THE

NATURALIST:

A

MONTHLY JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND.

EDITED BY

WM. DENISON ROEBUCK, F.L.S.,

Recorder to and Ex-President of the Conchological Society, and Hon. Secretary of the Yorkshire Naturalists' Union, &c.;

WITH THE ASSISTANCE IN SPECIAL DEPARTMENTS OF

J. GILBERT BAKER, F.R.S., F.L.S., Royal Herbarium, Kew;

W. EAGLE CLARKE, F.L.S., M.B.O.U., Museum of Science & Art, Edinburgh;

ALFRED HARKER, M.A., F.G.S., St. John's College, Cambridge;

CHAS. P. HOBKIRK, F.L.S., Dewsbury;

GEORGE T. PORRITT, F.L.S., F.E.S., Greenfield House, Huddersfield;

W. BARWELL TURNER, F.C.S., F.R.M.S., 38, Sholebroke Avenue, Leeds.

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PREFACE.

THE Editors have again to thank their contributors and their subscribers—the former for the articles which have kept the standard of *The Naturalist* up to its accustomed level, and the latter for the appreciative support which enables the journal to fulfil the ends for which it is carried on.

No. 162. JANUARY 1889.

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BOOKS RECEIVED.

Science Gossip, No. 288, for Dec. 1888. [Messrs. Chatto & Windus, Publishers.
The Midland Naturalist, No. 132, for Dec. 1888. [Birmingham Nat. Hist. Soc.
Research, monthly illust. journ. of science. vol. i, No. 6, Dec. 1888. [A. N. Tate, Ed.
Nat. Hist. Journ., No. 108, Dec. 15, 1888. [J. E. Clark & B. B. Le Tall, Editors, York.
The Wesley Naturalist, No. 22. for Dec. 1888. [The Wesley Scientific Society.
The Young Naturalist, Part 108 for Dec. 1888. [Mr. John E. Robson, Editor.
The Zoologist, Vol. xii, No. 144, 3rd Series, Dec. 1888. [J. E. Harting, Editor.
Grevillea, quarterly record of Cryptog. Bot., No. 82, Dec. 1888. [Dr. M. C. Cooke, Ed.
R. Howse.—Catalogue of Fossil Plants from the Hutton Collection. 8vo. reprint, 1888, 136 pp. and 6 plates. [Author.
Manchester Geological Society—Trans., vol xx, part 1, 1888. The Society.
Liverpool Science Students' Assoc.—7th Ann. Rep., 8vo. 40 pp., 1887-8. [Assoc.
Canadian Entomologist, Vol xx, No. 11, Nov. 1888. [T. D. A. Cockerell.
Revue Bryologique. 15e Année, 1888, No. 6. [T. Husnot, redacteur.
Hertfordshire N. H. Soc.—Trans., Vol. v, Parts 2 & 3, Oct. & Dec. 1888. [Soc.
Eleanor A. Ormerod—Notes on the Australian Bug (Icerya purchasi) in South Africa. Small 8vo, 36 pp., 1887. [S. D. Bairstow.

EXCHANGE.

Notices of Exchange inserted free of charge to Subscribers.

WANTED.—Living examples of *Limax arborum*, *L. lævis*, and *L. tenellus*. British Land and Freshwater Shells in exchange.—W. A. GAIN, Tuxford, Newark.

Conchology.—I have several specimens of *Venus exoleta* which I should like to exchange for other Marine specimens.—ARTHUR SMITH, 103, Freeman Street, Grimsby, July 11th, 1888.

Lincolnshire Natural History.—Co-operation in collecting information respecting the MARINE MOLLUSCA of Lincolnshire is desired. Lists and specimens may be forwarded to the care of Mr. H. WALLIS KEW, 112, Hanley Road, Stroud Green, N.

Yorkshire Heronries.—I should feel greatly obliged if brother naturalists and others interested in the history of our Yorkshire Heronries would furnish me with what information they may have concerning any of the Heronries of Yorkshire (either existing or those that have ceased to exist). Assistance can be rendered by sending extracts from old published records, or by calling my attention to same.—F. R. FITZGERALD, Hon. Sec. Naturalists' Society, Clifford House, Harrogate.

THE NATURALIST
For 1889.

NOTES FROM THE YORKSHIRE AND LINCOLNSHIRE COASTS IN THE AUTUMN OF 1888.

JOHN CORDEAUX, M.B.O.U.,
Great Cotes, Ulceby, Lincolnshire.

Sep. 3rd.—Manx Shearwater (*Puffinus anglorum*). One was killed striking the lantern of the lighthouse at the Spurn during the night. A similar occurrence took place on August 5th, 1883, at the same lighthouse.

Sep. 23rd.—First Grey Crows (*Corvus cornix*) seen at Kilnsea.

Sep. 25th.—Ring-Ouzel (*Turdus torquatus*) seen.

Sep. 26th.—A Wood Sandpiper (*Totanus glareola*) was shot near Kilnsea. This, on dissection, proved a female, and is probably an old bird. It has the upper parts profusely spotted with buffy-white. The rump is nearly black, with the upper tail coverts pure white. The lateral tail feathers are white, with a few dusky spots on the outer webs of each. This is the fourth obtained in the district during the autumn.

Oct. 2nd.—The American Pectoral Sandpiper (*Tringa maculata*), of which a notice has already appeared, was shot on the beach near Kilnsea, by Mr. T. W. Pool, of Hull. At the time it was in company with another, presumably of the same species.

Oct. 18th.—Woodcock (*Scolopax rusticula*), 'first flight'; four or five shot.

Oct. 20th.—A few Gold-crested Wrens (*Regulus cristatus*) near Kilnsea; have been most exceptionally scarce during the season. Hundreds of Grey Crows (*Corvus cornix*) coming in from the sea on the 19th and 20th.

Oct. 21st.—Three Sand-Grouse (*Syrrhaptes paradoxus*) seen on the warren at Kilnsea.

Nov. 2nd.—Woodcock (*Scolopax rusticula*), a few on 30th and 31st of October, and on Nov. 2nd and 3rd the 'great flight'—wind first strong from N.E., and then E., after which the birds ceased to

arrive. About one hundred were shot in the Spurn district in the two days. On the Lincolnshire coast on the night of November 2nd there was a strong arrival of 'cock' with a north-east wind. The following morning, Saturday, the 3rd, bags of twelve and a half and fifteen couples were made. The Woodcock arriving in the 'great flight' of November 2nd and 3rd appear to have been identical with the small dark Scandinavian race.

Eagle Owl? (*Bubo* ? species). A large owl, said to be much the largest ever observed at the Spurn, was seen several times in October, on the sand-hills and warren, either sitting in the bents or in flight—on the wing it is described as looking as big as one of the large gulls. One informant spoke to its having horns or tufts of feathers on the head.

Nov. 10th.—Glaucous Gull (*Larus glaucus*), an immature example was shot near Kilnsea on the 10th, and a very fine adult on the 13th.

Nov. 13th.—Great Crested Grebe (*Podiceps cristatus*). An adult female was shot on the sea opposite to Kilnsea.

Nov. 17th.—Large flights of old Fieldfares (*Turdus pilaris*) with blue rumps, Snow-Buntings (*Plectrophanes nivalis*), and Lapwing (*Vanellus vulgaris*) in enormous flocks, seen this day on the Lincolnshire side of the Humber, were also observed at the Spurn.

Nov. 20th.—Wind W., very strong, and occasional heavy squalls of mixed rain, snow, and hail. Snow-buntings (*Plectrophanes nivalis*) in very large numbers, thirty to two-hundred in a flock, flying up the coast from N. to S., or in some cases coming directly in from the sea. The flight contained a large proportion of old birds. Twites (*Linota flavirostris*) in flocks, an example obtained had the rump nearly as rich a crimson as in the spring. Stonechats (*Pratincola rubicola*), both old birds and young of the year, were numerous on the sand-dunes or perched on the level top of those storm-cut hedges that you might almost walk upon, where each stunted branch and twig seems to do its best to struggle landward. It is interesting to find the Stonechat nested this year near Kilnsea beacon.

Two male Sand-Grouse (*Syrrhaptes paradoxus*) were shot this day, from a flock of forty, three miles south of Withernsea. They were in exceedingly fine condition, one weighing a little over 12 oz., the other just under 11 oz. All those parts of the head, neck, and as far down as the narrow band of black-edged feathers on the chest, which in the spring and summer are buff-coloured, are now of a *dark smoky grey*. This colour is so deep that it almost kills or conceals this narrow band of dark-tipped feathers. On the hind neck, and the sides of the neck and the front throat, the orange-colour continues, but is perhaps scarcely so bright.

A flight numbering about forty Sand-Grouse was seen recently near the Spurn, also on the Lincolnshire coast near Grainthorpe; those, and the birds seen near Withernsea, may all probably be referred to one and the same flock, which pass to and fro between the two counties.

Nov. 24th.—A single Swallow (*Hirundo rustica*) was seen by Mr. W. Eagle Clarke hawking under the cliff side at Kilnsea.

On the same day Turnstone (*Strepsilas interpres*) were rather numerous. It is seldom we find them so late in the season, and this must be considered quite an unusual occurrence.

It is worth putting on record that on July 14th I received from Mr. Winson, of Spurn, two eggs of the Oyster-catcher (*Hæmatopus ostralegus*), taken from a nest there. Mr. Loten, senr., of Easington, also found a nest of the same species amongst the bents, and a third nest with three eggs was taken near Kilnsea in June. The Oyster-catcher has not nested at the Spurn within the memory of any now living in the neighbourhood, but its final disappearance as a nester from the opposite coast of Lincolnshire dates from a comparatively recent period.

Dec. 3rd.—Night Heron (*Nycticorax griseus*). I saw this day in the shop of Mr. Jefferies, Grimsby, an immature example of this species. Mr. G. H. Caton Haigh, to whom it belongs, informs me that it was shot near Tetney Haven on November 26th by Mr. W. Stubbs. It measured 24 inches in length; wing, 12 inches. The irides were red; naked skin on face, greenish-yellow; legs, green, with a shade of yellow.

Dusky Redshank (*Totanus fuscus*). One, now in Mr. Haigh's collection, was shot on the 'fitties' at Grainthorpe on Nov. 9th. Subsequently, Mr. Haigh several times observed one on the coast at Tetney, and the last occasion was on November 15th. It was always very wild and shy.

Swift (*Cypselus apus*). It is somewhat singular that my last note, in this anomalous season of green peas and strawberries, should be in connection with this bird. My neighbour, Mr. C. F. Davy, of Little Cotes, observed a single Swift hawking near our 'beck' on the morning of Saturday, December 1st. I may add he is perfectly well acquainted with the 'deviling,' which he sees in numbers every day during the summer, and is quite certain he is not mistaken in its identity.

Why tarry in the chill northland, lone laggard? Last of thy tribe—day-long wanderer through summer skies—are not all thy fellows six thousand miles due south? Months now since they left these shores to shoot in joyous bands over fruitful France and sun-

burnt Spain, the blue southern sea, and past cloud-capped Atlas, and now perchance career, race, and scream in concert above the swamps of the Zambesi or the rolling plains of Masailand! Here are the dark short days of mid-winter, and soon the old grey church, whose square tower thou lov'st so well, will be decked for Yule-tide. The field-fare and the snow-bunting have come, and alone the song of the redbreast is in the land. Haste then—lest too late—thou bird of the midsummer day; let thy wings know no rest, but southward, ever southward—to meet the tropic breezes and the warmth of the African sun!

PLAGIOTHECIUM UNDULATUM IN LINCOLNSHIRE IN PRE-HISTORIC TIMES.

CHAS. P. HOBKIRK, F.L.S.

THROUGH the kindness of my friend, Dr. Sorby, F.R.S., I have had submitted to me for examination and determination a somewhat curious and interesting object. It will, doubtless, be remembered that in the spring (about May, I believe) of 1886 an interesting relic of ancient times was unearthed at Brigg, in Lincolnshire, in the shape of an antique boat. This boat was apparently hewed or burnt out of a log of oak, and at the stern a groove appears to have been cut down each interior side and across the bottom, and into this groove a stern-board was fitted. This stern-board was—if we may so indicate it—caulked with moss to make it water-tight. The boat was about 48½ ft. long, 4½ ft. wide, and 3 ft. deep. It was a scrap of this caulking which was sent to me for examination. At first sight the 'stuff' looked unpromising enough—more like a few strands of half-rotted hay, blackened with age and damp. On placing a pinch of it under the microscope, there seemed to be very little chance of determination. I had evidently got hold of a bit which had been well hammered or beaten into the groove; it was utterly broken up. On careful maceration and preparation of the remainder, I at length came upon a much more promising scrap, which, on examination, proved to be the tip (about ¼ in. long) of a stem of *Plagiothecium undulatum*. This scrap was a perfect marvel—the undulations of the leaf, the two short nerves, the fine serratures at the apex of the leaf, were as perfect as if the specimen had been gathered yesterday, but blackish-brown with age; not a single cell-wall was damaged, and, curiously enough, many traces of chlorophyll grains could be distinctly seen.

On dissecting a portion, I further found two or three perichætia, the characteristic leaves of which were quite perfect, enclosing one or two antheridia, somewhat shrivelled, with their accompanying paraphyses.

Who were the makers of this boat, and who gathered this moss for caulking purposes, I have not seen definitely stated; it may have been ancient British, or it may have been older. If made in the immediate neighbourhood—which is more than probable—it may have been made, and probably was, by men living during that period when the vale of Ancholme was covered by that forest of oak, yew, hazel, birch, etc., which grew just above the gravels and boulder-clay of the drift period. Since then it would appear that the land began gradually to sink, the forest disappeared, its place being occupied by a swamp, and eventually a lake. But this is a question which can only be settled by those who know the district and the level at which the boat was found. I, for one, should be glad to know whether anything—and if anything, what—has been attempted towards determining this question, which is a most interesting one. At any rate, be the period what it may, *Plagiothecium undulatum* must then have been found in the district in considerable abundance.

NOTE—ORTHOPTERA.

Some Lincolnshire Orthoptera.—While in Lincolnshire in August this year I took seven species of Orthoptera, which have since been obligingly examined by Mr. Eland Shaw, viz.—*Stenobothrus viridulus* L., *S. bicolor* Charp., *S. elegans* Charp., *Gomphocerus maculatus* Thunb., *Tettix bipunctatus* L., *Thamnotrizon cinereus* L., and *Platycleis rœslii* Hagenb. *Stenobothrus viridulus* was abundant in and near an old chalk-pit at Haugham Pasture, where also one specimen of *Tettix bipunctatus* was obtained, and on the bramble-bushes near *Thamnotrizon cinereus* was numerous. *Stenobothrus bicolor*, *S. elegans*, and *Gomphocerus maculatus* were taken on the coast sand-hills at Mablethorpe. *Platycleis rœslii* was plentiful amongst the coarse grass on the coast sand-hills at Trusthorpe. This species was taken by Mr. Saunders, in August 1886, at Herne Bay, which, as Mr. Shaw informs me, appears to be the only other locality from which it has been reported recently.—H. Wallis Kew, London, 8th Oct., 1888.

NOTE—LEPIDOPTERA.

Scoparia ingratalis in Yorkshire.—On the 26th of June last, in a rough field beyond and adjoining Pennyspring Wood, Huddersfield, I knocked down a *Scoparia* which, from its whiteness when on the ground, at once attracted my attention. A closer examination at once revealed a beautiful specimen of *ingratalis*, and by beating an old whitethorn hedge bordering the field, I soon secured several more examples. *S. ingratalis* is now usually, and very properly so, considered to be a form of *S. pyralalis*, of which the ordinary form also occurred with the variety on the occasion of my taking the specimens; but *S. ingratalis* has never before been recorded from Yorkshire, nor, so far as I remember, anywhere than in the extreme south of England. It has always been associated in my mind with the chalk of Kent and Sussex, and that it should occur here on a heavy clayey soil, where the tendency in lepidoptera when they do vary, is almost always in the opposite direction to melanism, is very singular.—Geo. T. Porritt, Huddersfield, December 15th, 1888.

BOTTLE-NOSED DOLPHIN IN THE HUMBER.

JOHN CORDEAUX, M.B.O.U.,
Great Cotes, Ulceby, Lincolnshire.

This species (*Delphinus tursio*) is sufficiently rare in British waters to deserve a notice. On Saturday evening, August 25th, 1888, two came up the Haven at Tetney, but went out again with the tide. On the next morning they again came up, and entering the lock-pit, were speedily shut in, and attacked by an excited mob of men and boys, armed with guns, pitch-forks, and boat-hooks. I am told the poor creatures showed great tenacity, and did not succumb before they were fairly covered with wounds. Mr. G. H. Caton Haigh, on hearing from his keepers of the capture, at once went to Tetney, and was fortunate in obtaining the two heads. The bodies had already been cut up and sold for manure. He has kindly given me the following information:—The largest measured 10 ft. in length, the other 7 ft. or 8 ft.; the colour was black above, dirty greyish-white below, brighter in the smaller animal—the white extended to the point of the lower jaw. Subsequently I had an opportunity of seeing the skulls in the shop of Mr. Jefferies, at Grimsby. One is apparently that of a young animal, with teeth conical and pointed, twenty-three above and twenty-five below. The intermaxillaries are convex above, and form two well-marked ribs on the upper part of the rostrum, as described in Bell's 'British Quadrupeds.' The second skull is that of an adult, and the teeth are more or less truncated and worn at the point. The foot-plate of the skull in 'British Quadrupeds,' p. 469, unless it is taken from that of a very old animal, scarcely represents the teeth, making them too broad and square; in both these specimens they are more or less conical and pointed, although considerably worn down in the larger of the two. When the jaw is shut they close not unlike the teeth of a rat-trap, and have a most formidable appearance.

These two Dolphins seem to have formed part of a small school seen off the coast two or three days previously; two others were stranded on the high sand near the Haven mouth, and the bodies were boiled down to get the oil; a fifth was found by a fisherman, and taken into Grimsby.

Two were caught at the Spurn in September 1879, and described by Mr. E. Howarth in *The Naturalist* (September 1880, vi. 26), and are also recorded by Messrs. Roebuck and Clarke in their 'Handbook of Yorkshire Vertebrata,' p. 11.

November 1st, 1888.

YORKSHIRE NATURALISTS' UNION.

27th ANNUAL REPORT,

As presented at the Annual Meeting at Sheffield, Nov. 16th, 1888.

The 27th Annual Report (and Balance Sheet) now presented is to be regarded as merely an interim one, inasmuch as it is for a period of eight months only, during the greater part of which—brief as it is—the Union has been deprived of the services of both its honorary secretaries from unforseen causes. Mr. Eagle Clarke was appointed to an important position in the National Museum of Science and Art at Edinburgh, an appointment which necessitated his removal to that city at the end of May; while a month later, his colleague, Mr. Denison Roebuck, was totally disabled from all work for nearly four months by a very serious and unfortunate accident. Nevertheless, the work of the Union was taken up and carried on with the customary vigour and success, thanks to the prompt kindness of various members resident in Leeds. Particular credit is due to Mr. S. A. Adamson for assuming the duties of the honorary secretaryship at a critical time, and for the valuable services which entitle him to the gratitude, not only of the Executive, but of the members in general. Similar credit is due to Mr. F. Arnold Lees, who in like manner rendered invaluable assistance in the Editorial conduct of *The Naturalist*. The Executive therefore feel pleased to be able to report that at the present time the Union and its affairs are on the whole in a satisfactory and flourishing condition.

The Meetings which have been held during the year have been five in number, one in each division of the county. The places and dates have been as follows:—

Leyburn Shawl, Whit-Monday, 21st May.
Saddleworth, Saturday, 16th June.
Robin Hood's Bay, Monday, 16th July.
Market Weighton, Bank Holiday Monday, 6th August.
Fungus Foray at Bramham and Harewood Parks, Tuesday, 25th Sept.

For each of these meetings the usual fully descriptive circular, which is so conducive to the convenience of members undertaking the day's investigations, was published, and at all the meetings—with one notable exception, caused by adverse meteorological conditions—good results were achieved.

The opening excursion, arranged for Whit-Monday, at Leyburn, was well attended, the day's work being directed to the exploration of that portion of the northern escarpment of Wensleydale which

extends from Bolton Castle to Leyburn Shawl, and the meeting—over which Prof. A. H. Green, now of Oxford, presided—being held at Leyburn town.

The second meeting was held in June, in the Saddleworth district—one which lies on the western or Lancashire slope of the Pennine range of hills. There was a good attendance, and although the district is not a very productive one in zoölogy or botany, the geologists were able to profit largely by their investigations. At this meeting the chair was occupied by an old and valued friend and ex-president, Prof. W. C. Williamson, and the Union had an opportunity of mingling with a number of well-known and able naturalists from the neighbouring towns of Lancashire.

The third excursion was planned for visiting the Peak and the southern part of Robin Hood's Bay, on Monday, the 16th July, and our President journeyed from London to undertake the leadership of the geological party over ground which he has made peculiarly his own, and whose geology is so largely elucidated by his own researches and papers. Unfortunately, the weather was so thoroughly adverse, rain falling incessantly throughout the day and dense sea-fogs obscuring the view of the coast sections, that nothing whatever could be done, and a speedy retreat was made to the meeting-place at Scarborough by the adventurous score of members who had made the journey. Under these circumstances your Executive feel that the excursion should be again placed on the programme, and they are pleased to know that Mr. Hudleston has most kindly consented again to act as leader.

The fourth meeting was held on the Bank Holiday Monday in August, under better climatic auspices, and with a consequently better scientific result. The meeting was held at Market Weighton, and the day's explorations were directed to the neighbouring portion of the Wold country, lying about Goodmanham and Londesborough.

The concluding meeting of the season was devoted to the Fungus Foray, which our mycological botanists have looked forward to for some years. The date was fixed for the last week in September, and an old and valued member of the Union, Mr. George Massee, F.R.M.S., of Kew, attended as guide and botanical referee. Thanks to his assistance and to that of Mr. Soppitt and other of our botanists, to the suitability of the weather, and to the excellence and varied nature of the collecting-ground in the fine parks and woods at Bramham and Harewood, the Foray was a most decided success, resulting in substantial additions to our knowledge of the Fungus Flora of the county, and it was also the means of adding a couple of species to the British fungus-flora.

On all these occasions the Union has been indebted to the kindness which the landowners of Yorkshire have always been so ready to manifest in facilitating research on their estates; and the facilities which the various railway companies which run on Yorkshire soil have granted, have contributed their share to promoting the success of the Union's investigations.

The Societies which constitute the Union now number 38, the withdrawal of three Societies which are no longer connected with it—the Brighouse Friends' Botanical Society, the Hull Great Thornton Street Wesleyan Field Naturalists' Society, and the Driffield Literary and Scientific Society—being counter-balanced by the accession of other three—the Ellesmere School (Harrogate) Natural History Society, the Hull Scientific Club, and the Hull Geological Society.

The statistics which the Secretaries of the different societies are kind enough to furnish remain as stated in the last annual report, as at 2,109 associates and 375 members—altogether nearly 2,500—the time not having arrived for sending out the schedules on which such information is given.

The Membership of the Union still continues about stationary, and the necessity of a large increase in it will form a subject for the direct attention of the next Executive, additional support being necessary to enable the Union to carry out the investigations which fall to its lot.

The Financial Position of the Union has suffered considerably from the disablement of the Secretarial staff of which mention was made at the beginning of this report. At the time of Mr. Roebuck's accident the receipt-books usually in the hands of the Local Treasurers had all been called in, and he, as General Treasurer, was on the point of re-issuing them to the gentlemen who as Local Treasurers have been of so much service to the Union. On this account the subscriptions could not be collected by them, and consequently the balance-sheet now submitted shows only about half the amount of receipts that would appear in the balance-sheet of an ordinary year. Attention will, of course, be specially given by your Treasurer and Executive during the next few months to the collection of outstanding subscriptions, and it is to be hoped that the members will co-operate in this endeavour.

In connection with this subject your Executive recommend that members possessing a banking account should instruct their bankers to pay their subscriptions annually to the bankers of the Union (Messrs. Wm. Wms. Brown & Co., Leeds). For this purpose the Union Treasurer will be pleased to provide a form of authorization.

The Publications of the Union have been as heretofore.

The Transactions.—Part 12 is all printed, and awaiting binding-up only. It consists entirely of the second instalment of Mr. Baker's 'North Yorkshire,' including two coloured maps of the lithology and climatology of the Riding.

The Library of the Union continues to increase, by numerous donations and exchanges, and stands urgently in need of increased accommodation. Mr. Charles Brownridge, the honorary librarian, to whom the Union is under much obligation for the care and attention he has devoted to his department, reports that there is urgent need of a new bookcase, the books having long overflowed the accommodation provided, and the want of space hampered the whole administration of library matters, and he hopes that the Union may be able before long to provide the necessary accommodation. The books and bookcases are kept in a room at the Leeds Mechanics' Institution, to the committee of which the Executive are also under great obligation for the use of the board-room for their meetings.

The Librarian will be pleased to receive donations, particularly of works or papers dealing with Yorkshire natural history or geology, or memoirs written by Yorkshire scientific writers.

The Sections of the Union have carefully carried on their work during the year, and it is to their efficient working that the success attending the excursions has been due.

Committees of Research.—During the year the Yorkshire Boulder Committee has done a large amount of valuable work, as shown by their report published in the November number of *The Naturalist*, and the value and importance of their investigations has been thoroughly appreciated by the Erratic Blocks Committee of the British Association, in connection with which the Yorkshire work is carried on.

The Marine Zoology Committee's work has been at a standstill, on account of the removal from the county of Mr. Eagle Clarke, who was its secretary.

The Fossil Flora Committee has collected a series of fossil plants from Gristhorpe Bay near Scarborough, and a number of specimens from the Halifax Coal Measures. The fossils containing structure will be submitted for determination to Prof. Williamson, F.R.S., and the remaining ones to Mr. Robert Kidston, F.G.S., of Stirling. The Committee would be glad if such members as can do so, would forward specimens of fossil plants to Mr. Wm. Cash, of 38, Elmfield Terrace, Halifax, the secretary to the Committee.

There are other branches of investigation marked out by the British Association, which it is desirable should be undertaken by

committees of this Union, whenever members are to be found able and willing to act thereupon.

Proposals will be brought forward at this present meeting for the appointment of a committee to deal with the erosion of sea-coasts, this county being particularly suited for research in this direction.

British Association.—The Union has again been selected as one of the Corresponding Societies of the Association, and was represented this year at the Bath meeting by the Rev. E. P. Knubley, M.A., whose report has been published in *The Naturalist.*

Your Executive is pleased to know that the Association has accepted an invitation to meet in Yorkshire two years hence, at Leeds, and it is to be hoped that members will do what lies in their power to render that meeting a successful one.

The International Geological Congress, which has held its meetings this year in England, selected Yorkshire as the scene of two of the excursions, one being in the Craven district and the other on the Coast. These were attended by some of the foreign geologists then in England, and at both excursions this Union was represented by several of its members.

The Secretariate.—Your Executive cannot let this report pass without referring to the very serious loss the Union sustains this day by the retirement of Mr. W. Eagle Clarke from the position as honorary secretary which he has occupied with so much advantage to the Union during the past eight years, nor without an expression of the very sincere and deep regret which all the members and associates must feel at the severance of a connection so long and so intimate as that which has existed between Mr. Clarke and his Yorkshire colleagues.

The Presidency.—In conclusion, your Executive have to announce that the office of President has been accepted by an Ornithologist of the first rank, Mr. Henry Eeles Dresser, who is a Yorkshireman by birth, and the author of what is *the* standard work on European birds, and of numerous papers on the subject of which he is an acknowledged master.

The Executive have further to express their deep sense of the honour which our retiring President, Mr. Hudleston, has conferred upon the Union by his brief tenure of an office, the high character of which has been amply maintained in his keeping.

NOTE—MOLLUSCA.

Helix virgata in Lincolnshire.—This species was found in plenty at South Ormesby on the 6th of August, by Mr. Joseph Burtt Davy. The place is on the Lincolnshire Wolds, in the Alford district.—Jas. Eardley Mason, Alford, 10th August, 1888.

THE YORKSHIRE NATURALISTS' UNION.

ANNUAL MEETING AT SHEFFIELD.

The 27th Annual Meeting, held at Sheffield on Friday, the 16th November, was as successful as any of its predecessors, and the Union are much indebted to the Sheffield Naturalists' Club for the very excellent arrangements which they had made. Through their instrumentality and that of an old and valued friend and ex-president of the Union, Dr. H. C. Sorby, F.R.S., the Sheffield Corporation had placed the use of the Public Museum and Mappin Art Galleries at the disposal of the Union for the various meetings, and the convenience of members was met by tea being served in the same buildings.

The proceedings commenced at 3 p.m., when the General Committee met in the Art Gallery for the dispatch of business. The attendance included the official delegates of eleven societies (eight others being unofficially represented by permanent members of the Committee), the president and two ex-presidents, the two honorary secretaries, the chairman and four other members of the Executive, three presidents and four secretaries of sections, one of the auditors, two of the honorary local treasurers, and seven other permanent members of the Committee—making a total attendance of forty-five. The chair was occupied by the president, Mr. Wilfrid H. Hudleston, M.A., F.R.S. The minutes of the previous annual meeting were read and unanimously adopted.

