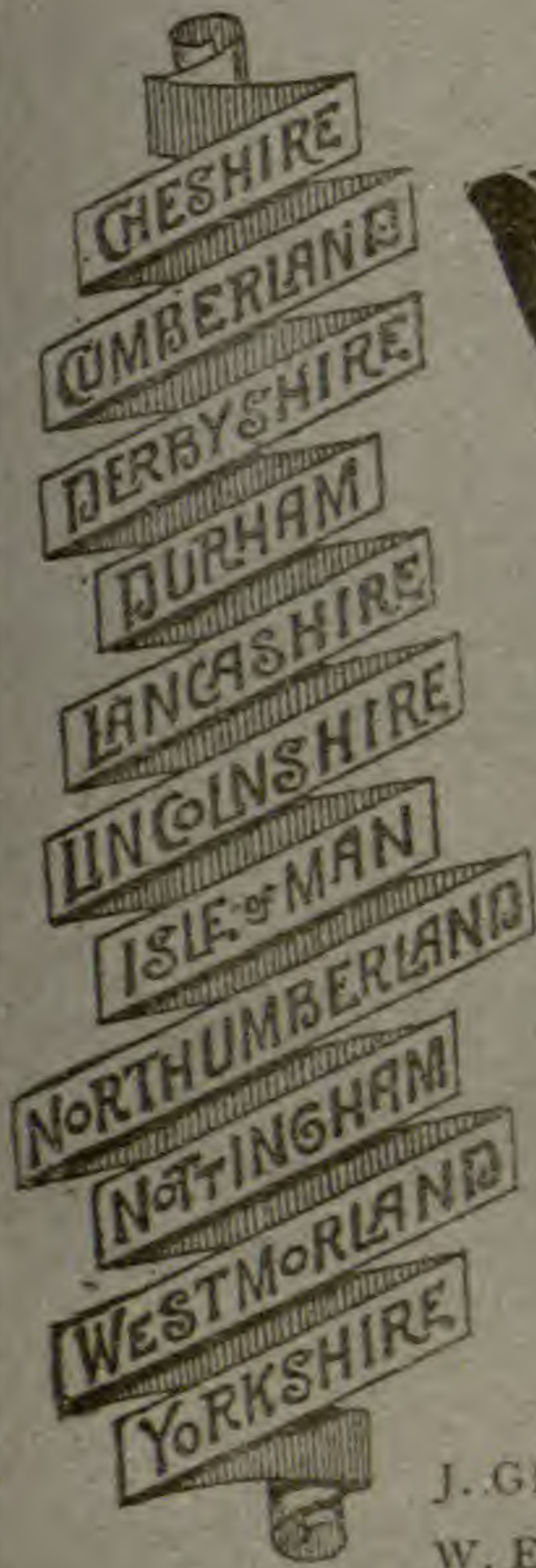
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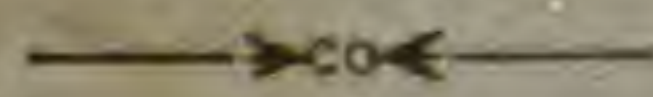
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