The 27th Annual Report (as printed at p. 7 of this number) was read by Mr. Chas. P. Hobkirk, F.L.S., the chairman of the Executive Committee, and upon his motion, seconded by Mr. M. B. Slater, unanimously adopted without discussion.

The Excursion-programme for 1889 was then fixed as follows, upon the recommendation of the Executive, adopted unanimously on the motion of Messrs. J. W. Davis, F.S.A., and J. W. Addyman, B.A., and with the understanding that the selection of dates be left to the new Executive, inasmuch as the date for the coast excursion depended upon the tide-tables :—

Upper Teesdale : a three-days' excursion in August.	Kirkham Abbey and Acklam Brow.
Robin Hood's Bay.	Harrogate.
	Huddersfield.

For the next Annual Meeting, a cordially written invitation from the presidents of the Hull Literary and Philosophical, Field Naturalists', and Geological Societies, for the Union to visit Hull, was read, and accepted by an unanimous vote proposed by the Revs. Wm. Fowler, M.A., and E. Maule Cole, M.A.

Proceeding to the election of officers, it was announced—as stated in the concluding paragraph of the Annual Report—that the Presidency had been accepted by the distinguished author of 'The Birds of Europe and the Western Palæarctic Region,' Mr. Henry Eeles Dresser, F.L.S., F.Z.S. Mr. W. Eagle Clarke, F.L.S., who is retiring from the office of honorary secretary, proposed the re-election of his colleague, Mr. Wm. Denison Roebuck, F.L.S., and the election as his own successor, of the Rev. E. Ponsonby Knubley, M.A., M.B.O.U. This was seconded by Mr. J. J. Stead, and adopted unanimously. Mr. P. H. Grimshaw, Leeds, was re-elected, and Mr. Edgar R. Waite, Leeds, elected, hon. assistant secretaries; Mr. Chas. Brownridge, F.G.S., Leeds, re-elected honorary librarian; as were also nine retiring members of the Executive—Rev. W. Fowler, M.A., Liversedge; Messrs. S. A. Adamson, F.G.S., Leeds; J. W. Davis, F.S.A., Halifax; Wm. Cash, F.L.S., Halifax; C. P. Hobkirk, F.L.S., Dewsbury; John Emmet, F.L.S., Boston Spa; Benjamin Holgate, F.G.S., Leeds; H. T. Soppitt, Bradford, and J. J. Stead, Heckmondwike, with the addition of a tenth member in Mr. M. B. Slater, Malton, in place of Mr. Dennis, retiring. The two retiring auditors—Messrs. J. E. Bedford, F.G.S., and C. D. Hardcastle, both of Leeds, were also re-elected.

Twenty-three local treasurers—Messrs. W. E. Brady, Barnsley; J. D. Butterell, Beverley; H. Speight, Bradford; P. F. Lee, Dewsbury; Geo. Winter, Doncaster; Rev. E. Maule Cole, M.A., Driffield; Messrs. Thos. Bunker, Goole; Wm. Cash, F.L.S., Halifax; F. R. Fitzgerald, Harrogate; J. R. Dore, Huddersfield; E. R. Waite, Leeds; M. B. Slater, Malton; T. F. Ward, Middlesbrough; T. H. Nelson, Redcar; Rev. R. A. Summerfield, Ripon; Messrs. J. H. Rowntree, Scarborough; W. N. Cheesman, Selby; A. T. Watson, Sheffield; J. J. Stead, Spen Valley; W. Gregson, Thirsk; Geo. Parkin, Wakefield; Thos. Newbitt, Whitby, and G. C. Dennis, York—were chosen.

The Committees of Research were then appointed.

The Yorkshire Boulder Committee was re-appointed, to consist of Prof. A. H. Green, M.A., F.R.S., Leeds (chairman); C. D. Hardcastle, Leeds (vice-chairman); S. A. Adamson, F.G.S., 52, Wellclose Terrace, Leeds (hon. secretary); Messrs. J. E. Bedford, F.G.S., and C. Brownridge, F.G.S., Leeds; S. Chadwick, Malton; Rev. E. Maule Cole, M.A., Wetwang; J. W. Davis, F.S.A., F.G.S., Halifax; Wm. Gregson, Baldersby; Ald. John Hill, Morley; B. Holgate, F.G.S., Leeds; Wm. Horne, F.G.S., Leyburn; Prof. L. C. Miall, F.L.S., F.G.S., Leeds; James Spencer, Halifax; T. Tate, F.G.S., Leeds; and J. W. Woodall, F.G.S., Scarborough; with Rev. H. W. Crosskey, LL.D., F.G.S., Birmingham, as Corresponding Member.

The Yorkshire Marine Zoology Committee was also re-appointed, to consist of the following members:—Dr. H. C. Sorby, LL.D., F.R.S., Sheffield (chairman); Rev. E. H. Smart, B.A., Kirby-in-Cleveland (hon. secretary); Messrs. Geo. Brook, F.L.S., Edinburgh; J. D. Butterell, Beverley; W. Eagle Clarke, F.L.S., Edinburgh; John Cordeaux, M.B.O.U., Great Cotes; Wm. Cash, F.G.S., Halifax; Rev. W. C. Hey, M.A., York; Baker Hudson, M.C.S., Redcar; T. H. Nelson, M.B.O.U., Redcar; O. T. Olsen, F.L.S., Grimsby; Rev. Henry Smith, M.A., Redcar; and J. W. Woodall, F.G.S., Scarborough; with Geo. Massee, F.R.M.S., Kew, as Botanical Referee.

The Yorkshire Fossil Flora Committee was also re-appointed, consisting of 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., 38, Elmfield Terrace, Halifax (hon. secretary); Messrs. S. A. Adamson, F.G.S., Leeds; Thomas Hick, B.A., B.Sc., Manchester; B. 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; and William West, F.L.S., Bradford.

A new Committee was then appointed, on the motion of the Rev. E. P. Knubley, M.A., seconded by Mr. J. W. Davis, F.S.A., to deal with the Erosion of the Yorkshire Coast, and to consist of Mr. J. W. Woodall, F.G.S., as chairman, and the Rev. E. Maule Cole, M.A., as honorary secretary, and to have power until the next annual meeting to add to their number.

It being in the power of the General Committee to add to its own number ten Permanent Members annually, this power was exercised in favour of Messrs. Edward Birks, Sheffield; J. W. Carter, Bradford; H. Bendelack Hewetson, M.R.C.S., Leeds; Robert Kidston, F.G.S., F.R.S.E., Stirling; A. D. H. Leadman, F.S.A., Boroughbridge; John McLandsborough, F.G.S., F.R.A.S., Bradford; Prof. Louis C. Miall, F.L.S., F.G.S., Leeds; Edgar R. Waite, Leeds; F. Fielder Walton, F.G.S., Hull; and J. W. Woodall, M.A., F.G.S., Scarborough.

The unanimous election, as members of the Union, of the Rev. W. H. Oxley, Filey; Messrs. Elijah Howarth, F.R.A.S., Sheffield; Geo. R. Vine, Sheffield; Rev. W. E. Hancock, Knaresborough; Messrs. E. G. Bayford, West Melton; Benj. Turner, Barnsley; Brooke Rowley, Halifax; F. Whiteley, Halifax; J. E. Jones, Halifax; Dr. Drury, Halifax; and Rev. Chas. Crawshaw, Shipley—all of whom had been duly proposed and seconded, followed, after which

the Pocklington Literary and Philosophical Society was duly admitted into the Union.

Dr. Sorby then took advantage of the occasion of Mr. Clarke's retirement from the honorary secretaryship to move a hearty vote of thanks to the two honorary secretaries for their services, which was seconded by Mr. M. H. Stiles, and unanimously adopted.

Mr. J. W. Addyman then moved a resolution in favour of a change in the constitution of the Union, which was seconded by Mr. Branson, and gave rise to a brief discussion. Eventually the motion, on being put to the vote, was lost, and the meeting was brought to a close.

The sections then met and elected their officers as follows :—

B. Vertebrate Zoology.—Mr. Thos. Bunker, Goole, president; Mr. James Backhouse, jun., F.Z.S., M.B.O.U., York (re-elected), and Mr. Edgar R. Waite, Leeds, secretaries.

C. Conchology.—Rev. W. C. Hey, M.A., York, president; and Messrs. John Emmet, F.L.S., Boston Spa, and Baker Hudson, M.C.S., Coatham, secretaries—all re-elected.

D. Entomology.—Mr. N. F. Dobrée, Beverley, re-elected president; and Messrs. W. E. Brady, Barnsley, and J. H. Rowntree, Scarborough, elected secretaries, in place of Messrs. Dennis and Walker, resigned.

E. Botany.—Mr. Chas. P. Hobkirk, F.L.S., Dewsbury, elected President, and Messrs. P. F. Lee, Dewsbury, and M. B. Slater, Malton, re-elected Secretaries.

F. Geology.—All the officers re-elected, namely—Rev. E. Maule Cole, M.A., Wetwang, president; Messrs. S. A. Adamson, F.G.S., Leeds, and Samuel Chadwick, Malton, secretaries.

G. Micro-Zoology and Botany.—Both officers re-elected, viz., Mr. H. Clifton Sorby, LL.D., F.R.S., Sheffield, president; Mr. J. M. Kirk, Doncaster, secretary.

Tea was then served in one of the rooms of the Art Gallery, and at 7 p.m. the Annual Public Meeting was held in the principal hall of the Art Galleries. There was a large attendance. The chair was taken by the president, Mr. Wilfrid H. Hudleston, M.A., F.R.S. The annual report having been read for the benefit of the members generally by the Rev. E. P. Knubley, M.A., the new secretary of the Union, the presentation of a testimonial to Mr. W. Eagle Clarke, F.L.S., on the occasion of his retirement from the honorary secretaryship, took place. It consisted of an illuminated address, a series of the earlier volumes of 'The Ibis,' and a timepiece. The wording of the address was as follows :—

To Wm. Eagle Clarke, Fellow of the Linnean Society of London, Member of the British Ornithologists' Union and of the British Association Committee on the Migration of Birds, etc.

Sir,—Upon the occasion of your leaving Yorkshire in order to take up an important position in the Museum of Science and Art at Edinburgh, we desire, on behalf of members of the Yorkshire Naturalists' Union and other friends, to express the sincere and deep regret which is felt at your removal from the county, and to offer you some permanent memento of their respect for your personal character, and of their high appreciation of your scientific ability. In your capacity as one of the honorary secretaries of our Union and an editor of its journal *The Naturalist*, as well as by your share in the authorship of the 'Vertebrate Fauna of Yorkshire,' you have not only manifested considerable ability as an ornithologist, but have contributed materially to the advancement of science in Yorkshire. We therefore beg your acceptance of the accompanying volumes of 'The Ibis,' together with a timepiece, as a small token of the esteem in which you are held by friends and fellow-workers, and in grateful recognition of the value of the services which you have so long rendered in promoting the detailed and systematic investigation of the natural history of your native county of York.

Then follow the signatures of the Rev. William Fowler, M.A.; H. Clifton Sorby, LL.D., F.R.S.; Prof. W. C. Williamson, LL.D., F.R.S.; J. Gilbert Baker, F.R.S., F.L.S.; Lord Walsingham, M.A., F.R.S.; Rev. W. H. Dallinger, LL.D., F.R.S.; Sir Ralph Payne-Gallwey, Bart., M.B.O.U.; Wilfrid H. Hudleston, M.A., F.R.S.—all ex-presidents of the Union; W. Denison Roebuck, F.L.S. (Mr. Clarke's colleague in the honorary secretaryship); Charles P. Hobkirk, F.L.S. (chairman of the Union's Executive), and John J. Stead (hon. treasurer to the Testimonial Fund), on behalf of the very numerous subscribers.

The presentation was made by Mr. Hobkirk, who, in a few graceful sentences, gave expression to the mingled feelings of regret at Mr. Clarke's removal to Scotland, and of congratulation to him on the recognition of his scientific abilities shown by his appointment to an important Government post, so generally felt by the members.

The President, Mr. Hudleston, then delivered the address, in which he dealt with 'The Geological History of Iron Ores,' illustrated by a number of large diagrams. Dr. Sorby occupied the chair during the delivery of the address, and at its conclusion proposed a vote of thanks to the President. This was seconded by the Rev. E. Maule Cole, M.A., and unanimously adopted, as was also a cordial vote of thanks to the Sheffield Corporation for the use of the Museum and Art Galleries, and to the Sheffield Naturalists' Club for their kind and hospitable reception of the Union. The remainder of the evening was devoted to the Annual Conversazione of the Sheffield Naturalists' Club, forming a pleasant means of inter-association between the local members and those from a greater distance.

BIBLIOGRAPHY:

Papers and records published with respect to the Natural History and Physical Features of the North of England.

DIPTERA,

1884, 1885, 1886, and 1887.

THE present instalment of 28 titles for four years proves how very scant is the attention paid by North of England naturalists to an order of insects so large and numerically important as is that of the Two-winged Flies. It is gratifying, however, to note the appearance of a small list for Lincolnshire, from the pen of Mr. H. Wallis Kew, and to note also the references given in their general papers by dipterists of the standing of Messrs. R. H. Meade and G. H. Verrall while the long series of titles to the score of Mr. Peter Inchbald demonstrate how energetically that naturalist continues his task of working out the life-histories of the gall-gnats. In connection with Mr. Inchbald's papers, it is, however, to be noted with a considerable amount of regret that in very few instances does he give clear indications of the localities from whence his specimens came, thus leaving the reader to surmise what he can from the address given at the foot of the notes, and destroying much of the value of the notes.

J. BEAULAH [of Brigg]. **? Linc. N.**

Nycteribia from Bat [and other parasites, *Pteroptus*, *Dermanyssus* and *Pulex*, presumably near Brigg]. Journ. of Microsc. and Nat. Sci., Oct. 1885, p. 261.

JOSEPH CHAPPELL. **Lanc. S.**

Obnoxious and Injurious Insects [decrease of *Musca domestica* at Manchester attributed to better sanitary arrangements]. Young Nat., May 1887, viii. 95. [*Pulex irritans* and its abundance near Manchester]. Young Nat., June 1887, viii. 98.

W. EAGLE CLARKE, W. DENISON ROEBUCK, and WILLIAM STOREY. **York Mid W.**

Upper Nidderdale and its Fauna . . . Diptera [*Hæmatopota pluvialis* noted]. Nat., July 1886, p. 211.

JAMES HARDY. **Northumberland S.**

Report of Meetings of Berwickshire Naturalists' Club, for the year 1885. . . . Rothbury [24th June; *Sericomyia borealis* noted on Spylaw]. Proc. Berw. Nat. Club for 1885 [pub. 1886], xi. 42.

PETER INCHBALD. **York Mid W.**

The Gall Gnat of the Cuckoo Flower [Life-history of the insect, which was reared near Harrogate, but which is not named in the note; probably a species of *Cecidomyia*]. Field, May 3rd, 1884, p. 597.

PETER INCHBALD. **? York Mid W.**

Gall Gnat of the Meadow-sweet [Continuation of life-history described in the spring. No names given]. Field, Sep. 6th, 1884, p. 364.

PETER INCHBALD. **? York Mid W.**

A Year's Work among Gall Gnats [*Cecidomyia betulæ*, *C. cardaminis*, *C. ulmariæ*, *Diplosis betularia*, *C. veronicæ*, *C. cratægi*, and *C. urticæ* are referred to; it may be presumed that the author's investigations were made in Yorkshire, but the locality is only mentioned (and that vaguely) for one species]. Ent., Feb. 1885, xviii. 36-38.

PETER INCHBALD. **? York Mid W.**

Leaf-mining Diptera in 1884 [*Phytomyza affinis* Macq., *P. albiceps*, and *P. glechomæ* Kaltenb.; presumably near Harrogate, but no precise indications of locality are given]. Ent., April 1885, xviii. 124.

PETER INCHBALD. **? York Mid W.**

A Year's Work among the Gall Gnats (1885) [The notes refer to *Cecidomyia acrophylla* (Winnertz), *C. cratægi* (Winnertz), *C. urticæ* Perris, *Hormomyia ptarmicæ* (Vallot), *H. floricola* Winnertz, *H. millefolii*, and *Cecidomyia persicariæ* (L.), of which life-histories and food-plants are stated; localities are indefinite, presumably Harrogate]. Ent., Dec. 1885, xviii. 311-313.

PETER INCHBALD. **York Mid W.**

Diptera bred from the pupæ in 1885 [giving the life-history of *Agromyza flavifrons* Meig., *Phorbia floricola* Zett., *Phytomyza lateralis* Meig., *Trypeta stellata* Fuessl. (Cambridgeshire), and *Cecidomyia caricis*, but, as will be seen, the only direct indication of locality given falls outside the North of England; and the only direct reference to a northern locality in this paper is in connection with an observation in which Mr. Inchbald failed to breed the fly; probably the observations unlocalised were made at Mr. Inchbald's residence, Fulwith Grange near Harrogate]. Ent., Jan. 1886, pp. 9-10.

PETER INCHBALD and R. H. MEADE. **? York Mid W.**

A New Cecid [*Cecidomyia muricatæ* Meade, sp. nov.; locality not stated, but it is barely possible it is a Yorkshire species]. Ent., June 1886, pp. 152-154.

PETER INCHBALD and R. H. MEADE. **? York Mid W.**

Description of a New Cecid [*C. clausilia* Bouché, new to Britain; locality not stated, possibly Harrogate]. Ent., Sep. 1886, xix. 223-4.

PETER INCHBALD. **? York Mid W.**

Notes on Cecidomyidæ during 1886 [the species mentioned are: *C. betulæ*, *C. cardaminis* Winnertz, *C. persicariæ* L., *C. muricatæ* 'sp. nov. (mihi),' *C. urticæ* Perris, *C. salicis* Schrk., *C. cratægi* Winnertz, *C. galii* H. Loew, *C. clausilia* Bouché, and *C. rumicis* H. Loew; localities not stated, presumably Harrogate]. Ent., Feb. 1887, xx. 34-36.

PETER INCHBALD. **? York Mid W.**

Gall Gnat [name not stated] **of the Rennet** (*Galium verum*) [locality not stated, presumably Harrogate; galls, larvæ, and imagines described]. Field, April 30th, 1887, p. 612.

PETER INCHBALD. **? York S.E.**

Autumn Brood of the Hessian Fly [(*Cecidomyia destructor*), **in Yorkshire,** presumably near Hornsea, from whence Mr. Inchbald writes his letter; details given of life-history]. Field, Sep. 17th, 1887, p. 478.

J. E. KELSALL. **York Mid W.**

[**Parasites on a Lesser Horse-Shoe Bat** taken at Eavestone on Dec. 25th, 1885, were two specimens of an orange-coloured *Acarus* and two of a *Nycteribia*, identified by reference to Prof. Westwood's paper (Trans. Zool. Soc. i. 292) as *N. biarticulata* Hermann]. Zool., March 1887, xi. 93.

Naturalist,

B. KENDRICK. **Cheshire.**

[The supposed Hessian Fly at High Legh near Warrington, turned out to be *Chlorops tæniopus*]. Young Nat., Dec. 1887, viii. 239.

H. WALLIS KEW. **Linc. N.**

Woodland Rambles in Lincolnshire [*Bombylius medius* noted in Griselbottom, near Louth, April 23rd, 1886]. Young Nat., July 1886, vii. 130.

H. WALLIS KEW. **Linc. N.**

Diptera near Louth, Lincolnshire [29 species, with localities, noted]. Nat., Sep. 1886, p. 276.

H. WALLIS KEW. **Linc. N.**

Natural History Rambles. No. 1.—In the Woods [near Louth; noting *Hæmatopota pluvialis* L. in Burwell Wood]. Sci. Goss., Feb. 1887, p. 31.

W. MAWER. **Linc.**

Swarms of Flies [on Lincolnshire Coast]. Sci. Goss., Oct. 1885, p. 238.

R. H. MEADE [also see INCHBALD]. **Isle of Man.**

Description of a New Maritime Fly belonging to the Family Scatomyzides, Fallen [*Ceratinostoma* (gen. nov.) *maritimum* (sp. nov.) is widely distributed on the British coasts, frequenting marine rejectamenta above high-water mark; the writer captured a pair (male and female) at Douglas, Isle of Man, June 20th, 1885, in company with numerous specimens of *Fucellia fucorum*, *Scatina litorea*, and other marine flies, but though he searched carefully on many subsequent days, never met with another]. Ent. Mo. Mag., Dec. 1885, xxii. 153-154 [but refer to correction noted in next title].

R. H. MEADE. **Isle of Man.**

Note on Ceratinostoma maritimum [which turns out to have been previously described by Macquart; its name will therefore stand as *Ceratinostoma oceana* (Macq.).]. Ent. Mo. Mag., Jan. 1886, xxii. 178.

R. H. MEADE. **York Mid W. and S.W., Westm. and Furness, Isle of Man, Derbyshire.**

Supplement to Annotated List of British Anthomyiidæ [including *Polietes hirticrura* sp. nov., founded upon a single male, captured in Aug. 1883 in the Woods near Bolton Abbey, Craven; *Hyetodesia trigonalis* Meig., abundant in the Lake District about Windermere; *H. simplex* Wied., several males found in Aug. 1886 near Ulverston; *Spilogaster tetrastigma* Meig., several males and females captured in Aug. 1886 near Ulverston]. Ent. Mo. Mag., Jan. 1887, xxiii. 179-181. [*Limnophora albifrons* Rond. non Zett., a single female captured at Conishead Priory near Ulverston, Aug. 2nd, 1886; *Hydrotæa similis* sp. nov., two males at Douglas, Isle of Man, June 1885, in a plantation at back of Castle Mona Hotel, along with numerous *H. dentipes*; *H. impexa* Loew, a single male at Windermere in June 1884, and several of both sexes near Ulverston, and also near Bradford; and *Homalomyia nigrisquama* sp. nov., Conishead Priory, near Ulverston, one, August 2nd, 1886]. Ent. Mo. Mag., April 1887, xxiii. 250-253. [*Phorbia ignota* Rond., both sexes bred by P. Inchbald in June 1885, from flower-heads of ragwort (p. 56); *Pegomyia silacea* Meig., found near Bradford]. Ent. Mo. Mag., Aug. 1887, xxiv. 54-58. [*Pegomyia ephippium* Zett., three males found in July 1887 at Baslow near Chatsworth, Derbyshire (p. 73); *Caricea sexmaculata* Meig., a single male found in author's garden near Bradford, April 24th, 1886; *Machorchis meditata* Fall., a female in the same garden in July 1886; *Cænosia geniculata* Fall., one in the same garden, June 1886; *Chelisia tricolor* Zett., a single female at Conishead Priory near Ulverston, Aug. 1886]. Ent. Mo. Mag., Sep. 1887, xxiv. 73-76.

ELEANOR A. ORMEROD. **Linc. N., Northumberland S.**

The Hessian Fly [*Cecidomyia destructor*; now in Lincolnshire and Northumberland]. Ent., Oct. 1887, xx. 262-4.

GEORGE ROBERTS. **York S.W.**

Topography and Natural History of Lofthouse and its Neighbourhood [etc.]. Vol. II. Leeds: printed for the Author. 1885 [viii. + 258 pp., 8vo.: *Chortophila floccosa* Macq., and *Acidia heraclei* noted at p. 138].

C. E. STANSFIELD. **York Mid W.**

Rawdon [Dates of appearance of dipterous insects]. Nat. Hist. Journ., March 15th, 1884, viii. 40.

G. H. VERRALL. **Westmorland or Furness.**

A Hundred New British Species of Diptera [including *Scatopse inermis* Ruthe, Windermere]. Ent. Mo. Mag., Jan. 1886, xxii. 180. [*Dactylolabis frauenfeldi* Egger, 'Lakes' (J. C. Dale); and *Empis æstiva* Lw., Lake District]. Ent. Mo. Mag., Feb. 1886, xxii. 200 and 202. [*Spilogaster pertusa* Mg., Lake District]. Ent. Mo. Mag., March 1886, xxii. 231.

NOTES AND NEWS.

Among the newly-elected Fellows of the Geological Society we notice the names of Messrs. J. W. Ashworth, of Heaton Moor; J. R. Hewitt, of Albaston near Derby; Rev. T. S. King, of Sheffield; Mr. J. S. Burrows, of Atherton; Rev. S. Gasking, of Liverpool; and Dr. F. F. Walton, President of the Hull Geological Society.

The quarto Transactions of the Royal Dublin Society have been lately the medium through which two of the papers of Mr. James W. Davis, of Halifax, on Fossil Fishes, have been given to the world. One on 'The Fossil Fishes of the Chalk of Mount Lebanon, in Syria,' with 25 plates, appeared in April 1887, and another 'On Fossil-fish Remains from the Tertiary and Cretaceo-tertiary Formations of New Zealand,' with 7 plates, was published in April 1888.

A useful paper—the first of a series upon the Fossil Fructifications of the Yorkshire Coal Measures, from the pen of Mr. William Cash, F.L.S., F.G.S., of Halifax—has lately been published in the Proceedings of the Yorkshire Geological and Polytechnic Society. This instalment deals with the genus *Calamostachys*, of which two species are treated of, one of which—*C. casheana* Williamson—has been gracefully and appropriately dedicated to the author of the paper by his friend, Professor Williamson. The paper is well illustrated by reproductions of micro-photographs and woodcuts of strata showing the horizons in which the plants occur.

Two papers by a well-known Yorkshire botanist, Mr. Geo. Massee, F.R.M.S., of the Royal Herbarium, Kew, appeared in the June number of the 'Annals of Botany.' The first—'A Monograph of the genus *Calostoma* Desv. (*Mitremyces* Nees),' of which genus he describes ten species, all exotic—is illustrated by a coloured plate. The other paper is 'On the presence of sexual organs in *Æcidium*,' and is also illustrated by a plate.

By the decease of George Adam Millar, which occurred on the 2nd of December, Keighley has lost one of its most useful and honoured townsmen, and the Scientific and Literary Society of that town one of its most active and sterling workers. He was connected with that Society from its commencement and had filled the office of President with marked success and ability. He displayed much interest in the work of the Yorkshire Naturalists' Union, and was a welcome attendant at its field excursions; he attached himself to the Geological Section, and his services at the Doncaster meeting in 1885 will not be easily forgotten; the Section was then in a moribund state, but Mr. Millar's energy on that occasion in conjunction with a few others, gave it a new lease of life and started it afresh on its now successful career. His services to the cause of education were also very great, as evinced by his labours in connection with the Keighley Mechanics' Institute for thirty years, and his long and active support of the Cambridge University Education Scheme.

THE FLORA OF NORTH-EASTERN IRELAND.

A Flora of the North-East of Ireland. By S. A. STEWART, F.B.S., and the late T. H. CORRY, M.A. Cr. 8vo, pp. 368. Belfast: Naturalists' Field Club, 50, King Street; Cambridge: Macmillan & Bowes. 5s. 6d.

Although our special province of record does not include North-East Ireland, yet, to the topographical botanist for purposes of comparative study, a critical flora—if well done—for an area much the same in extent as the county of broad acres, must always have considerable interest and value. On these grounds, being indisputably excellent in its performance, this, the work of two thorough naturalists—one of whom, of the greatest promise, the late T. H. Corry, met with his death by drowning in Lough Gill, Sligo, under most lamentable circumstances—calls for a somewhat extended analysis at our hands.

The flora proper fills some 270 pages, and is prefaced by thirty pages of Introduction, in which the History, Bibliography, Climate, and Geology are all too briefly dealt with. In addition, biographies of some famous North Irish botanists—John Templeton, Dr. David Moore, together with others who must remain connected with its botany though not born in Ireland, Dr. G. Dickie and Prof. Ralph Tate—are given. Down, Antrim, and Derry are the three counties regarded as North-East Ireland, but since the Mosses and Hepatics (366 in number) are included in the total of 1,169 species (803 Flowering Plants and Ferns) dealt with in such a comparatively limited space, the stations enumerated for each species, and the cognate observations, are anything but exhaustive. This, however, is not quite such blameworthy sketchiness as may be inferred from the bald statement of the fact, since it is due (in part, at least) to the views held by the compilers, views in which we heartily coincide—that precision and established truth of statement is of immensely greater value than the most attractive copiousness. To the botanical reader possessed of some phyto-geographical knowledge at start, the perusal of the pages of the flora carries with it an increasing confidence in the sterling reliability of the compilers; and this despite a something primâ facie repellant—and than this we know no higher praise: the book in the hand of a plant-lover conquers prejudice born of certain innovations. The great blot of the book is its want of a Map; the novel feature is the unwise duplication of Indices, for there are *five* (!) and the work itself is—in our view unnecessarily—split up into two sections. First, there is a Topographical Index—for a precedent one may go back to Leighton's Shropshire Flora—indicating roughly the locale of the plant-stations cited, and some of the names are confusing. 'Cranmore,' for example, is not a village, as strangers might expect, nor a common, but a gentleman's 'demesne,' and the

county in which each place is situate is not stated. This last omission is doubly regrettable since no Map accompanies the book, and when Belfast (lying near the boundary of two counties) is the pointer, consultation of a map is compulsory. Then there is an alphabetical Index to genera (only) of the Phanerogams; then another to the common and local English names of species; next a separate index to *both* genera and species of Mosses and Hepatics; and, finally, a fifth index to certain 'Excluded Plants'—some 270 kinds of both classes—which are placed by themselves in a sort of Appendix filling nigh forty pages, under the separate heads of non-natives and presumed erroneous records. This relegation of Aliens, etc., to an addendum gives the user of the book needless trouble; small type and brackets would have kept the discarded items sufficiently distinct in the body of the work; those consulting the book to see if a particular plant is absent, or rare, alien or what not, are, as it is, compelled to make two or more references, which, if they lead to impatience, are apt to result in uncertainty, or what may be worse—false inferences.

A careful examination of the matter of the work affords much curious information, some of it new to us, as for example the statement that the close relation and general likeness between the flora of the North-East of Ireland and that of Southern Scotland is more fanciful than real, and not borne out on close scrutiny (p. xxx). We had thought somewhat differently; and, indeed, if the known plants of the adjacent south-west corner of Scotia (its counties from Ayr to Dumfries, with Moffat, Arran, and Cantyre), as far as the comital records of Topographical Botany speak, be compared with the list in the present flora, a great similarity is revealed: both areas lack any high mountains, have much igneous or basaltic rock at the surface, little development of limestone, much bog and rolling moorland, and both alike are largely overlaid with drift in parts. As might be inferred almost from the above, the flora is not particularly rich, though the sub-xerophilous group of plants that seem to affect basalt especially, give variety and interest; strict alpines may once have existed on the higher ridges but are now rare; limestone loving species like *Gentiana Amarella*, *Chlora*, and *Campanula glomerata* are wanting because calcareous rock is wanting; and not one plant of Watson's 'Germanic' type seems to have spread from East Anglia and successfully made good its invasion. Still, when all supposed limiting or favouring circumstances have been taken into account, there remains much that is interestingly inexplicable or provokingly suggestive, in many of the proved facts of Absences or Presences on record. With our limited space, however, it is only possible for us to

notice a very few of the stranger floral features mirrored for phytologists in the pages of this book.

Among notable *Absentees* in N.E. Ireland we notice *Thalictrum alpinum*, *Corydalis claviculata*, *Chrysosplenium alternifolium*, *Campanula latifolia*, *Statice binervosa*, *Polypodium dryopteris*, and *Asplenium viride*, the absence of the second and fourth named being inexplicable. The common Betony (*Stachys betonica*) is likewise said to be 'very rare.' The infrequency of *Arabis hirsuta* is noteworthy, too; and the prevalence of trap rock in the area does not seem to give *Asplenium septentrionale* to the flora, although it does give *Silene acaulis*; and the rare Red Broomrape (*Orobanche rubra*), a limestone plant in North Anglia, is said to be frequent on the trap hills of Antrim and Derry. The lovely *Trientalis* too, is 'conspicuous by its absence'; whilst, per contra, the *Pinguicula lusitanica* is present, nay 'frequent,' and the Bladderworts seem in the same force as they are in Cantyre, Islay, Mull, and other of the western Isles. Another statement (pp. 2, 3) is so strange that one almost doubts its being really a fact. Stations in all three counties are given for the star-flowered water Crowfoot, *Ranunculus* '*trichophyllus*,' and in two counties for *Ran.* '*heterophyllus* Fr.,' whilst *Ran. drouetii* is not included at all—a very singular thing, and one much more improbable than (which we suspect) that *R. drouetii* has been classed with it—the two not differentiated. *Ran. trichophyllus* is a plant almost wholly of still marsh waters, mostly near the sea; whilst *Ran. drouetii* is very frequent in upland inland districts, and frequently produces floating-leaves variously cut, which are hairy below. The flaccidity of the capillary leaves is so variable in *R. drouetii*, rigidly-segmented non-collapsing ones being common enough in certain waters, that no reliance can be placed on that character; whilst *R. heterophyllus* in its early states is frequently called *drouetii*, and *drouetii* in its later states with floating leaves so often styled *heterophyllus* (even by 'authorities'), as to make it very doubtful whether the two are not, indeed, one species.

A strong point in this flora seems to be the attention given to the local vulgar names for common plants. Many are of a most suggestive and interesting sort, and some we have not seen before. True rustic plant-names are naturally often very local, and almost of necessity need also for their inception and perpetuation an abundance of the species in its restricted locale—a commonness sufficient to have rendered it familiar to unbotanical eyes. It is so in Yorkshire—witness the name Bog-Bell for *Andromeda*, only to be heard on rustic lips about Thorne—and is doubtless the same among the Irish peasantry, if any are left in North-East Ireland. A rare thinly spread

or inconspicuous species, seldom ever has a true local name at all; yet this is often forgotten, and those noting local names not unfrequently are tempted to doubt the genuineness, because it is not to be heard of in all, or even most of the districts in which it grows. In conclusion it may be interesting to quote a few of the less-common names given in this flora:—'Flower of Dunluce' (*Geranium pratense*: about the castle, where it grows), 'Tormenting Root' (*Potentilla tormentilla*), 'Blooming Sallow' (*Epilobium angustifolium*), 'Farmer's Plague' (*Ægopodium podagraria*) 'Espibawn' (*Chrysanthemum leucanthemum*), 'Prushus' (*Sonchus arvensis*), 'Bee Nettle' (*Galeopsis versicolor*).

The book is well printed, and attractively bound in bevelled boards, with a quite sufficiently accurate (recognisable to a botanist) outline in gold leaf of the Irish Rose (*R. hibernica*) on the cover. Misprints in the book seem to be rather numerous, and the paginal reference figures in the indices are by no means to be relied upon.—F. A. L.

NOTES—ORNITHOLOGY.

Flamborough Bird-notes.—The light-keeper the other day informed me that several birds had been killed against the lighthouse during the late dark and stormy nights:—Thrushes (*Turdus musicus*), Blackbirds (*T. merula*), Fieldfares (*T. pilaris*), Redwings (*T. iliacus*), Larks (*Alauda arvensis*), also Snow-Buntings (*Plectrophanes nivalis*), etc. Two Rough-legged Buzzards (*Archibuteo lagopus*) have been got here, one shot and the other caught in a rabbit-trap; they are splendid specimens. October 11th.—One male Sand-Grouse (*Syrrhaptes paradoxus*) shot here, several more seen.—MATTHEW BAILEY, Flamborough, December 8th, 1888.

Food of the Rough-legged Buzzard.—Mr. Garland, of Netherwood Hall, Barnsley, reports the occurrence of a male Rough-legged Buzzard (*Archibuteo lagopus*), which was shot in his presence at Bessecar, near Doncaster, on Nov. 21st. On the bird being opened, the stomach was found to contain the almost complete remains of a mole, a proof that these birds are vermin-destroyers, and do not feed solely upon game. Another specimen of this Buzzard, obtained near Barnsley in 1876, had a rat in its claws when shot.—WM. E. BRADY, 1, Queen Street, Barnsley, December 5th, 1888.

Crossbills in Cumberland.—I was in a certain part of East Cumberland, which it is not necessary to specify, on November 30th last, in which there is a very large wood, mostly of fir. While having lunch I saw a large flock of crossbills (*Loxia curvirostra*) some sixty strong, out of which I took toll to a small extent. I subsequently saw, in the same wood, and on the same day, two smaller parties, one of twenty, the other of fifteen or thereabouts. It used to be thought that the crossing of the mandibles was a sure indication of the sexes of the crossbills. It is an indication, but not an unfailing one. I find that in females the upper mandible nearly always crosses to the left, in the male to the right.—H. H. SLATER, Irchester Vicarage, Wellingborough, December 4th, 1888.

Pallas' Sand-Grouse on the Yorkshire Wolds.—A pair of Pallas' Sand-Grouse (*Syrrhaptes paradoxus*), shot from a flock of thirty at Market Weighton last June, have been presented to the Sheffield Public Museum, and the donor of them, writing in December, states that examples of the bird are still to be met with on the Wolds.—E. HOWARTH, Weston Park, Sheffield, December 24th, 1888.

LEPIDOPTEROUS FAUNA OF LANCASHIRE AND CHESHIRE.

JOHN W. ELLIS, L.R.C.P., L.R.C.S.E., F.E.S.,
Liverpool; *Honorary Secretary to the Lancashire and Cheshire Entomological Society*; *and to the Liverpool Naturalists' Field Club.*

TORTRICINA.

The initials J.H.T., which here appear for the first time, are those of Mr. J. H. Threlfall, of Preston, to whom I am indebted for much valuable information about our local micro-lepidoptera.

RHACODIA, Hüb.

Rhacodia (Teras) caudana, F. Generally distributed.

Lanc.—Chat Moss (J.C.); Croxteth Woods, near Liverpool (C.S.G.); Fylde district (J.H.T.); Preston (J.B.H.).

Ches.—Prenton, in profusion (C.S.G.); Wirral (J.F.B.).

TERAS, Tr.

(Including *Peronea*, Curt., *Leptogramma*, Curt., and *Dictyopteryx*, Steph.).

Teras umbrana, Hüb. Rarely among sloe at Grange (J.B.H.).

Teras hastiana, L. Abundant, but local.

Lanc.—Chat Moss (J.C.); Farrington (J.H.T.); Longridge and Lytham (J.B.H.).

Ches.—Throughout Wirral (J.F.B.); abundant among dwarf sallows on the Wallasey sandhills (J.C., J.W.E.).

Teras maccana, Tr. Manchester (Stainton's Manual, ii. 233). Not recorded by any of the Manchester entomologists.

Teras mixtana, Hb. Common on heaths and mosses.

Lanc.—Chat Moss (J.C.); Farrington and Pilling Mosses (J.H.T.); Longridge (J.B.H., J.H.T.).

Ches.—Bidston Hill (C.S.G., J.W.E.); Delamere Forest (C.S.G., Ent., vi. 452).

Teras logiana, Schiff. = **tristana,** Hb. Scarce, being recorded only from a single locality in Lancashire, viz., Windermere, among *Viburnum lantana* (J.B.H.), and from two localities in Cheshire: Eastham, only a few taken (C.S.G.), and Rock Ferry (J.F.B.).

Teras permutatana, Dup. First recorded as British by Nicholas Cooke (Zool., 1848, 2271), on the authority of a specimen

captured during August at New Brighton. The Wallasey sand-hills, where it occurs commonly in some seasons among *Rosa spinosissima*, remain almost the only British locality for this handsome species.

Teras variegana, Schiff. Abundant everywhere.

Teras literana, L. Not common.

Lanc.—Liverpool district, in old woods where there are lichen-covered thorns (C.S.G.); Windermere (J.B.H.).

Ches.—Dunham Park (J.C.); Wirral, occasionally (J.F.B.).

Teras lipsiana, Schiff. Recorded only from Grange (J.B.H.).

Teras sponsana, F. = **favillaceana,** Hb. Tolerably common.

Lanc.—Barton Moss and Prestwich (J.C.); Liverpool district, common among beeches (C.S.G., J.W.E.); Preston (J.B.H.); Lake side, Windermere (J.H.T.).

Ches.—Alderley and Cheadle, common (H.H.C.); Dunham Park (J.C.); Wirral, common (J.F.B.).

Teras schalleriana, L. Generally distributed, but scarcely common.

Lanc.—Chat Moss (J.C.); Preston (J.B.H., J.H.T.).

Ches.—About Prenton (C.S.G.); Staleybrushes (J.C.); Wirral (J.F.B.).

Teras comparana, Hüb. Abundant, but local.

Lanc.—Liverpool district, common (C.S.G.); Preston (J.B.H.).

Ches.—Wirral (J.F.B.).

VAR. **proteana,** H.S. = **potentillana,** Cooke. First described as British by Benjamin Cooke (E.M.M., vii. 42), from specimens found among strawberries near Liverpool in 1850. Recorded as common at West Derby (C.S.G.); and as occurring at Withington (J.C.), and New Brighton and Birkenhead (J.F.B.).

Teras comariana, Zell. Not common, being recorded only from the Preston district (J.B.H. and J.H.T.).

Teras perplexana, Bar. Recorded from near Preston (J.B.H.).

Teras aspersana, Hb. Scarce.

Lanc.—Grange (J.H.T.); Longridge (J.B.H.).

Ches.—Wallasey (J.F.B., C.S.G.); New Brighton (Stainton's Manual, ii. 235).

Teras shepherdana, Steph. Recorded only from Lytham (J.B.H., Intell., 1858, i. 146).

Teras ferrugana, Tr. Tolerably common, but local.

Lanc.—Grange (J.H.T.); Longridge (J.B.H.).

Ches.—Eastham, common (C.S.G.); Wirral (J.F.B.).

Teras caledoniana, Steph. Common on the moors and mosses.

Lanc.—Longridge (J.B.H., J.H.T.); Ribchester, abundant (J.B.H., Ent., xiii. 105); Lancashire mosses, among *Myrica gale* (C.S.G.).

Ches.—Staleybrushes (J.C.).

Teras forskaleana, L. Generally distributed.

Lanc.—Preston (J.B.H.); Prestwich (J.C.).

Ches.—Cheadle Hulme, rare (H.H.C.); Dunham Park (J.C.); Wirral (J.F.B., J.W.E.).

Teras holmiana, L. Local, but common where it occurs.

Lanc.—Irlam, Glazebrook, and Barlow Moor (J.C.); Levenshulme (H.H.C.); Preston (J.B.H., J.H.T.); near Sefton Park, Liverpool (J.W.E.).

Ches.—Cheadle Hulme, not common (H.H.C.); thorn hedges near New Brighton (C.S.G.); Tranmere (J.F.B.); near Wallasey (J.W.E.).

Teras contaminana, Hüb. Abundant everywhere.

TORTRIX, Tr.

A. CACŒCIA, Hb. (LOZOTÆNIA, Steph.).

Tortrix podana, Scop. = **pyrastrana,** Hüb., **fulvana,** Wilk. Common and generally distributed.

Tortrix xylosteana, L. Common everywhere.

Tortrix rosana, L. Common everywhere.

Tortrix sorbiana, Hüb. 'Four specimens from Little Britten Wood,' near Liverpool (C.S.G.); Preston and Longridge (J.B.H., J.H.T.).

Tortrix costana, F. Fairly common, and generally distributed throughout both counties.

B. PANDEMIS, Hüb.

Tortrix corylana, F. Local.

Lanc.—Barton Moss (J.C.); Preston (J.B.H., J.H.T.).

Ches.—Bromborough Woods (J.W.E.); Cheadle Hulme (H.H.C.); Dunham Park and Bowdon (J.C.); Wirral (J.F.B.).

Tortrix ribeana, Hüb. Common and generally distributed.

Tortrix heparana, Schiff. Common and generally distributed.

C. PTYCHOLOMA, Steph.

Tortrix lecheana, L. Generally distributed.

Lanc.—Preston (J.B.H., J.H.T.); Prestwich (J.C.).

Ches.—Bramall, not common (H.H.C.); Dunham Park (J.C.); Eastham Wood (J.W.E.); Puddington (J.F.B.).

D. IDIOGRAPHIS, Led. (HALONOTA, Steph.).

Tortrix inopiana, Haw. Recorded only from the Preston district (J.B.H.).

E. LOZOTÆNIA, H.S.

Tortrix musculana, Hüb. Common and generally distributed.

Tortrix unifasciana, Dup. Common and generally distributed.

G. LOPHODERUS, Steph.

Tortrix (Sericoris) politana, Haw. = **lepidana,** Curt. Common on the mosses.

Lanc.—Chat Moss (J.C.); Lancashire mosses (C.S.G.); Longridge (J.B.H.); Pilling Moss (J.H.T.).

Ches.—Staleybrushes (J.B.H.); Wirral, common (J.F.B.).

Tortrix (Eulia) ministrana, Hüb. Common and generally distributed in woods.

H. HETEROGNOMON, Led.

Tortrix conwayana, F. Generally distributed.

Tortrix bergmanniana, L. Common among roses throughout both counties.

Tortrix lœflingiana, L. Very local.

Lanc.—Barlow Moor and Irlam (J.C.); Preston (J.B.H.); Silverdale (J.H.T.).

Ches.—Wallasey, near the church (J.W.E.); Wirral (J.F.B.).

Tortrix viridana, L. Abundant everywhere where oaks grow.

Tortrix fosterana, F. Common and generally distributed.

Tortrix viburniana, F. Local, on the moors and mosses.

Lanc.—Chat Moss (J.C.); Fleetwood (J.H.T.); Lancashire Mosses (C.S.G.); Preston (J.B.H.).

Ches.—Abundant but local on the Cheshire moors (J.C.); Stockport, scarce (R. S. Edleston, Zool., 1845, 1220).

Tortrix paleana, Hüb. = **icterana,** Froel. Not very common, but widely distributed.

Lanc.—Aigburth, near Liverpool, bred from colt's-foot (J.W.E.); Fleetwood (J.H.T.); Glazebrook and Mode Wheel (J.C.); Preston (J.B.H.).

Ches.—Bramall, very local (H.H.C.); Knutsford (J.C.); Wallasey (J.W.E.); Wirral (J.F.B.).

Tortrix (Clepsis) rusticana, Tr. Scarce.

Lanc.—Chat Moss (J.C.); Longridge (J.B.H.); Simmonswood Moss (C.S.G.).

Ches.—Bidston Hill, a single specimen (J.F.B.); Lindow Common (J.C.).

I. BATODES, Guen.

Tortrix angustiorana, Haw. Generally distributed and fairly common.

Lanc.—Chorlton and Withington (J.C.); Grange (J.H.T.); Liverpool district, local (C.S.G.); Preston, common (J.B.H.).

Ches.—Dunham Park (J.C.); Wirral (J.F.B.).

L. DICHELIA, Guen.

Tortrix grotiana, F. Local, and recorded only from localities in Lancashire, viz., Barlow Moor and Irlam (J.C.); dry parts of the Lancashire mosses (C.S.G.); and Preston (J.B.H.).

M. AMPHYSA, Curt.

Tortrix gerningana, Schiff. Common on the moors and mosses.

Lanc.—Chat Moss (J.C., R. S. Edleston, Zool. 1845, 1220); Longridge (J.B.H.); Risley Moss (C.S.G., E.M.M., ix. 176); Silverdale (J.H.T.).

Ches.—Bidston Hill, abundant (C.S.G.); Bidston and Oxton heaths (J.F.B.); Lindow Moss (H.H.C.); Lindow Common and Staley-brushes (J.C.).

Tortrix prodromana, Hüb. Very local on the moors.

Lanc.—Longridge (J.B.H.); Withnell (J.B.H., J.H.T.).

Ches.—Staley-brushes (J.C., J.B.H., E.M.M., ii. 159); Stourton (C.S.G.).

N. CAPUA, Steph.

Tortrix favillaceana, Hüb. = **ochraceana,** Steph. Very scarce and local. The only records are from Lancashire: the Boor's Wood, Hale (C.S.G.), and Windermere, among juniper (J.B.H.)

SCIAPHILA, Tr.

A. ABLABIA, Steph.

Sciaphila osseana, Scop. = **pratana,** Hüb. Local and not common.

Lanc.—Chat Moss (J.C.); Longridge (J.B.H.); Silverdale (J.H.T.).

Ches.—Bidston Marsh and Ledsham (J.F.B.); Knutsford (J.C.).

B. SCIAPHILA, Tr.

Sciaphila longana, Haw. = **ictericana,** Haw. Tolerably common and generally distributed over both counties.

Sciaphila penziana, Hüb.

Var. (sp. ?) **conspersana,** Doug. Recorded from Grange (J.H.T.) and from Preston and Longridge (J.B.H.). No Cheshire localities have been noted.

Sciaphila octomaculana, Doub. Scarce.

Lanc.—Recorded only from Longridge (J.B.H.).

Ches.—A few at Stourton (C.S.G.); Wirral (J.F.B.).

Sciaphila chrysantheana, Dup. = **alternella,** Wilk. Scarce.

Lanc.—Preston and Longridge (J.B.H.).

Ches.—Prenton, near Birkenhead, scarce (C.S.G.).

Sciaphila wahlbomiana, L.

Var. **virgaureana,** Tr. Common and generally distributed.

Var. **subjectana,** Guen. Abundant everywhere.

Sciaphila pasivana, Hüb. = **pascuana,** Hüb. Recorded only from Preston and Longridge (J.B.H.).

Sciaphila sinuana, Steph. Recorded from Windermere (J.B.H.).

Sciaphila abrasana, Dup. Preston (J.B.H.).

CHEIMATOPHILA, Steph.

Cheimatophila tortricella, Hüb. = **(Tortricodes) hyemana,** Hüb. Abundant in oak woods in spring.

EXAPATE, Hüb.

Exapate congelatella, Clerck = **gelatella,** L. Local.

Lanc.—Taken at Rainhill in 1852 (C.S.G.).

Ches.—Handforth, rare (H.H.C.); Staley-brushes (C.S.G.).

OLINDIA, Guen.

Olindia (Sciaphila) hybridana, Hüb. Tolerably common.

Lanc.—Manchester district, local (J.C.); Preston (J.B.H.).

Ches.—Cheadle (H.H.C.); Tranmere and Burton (J.F.B.); Wallasey and New Brighton (C.S.G.).

Olindia ulmana, Hüb. Not common.

Lanc.—Brockholes Wood near Preston and Windermere (J.B.H.).

Ches.—Upton and Parkgate (C.S.G.).

COCHYLIS, Tr.

Cochylis (Xanthosetia) hamana, L. Common and generally distributed.

Cochylis (Xanthosetia) zœgana, L. Common and generally distributed.

Cochylis (Eupœcilia) maculosana, Haw. Not common.

Lanc.—The only locality given is Brockholes Wood, near Preston (J.B.H.).

Ches.—Eastham Wood, on flowers of *Hyacinthus non-scriptus* (C.S.G.); Knutsford (J.C.).

Cochylis (Eupœcilia) griseana, Haw. Recorded only from Martinmere, near Blackpool (J.B.H.), and from Bidston Marsh (J.F.B.).

Cochylis (Eupœcilia) affinitana, Dougl. Scarce, being recorded only from the Wyre district (J.B.H., J.H.T.), and from marshy places around Liverpool (C.S.G.).

Cochylis (Eupœcilia) vectisana, Westw. Found only in salt-marshes on the Wyre about Fleetwood (J.B.H., J.H.T.; see also J.B.H. in E.M.M., ix. 162).

Cochylis (Eupœcilia) cruentana, Froel. = **angustana,** Hüb. Tolerably common on the moors and mosses.

Lanc.—Farrington and Pilling Mosses (J.H.T.); Longridge (J.B.H.); Lancashire mosses, general (J.C.).

Ches.—Bidston Hill (J.W.E.); Claughton, near Birkenhead (J.F.B.); Lindow Moss, abundant (H.H.C.).

Cochylis (Lozopera) straminea, Haw. Local, but common where it occurs.

Lanc.—Ashton-on-Ribble (J.B.H.); Preston district (J.H.T.); Liverpool district, common (C.S.G.).

Ches.—Cheadle, abundant but local (H.H.C.); Knutsford and Castle Mill (J.C.); Stockport, scarce (R. S. Edleston, Zool., 1845, 1220); Wirral (J.F.B.).

Cochylis hartmanniana, Clerck. = **(Argyrolepia) baumanniana,** Schiff. Local.

Lanc.—Longridge (J.B.H.); Preston district (J.H.T.).

Ches.—Bidston (C.S.G.); Knutsford and near Castle Mill (J.C.); Stockport (R. S. Edleston, Zool. 1845, 1220).

Cochylis badiana, Hüb. Not common.

Lanc.—Grange (J.H.T.); Longridge (J.B.H.).

Ches.—Bidston (C.S.G.).

VAR. (sp. ?) **cnicana,** Doub. Recorded from Grange (J.H.T.); Windermere (J.B.H.); and Bidston Marsh (C.S.G.).

Cochylis francillana, Fab. Recorded from one locality only, Lytham (J.H.T.).

Cochylis dilucidana, Steph. Rare, both localities being in Lancashire, viz., Blackpool (J.B.H.) and Lytham (J.B.H., J.H.T.).

Cochylis smeathmanniana, F. Recorded by Mr. Gregson as scarce in the Liverpool district.

Cochylis ciliella, Hüb. = **ruficiliana,** Haw. Local and not common.

Lanc.—Grange (J.H.T., J.B.H., E.M.M., x. 40); Longridge (J.B.H.).

Ches.—Puddington (J.F.B.); Stourton and Wallasey (C.S.G.).

Cochylis (Eupœcilia) nana, Haw. Recorded only from two localities, both in Lancashire, viz., Grange (J.H.T.) and Chat Moss (J.C.).

Cochylis (Eupœcilia) roseana, Haw. The insect has been bred by Mr. Gregson from teazle-heads gathered on Bidston Marsh, from whence it has been also recorded by Mr. Brockholes.

Cochylis (Eupœcilia) rupicola, Curt. Scarce.

Lanc.—Brockholes Wood, near Preston (J.B.H.); Ditton Marsh (C.S.G.).

Ches.—Bidston Marsh (C.S.G.) and Wirral, scarce (J.F.B.).

Cochylis (Eupœcilia) notulana, Zell. Recorded only from Martinmere by Mr. Hodgkinson.

Cochylis ambiguana, Froel. = **albicapitana,** Cooke. Taken at Wallasey by Nicholas Cooke and recorded by him, Zool., 1861, p. 7800. Also recorded from Wallasey by Mr. Brockholes.

Cochylis atricapitana, Steph. Local and confined to the coast, but common where it occurs.

Lanc.—Blackpool (J.C., J.H.T.); Crosby (J.W.E.); Lytham (J.B.H.).

Ches.—Birkenhead (J.F.B.); Wallasey (C.S.G.).

RETINIA, Guen.

Retinia pinivorana, Zell. Not rare among firs.

Lanc.—Chat Moss (J.C.); Lancashire mosses (J.B.H.); Silverdale (J.H.T.).

Ches.—Bidston Hill and Burton (J.F.B.); Bidston (C.S.G.); Lindow Common and Rudd Heath (J.C.).

Retinia turionana, Hüb. Recorded only from Rudd Heath (R. S. Edleston, Zool., ii, 735).

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WM. DENISON ROEBUCK, F.L.S.,

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J. GILBERT BAKER, F.R.S., F.L.S., Royal Herbarium, Kew;

CHAS. P. HOBKIRK, F.L.S., Dewsbury;

W. EAGLE CLARKE, F.L.S., M.B.O.U., Museum of Science & Art, Edinburgh;

GEORGE T. PORRITT, F.L.S., F.E.S., Greenfield House, Huddersfield;

ALFRED HARKER, M.A., F.G.S., St. John's College, Cambridge;

W. BARWELL TURNER, F.C.S., F.R.M.S., 55, Reginald Terrace, Leeds.

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J. E. Marr and T. Roberts—Lower Palæozoic Rocks of Haverfordwest—16 pp. reprint, with plate, 8vo, 1885. [Mr. Alfred Harker.

J. A. Phillips—So-called Greenstones of W. Cornwall; J. D. Kendall—Hæmatite in the Silurians: and J. Aitken—Distribution of Drift on opposite sides of Pennine Chain. 36-page reprint, 8vo, 1876. [Mr. A. Harker.

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Mittheilungen des Ornith. Vereins in Wien, Jahrg. xii, Nr. 12, Dec. 1888. [Verein.

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Retinia Buoliana, Schiff. Common where firs grow.

VAR. (Sp.?) **pinicolana,** Doub. In the same localities as the type.

PENTHINA, Tr.

Penthina profundana, F. Recorded only from a single (Lancashire) locality, viz., Hoghton (J.H.T.).

Penthina salicella, L. Not common.

Lanc.—Near Huyton (C.S.G.); one at Penwortham, near Preston (J.B.H.); Preston (J.H.T.).

Ches.—Patrick Wood, Bromborough (J.F.B.); Woolden Hall, Glazebrook (J.C.).

Penthina semifasciana, Haw. Recorded from near Fleetwood (J.B.H.), and from the Crosby sandhills (C.S.G.).

Penthina scriptana, Hüb. = **Hartmanniana,** L. Mr. Hodgkinson records the capture of a specimen near the Ferry Hotel, Windermere.

Penthina corticana, Hüb. Local.

Lanc.—Chat Moss (J.C.); Grange and Silverdale (J.H.T.); Kirkby and Hale (C.S.G.); Preston (J.B.H.).

Ches.—Wirral (J.F.B.).

Penthina betuletana, Haw. Local, but common where it occurs.

Lanc.—Chat Moss (J.C.); Grange and Silverdale (J.H.T.); Kirkby (C.S.G.); Preston (J.B.H.).

Ches.—Lindow Common (J.C.); Cheadle district, local (H.H.C.); Wirral (J.F.B.).

Penthina sororculana, Zett. = **prælongana,** Guen. Not common.

Lanc.—Grange and Silverdale (J.H.T.); Preston (J.B.H.).

Ches.—Bidston, a single specimen (J.F.B.); Cheadle Hulme (H.H.C.).

Penthina sauciana, Hüb. Common on the moors.

Lanc.—Longridge (J.B.H., J.H.T.); near Ribchester, abundant (J.B.H., Ent., xiii. 105).

Ches.—Cheshire moors, local (H.H.C.); Staley-brushes (J.C.).

Penthina variegana, Hüb. = **cynosbatella,** Wilk. Abundant everywhere.

Penthina pruniana, Hüb. Common everywhere.

Penthina ochroleucana, Hüb. Tolerably common.

Lanc.—Irlam, near Manchester (J.C.); Liverpool district (C.S.G.); Preston (J.B.H., J.H.T.).

Ches.—Wirral (J.F.B.).

Penthina dimidiana, Hüb. Not rare on the Lancashire mosses. Near Middleton (J.C.); Preston (J.B.H.); Risley and Formby Mosses (C.S.G., E.M.M., ix. 176); Simmonswood Moss (C.S.G.).

Penthina oblongana, Haw. = **marginana,** Haw. Local, and not common.

Lanc.—Simmonswood Moss, scarce (C.S.G.); Windermere (J.B.H.).

Ches.—Knutsford (J.C.).

Penthina sellana, Hüb. Recorded from Windermere by Mr. Hodgkinson.

Penthina nigricostana, Haw. Recorded from Brockholes Wood, near Preston, by Mr. Hodgkinson.

Penthina postremana, Zell. Windermere (J.B.H.) is about the only British locality for this species.

Penthina mygindana, Schiff. = **(Euchromia) fulvipunctana,** Haw. Local, on the moors and mosses.

Lanc.—Chat Moss (J.B.H.).

Ches.—Staley-brushes (J.C., J.B.H.).

Penthina rufana, Scop. Recorded only from Grange (J.B.H., J.H.T.).

Penthina striana, Schiff. Local.

Lanc.—Gill brook, near West Derby (C.S.G.); Preston and Wyreside (J.H.T.).

Ches.—Bidston Marsh (J.F.B., C.S.G.); Claughton (J.F.B.).

Penthina (Mixodia) Schulziana, Zell. Common on the mosses.

Lanc.—Chat Moss (J.C.); Pilling Moss (J.B.H.); Silverdale (J.H.T.); Simmonswood Moss (C.S.G.).

Ches.—Knutsford and Rudd Heath (J.C.).

Penthina olivana, Tr. = **micana,** Froel. Recorded only from Pilling Moss (J.B.H., J.H.T.).

Penthina (Roxana) arcuella, Clerck. Recorded from a single locality in each county, viz., Windermere (J.B.H.) and Hooton (C.S.G.).

Penthina rivulana, Scop. = **conchana,** Hüb. Tolerably common.

Lanc.—Hale marsh, abundant (C.S.G.); Lytham, Longridge, etc. (J.B.H.); Preston (J.H.T.).

Ches.—Bramall, local (H.H.C.); Knutsford (J.C.); Wallasey sandhills (C.S.G.).

Penthina urticana, Hüb. Abundant everywhere.

Penthina lacunana, Dup. Abundant everywhere.

Penthina cespitana, Hüb. Local.

Lanc.—Grange (J.B.H.); Preston (J.H.T.).

Ches.—Knutsford (J.C.); Wallasey sandhills (J.F.B., C.S.G.).

Penthina bifasciana, Haw. Rare.

Lanc.—Chat Moss, one specimen (J.C.); Grange (J.B.H.).

Ches.—Hoylake, two specimens (C.S.G.).

Penthina trifoliana, H.S. = **ericetana,** Westw. Not common.

Lanc.—Liverpool district (C.S.G.); Preston (J.B.H., J.H.T.).

Ches.—Ledsham (J.F.B.).

Penthina antiquana, Hüb. Local and not common.

Lanc.—Preston (J.B.H., J.H.T.).

Ches.—Bidston Marsh (C.S.G.); Wirral, not common (J.F.B.).

ASPIS, Steph.

Aspis Udmanniana, L. Common and generally distributed.

APHELIA, Steph. (BACTRA, St.).

Aphelia lanceolana, Hüb. Generally distributed among rushes.

Aphelia furfurana, Haw. Recorded only from two localities, both on the Cheshire side of the Mersey, but where the insect is common:—Bidston Marsh (J.F.B.); Pits near Liscard (C.S.G., J.W.E.).

EUDEMIS, Hüb.

Eudemis (Sericoris) littoralis, Curt. Local, on salt-marshes.

Lanc.—Fylde district (J.H.T.); Preston and banks of Wyre (J.B.H.).

Ches.—Puddington Marsh (J.F.B.); Wallasey (J.C.).

LOBESIA, Guen.

Lobesia permixtana, Hüb. = **reliquana,** Hüb. Recorded only from North Lancashire:—Grange (J.B.H. in E.M.M., x. 40) and Windermere (J.B.H.).

GRAPHOLITHA, Tr.

B. PÆDISCA, Led.

Grapholitha expallidana, Haw. Recorded only from Grange, by Mr. Hodgkinson.

Grapholitha Scopoliana, Haw. Scarce.

Lanc.—Grange (J.B.H.); Preston (J.H.T.).

Ches.—Three specimens at Puddington (J.F.B.).

Grapholitha Hohenwartiana, Tr. Not common.

Lanc.—Grange (J.B.H.); Liverpool district (C.S.G.); Withington (J.C.).

Ches.—Wirral (J.F.B.).

Grapholitha cæcimaculana, Hüb. A single specimen is recorded from Tranmere by J. F. Brockholes.

Grapholitha tedella, Clerck = **Hyrciniana,** Wilk. Local.

Lanc.—Croxteth Park, near Liverpool (C.S.G.); Grange (J.H.T.); Windermere (J.B.H.).

Ches.—Bidston and Puddington (J.F.B.); Knutsford (J.C.).

Grapholitha proximana, H.S. = **distinctana,** Wilk. Recorded only from Windermere (J.B.H., and Stainton's Manual, ii. 216).

Grapholitha subocellana, Don. = **campoliliana,** Tr. Local.

Lanc.—Chat Moss (J.C.); Liverpool district (C.S.G.); Preston (J.B.H.).

Ches.—Wirral (J.F.B.).

Grapholitha nisella, Clerck. Local.

Lanc.—Preston (J.B.H., J.H.T.).

Ches.—Puddington, scarce (J.F.B.); Hooton and Spital (C.S.G.).

Grapholitha cinerana, Haw. Recorded from Preston by J. B. Hodgkinson.

Grapholitha Penkleriana, F. Local.

Lanc.—Preston (J.B.H., J.H.T.).

Ches.—Flaybrick Hill near Birkenhead (C.S.G.); Knutsford (J.C.).

Grapholitha ophthalmicana, Hüb. Local and not common.

Lanc.—Chat Moss (J.C.); Longridge (J.B.H., J.H.T.); near Ribchester (J.B.H., Ent., xiii. 105).

Ches.—Tranmere (J.F.B., C.S.G.); Rock Ferry (J.F.B.).

Grapholitha solandriana, L. Not very common.

Lanc.—Chat Moss (J.C.); Longridge (J.B.H.); Preston (J.H.T.); Liverpool district, among birches (C.S.G.).

Ches.—Carrington Moss and Lindow Common (J.C.); Wirral (J.F.B.).

Grapholitha semifuscana, Steph. Recorded from two Lancashire localities:—the Fylde district (J.H.T.) and Longridge (J.B.H.).

Grapholitha sordidana, Hüb. = **stabilana,** Steph. Local.

Lanc.—Longridge (J.B.H.).

Ches.—Knutsford (J.C.); Wallasey sand-hills (C.S.G.).

Grapholitha bilunana, Haw. Tolerably common.

Lanc.—Chat Moss (J.C.); Croxteth, near Liverpool (C.S.G.); Grange (J.H.T.); Levenshulme (H.H.C.); Longridge and Windermere (J.B.H.).

Ches.—Bidston (J.F.B.); Bramall, common (H.H.C.); Prenton (C.S.G.).

Grapholitha tetraquetrana, Haw. Local, and scarcely common.

Lanc.—Croxteth (C.S.G.); Longridge (J.B.H., J.H.T.).

Ches.—Wirral (J.F.B.).

Grapholitha immundana, Haw. Local.

Lanc.—Deysbrook and Walton, near Liverpool (C.S.G.); Longridge and Preston (J.B.H., J.H.T.).

Ches.—Wirral (J.F.B.).

Grapholitha similana, Hüb. = **(Halonota) bimaculana,** Don. Somewhat local.

Lanc.—Chat Moss (J.C.); Longridge (J.B.H.); Preston (J.H.T.).

Ches.—Cheadle, local (H.H.C.); Wallasey (J.W.E.).

Grapholitha incarnatana, Hüb. = **(Spilonota) amœnana,** Hüb. A very abundant species on the Wallasey sand-hills; also recorded from Grange by J. B. Hodgkinson.

Grapholitha (Spilonota) trimaculana, Haw. Common and generally distributed.

Grapholitha (Spilonota) rosæcolana, Doub. Local.

Lanc.—Barlow Moor and Irlam (J.C.); Preston (J.B.H., J.H.T.).

Ches.—Bidston (C.S.G.); Puddington, scarce (J.F.B.).

Grapholitha tripunctana, F. Common and generally distributed.

Grapholitha cynosbana, Guen. = **roborana,** Tr. Generally distributed and tolerably common.

Grapholitha Pflugiana, Haw. = **(Halonota) scutulana,** Wilk. Tolerably common.

Lanc.—Liverpool district, among thistles (C.S.G.); Longridge (J.B.H.); Manchester district, common (J.C.).

Ches.—Formerly at Birkenhead (J.F.B.).

Grapholitha circiana, Zell. Local.

Lanc.—Grange (J.H.T.) and Longridge (J.B.H.).

Ches.—Marple and near Castle Mill (J.C.).

Grapholitha trigeminana, Steph. Local, but common where it occurs.

Lanc.—Preston (J.H.T.); St. Anne's-on-the-Sea and banks of the Wyre (J.B.H.).

Ches.—Birkenhead (C.S.G.); Tranmere (J.F.B.).

Grapholitha tetragonana, Steph. Very local.

Lanc.—Brockholes Wood and Salwick (J.B.H.).

Ches.—Wirral (J.F.B.).

Grapholitha Brunnichiana, Froel. Common and generally distributed.

Grapholitha turbidana, Tr. Local, all the localities being in Lancashire, viz., Agecroft and Stretford (J.C.); Hoghton and near Preston (J.B.H., J.H.T.); near Stoneyhurst (J.B.H., Ent., xii. 204).

D. SEMASIA, H.S.

Grapholitha citrana, Hüb. Lytham (J.B.H. and Stainton's Manual, ii. 255) is one of the very few British localities for this handsome species.

Grapholitha aspidiscana, Hüb. Recorded only from Grange (J.B.H., J.H.T.).

Grapholitha hypericana, Hüb. Local.

Lanc.—Grange (J.B.H. in litt. and E.M.M., vii. 63); Grange and Whitewell (J.H.T.).

Ches.—Castle Mill (J.C.); Flaybrick Hill (C.S.G.); near Seacombe (J.F.B.).

Grapholitha nebritana, Tr. = **nigricana,** Steph. Recorded only from the Wyre district, from among peas (J.B.H.).

Grapholitha roseticolana, Zell. = **Germarana,** Wilk. Not common.

Lanc.—Cleveleys (J.H.T.); Wyre district (J.B.H.).

Ches.—Tranmere, near Birkenhead (J.F.B., C.S.G.).

Grapholitha funebrana, Tr. Recorded only from Preston by Mr. Hodgkinson.

Grapholitha succedana, Froel. = **ulicetana,** Haw. Abundant everywhere.

Grapholitha splendidulana, Guen. Not common.

Lanc.—Preston (J.B.H.).

Ches.—Bidston, scarce (C.S.G.); Bromborough (J.W.E.); Cheadle Hulme (H.H.C.); Dunham Park (J.C.).

Grapholitha scopariana, H.S. Recorded from Longridge and the neighbourhood of Ribchester (J.B.H. in litt. and Ent., xvii. 38).

Grapholitha coniferana, Rtz. Among firs on the mosses, etc.

Lanc.—Chat Moss (R. S. Edleston, Zool., 1845, 1220); Salwick, near Preston (J.B.H.).

Ches.—Bidston and Burton (J.F.B.); Cheshire fir-woods, especially where they have been burnt (C.S.G.).

Grapholitha Wœberana, Schiff. This species has recently made its appearance in Mr. Gregson's garden, where the larvæ are feeding in the bark of an old pear-tree. Not recorded from elsewhere in either county.

Grapholitha rufillana, Wilk. Recorded only from the banks of the Wyre, near Fleetwood (J.B.H., J.H.T.).

Grapholitha nitidana, Fab. Recorded only from the Preston district (J.B.H., J.H.T.).

Grapholitha compositella, Fab. Recorded from Eastham Wood by Mr. Gregson.

Grapholitha perlepidana, Haw. Mr. Gregson's record of the capture of this species near Hooton is unique so far as our counties are concerned.

Grapholitha aurana, Fab. Scarce, the localities of its capture being all in Lancashire, viz., Agecroft and Withington (J.C.); Cleveleys and Preston (J.H.T.); Grange (J.B.H.).

CARPOCAPSA, Tr.

Carpocapsa pomonella, L. Not often noticed, though probably much commoner than it appears to be.

Lanc.—Manchester district (J.C.); Preston (J.B.H.); Silverdale (J.H.T.).

No record for Cheshire.

Carpocapsa splendana, Hüb. Local, in oak woods where the larva feeds on acorns. Both localities from which it is recorded are in Cheshire:—Dunham Park (J.C.); Eastham Wood (J.F.B., J.W.E.).

COPTOLOMA, Led.

Coptoloma janthinana, Dup. Very local, being recorded only from near Fleetwood (J.B.H.) and Grange (J.B.H., E.M.M., vii. 87) in Lancashire, and from Wallasey (C.S.G.) in Cheshire.

PHTHOROBLASTIS, Led.

Phthoroblastis fimbriana, Haw. Common but local, all the localities being in Cheshire:—Cheadle district, common (H.H.C.); Staley-brushes and Dunham Park (J.C.).

Phthoroblastis argyrana, Hüb. Local.

Lanc.—Liverpool district (C.S.G.); Preston (J.B.H., J.H.T.).

Ches.—Bidston, occasionally (J. F. B.); Bromborough (J.W.E.); Knutsford, Dunham Park, and Moss-side near Bowdon (J.C.).

Phthoroblastis Juliana, Curt. Recorded only from two localities in Lancashire:—Withington (J.C.) and Silverdale (J.B.H.).

Phthoroblastis populana, F. Locally abundant.

Crosby, near Liverpool (C.S.G.); Lytham (J.B.H., J.H.T.).

Phthoroblastis regiana, Zell. Very local.

Lanc.—Manchester district, among sycamores (J.C.); Windermere (J.B.H.).

Ches.—Between Poulton and Seacombe (J.F.B.).

Phthoroblastis Rhediella, Clerck. Local.

Lanc.—Cleveleys (J.H.T.); Preston (J.B.H.); Old Swan, near Liverpool (C.S.G.).

Ches.—Bromborough (J.W.E.); Oxton and Upton (C.S.G.); Prenton (J.F.B.).

TMETOCERA, Led.

Tmetocera (Hedya) ocellana, Fab. Common, but local.

Lanc.—Liverpool district (C.S.G.); Manchester district, common (J.C.); Preston, common (J.B.H., J.H.T.).

STEGANOPTYCHA, Hüb.

Steganoptycha aceriana, Dup. Very scarce, being recorded only from St. Anne's-on-the-Sea (Lancashire), a single specimen in August 1888 (J.B.H.), and from Egremont (Cheshire) by Mr. Gregson.

Steganoptycha incarnana, Haw. = **dealbana,** Froel. Very local.

Lanc.—Preston (J.H.T.).

Ches.—Puddington, scarce (J.F.B.); river-bank between New Ferry and Bromborough Pool (C.S.G.).

Steganoptycha neglectana, Dup. Local, but common.

Lanc.—Manchester district, common (J.C.); Preston (J.B.H., J.H.T.).

Ches.—Liscard, common (C.S.G.); Wirral (J.F.B.).

Steganoptycha pauperana, Dup. Local, but common.

Lanc.—Chat Moss (J.C.); Preston (J.B.H.).

Ches.—Bidston Hill, common (J.F.B., C.S.G.).

Steganoptycha nigromaculana, Haw. Somewhat local.

Lanc.—Lytham and banks of the Wyre (J.B.H.).

Ches.—Liscard, common (J.W.E.); Kersall Moor, near Manchester, rare (R. S. Edleston, Zool., 1845, 1220); Wirral (J.F.B.).

Steganoptycha ramella, L. = **Paykulliana,** Wilk. Recorded only from Windermere (J.B.H.).

Steganoptycha pinicolana, Zell. = **(Retinia) occultana,** Wilk. Local, in fir-woods.

Lanc.—Chat Moss (J.C.); Grange (J.H.T.); Longridge (J.B.H., J.H.T.).

Ches.—Claughton (J.F.B.); Prenton (C.S.G.).

Steganoptycha (Pœcilochroma) corticana, Hüb. Common and generally distributed.

Steganoptycha signatana, Doug. Very local.

Lanc.—Scorton, Salwick, and Windermere (J.B.H.); Grange (J.H.T.).

Ches.—Delamere Forest (C.S.G., Ent., vi. 453).

Steganoptycha nanana, Tr. Recorded only from Windermere (J.B.H.).

Steganoptycha ustomaculana, Curt. Local, being recorded from Staley-brushes (J.C., J.B.H.).

Steganoptycha vacciniana, Zell. Local, but common where it occurs.

Lanc.—Barton Moss (J.C.); Windermere (J.B.H.).

Ches.—Flaybrick Hill (C.S.G.).

Steganoptycha fractifasciana, Haw. Very local.

Lanc.—Halewood and Ditton Marsh (C.S.G.); Grange (J.B.H.).

Ches.—Near Tranmere (J.F.B.).

Steganoptycha quadrana, Hb. Rare, being recorded only from Newby Bridge, near Windermere (J.B.H.).

Steganoptycha (Hypermesia) augustana, Hüb. Abundant, but local.

Lanc.—Crosby sand-hills, abundant (C.S.G., J.W.E.); Lytham and Farrington (J.H.T.); Preston, common (J.B.H.).

Ches.—Heswall (J.W.E.); Wallasey (J.C.); Wirral (J.F.B.).

Steganoptycha trimaculana, Don. Common and generally distributed.

Steganoptycha minutana, Hüb. Recorded only from Pendleton, near Manchester (J.C.).

PHOXOPTERYX, Tr.

Phoxopteryx Mitterbacheriana, Schiff. Local, but common where it occurs.

Lanc.—Pendleton (J.C.); Windermere (J.B.H.); Liverpool district (C.S.G.).

Ches.—Wirral (J.F.B.).

Phoxopteryx obtusana, Haw. Recorded only from Grange (J.B.H., J.H.T.), from which locality Mr. Hodgkinson informs me it has been lost for some years.

Phoxopteryx biarcuana, Steph. Local.

Lanc.—Crosby, common (C.S.G.); Grange and Windermere (J.B.H.); Pilling (J.H.T.).

Ches.—Wirral (J.F.B.).

Phoxopteryx diminutana, Haw. Recorded from only two localities in Lancashire:—Pilling (J.H.T.) and Windermere (J.B.H.); and one in Cheshire:—Bebington, scarce (C.S.G.).

Phoxopteryx uncana, Hüb. Scarce.

Lanc.—Grange and Windermere (J.B.H.); Longridge (J.H.T.).

Ches.—Bidston and Prenton Hills (C.S.G.).

Phoxopteryx unguicella, L. Local.

Lanc.—Grange and Windermere (J.B.H.).

Ches.—Bidston (J.F.B., C.S.G.); Bramall, local (H.H.C.); Lindow Common (J.C.).

Phoxopteryx siculana, Hüb. Local.

Lanc.—Grange (J.B.H.); Simmonswood Moss (C.S.G.).

Ches.—Knutsford (J.C.).

Phoxopteryx comptana, Froel. Recorded by Mr. Gregson as common on Flaybrick Hill, near Birkenhead.

Phoxopteryx lundana, F. Common everywhere.

Phoxopteryx myrtillana, Tr. Common on the moors.

Lanc.—Chat Moss (H.H.C.); Longridge (J.B.H.); near Stoneyhurst (J.B.H., Ent., xii. 204).

Ches.—Flaybrick Hill, scarce (C.S.G.); Staley-brushes (J.C.).

RHOPOBOTA, Led.

Rhopobota nævana, Hüb. Common wherever hollies grow.

Var. (sp. ?) **geminana,** Steph. Common on the moors and mosses.

DICHRORAMPHA, Guen.

Dichrorampha petiverella, L. Fairly common.

Lanc.—Grange district (J.B.H., J.H.T.).

Ches.—Heswall (J.W.E.); Knutsford (J.C.); New Brighton (C.S.G.); Tranmere (J.F.B.).

Dichrorampha alpinana, Tr. Recorded from Grange (J.H.T.) and from near Rock Ferry (C.S.G.).

Dichrorampha simpliciana, Haw. Recorded by Mr. Gregson from Croxteth Park, near Liverpool.

Dichrorampha plumbagana, Tr. = **tanaceti,** Wilk. Local.

Lanc.—Grange and Preston (J.B.H., J.H.T.).

Ches.—Bidston Marsh (C.S.G.); near Crewe (Stainton's Manual, ii. 214).

Dichrorampha acuminatana, Zell. Grange (J.B.H., J.H.T.).

Dichrorampha consortana, Wilk. Grange (J.B.H., J.H.T.); near Manchester (Stainton's Manual, ii. 215).

Dichrorampha plumbana, Scop. = ? **(Endopisa) ulicana,** Guen. Recorded only from Grange by Messrs. Hodgkinson and Threllfall.

NOTES AND NEWS.

Mr. Richard Howse, the curator of the Museum at Newcastle-on-Tyne, has just published in the Natural History Transactions of Northumberland and Durham, a valuable 'Catalogue of Fossil Plants in the Hutton Collection,' illustrated by seventeen woodcuts. It is prefaced by a history of this celebrated collection, in which are preserved the type-specimens described in Lindley and Hutton's 'Fossil Flora,' all of which are carefully indicated.

BIRD-NOTES FROM THE HUMBER DISTRICT.

JOHN CORDEAUX, M.B.O.U.,
Great Cotes, Ulceby, Lincolnshire.

Nutcracker (*Nucifraga caryocatactes*). November 6th, 1888. One, now in the collection of Mr. G. H. Caton Haigh, of Grainsby Hall, was shot on this date in the parish of Marsh Chapel, on the Lincolnshire coast, by Mr. Thomas Sargeant. This is the first recorded example of the Nutcracker in the county. Two Yorkshire occurrences are given in the 'Handbook of the Vertebrate Fauna of Yorkshire,' by Messrs. Clarke and Roebuck. It is probable the Lincolnshire bird came in with the great flight of Woodcock (*Scolopax rusticula*) and other species, during the first week in November, with a north-east wind.

House Martin (*Chelidon urbica*). December 4th, 1888. Whitby South Lighthouse, 10 a.m., W.S.W. (4), B.C.M. One seen going south. Recorded by Mr. John Odgers, in the Migration Schedule from that station.

Ruff (*Machetes pugnax*). January 7th, 1889. A very fine example was obtained on this day at Stonecreek, Sunk Island, on the Yorkshire side of the Humber. When shot it was feeding in company with a flock of Stints. I examined this bird, which was fat, and in very good condition, in the flesh. This, as far as I am aware, is the first instance in which the Ruff has been recorded in Great Britain in winter. In Ireland, according to Thompson ('Birds of Ireland,' vol. ii, p. 230), it has been obtained in one instance as late as November 29th.

January 18th, 1889.

NOTE—FUNGI.

Agaricus (Pleurotus) revolutus near Thirsk.—I found several specimens of this interesting fungus on the upright trunk of a black poplar, which had been decaying for a number of years. I could find no fungus answering to its characters in Cooke's Handbook; but, on consulting Mr. Foggitt, our local botanical secretary, we found in the second edition of that work now publishing in 'Grevillea,' and also in Stevenson's Manual, definitions of the above fungus, which very nearly corresponded to the specimens. As we had still some little hesitation Mr. Foggitt sent specimens to the Rev. Jno. Stevenson, of Glamis. He kindly replied, saying—'Your plant is what is now accepted as *Ag. revolutus* Kickx as distinct from *Ag. corticatus* Fr. Yours is exactly the plant of Saunders and Smith's *Ag. corticatus*, which = *Ag. revolutus*, as we interpret them at present.' Mr. Stevenson further adds—'I am in doubt whether the distinction between *Ag. corticatus* Fr. and *Ag. revolutus* is a sufficient one. The difference lies plainly in the gills being perfectly distinct in *Ag. revolutus*, not anastomosing behind as in *Ag. corticatus* Fr.' I may add that, while no other fungus grows on the decorticated upright stump, yet on a portion of the trunk which has been several years on the ground, and therefore level, no other fungus grows except *Hirneola auricula-judæ*.—F. ADDISON, M.A., Thirsk, Jan. 9th, 1889.

THE
MUSEUMS OF THE NORTH OF ENGLAND.

THE following particulars of our Northern Museums have been extracted from the Report which has been prepared by the Provincial Museums Committee of the British Association, and cannot fail to be extremely valuable to our readers, who can thus know in the towns specified the locality and special character of the museum, and further, which is highly important to collectors, those museums possessing duplicates for exchange. The museums are also classified, and in doing so the superficial area of the rooms, the size and character of the collections, the annual cost, the staff, and the number of visitors were taken into consideration. Annexed is a list of collections of special or local interest, with the museums in which they are preserved.

COLLECTIONS OF SPECIAL OR LOCAL INTEREST.

GEOLOGY.

Collection of Dr. Grindrod	Carlisle.
,, Prof. Harkness	,,
,, Clifton Ward	Liverpool, Royal Institute.
Geology of Yorkshire	York.
,, East Yorkshire	Scarborough ; Malton.
Fossils of Permian Strata	Sunderland.
,, Jurassic ,, ...	Middlesbrough.
,, Coal	Newcastle Nat. Hist.; Stalybridge.
,, ,, ...	Liverpool Free M. ; Chesterfield.
,, Skiddaw Slates (Harrison)... ...	Keswick.
,, Lias	Whitby.
,, Post-glacial Deposits	Liverpool Free M.
Minerals (Keate Collection)	Giggleswick.
Cave Remains (Victoria Cave)	,,

ZOOLOGY.

Mammalia, pictorially mounted	Liverpool Free M.
Birds, British, nearly complete	Leeds ; Durham ; Sunderland.
,, ,, ,, ...	Scarborough.
,, Hancock Collection	Newcastle Nat. Hist. Society.
,, European, Skins	York.
,, Skeletons of extinct Moa	Leeds and Owens College.
Invertebrates, fine collection	Liverpool Free M.
,, European Coleoptera	Bootle.
,, Lancashire Insects (Gibson) ...	Salford.
,, British Lepidoptera (Cooke) ...	Liverpool.
,, Recent Shells	Stockport.
Marine Fauna	Liverpool College.
Injurious Insects	Huddersfield.

ARCHÆOLOGY.

Roman, from Eboracum	York.
,, ,, Wilderspool	Warrington.
,, ,, Isurium	Aldborough.
,, ,, Chester	Chester.
,, ,, North of England	Newcastle ; Carlisle.
,, ,, South Shields	South Shields.
General, British to Mediæval	Sheffield.
Egyptian	Alnwick.

ANTHROPOLOGY.

General Collection, large	Liverpool Royal Inst. M.
Prehistoric ,, ...	York; Preston; Owens College;
,, ,, ...	Scarborough.
Indian and Chinese	Newcastle, Blackgate M.
Anglian Cinerary Urns	York.
Musical Instruments	Manchester, Queen's Park M.
Bewick Relics	Newcastle Nat. Hist. M.

Town and County.	Name and Locality of Museum.	Date of Foundation.	Name and Address of Curator, Principal Officer, or Owner.	Class
Aldborough, Yorks.	'M. Isurianum,' Aldborough Manor, near Boroughbridge	—	A. S. Lawson, Owner, Aldborough Manor	4
Alnwick, Nrthd.	The Castle M., Alnwick Castle	—	Duke of Northumberland, Owner	2
Bakewell, Derbyshire	Bingham's M., Bath Street	1873	L. F. Bingham, Owner, Bakewell	4
Barnard Castle, Durham	The Bowes M. . .	1869	Owen S. Scott, Cur., Bowes M., Barnard Castle	2
Berwick-on-Tweed	Berwick M., High Street	1869	John Scott, Cur., 103, High Street	3
Blackburn, Lanc.	Public Library and M., Library Street	1862	David Geddes, Cur. .	2
Bolton, Lanc.	The Chadwick M., Park Road	1884	W. W. Midgley, Cur. .	1
Bootle, Lanc.	Free Public Library and M., Oriel Road	1885	— —	2
Bradford, Yorks.	Free Library and Art M., Darley Street	1879	Butler Wood, Cur., 1, Scott Street	2
Carlisle, Cumb.	Carlisle M., Finkle Street	1835	R. S. Ferguson, M.A., Hon. Cur., Lowther Street	2
Chester, Chesh.	Grosvenor M., Grosvenor Road	1886	Robert Newstead, Cur. .	2
Chesterfield, Derbyshire	M. of Chesterfield and Mid. Counties Institution of Engineers	—	Rev. J. M. Mello, M.A., F.G.S., Hon. Cur.	2
Darwen, Lanc.	Public Library and M., Church Street	1839	R. Neville, Cur.	4
Derby, Derbysh.	Derby Free M., Wardwick	1879	W. Crowther, Cur.	2
Durham, Durham	University M. . .	1833	J. Cullingford, Cur., Palace Green	3
Giggleswick, Yorks.	Giggleswick School M. .	1887	Rev. G. Style, M.A., Head Master	3
Halifax, Yorks.	M. of Lit. and Phil. Soc.	1830	J. W. Davis, F.G.S., Hon. Cur.	1

Collections.		Supported by	No. of Visitors weekly.	Duplicates for Exchange.	Terms of Admission.	Remarks.
General.	Local.					
—	Arch. (Roman remains, &c.)	Owner .	—	—	Free on application	Private
Arch. (Egyptian &c.) Geo., Zoo., Anth.)	Arch. . .	,,	—	—	Free on order	,,
Geo. (White Watson's coll.), Zoo., Shells, Models, &c.	—	,,	100	—	Free .	—
Art (Italian and Spanish, paintings pottery, and porcelain)	—	Endowment	—	—	Free on application	Not yet formally opened
Geo. (few), Zoo. (few), Arch. (few)	Bot., Zoo., Geo., Arch.	Town Subscription and Fees	30	—	1d. daily	Intended to be purely local
Geo., Zoo., Arch., Bot., Anth., Art (industrial and fine)	—	Rates .	1,200	Geo., Bird-skins and eggs, &c.	Free daily	—
Zoo., Geo., Arch., Bot., Tech. Art (industrial and fine)	—	Rates .	3,500	—	,,	—
Zoo., Geo. (purchased from Royal Institution, Liverpool	—	Rates .	—	—	—	Not yet opened
Art (industrial and fine), Geo., Anth.	—	Rates .	6,000	—	Free daily	Loan from S. K.
Zoo., Geo., Arch., Anth.	Geo., Zoo., Bot., Arch., Anth.	Borough Fund & Fees	100	—	2d. daily	—
Geo., Zoo. . .	Zoo., Arch.	Fees and Subscriptions	—	—	Free one day; 6d. five days	Loan from S. K.
Geo., Arch. . .	Geo. . .	The Institution	—	—	Free daily	—
—	Geo., Zoo., Bot., Arch.	Rates .	Few	—	,,	—
Geo., Zoo., Arch., Anth.	Geo., Zoo., Bot., Arch.	Rates .	—	Few .	,,	—
Zoo., Geo., Arch.	Bot., Arch.	The University	—	—	2d. daily	—
Geo., Zoo. . .	—	The School	—	—	Free .	—
Zoo., Geo., Arch.	Geo., Zoo., Bot., Arch.	Local Society	400	—	1d. daily	—

Town and County.	Name and Locality of Museum.	Date of Foundation.	Name and Address of Curator, Principal Officer, or Owner.	Class
Halifax, Yorks.	Mr. J. W. Davis's M., Chevinedge	—	J. W. Davis, F.G.S., Owner	2
Huddersfield, Yorks.	Beaumont Park M., Woodside Road	1880	S. L. Mosley, Owner, Museum	3
,, ,,	M. of Technical School and Mechanics' Institute	—	Austin Keen, Secretary .	4
Kendal, Westm.	M. of Lit. and Sci. Institution, Strickland Gate	1835	J. Severs, Hon. Sec. .	3
Keswick, Cumb.	M. of Local Nat. Hist. Soc., Town Hall	1877	J. Birkett, Hon. Cur., Market Place	3
Kirkleatham, Yorks.	Kirkleatham M., Turner Hospital	—	Trustees of Kirkleatham Estate	4
Lancaster, Lancs.	Mechanics' Institute M. .	—	George Kelland, Hon. Sec.	4
Leeds, Yorks.	Corporation M., Municipal Buildings	1884	J. Yates, Cur. . . .	4
,, ,,	M. of the Phil. and Lit. Soc., Park Row	1822	Prof. L. C. Miall, F.G.S., Cur., Yorkshire College	1
,, ,,	M. of Yorkshire College, Medical Dept. Park St.	—	Prof. E. H. Jacob, M.D., Cur., Yorkshire College	3
,, ,,	M. of the Architectural Soc., Infirmary Buildings	1882	L. F. Hicks, Cur. . .	2
Liverpool, Lancs.	Free Public M., William Brown Street	1852	T. J. Moore, Cur., Museum	1
,, ,,	M. of the Royal Institution, Colquitt Street	1814	E. Doling, Cur., Royal Institution	1
,, ,,	Zoological M. of University College, Ashton Street	1881	Prof. Herdman, D. Sc., Cur., University College	3
Macclesfield, Chesh.	School of Art M., Park Lane	1883	— —	3
Malton, Yorks.	M. of Field Nat. and Sci. Soc., Yorkersgate	1880	S. Chadwick, F.G.S., Hon. Cur., Mount Pleasant	2
Manchester, Lanc	Manchester M., Owens College	—	Prof. W. B. Dawkins, M.A., F.R.S., Cur., Owens College	1
,, ,,	Art M., Ancoats Hall .	1886	Henry Brooke, Cur., Ancoats Hall	1
,, ,,	Queen's Park M. and Art Gallery, Queen's Park	1884	C. G. Virgo, Cur., 2, Green Mount, Queen's Park	1
Middlesbrough, Yorks.	Middlesbrough M., Zetland Road	1887	W. Y. Veitch, Hon. Cur., 37, Grange Road	3

Collections.		Supported by	No. of Visitors weekly.	Duplicates for Exchange.	Terms of Admission.	Remarks.
General.	Local.					
Geo. . . .	Geo. . .	Owner .	20	—	Free on application	—
Zoo., Geo. . .	—	Owner .	—	Zoo. .	1d. daily	—
Zoo., Industrial Arts	—	The Institute	—	—	—	—
Geo., Zoo.	Bot. . .	Local Society	40	Geo. .	Free daily	—
—	Geo., Zoo., Bot., Arch.	Local Soc. and Fees	40	—	1d. daily	—
Arch., Anth. .	—	The Owners	—	—	Free daily	—
Geo., Zoo. . .	—	The Institute	—	—	—	—
Industrial and Fine Arts	—	Rates .	2,500	—	Free daily	—
Zoo., Geo., Bot., Arch., Anth.	—	Local Soc. and Fees	500	Few .	1d. daily	—
Pathology, Anatomy	—	The College	—	—	Free to visitors	For students
Building appliances	—	Exhibitors' Rents	—	—	Free daily	—
Zoo., Geo., Bot., Arch., Anth., Art Treasures	Zoo., Geo.	Rates .	7,000	Geo., Zoo., Bot.	,,	—
Geo., Anth., Fine Arts	—	Local Society	—	—	Free one day	—
Zoo. . . .	—	The College	—	—	Free on application	—
Industrial and Fine Arts	—	School of Art	—	—	Free daily	Loan from S. K.
Geo., Zoo., Bot., Arch., Anth.	—	Local Society	40	Geo , Zoo.	Free daily	—
Geo., Zoo., Bot., Arch., Anth.	—	The College	—	Geo. Zoo., Bot.	Free three days	—
Industrial and Fine Art	—	Subscriptions	2,000	—	Free daily, and on Sundays 2 to 5	—
Geo., Zoo., Bot., Arch., Anth., Industrial and Fine Art	—	Rates .	2,500	Few .	Free daily	Loan from S. K.
Geo., Zoo., Bot. .	—	Rates .	—	Geo. .	—	—

Town and County.	Name and Locality of Museum.	Date of foundation.	Name and Address of Curator, Principal Officer, or Owner.	Class
Newcastle-on-Tyne, Northd.	Castle and Blackgate M. of the Antiquarian Society	1813	Robert Blair, F.S.A., Hon. Sec., South Shields	2
,, ,,	M. of the Nat. Hist. Soc., St. James', Barras Bridge	1829	Richard Howse, Cur., Museum	1
Northwich, Ches.	The Brunner Free Public Library and M., Wilton Street	1885	F. A. Howe, Cur., Free Library	4
Oldham, Lanc.	Free Library M. and Art Gallery, Union Street	1885	T. W. Hand, Cur., 169, Windsor Road	3
Penrith, Cumb.	Penrith M. . . .	1883	J. Stuart, Librarian . .	4
Preston, Lanc. .	Free M., Cross Street .	1880	Rev. J. Shortt, Hon. Cur., Museum	2
Richmond, Yorks	M. of Naturalists' Field Club	1885	W. D. Benson, Hon. Cur.	4
Ripon, Yorks.	M. of the Naturalists' Club, Park Street	1883	B. M. Smith, Hon. Sec., 31, Prince's Road	4
Salford, Lanc.	Royal Free M. and Library, Peel Park	1850	Major John Plant, F.G.S., Cur.	1
Scarborough, Yorks.	M. of the Phil. and Arch. Society	1828	J. H. Phillips, Hon. Sec., 22, Albemarle Crescent	2
Sheffield, Yorks.	Public M., Weston Park .	1875	E. Howarth, F.R.A.S., Northumberland Road	1
Southport, Lanc.	Botanic Gardens M., Botanic Road	1876	W. Fish, Cur., Botanic Gardens	2
South Shields, Durham	Free Public M., Ocean Road	1876	L. Inkster, Sec., Public Library	3
Stalybridge, Lanc	Park M., Stamford Park	1875	W. Bardsley, Cur., Stamford Park	3
Stamford, Linc.	M. of Lit. and Sci. Institution, St. Peter's Hill	1842	H. Mitchell, Cur., The Institution	3
Stockport, Chesh.	Vernon Park M., Vernon Park	1860	John Tym, Cur., The Museum	2
Sunderland, Durham	Borough M.	1880	Robert Cameron, Cur., 4, St. Bede's Terrace	1
Tynemouth, Northumberlnd.	Free Library and M., Howard Street	1825	G. Tidy, Librarian . .	3
Wakefield, Yorks	M. of the Naturalists' Soc., Westgate	—	W. Rushforth, Hon. Sec., Horbury	4
Warrington, Lanc	Warrington M., Bold Street	1838	Charles Madeley, Cur., The Museum	1
Whitby, Yorks.	M. of the Lit. and Phil. Society, The Pier	1823	Martin Simpson, Cur., Stakesley Vale	2
York, Yorks.	M. of Yorkshire Phil. Soc.	—	H. M. Platnauer, F.G.S., Cur., Low Royd, St. Olave's Road, York.	1

Collections.		Supported by	No. of Visitors weekly.	Duplicates for Exchange.	Terms of Admission.	Remarks.
General.	Local.					
Arch., Anth. .	Arch., Anth.	Local Soc. and Fees	130	—	6d. & 3d.	—
Bot., Geo., Zoo., Arch., Anth.	Bot., Geo., Zoo.	Local Soc. and Fees	350	Geo., Zoo. Bot.	3d. daily	—
Industrial Art .	—	—	—	—	—	Loan from S. K.
Geo., Zoo. . .	—	Rates .	—	—	—	—
Geo. . . .	—	Rates .	—	—	Free daily	—
Geo., Zoo., Arch., Anth.	—	Rates .	400	—	,,	—
Geo., Zoo. . .	—	—	—	—	Small charge	—
Geo., Zoo., Bot., Arch.	Arch. . .	Local Society	10	—	2d. daily	—
Geo., Zoo., Bot., Arch., Anth.	Geo., Zoo., Bot., Arch., Anth.	Rates .	7,000	Given away	Free daily	—
Geo., Zoo., Bot., Arch., Anth.	—	Local Soc. and Fees	6,000 in Sumr.	—	3d. daily	—
Geo., Zoo., Bot., Arch., Anth.	—	Rates .	2,000	Geo. .	Free daily	—
Geo., Zoo., Bot., Arch., Anth.	Zoo. . .	Bot. Gardens Co.	2,500	—	4d. daily	With the gardens
Geo., Zoo., Arch.	Arch. . .	Rates .	1,000	Arch. .	Free daily	—
Geo., Bot. . .	Geo. . .	Endowment and Rate	—	—	,,	—
Geo., Bot., Zoo., Arch.	—	Local Society	50	—	6d. daily	—
Geo., Zoo., Art .	—	Rates .	600	—	Free daily	Loan from S. K.
Geo., Bot., Zoo., Arch., Anth.	Geo. . .	Rates .	1,800	Geo., Shells	,,	—
Geo., Zoo., Bot., Arch.	—	Rates .	200	—	Free one day	—
Geo., Zoo., Bot. .	—	Local Society	—	—	—	Open only on special occasions
Geo., Zoo., Bot., Arch., Anth., Art	Arch. . .	Rates .	600	Shells .	Free three days	Loan from S. K.
Geo., Zoo., Bot., Arch.	Geo., Zoo. .	Local Soc. and Fees	30	—	6d. daily	—
Geo., Zoo., Bot., Arch., Anth.	Geo., Arch.	Local Society	500	Geo. .	1s. daily	—

NOTE—FISHES.

Burbot off the Cleveland Coast.—On the 26th December, 1888, Mr. T. H. Nelson sent me a fish which he stated to be very rare at Redcar, and not known to the fishermen. I saw at once it was a Burbot (*Lota vulgaris*), and in this determination I was confirmed by Mr. Edward E. Prince, B.A., who has paid much attention to the British food-fishes, and to whom I showed it the same day. Mr. Nelson has since informed me that it was caught on the day he sent it off, at sea, about a mile off the Point of Huntcliff. The fishermen at Redcar told him they had never seen a fish like it before. It was caught on a mussel-bait. Being the first time I have heard of this—a river-fish—being caught at sea, I should be glad to learn if similar instances are known.—W. Denison Roebuck, Sunny Bank, Leeds, January 1st, 1889.

NOTES—ORNITHOLOGY.

Little Gull and Sclavonian Grebe near Scarborough.—I have had sent to me a Little Gull (*Larus minutus*) in immature plumage, shot at Gristhorpe Bay on December 18th last. It was killed during very thick fog. A Sclavonian Grebe (*Podiceps auritus*) was obtained on the shore near Scarborough on December 6th. It was killed by some boys in a pool.—Riley Fortune, Harrogate, Jan. 10th.

Pallas' Sand-Grouse in Cleveland.—Two very fine examples of Sand-Grouse (*Syrrhaptes paradoxus*), male and female, were shot on the Kirkleatham Estate, near Redcar, about the 13th Nov. Both birds were in good condition and weighed a little over 10 oz. each. Their crops contained wheat and buckwheat. —T. H. Nelson, Apsley House, Redcar, 31st Dec. 1888.

Crossbills in Nidderdale.—Mr. J. Charlton, Pateley Bridge, told me that he saw six Crossbills (*Loxia curvirostra*) in Harefield Wood, the second week in July. A few days after he saw a number more. This, I think, is the first record for summer. They are seen almost every winter in Nidderdale, flying from one side of the valley to the other, to the larch woods.—James Ingleby, Eavestone, near Ripon, Sep. 15th, 1888.

Notes on Nesting-Sites of the Missel Thrush.—In reference to Messrs. Butterfield's and Lees' notes on the unusual nesting-site of the Missel Thrush (*Turdus viscivorus*), I think it is a not uncommon habit and does not arise from the superabundance of birds. They are not numerous in this part, but last year I found a Missel Thrush's nest on the ledge of a rock on Brimham Moor, with four eggs in, and there is no lack of trees around Brimham Rocks. I have seen Missel Thrushes' nests on the top of walls, one within 200 yds. off a clump of trees. I do not know where the protection is to a nest on the top of a wall or the face of rock.—James Ingleby, Eavestone, Sep. 15th, 1888.

Crossbills in the Lake Counties.—I was pleased to see the note of my friend Mr. Slater, on the Crossbill. If I infer the locality correctly, it is one in which Crossbills nested many years ago. I do not think that Crossbills are ever entirely absent from the fir-woods of the North-West of England, but their appearances in large numbers occur only at considerable intervals. Thus, the seasons 1838-9 and 1855-6 were remarkable for the abundance of *Loxia curvirostra* in the Lake counties; and the year 1887-8 inclusive has proved prolific in the same way. From Grange, Barrow, Millom, Kendal, Milnthorpe, Appleby, and Penrith the same reports reached me; had I cared to make special inquiries, I should have heard of them in many other places. The most interesting fact in *this* visitation is that brought to light by my young friend, Mr. Edward Tandy, of Penrith, who dissected a number of these finches, and obtained an adult female in red plumage, the red being as bright as in an ordinary male. Mr. Tandy also examined the mandibles, and came to the same conclusion as Mr. Slater, which I can thoroughly endorse from my own experience.—H. A. Macpherson, Carlisle, 2nd January, 1889.

BRAITHWAITE'S BRITISH MOSS-FLORA.

British Moss-Flora. By R. Braithwaite, M.D., F.L.S., etc. Vol. ii, pt. xi.

After a very long interval (Part 10 was issued in June 1887) we have again the pleasure of welcoming another instalment of this important publication—one which in all respects keeps up to the high standard attained from the very first issue. The present number commences a new volume (Vol. ii), and contains the first portion of the Grimmiaceæ, with descriptions and plates of some forty-four species. The author has, as we think wisely, followed Müller, Mitten, and Lindberg in uniting *Racomitrium* with *Grimmia*, as the linear crenulate leaf-cells, which have always been considered as the chief distinguishing character of the former, are not infrequently found in many species of the latter. The genus *Grimmia* is divided by the learned author into four sections, viz.:—

1—*Schistidium*, containing the usual three species.

2—*Eu-Grimmia*, 22 species. In this section *G. incurva* Schwaeg. (1816) is restored as the original name for what has been usually called *G. contorta*; *G. torquata* Hornsch. replaces the more recent specific name *torta*; *funalis* of Schwaegrichten (1811) replaces *spiralis* of Wilson's Bry. Brit.; whilst the *funalis* of Bry. Eur. = *Schultzii* of Bry. Brit., is referred to an older name of *decipiens*, so named by Schultz under *Trichostomum* (1817); *Donii* is very properly substituted for *Doniana*; *Ungeri* (1865) Juratz. becomes *alpestris* Schleich. (1827); *commutata* Hueb. is referred to *ovata* of Web. and Mohr., and the *ovata* of most modern authors is the *ovalis* of Hed. (1792), and is so referred; *Racomitrium sudeticum*, Bry. Eur. and Bry. Brit., takes its place here as *Gr. microcarpa* (Gmel.) Lindb.; *leucophæa* becomes *campestris* Bruch, MSS., 1820.

In Section 3, *Dryptodon*, we have *G. atrata*, *unicolor*, *elliptica* (Turn.) Arn. = (*Rac. ellipticum*, Bry. Eur. et Brit.) and *patens*.

Section 4, called *Trichostomum* Hed., includes the remaining species of *Racomitrium*; *R. protensum* becomes *G. aquatica* (Brid.) 1798? Müll.; *R. heterostichum* var. *gracilescens* becomes *G. obtusa* (Sm.) 1816, var. *β alopecurum* becomes *G. affinis* (Schleich.) Lindb.; *R. microcarpon* becomes *G. ramulosa* Lindb.—a doubtful native; this seems a departure from the author's usual plan of adopting the oldest name; *R. lanuginosum* becomes *G. hypnoides* L. (Sp. Plant. 1753).

Coscinodon cribrosus Hedw., Coniston, 1867, Staveley near Kendal (Binstead, 1886), and *Glyphomitrium Daviesii* follow in order, whilst *Ptychomitrium polyphyllum* Auct. is referred to *Glyphomitrium* under same specific name, and *Campylostelium saxicola* is included as *Gl. saxicola*. *Anœctangium* Hed., 1801, is adopted as a generic

name for the two species of *Zygodon* Auct., viz., *lapponicum* and *Mougeotii*. We here indicate the chief changes in nomenclature without expressing any opinion as to the advisability of them. At the same time we must say that with most of them we entirely agree, though for a time they may cause some little confusion amongst students, but the same might have been said of Bry. Eur., and of Wilson's Bry. Brit., when first issued. Of the letter-press, descriptions, synonymy, and plates we can only accord them unqualified praise, as being everything that could be desired.—C. P. H.

NOTES—MAMMALIA.

Scarcity of Lesser Horse-shoe Bat in Nidderdale.—In March last I went to Ned Hole to see if there were any Bats of the Lesser Horse-shoe species (*Rhinolophus hipposideros*) and saw three suspended from the roof. There has been a great number taken at one time or another. There is a stock left; some were in the rocks to breed from or they would have been exterminated.—JAMES INGLEBY, Eavestone, Sep. 15th, 1888.

Wild Cherry Stones used as Food by the Long-tailed Field-mouse.—Having found occasion to visit the principal hamlet in my parish some three weeks ago, instead of coming home by the road as usual, I diverged in such a direction as to take me along a moor bank, and above a wood which clothes some part of it, my path lying 750 ft. or so above the sea. As I was threading my way between the sparse growth of ling which partly covered the bank, my attention was attracted by a group of whitish objects of somewhat oval form, which were well thrown up to view, inasmuch as they lay mainly on the black soil of the bank in an interspace between the neighbouring tufts of moor growth. Taking some of them up, I found they were the stones of the small black wild-cherry, or gean, several trees of which kind have grown in the vicinity as long as I have known it. These had all been gnawed with sharp teeth at the germ-end, so as to admit of the extraction of the kernel. Hard and thick as the stones were the trouble and toil of dealing with them thus must have been very great. I counted over 140 of these stones, and had no doubt I could have added largely still to that number if I had had time to hunt up those that had been carried down the slope by little streamlets in wet weather. Just above the main group was a mouse-hole, which I had no doubt gave admission to the domicile of a Long-tailed Field-mouse (*Mus sylvaticus*). The nearest cherry-tree stood a long forty yards away. Probably the gathering and bringing home of only the stones I saw had cost the little collectors not less than five miles of going and coming, and that over and above the work of getting through the stony shell which sheltered the minute particle of food comprised in the kernel. But the length of the journeys taken, and the apparently unlikely places to which these little creatures, I suppose in the quest for food, actually push their advances, have long seemed to me worth a moment's notice. There is a ridge of over a thousand feet high lying between one of my chapels-of-ease and my residence. I have seen the traces of the Long-tailed Field-mouse, on the highest part of the ridge, winter after winter, when the snow was in a fitting state to receive and record the impressions made by their feet and tail. But I have not noted the tracks of the other mice, or voles, in the same way. These occur with us, but much more sparingly; though I have occasionally caught a short-tailed mouse (*Arvicola agrestis*) in a trap set in my cellar. As to their long-tailed brethren, scores of them in heavy winters have been caught under the same circumstances. Adjoining my garden on the east is a pasture-field. In it I counted, last year, thirty-one small clumps of crocuses in bloom, all of them resulting from the plundering propensities of the long-tails. They are very beautiful, but very mischievous; and where the gamekeeper and the gun-licensed bird-butcher work their sweet will on kestrel and hawk, owl, weasel and 'clubster,' t is a case of paradise for the mice as compared with what it was some thirty-five or forty years ago.—J. C. ATKINSON, Danby-in-Cleveland, Jan. 5th, 1889.

Naturalist,

A FEW NOTES ON THE FOOD AND HABITS OF SLUGS AND SNAILS.

W. A. GAIN, M.C.S.,

Tuxford near Newark, Nottinghamshire.

At present I am feeding a number of colonies of slugs and snails, taking notes of their food and habits, and I have noted a few rather interesting facts.

I find *Amalia gagates* takes eighty-three per cent. of the different kinds of food offered. This is nearly equalled by *A. marginata*. *A. gagates* is very hardy, breeds freely in confinement, and lives buried in the earth except when feeding. One would expect this slug to be plentiful and universally distributed, but such is not the case.

Limax arborum refuses foliage of all kinds; it will eat the stalks of lettuce and cabbage but not the leaves; these, with the exception of *cooked* potatoes and onions, are the only foods I have yet succeeded in getting it to take. As it refuses the mosses, lichens, and fungi growing on wood, as well as insects, I am at a loss to account for its habit of ascending trees.

Limax flavus takes the foliage of holly only; its chief food appears to be fungi; it also eats the stalks of cabbage and lettuce, potato (tubers) raw and cooked, turnips white and swede, and other roots, and fruits; cream is decidedly its favourite food, which it will get if not well protected in the cellars which it frequents. It is said to eat meat, but this appears to be a mistake.

Since writing the above, my examples of this species have developed a liking for foliage in a small degree, having taken, during the last three weeks, bean, bryony (*Bryonia dioica*), *Campanula latifolia*, two species of spurge, pea, and the common ragwort.

Limax maximus is a very dainty feeder, preferring fungi to all other foods, and seems to be harmless in the garden. Cannibalism occurred with this species. I found one of my three examples two-thirds eaten, the tail left clean cut off, reminding one of that portion of a fish on a fishmonger's stall; that this was not through starvation was proved by the fact that during the night a large meal of *Boletus edulis* had been eaten, some part of which remained; on two other occasions I have found the unfortunate third slug, deprived of its slime and a portion of its skin, in a dying condition.

Limax agrestis took forty-seven per cent. of the articles of food offered, a much less proportion than I expected.

Feb. 1889.

Of the *Arions* I find *A. ater* by far the most greedy feeder, taking seventy-two per cent. of the foods given it; it is also occasionally guilty of cannibalism, the larger captives gnawing off the skin of the smaller. *A. hortensis* is rather sickly in confinement and very frequent additions are required to keep the colonies up to their original numbers; this species took sixty per cent. of the foods offered. *A. bourguignati* ate exactly one-half of the foods given; this slug thrives and breeds freely in confinement.

Some of the slugs can sustain long fasts without any apparent inconvenience. *Limax arborum* has remained without eating for five weeks, though food which it will take has been offered, and *L. flavus* has fasted for nearly as long. One of the latter deposited sixteen eggs beneath a stone placed in its cage; these are seven millimetres in length, oval, with a small point at each end as if they had been connected by a filament which had been broken; they are white, and when first seen were as transparent and bright as a drop of water. The eggs were deposited on July 19th, and about half hatched on the 15th of August; the young, of a pale-yellow colour and almost transparent, attained a length of 11 mm. when fully extended.

Limax arborum has a curious habit of excavating a grave-like trench its own length, with perpendicular sides about an inch in depth, in which it lies; either the original excavator or his companion has occupied the trench on two occasions subsequent to its formation. On examination I have failed to discover eggs either in the trench or in the surrounding earth.

Among the *Helices* experimented with, *H. arbustorum* is by far the most voracious, taking sixty-one per cent. of the foods given, and eating largely; of those neglected only two were taken by any other *Helix* among those experimented with.

Helix nemoralis and *H. hortensis* agree in their choice of foods in ninety-one cases out of a hundred. Taking this fact with the general resemblance of the two species it has occurred to me that perhaps we have here a case of comparatively recent development of two species from an original ancestor, or of one from the other. After three years' trial I have failed to get these two species to breed together. Though I have succeeded in breeding both, they obstinately refuse to cross.

A fine example of *Arion subfuscus*, received from Mr. Roebuck on the 27th August, deposited, Sept. 5th, about thirty eggs on the surface of the earth, glued together in a mass, each egg $2\frac{1}{2}$ mm. in diameter, milky-white and translucent; these became yellowish in a week or ten days. On the 23rd September this slug deposited a second cluster

of about seventy eggs within half-an-inch of the first; the animal had been isolated. It is probable that a single impregnation, which generally takes place in June or July, is sufficient to fertilise two, or perhaps more, batches of eggs deposited at intervals during the period the animals are active.

This explains a circumstance which has hitherto greatly puzzled me. I will first give the life of a *Helix aspersa*, from the egg to its death, presumably from old age.

Some eggs were accidentally introduced with earth placed in a flower-pot in which I kept some *H. cantiana*; the eggs hatched about August 1882. Three attained a diameter of three-eighths of an inch before winter, and one lived through the winter, fed on colt's-foot and cabbage. On the 5th October, 1883, it was just one inch in diameter, lip not formed, though there was a slight thickening of the rim of the shell. July 1884—shell finished; diameter, including a very well finished lip, one inch and an eighth. May 3rd, 1885—left winter-quarters and became active; soon after, I introduced a companion with which I saw it in company on August 5th. On the 9th it deposited eggs in the soil; shell nearly covered the whole day. September 10th—some small shells beneath the surface. On the 17th the young were feeding; on the 24th two of the clutch had increased in size, the remainder died off. In the middle of May 1886 the largest of the young had attained a size of eleven-sixteenths of an inch. On the 13th October, 1887, the old snail was found dead, having lived five years and two months.

The circumstance to which I alluded is this:—Soon after the eggs were hatched in September 1885, I removed the companion which I had introduced, leaving the snail with a *H. pomatia*, some *H. nemoralis*, etc. Early the following summer a large brood appeared, which I hoped were a cross between *H. aspersa* and *H. pomatia*, and of course I watched them with great interest—only to find they were pure *H. aspersa*. Now I have no doubt these were the product of the first conjunction which I witnessed, but whether the eggs were deposited the following summer, or remained unhatched during the winter, or hatched and remained beneath the soil, cannot now be determined. That the last-named might have occurred is probable, as very small *Helices*, etc., are to be found hybernating plentifully under leaves in woods.

In the summer of 1885 I received four full-grown examples of *H. pomatia*. Saw a pair in copulation on 15th July. On the 6th of August I found the young, about the size of peas, an inch below the surface of the sandy soil placed in a moderately large box, fitted with a glazed cover, in which the animals were kept. On the 17th

they had not appeared on the surface, and could have taken no food, but they had increased from barely 8 m.m. in diameter to nearly 9 mm. These probably died during the winter, though it is reasonable to suppose they *might* have lived through it. In the following August (18th) I found young and eggs—the latter hatched on the 25th, and on 21st September the young shells measured from 9·5 to 30 mm. in diameter. From Oct. 10th, 1885, to Jan. 19th, 1886, the box was placed in the garden, as I doubted whether the animals would form solid epiphragms if kept within doors. I now know that this course was unnecessary. When removed to the house, three of the *H. pomatia* were visible—two above the surface with hard white chalky epiphragms just *within* the mouth of the shell, and one, partly buried, mouth downwards, had a thin, bulging, slightly-flexible epiphragm moulded to the irregular surface of the hollow in which the shell was partially buried. All had within a quantity of fluid resembling fine chalk mixed into a thin paste with water. The dart of those dissected was too fragile for preservation, consisting of a tender transparent material, alternating with opaque white portions. The following winter they passed within the house, hybernating among leaves placed in the box—one, mouth upwards, with a firm convex epiphragm, the edge *flush* with the mouth of the shell; the other, on its side, had cast the first epiphragm and formed another—thin, tumid, and irregular.

I have noticed the noise made by this species when feeding; the crunching sound as they munch the crisp lettuce-leaves can be heard at some distance from their box.

I should like to record a curious circumstance which occurred in 1883. I had found three immature examples of *H. nemoralis* with very transparent shells of a lilac colour. I fed them on coltsfoot and nettles till they came to maturity, and when, after pouring boiling-water on them, I extracted the animals, I found them of a bright yellow colour, except the brown tips of the tails, and the heads, which were nearly white.

As illustrating the very small changes which may influence the abundance or scarcity of a snail in any locality, I may mention that in 1883 I discovered a colony of *H. sericea* occupying a portion of a hedge-bottom twenty yards in length; it was by far the most plentiful snail in this part, associated with *H. nemoralis*, *H. hortensis*, *H. hispida*, *H. rotundata*, *Z. cellarius*, *Z. nitidulus* and its var. *helmii*, and *Cochlocopa lubrica*. All the other species extended beyond the twenty-yards' limit, but very few *H. sericea* were found outside, and I have never found more than one or two at a time in any other

part of the district, and only in one other locality. Up to last year I have been in the habit of going and taking as many as I wanted just when required. Then the hedge was trimmed, but not excessively, and the bottom does not appear to have been interfered with. But though the species is still to be found in its old quarters, a long and careful search is required to obtain even half-a-dozen examples. Whether the snails will die out or again become plentiful remains to be seen.

Having been engaged in carefully noting the plants, etc., eaten and rejected by different species of slugs, *Helices*, etc., I find that these animals are fully on the feed only during the months June, July, and August; they certainly take food before and after the time specified, but in such a fitful kind of way that I consider all negative results obtained at these times as valueless.

As since writing the above I have received a letter asking for particulars of my method of keeping slugs and snails for prolonged observation, and it occurs to me that perhaps a few hints as to the plan I have found most convenient might be of use to others desirous of making similar observations. I take a common flower-pot, put in a few pieces of broken pottery for drainage, and half fill with light garden mould; then put in a few dead leaves to cover about a third of the surface, and flat stones—pieces of roofing-slate are the best—to cover another third, leaving the remaining surface bare. For slugs and all except the smaller *Helices*, the pots should not be less than seven or eight inches across the top. These pots should stand in saucers and be kept well watered. When rearing the young, I sink a small bottle in the earth to contain water for the purpose of keeping the food fresh. When the food is changed frequently, as is the case when experimenting on the diet of the various species, the bottle is unnecessary. Over the pot I place a square of fine perforated zinc, with the corners bent down to keep it in place, and a stone on the top to keep it steady. I have a couple of boxes covered with glazed frames for lids, in which to keep *H. pomatia* and a few foreign things.

NOTE—MAMMALIA.

Whiskered Bat in Derbyshire.—On New Year's Day I took a male Whiskered Bat (*Vespertilio mystacinus*) in Lathkill Dale, near Bakewell. It was hanging, asleep, in a damp place, its fur being quite wet, in a tunnel connected with some disused lead-mines. The bats of this species which I have taken in the copper workings at Alderley Edge, Cheshire, have frequently been a hundred yards or more from the mouth of the tunnel, but the Lathkill example was within a few feet of the entrance, sleeping in broad daylight, in fact I found it before I had lighted my candle.—CHAS. OLDHAM, Sale, Jan. 3rd, 1889.

NOTES—COLEOPTERA.

Aphodius tessulatus at Huddersfield.—It may be of interest to record that we have found this somewhat rare beetle in some numbers in cows' dung in the fields near here, but it is very local.—FLORENCE MOSLEY, Beaumont Park Museum, Huddersfield, Jan. 2nd, 1889.

Coleoptera at Ingleton.—During a few hours spent in the delightful neighbourhood of Ingleton during last June, when engaged in arranging an excursion for the Liverpool Naturalists' Field Club, I found the following beetles—the record of which may be useful as a contribution towards the insect fauna of the West Riding of Yorkshire.

Bembidium monticola
,, *tibiale*
Nebria gyllenhalii
Homalota currax
Stenus guttula
Geodromicus nigrita
Trogophlæus arcuatus
} Among shingle on the bank of the River Doe.

Eusphalerum primulæ
Sericosomus brunneus
Dolopius marginatus
Telephorus nigricans
,, *hæmorrhoidalis*
,, *pallidus*
Strophosomus coryli
} Beaten from shrubs, etc., in the woods.

Corymbites pectinicornis, on heather.

Haltica ericeti, abundant on heather on the (so called) Cuckoo Island. —JOHN W. ELLIS, 3, Brougham Terrace, Liverpool, Dec. 23rd, 1888.

Coleoptera in Kingsdale, Mid West Yorkshire.—As a further contribution towards the fauna of the West Riding of Yorkshire, I send you the following list (extracted from my diary) of the very few coleoptera I was able to obtain by sweeping during a walk, on September 29th, 1886, from Dent to Ingleton, by way of Kingsdale.

Pterostichus strenuus.
Philonthus decorus
Tachinus collaris
Tachyporus tersus
Stenus impressus
Stenus brunnipes
Stenus nitidiusculus
Stenus picipes
Lathrimæum unicolor
Liosomus ovatulus
Sciaphilus muricatus
Chrysomela staphylæa
Phædon tumidulum.

—JOHN W. ELLIS, 3, Brougham Terrace, Liverpool, Dec. 23rd, 1888.

NOTE—ARACHNIDA.

Parasites on the Water Vole.—On the 28th October last, my cat brought in a fine adult male *Arvicola amphibia* just killed and warm. While handling it a large number of small objects were noticed to leave the skin and wander on the fur as if wishful to escape. A lens showed them to be acari. Some were killed with hot water and sent to Dr. C. F. George, of Kirton-in-Lindsey. He considers the mite to be a *Lælaps*—possibly *Lælaps hilaris* Koch, but living specimens are wanted to clear up the question. In the January number of 'Science Gossip' (p. 6) he describes and figures them as new, under the name of *Lælaps arvolica*. A bit of moistened blotting-paper should be put with such things when they are sent. They then often keep alive a long time.—JAS. EARDLEY MASON, The Sycamores, Alford, January 2nd, 1889.

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GEOLOGY AND PALÆONTOLOGY, 1887.

We are again indebted to Messrs. S. A. Adamson, F.G.S., and Alfred Harker, M.A., F.G.S., for the geological bibliography; to both gentlemen for contributing the titles and abstracts, and to the former for arranging and preparing the material for the printer. Titles are cited of such papers published in previous years as have escaped notice in former instalments of the bibliography, including papers which have appeared in *The Naturalist* itself.

Anon. [not signed]. **East Yorkshire.**

A Post-glacial Forest in Hull [This section is in a brick-yard on the west of Hull, about a mile from the Humber, and one-and-half miles from the river Hull; section—warp, 12 ft. or 13 ft.; then a forest bed, the surface of which is a greenish sandy clay, with pebbles and stones; about 1 ft. below comes 8 ft. of red clay, with pebbles of stone, chalk, etc.; below this, quicksand; roots of the trees standing where they grew: they are oak and Scotch fir, mostly the latter]. Sci. Goss., Sep. 1886, p. 214.

Anon. [Editors of Naturalist.] **West Yorkshire.**

[**The Clayton Fossil** (*Stigmaria ficoides*) is now at Owens College, Manchester]. Nat., Nov. 1886, p. 348.

Anon. [not signed]. **Yorkshire.**

Formation of a Yorkshire Boulder Committee. Nat., Jan. 1887, pp. 17-18; Nat. World, Feb. 1887, iv. 31-32.

Anon. [not signed]. **West Yorkshire.**

Yorkshire Waterfalls and Caves: [a brief illustrated account of Scaleber Force near Settle, Thornton Force, Wethercote, Easegill Force, and Yordas and Ingleborough Caves]. Yorkshire Notes and Queries, April 1887, Pt. vii. pp. 133-138.

Anon. [Editorial]. **Yorkshire generally, Durham.**

[**Yorkshire Boulder Committee**; brief note on its proceedings and work]. Nat., July 1887, p. 224.

Anon. [not signed]. **Durham.**

Dedication of a Boulder Stone [on Jubilee Day; a large boulder in the village of Sadberge dedicated with fitting honours]. Nat., Aug. 1887, p. 244.

Anon. [not signed]. **Durham.**

A Jubilee Boulder [an extract from Dr. Crosskey's report upon 'Erratic Blocks' to the British Association, with a brief account of the proceedings respecting a boulder in a Durham village upon Jubilee Day]. Sci. Goss., Oct. 1887, p. 239.

S. A. Adamson. **South Yorkshire.**

Yorkshire and Nottinghamshire Naturalists at Anston Stones [April 30th, 1885; the district explored was in the neighbourhood of Kiveton Park and Shire Oaks Collieries, both of which were visited; at Harthill, the quicksands at the base of the Permian formation examined; at Whitwell, in a disused quarry of the Magnesian Limestone, some good specimens of the peculiar-toothed structure found in this rock obtained; the long-renowned Magnesian Limestone quarries of Steetly also visited]. Nat., June 1885, pp. 261-262.

S. A. Adamson. **West Yorkshire.**

The Yorkshire Naturalists' Union at Boroughbridge [May 25th, 1885; in the erratic drift on the way to Boroughbridge were observed boulders of mountain limestone, chert and galliard with striæ; whilst the local drift contained fragments of Permian rocks and New Red Sandstone; the gritstone monoliths, known as the Devil's Arrows, at Roecliffe, also visited]. Nat., July 1885, p. 281.

S. A. Adamson. **East Yorkshire.**

The Yorkshire Naturalists' Union at Pocklington [June 24th, 1885; outcrops of the Red Chalk noted in ascending the hill near Warter Priory; in the Warter brickyard, a section showing—although somewhat obscured by slips—the Grey and White Chalk, below which the Red Chalk, and again beneath Lower Lias beds of the zone of *Ammonites bucklandi*]. Nat., Aug. 1885, pp. 308-309.

S. A. Adamson. **North-East Yorkshire.**

The Yorkshire Naturalists' Union at Whitby [Aug. 3rd, 1885; the fault near Whitby Pier pointed out, having a downthrow to the west of about 150 ft.; in the drift some stratified patches of compact ferruginous sand noted, and immediately underlying was a breccia of angular and sub-angular fragments chiefly derived from the Lias; an outcrop of the 'Dogger' in the Sandsend Road was examined; proceeding along the base of the cliffs to Kettleness the beds of the zones of *Ammonites communis*, *A. serpentinus*, *A. annulatus*, and *A. spinatus* examined]. Nat., Oct. 1885, pp. 349-350.

S. A. Adamson. **West Yorkshire.**

The Yorkshire Naturalists' Union at Blubberhouses [Sept. 26th, 1885; evidence of the anticlinal, which is a continuation of the one from Skipton, seen in the gorge on the Kex Gill Road; the characteristic weathering of the gritstones noted and described; in a small quarry, a bed of calcareous grit overlaid by black micaceous shale, in the latter some scales of *Acrolepis* obtained; the escarpment of the Kinder Scout Grits above Redshaw Gill visited and similarity between these rocks and those at Brimham observed]. Nat., Nov. 1885, p. 381.

S. A. Adamson. **South Yorkshire.**

The Yorkshire Naturalists' Union at Askern [May 20th, 1886; quarries of Lower Magnesian Limestone near Barnsdale, and of Upper Magnesian Limestone near Sutton visited]. Nat., June 1886, p. 190.

S. A. Adamson and E. M. Cole. **East Yorkshire.**

The Yorkshire Naturalists' Union at Flamborough Head [June 14th, 1886; fine section near Bridlington seen showing the upper and lower purple and basement clays; further on a bed of inter-glacial clay and those beds of sand and gravel and laminated clay known as the 'Sewerby Gravels' noted; the ancient chalk cliff running inland from the coast pointed out; at Selwick's Bay, a mass of blue Speeton Clay, with characteristic fossils, was seen stranded on the top of the chalk; along the coast the effects of the erosion of the chalk cliffs by the waves were observed; near Scale Nab, Bempton, the extraordinary contortions of the chalk in the cliffs were pointed out]. Nat., July 1886, pp. 217-218, with list of fossils obtained.

S. A. Adamson. **West Yorkshire.**

Remarkable Geological Discovery at Clayton [near Bradford; preliminary notes upon the first specimen of *Stigmaria ficoides* found in Messrs. Murgatroyd's quarry]. Nat., Aug. 1886, p. 252.

S. A. Adamson. **West Yorkshire.**

The Yorkshire Naturalists' Union in Upper Nidderdale [July 17th, 1886; near Lofthouse the river Nidd observed issuing from its underground course, into which it entered at Goydon Pot Hole about two miles above; the Blayshaw Gill investigated, a fine example of a fault seen, good sections of encrinital limestone and black shales examined; the ravine of How Stean visited, with Prof. Green's observations thereon]. Nat., Aug. 1886, 254-255.

Naturalist,

S. A. ADAMSON. **North-East Yorkshire.**

The Yorkshire Naturalists' Union at Pickering [August 2nd, 1886; in walking from Levisham to Saltersgate, sections of the Kelloways Rock, Oxford Clay and Lower Calcareous Grit noted, with remarks on denudation; the Hole of Horcum, an inlier of the Kelloways Rock visited and described; general view of the Tabular Hills obtained from this point; the quarries in the Middle Oolites near Pickering visited, and list of fossils obtained given]. Nat., Sept. 1886, pp. 274-275.

S. A. ADAMSON. **West Yorkshire.**

The Fossil Tree at Clayton [near Bradford: detailed measurements of the roots of the first specimen of *Stigmaria ficoides* discovered in Messrs. Murgatroyd's quarry]. Nat., Sep. 1886, p. 284.

S. A. ADAMSON. **West Yorkshire.**

Discovery of Carboniferous Vegetation at Bradford [details of the specimens of *Stigmaria ficoides* found in Darley Street, Bradford]. Nat., Oct. 1886, p. 309.

S. A. ADAMSON. **West Yorkshire.**

Discovery of the base of another large Fossil Tree [at Clayton near Bradford; details of the Stigmarian roots discovered in Messrs. Briggs and Shepherd's quarry]. Nat., Nov. 1886, p. 336.

S. A. ADAMSON. **West Yorkshire.**

The Hitchingstone, Keighley Moor [This celebrated stone, reported in 1874 to the British Association as an erratic, examined by the members of the Leeds Geological Association; conclusion arrived at—that it is not a true erratic, but that it is a portion of the strata of Rough Rock which originally covered these moors]. Nat., Nov. 1886, pp. 333-336.

S. A. ADAMSON. **West Yorkshire.**

Notes on the Discovery of a large Fossil Tree in the Lower Coal-measures at Clayton, near Bradford [see Nat. for 1886]. Brit. Assoc. Rep. for 1886, pp. 628-629.

S. A. ADAMSON. **West Yorkshire.**

Exposure of a Fault at Apperley [exposed in the alterations at the railway station, and the same as shown on the Geol. Survey Map as passing nearly S.W. by N.E. through Apperley Station to Buckstones]. Nat., Jan. 1887, p. 18.

S. A. ADAMSON. **West Yorkshire.**

Discovery of a Fossil Tree at Ilkley [brief account of the discovery of a large fossil tree in the 'Third Grits' of the Millstone Grit series]. Nat., March 1887, p. 71.

[S. A. ADAMSON, Hon. Sec.] **Yorkshire generally.**

The Yorkshire Boulder Committee's Schedule [reprinted in full, with list of the Committee]. Nat., May 1887, pp. 141-142.

S. A. ADAMSON. **North-East Yorkshire.**

Amongst the Yorkshire Oolites [account of a field-excursion from Malton to Settrington and North Grimston, also a visit to the Malton Museum]. Nat., June 1887, pp. 177-180.

S. A. ADAMSON. **West Yorkshire.**

On some Sections exposed in making the Skipton and Ilkley Railway [giving particulars of the several sections exposed in the cuttings, thirteen in number; also alluding to the Haw Bank, Skibeden, Draughton, Wheelam Rock, and Hambleton Quarries, with details of dip, etc.]. Proc. York. Geol. and Pol. Soc., vol. ix. Pt. iii. pp. 363-369; and Nat., July 1887, pp. 202-208.

S. A. ADAMSON. **North-East Yorkshire.**

The Yorkshire Naturalists' Union at Saltburn [30th May, 1887; zones of *Ammonites communis*, *A. serpentinus*, *A. annulatus*, *A. spinatus*, and *A. margaritatus* (upper part) examined; the ironstone at Port Mulgrave described; fossils obtained—*Pecten æquivalvis*, *Protocardium truncatum*, *Dentalium elongatum*, *Ammonites ferrugineus*, etc.]. Nat., July 1887, pp. 221-224.

S. A. ADAMSON. **North-East Yorkshire.**

Yorkshire Naturalists at Gormire Lake and Thirkleby Park [20th July, 1887; Hood Hill and Roulston Scar of the Hambleton Hills visited and stratification described; Gormire Lake and its vicinity investigated, and theories for the origin of the lake brought forward; fossils obtained—*Terebratula maxillata*, *Holectypus depressus*, *Belemnites abbreviatus*, *Gryphæa bilobata*, etc.]. Nat., Aug. 1887, pp. 239-241.

S. A. ADAMSON. **West Yorkshire.**

The Yorkshire Naturalists' Union at Sedbergh [1st August, 1887; the oldest stratified rocks in Yorkshire examined; the Lower Silurian, the Riggs, Frostrow Fells, Helm Knot, and Helm Gill visited; in the latter an exposure of the Coniston limestone seen, also black mica trap from the dykes in the vicinity; in the Rawthey valley good exposures noted of the Conglomerate or basement bed of the Carboniferous series; fossils obtained—*Graptolites* several species), *Orthoceratites*, *Trilobites*, *Orthis*, *Strophomena*, *Athyris*, *Favosites*, *Halysites*, *Encrinites*, etc.]. Nat., Sep. 1887, pp. 282-284.

S. A. A[DAMSON]. **Northern Counties generally.**

Geological Papers relating to the North of England, read at the Manchester Meeting of the British Association [enumerated]. Nat., Oct. 1887, pp. 292-294.

S. A. ADAMSON. **Yorkshire.**

Reports of Field Excursions [Malton—North Grimston quarries described, also the Malton Museum; Skipton and Ilkley Railway—general geology of this new railway given, including accounts of the Hambleton, Haw Bank, Skibeden and Wheelam Rock Quarries, the Craven anticlinals, and the Yoredale Rocks and Boulder Clay; Kettleness to Staithes—account of the geology along the coast; Leyburn—Keld Head Lead-mines with section, Lady Algitha Cave, and the Harmby Quarries described; Thirkleby and Gormire—general geology of district, including stratification of Hood Hill and Roulston Scar; Sedbergh—Account of geology from Sedbergh to Helm Gill; Ingleton (Dale Beck)—glacial drift of Ingleton described, also the Tow Scarr and Twistleton faults, the trap dykes of Ingleton and the Skirwith Quarries; Hatfield Chase—gravel-pit near Lindholme visited, also account of warping the land]. Trans. Leeds Geol. Assoc., Part 3 (1886-7), pp. 127-153.

MATTHEW BAILEY. **East Yorkshire.**

The Rocks at Flamborough [in Selwick's Bay, are called Adam and Eve]. Nat., Nov. 1886, p. 347.

J. E. BEDFORD. **Isle of Man.**

Notes on Flint-flake Implements found in the Isle of Man [giving details of some sections of gravel and sand on the hill-side opposite to Peel Castle]. Proc. Yorks. Geol. and Pol. Soc., vol. ix., Part iii. pp. 369-371.

J. E. BEDFORD. **Yorks., Derbysh., Lancs., Notts.**

Effects of Denudation [geology of Yorkshire from Holderness to Craven briefly described and the power of denudation in effecting great changes in the physical contour of the district; the Craven fault and the Ingleton coal-field also alluded to]. Proc. Leeds Geol. Assoc., Part 3 (1886-7), pp. 110-113.

J. F. BLAKE. **North East Yorkshire.**

On a New Specimen of Solaster Murchisoni from the Yorkshire Lias [this example of a polyradial starfish is from the Capricornus zone at Huntcliff]. Geol. Mag., Dec. 1887, dec. iii. vol. iv. pp. 529-531 and plate xv.

G. S. BOULGER. **Northumberland.**

Excursion to Northumberland [Account of an excursion of the Geologists' Association in August 1886; bibliography given]. Proc. Geol. Assoc., vol. ix. (1887), pp. 582-596.

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J. GILBERT BAKER, F.R.S., F.L.S., Royal Herbarium, Kew;

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BOOKS RECEIVED.

Abel Chapman—Bird-Life of the Borders, 8vo, cloth, 1889, pp. 286. [Gurney & Jackson, Publishers.
Alex. Somerville—Dredging off Portincross, Ayrshire, 8vo reprint, pp. 5, Jan. 1889. [Author.
T. Mellard Reade—Physical Theories of the Earth in Relation to Mountain Formation, 8vo reprint, pp. 6, Feb. 1889. [Author.
Yorkshire Geol. and Polytechnic Soc.—Proc. vol. 11, part 1, 1889. [The Society.
Nat. Hist. Trans. of Northumberland, Durham and Newcastle-upon-Tyne, Vol. 10, part 1, 1888. [Society.
The Selborne Mag., Vol. 2, Nos. 13, Jan., and 14, Feb. 1889. [Elliot Stock, Pub.
West American Scientist, Vol. 5, No. 3, Nov. 1888. [T. D. A. Cockerell.
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Manchester Geological Society—Trans., vol 20, parts 2 & 3, 1888-9. [The Society.
Revue Bryologique, 16e Année, 1889, No. 1. [M. T. Husnot, redacteur, Cahan.
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Journal of Conchology, vol. 6, No. 1, Jan. 1889. [Conchological Society.
Science Gossip, No. 290, for Feb. 1889. [Messrs. Chatto & Windus, Publishers.
The Midland Naturalist, No. 134, for Feb. 1889. [Birmingham Nat. Hist. Soc.
Research, monthly illust. journ. of science, vol. 1, No. 8, Feb. 1889. [A. N. Tate, Ed.
The Wesley Naturalist, No. 24, for Feb. 1889. [The Wesley Scientific Society.
The Young Naturalist, Part 110 for Feb. 1889. [Mr. John E. Robson, Editor.
The Zoologist, 3rd Series, Vol. 13, No. 146, Feb. 1889. [J. E. Harting, Editor.
Psyche: journ. of entom., vol. 5, No. 153, Jan. 1889. [Camb. Ent. Cl., U.S.A.

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Wanted.—Living examples of *Limax lævis* and *L. tenellus*. British Land and Freshwater Shells in exchange.—W. A. GAIN, Tuxford, Newark.

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YORKSHIRE NATURALISTS' UNION.—ENTOMOLOGICAL SECTION.—The President and Secretaries of the Section will be pleased to receive the names and addresses of those members specially interesting themselves in this branch. The object in view is to circulate a fairly complete list amongst the members of this section, and thereby to facilitate the exchange of information, and also, if sufficient encouragement is given, to publish (in the Annual Report of the Section) at the close of the season a list of Yorkshire Occurrences of Insects.

Address the President:—Mr. N. F. DOBRÉE, The New Walk, Beverley;

Or the Hon. Secretaries:—Mr. J. H. ROWNTREE, Westwood, Scarborough; Mr. W. E. BRADY, 1, Queen Street, Barnsley.

G. S. Boulger. **Derbyshire.**

The Geology of the South Derbyshire and East Leicestershire Coal-fields. Sections of Coal-Measures in East Derbyshire, South Derbyshire, and Leicestershire. Trans. Chesterfield Mid. Count. Inst., xv. pp. 327 et sequ., 1887.

G. S. Bragge. **Derbyshire.**

The Geology of the South Derbyshire and East Leicestershire Coal-fields. Trans. Chesterfield Mid. Count. Inst., xv. pp. 198 et sequ., 1886.

W. M. Briggs. **Westmorland.**

Geology. . . . A. Stratigraphy [*Phyllograptus typus* from the Skiddaw Slates]. Wesley Nat., April 1887, i. 50-51.

Charles Brownridge. **West Yorkshire.**

On the occurrence of Quartzite and other Boulders in the Lower Coal Measures at Wortley near Leeds [boulders obtained in the 'Black Bed' Pit of Messrs. Ingham & Sons; four described; the largest, a coarse gritstone embedded in the 'bend' or clayey shales overlying the coal; the three smallest are quartzites and were embedded in the 'Black Bed' coal itself; analyses of the quartzites by Prof. Bonney, F.R.S., are given]. Trans. Leeds Geol. Ass., Part 3, 1886-7, pp. 113-115. Sci. Goss., June 1887, p. 140. Proc. Yorks. Geol. and Pol. Soc., vol. ix. part iii. pp. 405-407.

William Cash. **West Yorkshire.**

Palæontology [illustrated by descriptions of fossil plants (*Lepidodendron selaginoides*, etc.) and mollusks (*Aviculopecten papyraceus*, etc.) from the Halifax Hard Bed Coal]. Wesley Nat., April 1887, i., 58-60.

William Cash. **West Yorkshire.**

Palæontology [*Calamostachys binneyana* Schimper, Halifax Hard Bed]. Wesley Nat., June 1887, i. 116.

William Cash. **West Yorkshire.**

On the Fossil Fructifications of the Yorkshire Coal Measures. No. 1. Calamostachys [Hard Bed or Ganister Coal described, also the order of superposition of the Ganister group; measured section of beds included between the Elland Flagrock and the Rough Rock given; typical section in Lower Coal Measures, Beacon Hill, Halifax, detailed at length; the genus Calamostachys fully discussed in detail; Bibliography of the subject annexed]. Proc. Yorks. Geol. and Pol. Soc., vol. ix. Part iii. (1887) pp. 435-439 with 8 plates.

S. Chadwick. **East Yorkshire.**

Asteracanthus ornatissimus in the Middle Oolites near Malton [the only authenticated specimen that has ever been found so low down in the Middle Oolites before in England]. Nat., April 1886, p. 102.

Wm. Cheetham. **Westmorland.**

A visit to Shap [route described, also the quarries at Wasdale Head; attention drawn to the inclusion of other rocks in this granite; dispersion of Shap boulders alluded to]. Trans. Leeds Geol. Assoc., Part 3 (1886-7), pp. 107-110.

J. E. Clark. **Cumberland.**

Slate Ripple Marks on Skiddaw [explained]. Nat. Hist. Journ., Sep. 15th, 1887, xi. 137.

Theo. D. A. Cockerell. **Northumberland, Derbyshire, Yorkshire, South Lancashire, Durham.**

Palæontological Notes from the British Museum Collections [Specimens of fossil Fishes (four), Mollusca (22), and Echinodermata (two species) noted, with localities]. Nat., March 1886, p. 81.

E. MAULE COLE. **North-East Yorkshire.**

The Yorkshire Naturalists' Union at Helmsley [4th August, 1884; at Sproxton Quarry the Coral Rag and Coralline Oolite examined; fossils obtained—*Thamnastræa*, *Thecosmilia*, *Cidaris florigemma*, *Trigonia*, *Lima*, *Chemnitzia*, etc.; the Middle Calcareous Grit at the 'Windy Pits' visited]. Nat., Sep. 1884, p. 41.

E. MAULE COLE. **East Yorkshire.**

The Yorkshire Naturalists' Union at Spurn Point [3rd September, 1884: from the shingle, specimens of encrinital limestone, gneiss, black Scandinavian flints, Liassic fossils, Silurian schist, granite, trap, etc., obtained]. Nat., Nov. 1884, p. 93.

E. M. COLE. **East Yorkshire.**

On the frequent occurrence of Whinstone Erratics at Flamborough [after giving details of a number of Whinstone Erratics in the immediate vicinity of Flamborough, discussing their probable origin, and the path by which they have travelled]. Nat., Oct. 1887, pp. 289-290.

E. MAULE COLE. **East Yorkshire.**

Note on Dry Valleys in the Chalk [admitting that glacial conditions were a vera causa in promoting the denudation of the Wolds, but still adhering to the opinion that the main agent is rainfall, acting not so much mechanically as chemically]. Proc. Yorks. Geol. and Pol. Soc., vol. ix. part iii (1887), pp. 339-343.

W. G. COLLINGWOOD. **Westmorland and Furness.**

On Lake-Basins of the Neighbourhood of Windermere [the following questions dealt with: 1. Problem of the conditions of Basin formation. 2. Minor basins, anticlinal. 3. Ditto, synclinal. 4. Compound Basins. 5. Analogy of structure in the Alps. 6. Structural relations of Windermere. 7. Laws conditioning the origin of Basins. 8. Basins in Faults. 9. Share of glacial action in the creation of Basins. References throughout to various localities in the Lake District]. Trans. Cumb. and Westm. Ass., No. 10 (1884-85), pp. 1-10, with woodcuts.

JOHN CORDEAUX. **East Yorkshire.**

The Spurn [notes of mammalian remains in Holderness gravels; and as to appearance of black flints in chalk boulders south of Hornsea, which boulders must therefore be of Norse origin]. Nat., Aug. 1884, pp. 1-8.

JOHN CORDEAUX. **Linc. N. and S.**

Lincolnshire [the geological strata of the county briefly reviewed and enumerated, with references to papers read before the Geological Society upon the Rhætic Beds, near Gainsborough; Glacial and Post Glacial Strata of Lincolnshire; Neocomian Strata, Lias and Oolite of Lincolnshire; Southern extension of the Hessle Boulder Clay, etc.; the Barnack Ragstone also described]. Nat., Jan. 1886, pp. 1-15.

H. W. CROSSKEY. **Yorkshire, Westmorland, etc.**

Fourteenth Report of the Committee, consisting of . . . [12 names] **. . . appointed for the purpose of recording . . . Erratic Blocks . . .** [notices of the boulders on limestone pedestals, near Kendal and Settle, and of the occurrence of Lake District boulders between Shiffnal and Tong]. Brit. Assoc. Rep. for 1886, pp. 223, 224.

J. R. DAKYNS and C. FOX-STRANGWAYS. **East Yorkshire.**

The Geology of the Country around Driffield. (Explanation of Quarter-Sheet, 94 N.W.;) (New Series, Sheet 64.) [The rocks of this area include the Middle and Upper Oolites and the Cretaceous, besides Glacial and Post-Glacial deposits; there is a chapter on the physical structure of the district, and an index]. Mem. Geol. Surv. England and Wales, 24 pp., London, 1886.

J. R. Dakyns, C. Fox-Strangways, and A. G. Cameron. **East Yorkshire.**

The Geology of the Country between York and Hull. (Explanation of Quarter-Sheets, 93 S.E., 94 S.W., and part of 86.) [The rocks composing this district include from the Bunter Sandstone to the Upper Chalk, the beds between the Oxford and Kimeridge Clays, however, being absent; there are also thick superficial deposits of varied character, both east and west of the Wolds; an appendix gives particulars of many well-sections; another a bibliography of the district; there is also an index]. Mem. Geol. Surv. England and Wales, 54 pp., London, 1886.

W. H. Dalton. **Nottinghamshire.**

The Collingham or Scarle Boring [giving details of this boring, which reaches a depth of 2,032 feet, touching the Coal Measure Shales]. Geol. Mag., Jan. 1887; dec. iii. vol. iv. p. 48.

J. W. Davis. **West Yorkshire.**

On the Exploration of the Raygill Fissure in Lothersdale, Yorkshire [reporting the progress of the excavation since 1883]. Brit. Assoc. Rep. for 1886, pp. 469-470.

W. Boyd Dawkins and M. Stirrup. **South Lancashire.**

Physiography and Geology [in Handbook of Manchester, prepared by the local committee for the members of the British Association at the Manchester Meeting, 1887, pp. 19-26; this is a short description of the physical features of the district and of the Carboniferous, Permian, and Triassic rocks and the Boulder-drift]. 12mo., Manchester 1887.

C. E. De Rance. **Cheshire.**

Twelfth Report of the Committee, consisting of . . . [20 names] . . . appointed for the purpose of investigating the Circulation of Underground Waters . . . [Details of boring through New Red Sandstone near Birkenhead]. Brit. Assoc. Rep. for 1886, p. 236.

C. E. De Rance. **Nottinghamshire, Lincolnshire.**

The Collingham or Scarle Boring [in reply to Mr. Dalton; the writer also states that an artesian boring at Gainsborough has penetrated the Keuper Marls and reached the Sandstone at a depth of 725 ft.]. Geol. Mag., March 1887; dec. iii. vol. iv. p. 140.

N. F. Dobrée. **East Yorkshire.**

Mammalian Remains [Rhinoceros and Elephant] at Kelsey Hill, Holderness. Nat., Nov. 1885, p. 378.

N. F. Dobrée. **Lincolnshire.**

Large Ammonite at Hessle [22 in. diam. by 65 circumf.]. Nat., Nov. 1885, p. 378.

[Miss] J. Donald. **Yorksh., Westmorld., Cumberld., Northumberld.**

Notes upon some Carboniferous Species of Murchisonia in our Public Museums [describing and figuring a number of specimens from Bolland, Settle, Kendal, King Water, etc., including four new species named *M. pyramidata*, *zonata*, *spherulata*, and *tenuissima*]. Quart. Journ. Geol. Soc., vol. xliii. pp. 617-631 and plate xxiv.

[Editor of Science Gossip]. **? Lanc.**

The Meteorite at Little Lever [the so-called meteorite, reported in a Manchester paper, is nothing but a fragment of ordinary mottled sandstone shale]. Sci. Goss., March 1887, p. 70.

D. Embleton. **Durham, Westmorld., North Yorkshire, North Lincolnshire.**

A Catalogue of the Place-names in Teesdale [many of which are founded on the physical features of the district]. Nat. Hist. Trans. of North., Durh., and Newc., vol. ix., part i (1887), pp. i-xviii and 1-223.

L. FLETCHER. **Cheshire.**

On Crystals of Cuprite and Cerussite resulting from the slow alterations of buried coins [the crystals, associated with the usual blue and green carbonates of copper, were found on Roman coins in a soil of disintegrated red sandstone and clay at Chester]. Mineralog. Mag., vol. vii. pp. 187-188.

W. FLIGHT. **North East Yorkshire.**

A Chapter in the History of Meteorites [giving description of the meteorite, weighing $3\frac{1}{2}$ lb., which fell at Pennyman's Siding, Middlesbrough, March 14th, 1881; it is an olivine-bronzite rock with 9 per cent. of nickeliferous iron: pp. 218, 219]. 8vo, xii. + 221 pp., London, 1887.

C. FOX-STRANGWAYS, A. G. CAMERON, and G. BARROW. **North Yorkshire.**

The Geology of the Country around Northallerton and Thirsk (Explanation of Quarter-sheets 96 N.W. and 96 S.W.; New Series, Sheets 42 and 52) [dealing with the Carboniferous, Permian, Trias, Lias, and Lower, Middle, and Upper Oolites, the first two being but little developed in the area of the maps; there is also a chapter on Physical Structure, Faults, etc., besides one on the Superficial Deposits; also two appendices—one giving well-sections, another bibliographical—and an index]. Mem. Geol. Surv. England and Wales, 75 pp., London, 1886.

R. GASCOYNE. **Yorkshire, Notts.**

On the Eastern Extension of the Leeds and Nottingham Coal-field. Trans. Midl. Inst. of Mining, Civ., and Mech. Eng., vol. x. pp. 250 et sequ.

J. G. GOODCHILD. **Cumberland, Westmorland, Yorkshire.**

Ice Work in Edenside and some of the adjoining parts of North Western England [a valuable summary of lectures upon glacial geology given 1880-1887, and, after the introduction, dealing with ice and glaciation, the origin of our drift deposits, the results of ice action upon the surface, post-glacial denudation; illustrated by diagrams and woodcuts]. Trans. Cumb. and Westm. Assoc., No. xii (1886-87, pub. 1887), pp. 111-167.

A. H. GREEN, C. LE NEVE FOSTER, and J. R. DAKYNS. **Derbyshire.**

The Geology of the Carboniferous Limestone, Yoredale Rocks, and Millstone Grit of North Derbyshire (Parts of Sheets 88 S.E., 81 N.E., 72 N.E., 82 N.W., 82 S.W., and 71 N.W.), 2nd ed., with additions by A. H. Green and A. Strahan [besides a full treatment of the Carboniferous Rocks, there are chapters on the Post-Pliocene Deposits, etc., and an account of the various mines; the list of fossils by Mr. R. Etheridge is greatly enlarged by Messrs. G. Sharman and E. T. Newton, and another appendix by Mr. W. Whitaker gives a list of 293 works referring to the district]. Mem. Geol. Surv. England and Wales, 212 pp., London, 1887.

W. S. GRESLEY. **West Yorkshire.**

A Fossil Tree [*Stigmaria ficoides*] **at Clayton, Yorkshire** [described and figured]. Midl. Nat., Sept. 1886, ix. pp. 229-232 and plate iii.

W. S. GRESLEY. **Derbyshire.**

Re 'Explosive Slickensides' [supplementing Mr. Strahan's paper by description of similar 'explosions' in coal-mines]. Geol. Mag., Nov. 1887, dec. iii. vol. iv. pp. 522-523.

W. S. GRESLEY. **Derbyshire.**

Notes on the Formation of Coal-seams, as suggested by evidence collected chiefly in the Leicestershire and South Derbyshire Coal-field [showing reasons for rejecting the theory that coal-seams were formed of plants that grew upon the spot]. Quart. Journ. Geol. Soc., vol. xliii. pp. 671-674; Abstr. Proc. Geol. Soc., June 23rd, 1887; Geol. Mag., Aug., dec. iii. vol. iv. p. 375.

W. HAMPTON and H. WALLIS KEW. **North Lincolnshire.**

The 'Blue Stone' Boulder, Louth, Lincolnshire [is a sub-angular boulder of a blue-black colour, about 32 in. in height and about 145 in. in girth; it is a slightly altered dolerite]. Nat., Aug. 1887, pp. 225-226.

C. D. HARDCASTLE. **Derbyshire.**

An Inaugural Address [giving section of High Tor]. Trans. Leeds. Geol. Assoc., Part 3 (1886-7), pp. 126-128.

ALFRED HARKER. **East Yorkshire.**

The Oolites of the Cave District [a comprehensive account of the Jurassic strata which strike N.N.W. from the Humber in the neighbourhood of Brough to near Market Weighton; section of the 'Town Quarry' at North Newbald given, with fossils obtained; section of the Kellaways Rock with overlying Oxford Clay in cutting of Hull and Barnsley Railway described; the clay exposed in the railway near Weedley, by its aspect and the Belemnites it yielded, thought to be Neocomian; the lacustrine deposit at Bielbecks noted]. Nat., May 1885, pp. 229-232.

ALFRED HARKER. **West Yorkshire.**

Joints cutting through Pebbles [The conglomerate at the base of the Mountain Limestone in North-West Yorkshire is intersected by joints, which cut quite cleanly through the included pebbles, even those of quartz. Localities for observation: mouth of Crummock Dale, just below Norber Brow, and higher up the dale at Crummock Beck Head]. Nat., April 1886, p. 102.

ALFRED HARKER. **West Yorkshire.**

Jointing in the Mountain Limestone of the Austwick District [a résumé of observations in the neighbourhood of Austwick near Settle]. Nat., April 1886, p. 102.

W. C. HEY. **East Yorkshire.**

Flamborough Head [a good and detailed explanation of the denudation of the chalk cliffs by the action of the sea, with special reference to 'blow holes' and 'creux']. Nat., June 1886, pp. 161-162.

W. E. HIDDEN. **North-East Yorkshire.**

On the Mazapil Meteoric-Iron [compared with the meteorite which fell at Wold Cottage, near Scarborough, in 1795]. Amer. Journ. Sci., 3rd ser., vol. xxxiii. pp. 221-226 [224], 1887.

G. J. HINDE. **North and West Yorkshire.**

On the Character of the Beds of Chert in the Carboniferous Limestone of Yorkshire [which occur in the limestones of the Yoredale Series near Harrogate and Richmond; the writer finds them to be composed of spicules of siliceous sponges]. Nature, April 21st, 1887, vol. xxxv. p. 582.

G. J. HINDE. **Yorkshire.**

On the Organic Origin of the Chert in the Carboniferous Limestone Series of Ireland, and its similarity to that in the corresponding strata in North Wales and Yorkshire [showing that the chert is due to the siliceous parts of sponges]. Geol. Mag., Oct. 1887, dec. iii. vol. iv. pp. 435-446; and Rep. Brit. Assoc. for 1887, pp. 688-692.

T. V. H[OLMES]. **Cumberland.**

Purple-grey Carboniferous Rocks and the Whitehaven Sandstone [a criticism of Mr. J. D. Kendall's paper upon the same subject, in Part ix, pp. 113-117]. Trans. Cumb. and Westm. Assoc., No. xi (1885-86—pub. 1886), pp. 146-148.

T. McK. HUGHES. **Westmorland.**

On Bilobites [describing tracks similar to *Cruziana* found in sandstone in the Mountain Limestone series; the author regarding them as burrows]. Brit. Assoc. Rep. for 1886, p. 653.

T. McK. HUGHES. **West Yorkshire.**

Bursting Rock Surfaces [the author describes some curious phenomena at Dent Head quarries and Ribble Head tunnel; in cutting the tunnel a thin layer of hard rock was left as a floor over the underlying shale; the shale, yielding to the superincumbent weight at the sides, exerted a powerful force on the overlying thin bed, so that pieces of the latter burst off with a loud noise]. Geol. Mag., Nov. 1887, dec. iii. vol. iv. pp. 511-512.

E. Hull. **Yorkshire.**

Dr. Hinde on the Origin of Carboniferous Chert [remarks on Dr. Hinde's paper]. Geol. Mag., Nov. 1887, dec. iii, vol. iv, pp. 525-526.

S. Hyde. **Derbyshire.**

Peakland and the Baths and Climate of Buxton [containing a few geological notes, with description of Poole's Cavern, etc.]. 12mo, Manchester, 1887.

Elijah Jackson. **Yorkshire.**

Recent Discoveries of Fossil Trees [at Clayton near Bradford, and in Darley Street, Bradford]. Wesley Nat., April 1887, i. 40 and plate [coarse].

O. W. Jeffs. **South Lancs., Cheshire.**

A Buried Valley [at about 300 yds. from the Liverpool side, the upper part of the Mersey Tunnel intersected for about 100 yds. a gorge filled with boulder clay and erratics; the clay is hard and of the usual type of lower boulder clay, elsewhere found resting on the Triassic sandstone; well-rounded boulders of granite, greenstone, etc., taken out of the clay]. Nat., April 1885, p. 212.

T. Rupert Jones, and two others. **Westmorland, Yorkshire.**

[Palæozoic Phyllopoda, being the] Fourth Report of the Committee, consisting of Mr. R. Etheridge, Dr. H. Woodward, and Prof. T. Rupert Jones (secretary), on the Fossil Phyllopoda of the Palæozoic Rocks [discussing fossils from the Lower Wenlock rock of Helm Knot, Dent, the Wenlock beds of Kirkby Lonsdale, and the Upper Ludlow beds, Benson Knot near Kendal; *Ceratiocaris papilio* and *C. stygia* are both tabulated with a query for Benson Knot, and *C. inornata*, *C. ruthveniana*, *C. solenoides*, *C. gobiiformis*, *C. peror-nata*, and *Emmelozoe elliptica* are definitely tabulated for the same place; while for Kirkby Lonsdale the only species cited is *C. valida*, and for Helm Knot *C. leptodactylus*]. Brit. Assoc. Rep., Birm. 1886 [pub. 1887], pp. 229-234.

A. J. Jukes-Browne. **North Lincolnshire.**

Note on a Bed of Red Chalk in the Lower Chalk of Suffolk [identifying it with the lower of the two red bands in the chalk near Louth, which are described]. Geol. Mag., Jan. 1887, dec. iii. vol. iv. pp. 24-28.

A. J. Jukes-Browne. **East Lincolnshire.**

The Geology of Part of East Lincolnshire, including the Country near the Towns of Louth, Alford, and Spilsby (Explanation of Sheet 84) [After a general description of the district, and an account of the lowest formation—the Kimeridge Clay, the author gives a very complete description of the Lower and Middle Chalk, and of the Glacial and Post-glacial deposits; a chapter is also devoted to the physical features (hills and valleys), and another to the economic products and water-supply; appendices give the particulars of well-sections and lists of fossils, while an index completes the work]. Mem. Geol. Surv. England and Wales, 181 pp., London, 1887.

P. Quin Kegan. **Westmorland.**

Glacial Action near Grasmere [drawing attention to moraine heaps in the upper part of Ennerdale, around Greenside Reservoir, in Greenup Valley, and all over the summit of the Stake Pass, etc.]. Sci. Goss., Sep. 1886, p. 212.

P. Q. Keegan. **Cumberland, Westmorland.**

The Minerals and Flowers of the English Lake District [giving localities for a number of minerals]. Sci. Goss., Jan. 1887, pp. 1-4.

J. D. Kendall. **Cumberland.**

On the best locality for Coal beneath the Permian Rocks of North-West Cumberland [a criticism of a paper by Mr. T. V. Holmes upon the same subject]. Trans. Cumb. and Westm. Assoc., No. x (1884-85, pub. 1885), pp. 109-113.

J. D. KENDALL. **Yorkshire, Lincolnshire.**

The Iron Ores of the English Secondary Rocks [title only given in list for 1886; after showing that the amount of iron-ores raised from Secondary rocks has increased about nine-fold in thirty years, and now constitutes 56 per cent. of the total output, and giving a short bibliography of the subject, the author proceeds to describe in detail the most important sources of iron-ores in the Secondary strata; these include in the Lower Lias (*A. semicostatus* zone) the Frodingham bed in North Lincolnshire; from the Middle Lias the Cleveland ironstone, the Main Seam being in the *A. spinatus* zone, the Bottom Seam in that of *A. margaritatus*; the deposit at Caythorpe in South Lincolnshire is also Middle Lias; in the Lower Oolites come the Top Seam of Cleveland and the magnetic iron-stone of Rosedale in that district, also the ore near Lincoln; to the Lower Cretaceous belong the iron-ores of Claxby in North Lincolnshire, with *Pecten cinctus*; the concluding part of the paper discusses the origin of these ores, the carbonate of iron being supposed to have replaced carbonate of lime in ordinary limestones]. Trans. N. of Eng. Inst. Mining and Mech. Eng., vol. xxxv. pp. 105-157 and plates x-xxii. 1886.

P. F. KENDALL. **North of England generally.**

The Carboniferous Volcanoes of Great Britain [intrusions of lava in Newcastle coal-field described; toadstone of Derbyshire alluded to, also the columnar structure of baked mud in Tideswell Dale]. Trans. Manch. Geol. Soc. (1886-7), vol. xix. parts vi. and vii. pp. 133-151.

H. WALLIS KEW. **North Lincolnshire.**

Another Post-glacial Ravine and its inhabitants [commencing with a few words on its formation and aspect]. Nat. World, March 1886, iii. 41.

G. H. KINAHAN. **Yorkshire.**

Chert in Irish Carboniferous Rocks [remarks on Dr. Hinde's paper]. Geol. Mag., Nov. 1887, dec. iii. vol. iv. pp. 521-522.

F. H. KNOWLTON. **Yorkshire, Lancashire.**

A Monograph on Stigmaria (review) [Prof. Williamson has collected specimens of *Stigmaria ficoides*, with the structure exquisitely preserved, in the districts round Oldham and Halifax]. Bot. Gazette, Feb. 1888, xiii. 43.

L. G. DE KONINCK and MAX. LOHEST. **Yorkshire.**

Notice sur le parallélisme entre le calcaire carbonifère du nord-ouest de l'Angleterre et celui de la Belgique [abstract of paper; see Bibliog. 1886]. Neu. Jahrb. f. Min. Geol. u. Paläont. 1887, Bd. ii. Ref. p. 117.

LEWIS L. KROPF. **East Yorkshire.**

Spurn Head [calling attention to the old map by Saxton (1577) as showing very distinctly the form of Spurn Head]. Nat., Sep. 1886, p. 279.

G. W. LAMPLUGH. **East Yorkshire.**

Mammaliferous Gravel at Elloughton, in the Humber Valley [the locality is Mill Hill, 1 m. N. of the Humber; a new excavation showed 5 ft. of yellow sand with a mammoth's tusk, etc., surmounted by 9 ft. of rough stony gravel with local boulders]. Nature, June 15th, 1887, vol. xxxvi. p. 153.

G. W. LAMPLUGH. **East Yorkshire.**

On a Mammaliferous Gravel at Elloughton in the Humber Valley [account of a pit excavated into the top of a small isolated hill known as Mill Hill, with measured section; the fauna of the pit, thus far determined, are *Elephas primigenius* and *Equus* sp.]. Proc. Yorks. Geol. and Pol. Soc., vol. ix. part iii. (1887), pp. 407-411.

G. W. LAMPLUGH. **East Yorkshire.**

On the larger boulders of Flamborough Head. Part I. [the more important boulders upon the beach between Bridlington Quay and Danes' Dyke are enumerated, with position, description, geological age, shape and size; a percentage analysis of the character of the blocks is also included]. Proc. Yorks. Geol. and Pol. Soc., vol. ix. part iii. (1887), pp. 339-343.

G. W. Lamplugh. **East Yorkshire.**

Report on the buried Cliff at Sewerby, near Bridlington [this valuable report is divided thus:—Introduction; an ancient shore; the old sea-beach; the old land-surface; the blown sands; the fossils; age of the beds; concluding notes]. Proc. Yorks. Geol. and Pol. Soc., vol. ix. part iii. (1887), pp. 381-392, with plate.

R. Law and J. Horsfall. **West Yorkshire.**

On the Discovery of Carboniferous Fossils in a Conglomerate at Moughton Fell, near Settle, Yorkshire [giving section and list of fossils; abstract of paper read at Brit. Assoc. Meeting at Manchester]. Geol. Mag., Jan. 1887, dec. iii. vol. v. p. 30; Rep. Brit. Assoc. for 1887, p. 690.

G. A. Lebour. **West Yorkshire.**

Note on a Deposit of Lacustrine Marl in West Yorkshire [occupying the bottom of the Crummock Valley between Moughton Fell and Norber; the marl was pure white, like crumbly chalk, and was almost entirely made up of fresh-water shells, chiefly of the genera *Limnæa* and *Cyclas*; a thin layer of peaty vegetable matter divides the white marl]. Nat., Aug. 1884, pp. 16-17.

G. A. Lebour. **Durham.**

Note on an Abnormal Deposit of Drift Coal in North Durham [at a small sandpit near the working-shaft of St. Andrew's Colliery, worked for a fine brown sand which rests upon boulder clay, is a much false-bedded mass of sand and gravel of various degrees of coarseness; on one side of this sand-pit was a bed of rolled coal of more than two feet in thickness, dipping steadily S.E.; the coal pebbles contained were exceptional in size and unlike any coal-measure coal known in the district; analysis of coal given:—Volatile matter 17·0, Red Ash 17·4, Fixed Carbon 65·6]. Nat., Mch. 1885, pp. 179-180.

G. A. Lebour. **Durham and North-East Yorkshire.**

On the Stratigraphical Position of the Salt Measures of South Durham [abstract of paper read before British Association, 1886; gives classification of strata from base of Permian to Rhætic; the salt measures are considered to represent probably the Upper Permian or *Rauchwacke* of Germany]. Geol. Mag., Jan. 1887, dec. iii. vol. iv. p. 39. Brit. Assoc. Rep. for 1886, p. 673.

G. A. Lebour. **Northumberland, Durham, N.E. York.**

Outlines of the Geology of Northumberland and Durham [the geological formations are treated in order from above downwards; special attention is given to the Carboniferous system, chapters being devoted to the Coal Measures, the Ganister and Millstone Grit series, the Bernician rocks, and the Tuedian series; the small inliers of Silurian beds in Northumberland and Teesdale are described; the Igneous rocks of the district are duly noticed, including the dykes, the Whin Sill, and the granites and felsites of the Cheviots: extensive lists of Carboniferous fossils are given]. 8vo, cloth, 156 pp. and 5 plates, including maps of Northumberland and Durham, and part of Cleveland; see Review in Nat., Sep. 1887, p. 288.

G. A. Lebour. **Northumberland and Durham.**

Sketch of the Geology of Northumberland [describing the physical features of the county, the inliers of Silurian, the Cheviot 'porphyrites,' the whole Carboniferous system, with the Whin Sill, the Permians of Durham, and the superficial deposits; a map and sections are given]. Proc. Geol. Assoc., vol. ix. pp. 555-575, 1887.

H. Carvill Lewis. **Northern Counties.**

Comparative Studies upon the Glaciation of North America, Great Britain and Ireland [abstract of paper read before Brit. Assoc. 1886; see Bibliography for 1886]. Geol. Mag., January 1887, dec. iii. vol. iv. pp. 28-32. Brit. Assoc. Report for 1886, pp. 632-635.

H. Carvill Lewis. **Northern Counties.**

On some important Extra-Morainic Lakes in Central England . . . [the author supposes that the North Sea Glacier dammed back the drainage of the Humber, forming a lake which extended westward to the Pennines and

southward nearly to London; it deposited the great chalky boulder clay; smaller lakes were caused by the Aire glacier, and the Irish Sea glacier caused many on the west side of the Pennine chain; abstract of paper read before British Association, at Manchester]. Geol. Mag., Nov. 1887; dec. iii. vol. iv. pp. 515-517; Sci. Goss., Nov. 1887, p. 262; and Rep. Brit. Assoc. for 1887, pp. 692-693.

R. LOFTHOUSE. **Durham and N.E. Yorkshire.**

The River Tees: its Marshes and their Fauna [giving a brief account of the geology of the basin of the River Tees, including the shell-beds at Canoe Point, near to Greatham Fleet, and some particulars as to the salt industry]. Nat., Jan. 1887, pp. 1-16.

J. MADISON. **Lancashire or Yorkshire.**

[**Actinocrinus and Productus punctatus from Clitheroe** exhibited to Birmingham Microscopists' and Naturalists' Union]. Midl. Nat., May 1886, ix. 143.

J. E. MARR. **Yorkshire.**

The Lower Palæozoic Rocks near Settle [a supplementary paper tracing the succession of these rocks and giving lists of fossils; the author correlates the strata with those of the Lake District, and points out how they exhibit an approach in lithological character and fossil contents to their Swedish equivalents]. Geol. Mag., Jan. 1887, dec. iii. vol. iv. pp. 35-38; Brit. Assoc. Rep. for 1886, pp. 663, 664.

J. E. MARR. **Yorkshire, etc.**

The Work of Ice-Sheets [comparing the glacial phenomena of the Pennine district with the effects produced by the great Greenland ice-sheet of the present day]. Geol. Mag., April 1887, dec. iii. vol. iv. pp. 151-155.

A. T. METCALFE. **Derbyshire, Nottinghamshire, Lincolnshire.**

Rain and Rivers as Geological Agents, with a brief explanation of the Recent Discovery that the Trent formerly flowed from Newark via Lincoln into the Wash [and discussing the course of Derbyshire streams]. Trans. and 34th Report of Nottingham Nat. Soc. for 1886, pp. 35-40.

L. C. MIALL. **West Yorkshire.**

On a Megalichthys from the Yorkshire Coal-field [this example discovered at Mr. F. B. Ellison's colliery near Idle, in the roof of the Halifax Hard Bed; it measures 3 ft. 8 in. in length, of which the head includes 10 ins. and the tail about a foot; it is now in the museum of the Leeds Philosophical Society]. Nat., Jan. 1885, pp. 121-124, with woodcuts and a plate.

HUGH MILLER. **Northumberland.**

The Geology of the Country around Otterburn and Elsdon (explanation of Quarter-sheet 108 S.E.; New Series, Sheet 8.) [Silurian beds occupy two or three square miles in Redesdale; the Old Red Sandstone rocks are mainly volcanic ("porphyrites"); the remainder of the strata belong to the Carboniferous; these are fully described; succeeding chapters deal with Faults, Palæontology, Igneous Rocks, Glaciation, Post-Glacial Deposits, Physical History of the District, and Economic Geology; three appendices give respectively a list of publications on the district, a glossary of local terms, and an account of borings]. Mem. Geol. Surv. England and Wales, 147 pp., London, 1887.

HUGH MILLER. **Northumberland.**

On the Classification of the Carboniferous Limestone Series: Northumbrian Type [upholding Tate's against Lebour's classification; paper read at Brit. Assoc. Meeting, 1886]. Geol. Mag., March 1887, dec. iii. vol. iv. pp. 117-120; Brit. Assoc. Rep. for 1886, pp. 674-676.

W. H. S. MONCK. **Westmorland.**

The Date of the Ice Age [referring to Borrowdale and Easedale Tarn, citing the unimportant amount of denudation since the Glacial period in argument that that time cannot be put so far back as Dr. Croll's 200,000 years]. Geol. Mag., Nov. 1887, dec. iii. vol. iv. pp. 523-524.

E. T. Newton, P. B. Brodie, and E. Wilson. **Nottinghamshire.**

On the Remains of Fishes from the Keuper of Warwick and Nottingham. [the specimens from near Nottingham, much broken and crushed, seem to be *Semionotus*, and others to belong to the *Palæoniscidæ*; abstract in Proc. Geol. Soc., May 25th, 1887; Geol. Mag., July, dec. iii. vol. iv. pp. 326-327]. Quart. Journ. Geol. Soc., vol. xliii. pp. 537-543 and Plate xxiii. Ann. and Mag. N. H., Aug. 1887, 5th Ser. xx. pp. 139-140.

H. A. Nicholson and J. E. Marr. **Cumberland.**

On the occurrence of a New Fossiliferous Horizon in the Ordovician Series of the Lake-District [certain shales and mudstones exposed in Drygill near Caldbeck Fells were found to contain a fauna of trilobites and brachiopods, which are supposed to indicate a position about the horizon of the Llandeilo Limestone or slightly higher; these beds are regarded by the authors as part of the Borrowdale Series, which has hitherto yielded no fossils]. Geol. Mag., Aug. 1887, dec. iii. vol. iv. pp. 339-344.

H. Franklin Parsons. **Derbyshire.**

Waterfall on Kinderscout, Derbyshire [a general description of the Hill of Kinderscout in the Peak of Derbyshire; in the centre of the western edge is a cascade about 50 ft. in height]. Nat., Oct. 1886, p. 310.

S. R. Pattison. **Yorkshire.**

The Coral Reefs of England [noticing the Mountain Limestone reefs of Yorkshire (p. 422), and the Corallian rocks of the same county (p. 495)]. Leisure Hour, June and July, 1887, pp. 420-423, 493-496.

Horace Pearce. **Westmorland.**

Glacial Action near Grasmere [great number and size of glacial moraines near the outlet of Easdale Tarn observed]. Sci. Goss., Aug. 1886, p. 189.

H. M. Platnauer. **N.E. Yorkshire.**

On the occurrence of Strophalodus Rigauxi (Sauv.) in the Yorkshire Cornbrash. Ann. Rep. Yorksh. Philosoph. Soc. for 1886, p. 36.

J. Postlethwaite. **Cumberland.**

Trilobites of the Skiddaw Slates [dividing the specimens found into 1. Trilobites having the thoracic portion of the axal furrows more or less curved, caudal shield doubtful or altogether absent. 2. Forms having the thoracic portion of the axal furrows more or less curved, and a well-developed caudal shield. 3. Those having the axal furrows straight, except the outward curve near the margin of the carapace, and the rounded posterior extremity of the axis, a caudal shield being present. Numerous localities given]. Trans. Cumb. and Westm. Ass., part x (1884-85, pub. 1885), pp. 71-80, with plates ii. and iv.

J. Postlethwaite. **Cumberland, Cheshire.**

The Mineral Springs near Keswick [describing chalybeate spring at Woodend Mine, near Threlkeld, and saline springs at Brandley Mine and at Saltwell Park; an analysis given of the Brandley spring]. Trans. Cumb. and Westm. Ass., No. xi (1885-86, pub. 1886), pp. 142-145.

Herbert Prodham. **Durham.**

Drift Coal in Durham [in making the railway from Scotswood to Benfieldside, a cutting was necessary nearly opposite Gibside, and was some 60 ft. deep in the deepest part; about two-thirds of this was dry sand resting upon hard boulder clay; in the sandy portion were 'discontinuous, wedge-shaped, current-bedded patches of coal']. Nat., April 1885, p. 213.

J. Radcliffe. **South Lancashire.**

Quartzite Boulders and Grooves in the Roger Mine at Dukinfield [the boulders vary from 166 to 4 lb. in weight, and consist of quartzose grit and quartzite, resembling some of the pebbles in the Bunter conglomerate, and like the quartzites of Loch Maree]. Abstr. in Proc. Geol. Soc., March 23rd, 1887; Geol. Mag., May 1887, dec. iii. vol. iv. p. 238.

Charles Ricketts. **Cheshire.**

The Boulder-Clay of Cheshire [abstract of a paper read before the Geological Society, May 27th]. Knowledge, June 13th, 1885, p. 502.

H. Rosenbusch. **North of England generally.**

Mikroskopische Physiographie der Massigen Gesteine, 2nd ed. [this new edition of a much-valued standard work on the microscopical study of rocks is almost entirely re-written, and contains much new matter; among North of England rocks we notice references to and descriptions of the following (the nomenclature being that adopted by the author): augite-granitite of the Cheviots; chiastolite-slate around the Skiddaw granite; diabases [dolerites] of Westmorland, with the leucophyre of Swirrel Edge; salite-diabase of the Whin Sill [enstatite-dolerite, Teall]; hornblende-picrite of Little Knott [Bonney]; augite-minettes and kersantites of the Kendal and Sedbergh district [Bonney and Houghton]; granophyres of Armboth dyke and Mosedale, the latter with augite; porphyrites of the Cheviots [including Teall's hypersthene-andesites]; labrador-porphyrites near Penrith, Eycott Hill, Alston, and Langley Ford (Cheviots) [dolerites]; tholeiite dykes of Hett, Hebburn, Tynemouth, and Morpeth, the last being an olivine-tholeiite; and the olivine-free basalt of the Cleveland dyke [augite-andesite of Teall]]. 877 pp. and 6 plates, 8vo, Stuttgart.

H. G. Seeley. **N.E. Yorkshire.**

On the Mode of Development of the Young in Plesiosaurus [abstract of paper read before Brit. Assoc. at Manchester; the author describes a specimen from the Lias of Whitby, showing apparently four fœtal Plesiosauri, the flesh mineralised with phosphate of lime]. Geol. Mag., Dec. 1887, dec. iii. vol. iv, pp. 562-563.

H. W. Schneider. **Furness.**

On the Hæmatite Iron Mines of Low Furness [descriptive of various mines in this district, the stratification, mode of working, and also a history of the rise and progress of the Hæmatite Iron industry]. Trans. Cumb. and Westm. Assoc., part x (1884-85, pub. 1885), pp. 99-108 and litho. map.

J. Shipman. **Nottinghamshire.**

Some Traces of the Ancient Beach of the Lower Keuper at Castle Donington [in Leicestershire, with references to Notts., and a woodcut section of the cutting]. Trans. and 34th Rep. of Nottingham Nat. Soc. for 1886 [pub. 1887], pp. 61-65; and Nat., Feb. 1887, pp. 33-38.

J. Spencer. **Lancashire.**

On Boulders found in Seams of Coal [these boulders of foreign rocks are referred by the author to transport by floating ice. Abstr. in Proc. Geol. Soc., June 23rd, 1887; Geol. Mag., Aug., dec. iii. vol. iv. pp. 377, 378]. Quart. Journ. Geol. Soc., vol. xliii. pp. 734, 735; and Sci. Goss., Aug. 1887, p. 189.

Henry Stolterfoth. **West Yorkshire.**

Microscopic Examination of Crummach Lake Deposit [contains about 95 per cent. of Carbonate of Lime, which was dissolved out with hydrochloric acid; the remainder was treated for diatoms, with result nil; it consisted, on examination by the microscope without chemical treatment, of fragments of freshwater shells and fine amorphous grains of limestone]. Nat., Oct. 1884, p. 66.

A. Strahan. **Derbyshire.**

On Explosive Slickensides [in the lead-mines of Derbyshire some slickensided veins fly into fragments with violence when touched by the miner's pick; the author suggests that the spars are in a state of strain, similar to that of Rupert's drops]. Geol. Mag., Sep. 1887, dec. iii. vol. iv. pp. 400-408.

Thomas Tate. **West Yorkshire.**

Yorkshire Petrology, Introduction and Part I (The Lamprophyres) [general remarks upon the Igneous Rocks of Yorkshire; after explanation of the term 'lamprophyre' proceeds to detail sections of Mica-syenite with Hornblende, Orthoclase felspar, Biotite mica, Magnetite, etc., obtained at Ingleton]. Proc. Yorks. Geol. and Pol. Soc., vol. ix. part iii. (1887) pp. 372-381, with 3 plates.

J. J. H. Teall. **Northumberland.**

Petrographical Notes on some of the Igneous Rocks of Northumberland [a résumé of the author's investigations on these rocks, including the plagioclase-augite dykes (Tynemouth, Morpeth, Acklington, High Green, etc.), the Whin Sill, the Old Red Sandstone andesites and porphyrites of the Cheviots, and the augite-granites and quartz-felsite dykes of the same district]. Proc. Geol. Assoc., vol. ix. pp. 575-581, 1887.

J. Stanley Tute. **West Yorkshire.**

Note on the occurrence of Lingula in the Millstone Grit Series, West of Ripon [in a bed of black shale exposed in making reservoirs on Lumley Moor, for Ripon Waterworks, were discovered examples of *Lingula credneri*, or *L. mytiloides*, the first recorded from the Millstone Grit of this district]. Proc. Yorks. Geol. and Pol. Soc., vol. ix. part iii. (1887), p. 425.

W. Y. Veitch. **North-East Yorkshire.**

Fossils in the Yorkshire Lias [*Chonetes clevelandicus*, *Pleuromya navicula*, *Isis liassica*, described in Proc. Yorksh. Geol. and Poly. Soc.]. Nat. World, May 1886, iii. 98.

George R. Vine. **Northern Counties generally.**

Micro-Palæontology of the Northern Carboniferous Shales [divided into (1) Introduction, Foraminifera, etc.; (2) Polyzoa of the Redesdale Shales, Northumberland; (3) Ostracoda, Monticulipora and Miscellaneous Forms, Redesdale Shales; (4) Polyzoa, Entomostraca, Gasteropoda and Miscellaneous Organisms of the Skelly Gate Shales, Northumberland; (5) Upper Carboniferous Shales, Northumberland, Yoredale, Fourstones, 'Ingrow,' Lowick, Polyzoa and Entomostraca; (6) Carboniferous Shales, Northumberland and North Lancashire, etc., Scaur Limestone and Yoredale Rocks, Foraminifera, &c.]. Nat., Sep. 1884, p. 37, &c.; Oct. 1884, pp. 61-66; Dec. 1884, pp. 97-103; April 1885, pp. 207-212; Sep. 1885, pp. 313-320; Nov. 1885, pp. 367-378.

G. R. Vine. **North Lincolnshire.**

Fossil Polyzoa in Lincolnshire [in the Neocomian Clays of Donington-on-Bain; either new or allied to foreign examples of *Entalophora gracilis* (*Ceriopora gracilis*) Goldfuss]. Nat. Jan. 1887, p. 18.

G. R. Vine. **Lincolnshire.**

Notes on a Species of Entalophora from the Neocomian Clay of Lincolnshire. Ann. & Mag. Nat. Hist., Jan. 1887, (5) vol. xix. pp. 17-18; and Nat., Jan. 1887, p. 18 (see preceding title).

F. Fielder Walton. **East Yorkshire.**

Geology of the District between Market Weighton and the Humber [a brief account of the narrow band of Liassic and Oolitic beds which is exposed on the west side of the wolds from Market Weighton to the Humber]. 24 pp., 8vo, Hull, 1886. Reviewed by E. M. C[ole]. in Nat., March 1887, p. 88.

T. Ward. **Cheshire.**

The History and Cause of the Subsidences at Northwich and its Neighbourhood, in the Salt District of Cheshire [these destructive subsidences are caused by the removal of the salt, which is pumped off in the form of brine]. Geol. Mag., Nov. 1887, dec. iii. vol. iv. pp. 517, 518; Trans. Manch. Geol. Soc., 1886-7, parts vi. and vii. pp. 152-172.

William West. **Westmorland.**

Glacial Action near Grasmere [a note recommending geologists to study the moraines of Upper Langdale and Borrowdale]. Sci. Goss., Sep. 1886, p. 212.

W. H. Wheeler. **South Lincolnshire.**

Post-tertiary Deposits at Boston [in the excavations being made for the new dock and out-fall of the river, below the alluvium were beds of peat and sand containing remains of large trees; below this again, a thick layer of boulder

clay, largely interspersed with chalk, which gave it a grey appearance; succeeding this, another boulder clay of a lead colour, or nearly black, containing large numbers of ice-scratched blocks]. Nat., March 1887, p. 71.

W. C. WILLIAMSON. **West Yorkshire.**

On the Organisation of the Fossil Plants of the Coal-measures. *Heterangium tiliæoides* (Will.) and *Kaloxylon hookeri* [describing new specimens from Halifax]. Proc. Roy. Soc., vol. xlii. pp. 8-10.

W. C. WILLIAMSON. **South Lancashire.**

On the true Fructification of the Carboniferous Calamites [specimens recently found near Oldham prove the Calamites to be true spore-bearing cryptogams, and so allied to the equisetums]. Proc. Roy. Soc., vol. xlii. pp. 389, 390; Proc. Manch. Lit. and Phil. Soc., Feb. 22nd, 1887, xxvi. 95.

W. C. WILLIAMSON. **West Yorkshire.**

On recent Researches among the Carboniferous Plants of Halifax [giving a number of interesting results obtained from some fine specimens in the Lower Carboniferous of Halifax; refers also to the Stigmaria described by S. A. Adamson]. Brit. Assoc. Rep. for 1886, pp. 654-655.

W. C. WILLIAMSON. **West Yorkshire and South Lancashire.**

A Monograph on the Morphology and Histology of Stigmaria ficoides [containing allusions to specimens from the Yorkshire and Lancashire coal-fields, with a photograph (pl. xv) of the *Stigmaria* discovered at Clayton near Bradford]. Palæontographical Soc., vol. for 1886 (pub. 1887), pp. i-iv. 1-62, pl. i-xv.

W. C. WILLIAMSON. **South Lancashire.**

[Exhibition of Schizopteris anomala Brongn., remarkably fine, from Bardsley Colliery, Ashton-under-Lyne; details and comparisons given]. Proc. Manch. Lit. and Phil. Soc., Dec. 1st, 1885, xxv. 77-78.

E. WILSON. **Lincolnshire.**

British Liassic Gasteropoda [describing and figuring *Monodonta lindecolina*, a new species from the Upper Lias, Oxynotus zone, at Lincoln]. Geol. Mag., May 1887, dec. iii. vol. iv. pp. 201, 202.

THOS. WINDER. **Derbyshire.**

Poole's Cavern, Buxton [account of discovery, on Jan. 8th, 1887, of human remains, pottery, etc.]. Nat. World, Feb. 1887, iv. 40.

H. B. WOODWARD. **Northern Counties in general.**

The Geology of England and Wales, with Notes on the Physical Features of the Country: 8vo, xv and 670 pp. and map: London, 1887; 2nd ed. [This much-enlarged edition, with more than a hundred sections and illustrations, is a very complete geological guide to England and Wales; the northern counties receive a large share of attention; the correlation of the Lower Palæozoics of the Lake District is carefully handled; the coal-fields are noticed in order; the Permian and Trias are mapped together, with the usual discussion of their mutual relations; the Jurassic and Cretaceous systems are treated at length; and the Glacial deposits of Lancashire, Yorkshire, and Lincolnshire of course receive full notice. Reviewed by A. H[arker]. in Nat., Oct. 1887, pp. 300-302].

H. WOODWARD. **West Yorkshire.**

On Some Spined Myriapods from the Carboniferous Series of England [mentions (p. 9) and figures a fragmentary specimen from the Carboniferous Limestone of Grassington]. Geol. Mag., Jan. 1887, dec. iii. vol. iv. pp. 1-10 and pl. i.

JOHN YOUNG. **Derbyshire.**

[Elaterite, or flexible bitumen, a hydrocarbon mineral found in fissures in the carboniferous limestone at Castleton, Derbyshire]. Young Nat., Oct. 1887, viii. 200.

NOTES—ORNITHOLOGY.

Ruff and Goshawk near Whitby in Winter 1888-9.—A Ruff (*Machetes pugnax*), which for some time had frequented the neighbourhood of Ruswarp, was last seen on the 2nd December, 1888. A male Goshawk (*Astur palumbarius*) was shot by one of the keepers at Keldy Castle, near Levisham, on the 14th ult.; it is a fine mature specimen, and has been preserved by Mr. J. H. Wilson of Whitby.—THOS. STEPHENSON, Whitby, 20th February, 1889.

Sand-Grouse near York.—I have to record the occurrence of three Sand-Grouse (*Syrrhaptes paradoxus* Pallas), two females and one male having come into my possession. One of the females was found dead in a fallow field near here, and the other two were shot in June last year. I have had the pleasure of personally examining some sixty specimens. The majority of these birds were in more or less bad plumage, some evidently well advanced in moult and were chiefly females, of which latter there seems to have been the greatest quantity. The sixty Sand-Grouse seen by me had all been shot in Yorkshire during 1888. —WILLIAM HEWETT, 3, Wilton Terrace, Fulford Road, York, Feb. 1st, 1889.

Pallas' Sand-Grouse near Skegness.—The following extract from the 'Lincoln, Rutland, and Stamford Mercury' newspaper of 18th January, 1889, recording an occurrence of *Syrrhaptes paradoxus*, will be of interest:—'During the past few days Mr. Grimstead, taxidermist, Skegness, has had three Sand-Grouse brought to him for setting-up. The birds in question were shot near Ingoldmells.' This is a parish bordering the German Ocean, about four miles north of Skegness.—JAS. EARDLEY MASON, Alford, 18th January, 1889.

Sand-Grouse in Cleveland.—Three more Sand-Grouse (*Syrrhaptes paradoxus*) have been killed near Redcar. One, a female, was shot from a flock of seven on the South Gare Breakwater at the Tees Mouth, on the 14th February. Another female was killed at the same place on the following day; and a third example, a male, was picked up on the sands on the 16th. It had an old wound in the side—the cause of death, was very poor in body, and the flesh was quite putrid. Both the female birds were in good condition.—T. H. NELSON, Redcar, 25th Feb., 1889.

NOTES AND NEWS.

The Rev. E. Maule Cole, M.A., President of the Geological Section of the Yorkshire Naturalists' Union, and Mr. S. Chadwick, one of the Secretaries of that Section, have lately been elected Fellows of the Geological Society of London.

Mr. S. D. Bairstow, F.L.S., of Port Elizabeth in the Cape Colony, has devoted himself with his characteristic energy to good and useful work in that district, and his Yorkshire friends will be pleased to know that through his instrumentality at the Cape and that of Miss Eleanor A. Ormerod in England, considerable light has been thrown upon the history and the method of destruction of *Icerya purchasi*, a South Australian bug which—having invaded South Africa—is committing there great ravages on trees and shrubs. A pamphlet on the subject, which is worked out with Miss Ormerod's accustomed ability, is now before us.

The fifty-sixth Anniversary Meeting of the Entomological Society of London was held on the 16th January, when the following were elected as Officers and Council for 1889:—President, the Right Hon. Lord Walsingham, M.A., F.R.S.; Treasurer, Mr. Edward Saunders, F.L.S.; Secretaries, Mr. Herbert Goss, F.L.S., and the Rev. Canon Fowler, M.A., F.L.S.; Librarian, Mr. Ferdinand Grut, F.L.S.; and as other Members of Council, Mr. Henry W. Bates, F.R.S.; Captain H. J. Elwes, F.L.S.; Mr. William H. B. Fletcher, M.A.; Mr. F. DuCane Godman, M.A., F.R.S.; Prof. Raphael Meldola, F.R.S.; Dr. Philip Brooke Mason, F.L.S.; Mr. Osbert Salvin, M.A., F.R.S.; and Dr. David Sharp, F.L.S.

Naturalist,

A YORKSHIRE BIRD NEW TO THE EUROPEAN AVIFAUNA?

W. EAGLE CLARKE, F.L.S., Etc.,
Nat. Hist. Dept., Museum of Science and Art, Edinburgh.

At the meeting of the Zoological Society of London held on the 15th of January last, the Rev. Canon Tristram, F.R.S., made some remarks on a specimen of *Emberiza cioides* Brandt, which was 'believed' to have been obtained at Flamborough in October 1887. This is a most interesting scrap of news for ornithologists, and it is much to be hoped that full particulars concerning the occurrence of this feathered stranger to Europe may be forthcoming. *E. cioides* appears to be a rare bird in collections, and even the British Museum can only boast of a few specimens. It is an inhabitant of Siberia and Mongolia; so that, as a visitor to Europe and to our own shores, it cannot be regarded as a much greater waif from its accustomed habitat than *Turdus varius*, *T. atrigularis*, *Phylloscopus superciliosus*, *Syrrhaptes paradoxus*, *Bernicla ruficollis*, or a few other casuals of Eastern Palæarctic origin which every now and then unaccountably elect to wander 'westward ho,' even unto Britain.

NOTES—ORNITHOLOGY.

Hawfinch near York.—I have to record the occurrence of the Hawfinch (*Coccothraustes vulgaris*), a male specimen of which was brought me alive on the 19th January, having been captured near York. I may add that it is a very rare bird in this neighbourhood.—William Hewett, 3, Wilton Terrace, Fulford Road, York, February 1st, 1889.

Black-throated Diver near Alford, Lincolnshire.—In the first week of May 1888, a Black-throated Diver (*Colymbus arcticus* L.) was shot at Hogsthorpe near Alford. It is in the possession of William Boulton, surgeon, of the former place, and is apparently a bird of the previous year. I heard of it at the time, but did not see it until to-day.—Jas. Eardley Mason, Alford, 23rd Jan., 1889.

Wintering of the Ruff.—Mr. Cordeaux's interesting note on the occurrence of *Machetes pugnax* in mid-winter induced me to turn up one or two references. Who first recorded the wintering of the Ruff in Britain is at present unknown to me. Certainly. Mr. Booth drew attention to the fact in 1876, when he published his Catalogue of Birds (cf. Catalogue, p. 144). In the Zoologist (1879, p. 134), Mr. Mansell-Pleydell recorded a Reeve snared in Dorset in December; Gunn, the Norwich bird-stuffer, recorded another example shot in Suffolk in January (Zool., 1885, p. 54). The fact also received notice in Saunders' edition of Yarrell. If Mr. Cordeaux investigates the point, I think he would find other and earlier records. These may suffice in the meantime. Personally, I always associate Ruffs with August and September, in which months we find that a few visit our salt-marshes every year. The London markets often expose Ruffs for sale in October, and in 1886 I handled eight Ruffs in winter dress, which were sent in to Leadenhall on the 26th of October. But I do not think that many Ruffs prolong their stay with us after September.—H. A. Macpherson, Carlisle, Jan. 31st, 1889.

I saw a male *M. pugnax* exposed for sale in the flesh in the Leeds market in January 1877. Mr. Cordeaux informs me that a Ruff was obtained near Withernsea on January 20th last—a second Yorkshire winter specimen for this season.—W. E. Clarke.

March 1889.

GERANIUM MACRORHIZUM AND CAREX GIBSONI IN WEST YORKSHIRE.

ARTHUR BENNETT, F.L.S.

In the lately-published excellent 'Flora of West Yorkshire,' Mr. F. A. Lees has recorded the first-named plant under the name of *G. nodosum*, with a note—'no further information.' As the history of this plant may help to show how ambiguities, etc., get into Floras, I will give it as concisely as possible. In the first volume of 'The Phytologist,' p. 525, Mr. H. C. Watson enquires whether Mr. S. Gibson is the Mr. Gibson connected with whose name *Geranium nodosum* appears in the New Botanist's Guide. At p. 556 Mr. Gibson replies—'If the Geranium in question be any Geranium which I sent to Mr. Bowman, it will be *G. pyrenaicum*, and the locality would be Washerlane, near Halifax.' At p. 588 Mr. Watson replies that the plant may be *nodosum*, but certainly is not *pyrenaicum*. Lastly, Mr. H. C. Watson in Comp. Cybele Brit., p. 495, remarks—'*Geranium macrorhizum*? Prov. 13. Washerlane, near Halifax. Mr. S. Gibson. Ambiguity.' He mentions the record in N. B. Guide and Phytologist, and remarks—'The specimen is a mere scrap, the top of a flowering stem or branch, and assuredly wide away from *G pyrenaicum*. It may, perchance, be the old garden-flower above named; the fragment itself perhaps picked in a garden. But 'Washerlane' might be examined by a resident botanist.'

[Watson's herbarium is now at Kew, and the specimen of Geranium in question clearly belongs to *G. macrorhizum*. There were two well-known botanical Mr. Bowmans. This is R. B. Bowman of Newcastle.—J.G.B.]

Carex gibsoni Bab. was first described in the Annals of Nat. Hist., ii, p. 168, t. 5. In the second edition of his 'Manual,' Prof. Babington remarks, p. 362: 'This very remarkable plant may, as seems generally suspected, be an abnormal form of some species (perhaps *C. acuta*, as suggested by Dr. Boott), but after a careful re-examination of it, I am unable to refer it to any one.' On a specimen in Borrer's herbarium at Kew, Dr. Boott has written—'I am glad I have seen this; it must be a form of *C. goodenovii* or *cæspitosa* (*stricta* G.). It will not do to establish a species on such specimens. It is curious as a variety, I should say of *C. goodenovii*.' The fruit and glumes are remarkably long; the latter are whitish or yellowish at the tips. I think there is no doubt it comes under *C. goodenovii*.

ORNITHOLOGICAL NOTES FROM REDCAR AND TEES MOUTH

For 1887 and 1888.

T. H. NELSON, M.B.O.U.,

Redcar.

In continuation of my notes for 1886, I now beg to forward the result of my observations during the past two seasons. The most noticeable features of 1887 were the great abundance of waders, principally Pigmy Curlews (*Tringa subarquata*), Little Stints (*T. minuta*), Knots (*T. canutus*), and Grey Plovers (*Squatarola helvetica*) in the early autumn, and, later, the unusual numbers of Long-tailed Ducks (*Harelda glacialis*) which frequented the sea off Redcar and the Tees mouth. With regard to Pigmy Curlews and Little Stints, they appear to have been noticed in many different places; correspondents of mine who were shooting on the coasts of Wales, Northumberland, South Yorkshire, and Norfolk, all commented on the large numbers of these small shore-birds which were met with; while as for Long-tailed Ducks, the natural history columns of the 'Field' and the pages of the 'Zoologist' testify that this usually uncommon sea-duck has been noticed by different observers all round our coasts.

April 12th, 1887.—A white Guillemot (*Lomvia troile*) was seen at sea by several of the fishermen; another Guillemot, with a white head, probably the same bird, was reported on the 28th; on the same day many Gannets (*Sula bassana*), in pairs, were flying S.E. 15th.—The first clutch of Ringed Plover's (*Ægialitis hiaticula*) eggs, and on the 18th the first Redshank's (*Totanus calidris*) eggs, were found on the neighbouring marshes. During April and May several Manx Shearwaters (*Puffinus anglorum*), Great Northern and Red-throated Divers (*Colymbus glacialis* and *C. septentrionalis*), and large bodies of Razorbills (*Alca torda*), Guillemots (*Lomvia troile*), and Puffins (*Fratercula arctica*) were observed at sea. A pair of Sheldrakes (*Tadorna cornuta*) frequented the sands E. of Redcar all the spring, and I saw four at the Tees mouth in May. If undisturbed there is no doubt they would breed in some favourable spot on the sand-hills.

May 7th.—Mussell, the Middlesbrough taxidermist, had a female Peregrine (*Falco peregrinus*), and a female Hen Harrier (*Circus cyaneus*), which had been trapped at Egton Bridge, near Whitby, at

the latter end of April. 13th.—A Whimbrel (*Numenius phæopus*) passed to the N.W. in the early morning, and on the 14th another was heard whistling overhead. The first flock of Terns was noticed on the 17th. On the 24th I saw two Sanderlings (*Calidris arenaria*) in summer plumage, on the East sands; and on the 9th of June a large flock of birds, including Sanderlings, Knots (*Tringa canutus*), Turnstones (*Strepsilas interpres*), Grey Plovers (*Squatarola helvetica*), etc., was observed at 3.0 a.m. No doubt these birds, as also the Whimbrels before mentioned, would be on the way North to their breeding-grounds.

June 8th.—Fifteen Geese passed to the N.W. Twelve Sheldrakes (*Tadorna cornuta*) were seen at sea the next day.

July 14th.—The migration from the North commenced; twelve Whimbrels were observed on Salt Scar; on the 26th the first Turnstones were seen on the same place, and the first Knots on the 27th.

August 1st.—About twenty Manx Shearwaters and three or four immature Gannets were seen in the offing. On the 2nd, adult Sanderlings, in faded plumage, were plentiful in the estuary; two small flocks of Lesser Terns (*Sterna minuta*) were also seen. 3rd.—Mr. Emerson saw three Manx Shearwaters, and shot one, about two miles off Redcar. In the Tees Bay, in the afternoon, a Black Tern (*Hydrochelidon nigra*) was flying in company with a flock of the commoner species. On the 4th Mr. W. Pyman shot a Manx Shearwater, and saw several others, off Redcar. 13th.—Several Shearwaters, one being *P. major* or *P. griseus*, were noticed at sea. The first Godwits (*Limosa lapponica*) appeared at the Tees mouth. 16th.—Skuas (either *Stercorarius catarrhactes* or *S. pomatorhinus*) and Shearwaters were reported from the fishing-grounds. I shot a Lesser Tern (*Sterna minuta*) and a Pigmy Curlew (*T. subarquata*) at the Tees mouth. Eight Grey Plovers, with black breasts, were on the sands E. of the breakwater. 19th.—N.E. wind, light, dull. Several flocks of Duck (*Anas boschas*) and Teal (*Querquedula crecca*) passed in the early morning. I secured two more Pigmy Curlews, from a flock of about twenty, as they flew over the Scars to the East of Redcar; and the next day shot another at the same place. 21st.—A large flock of Oystercatchers (*Hæmatopus ostralegus*) flew past to the N.W. 23rd.—Terns were abundant at sea; nearly all were *Sterna fluviatilis*. I also noticed a dark-plumaged Richardson's Skua (*Stercorarius crepidatus*). 24th.—I saw several Richardson's Skuas, and obtained one, the adult dark variety. Both Common and Arctic Terns were numerous, the latter species (*S. macrura*) predominating. In the early part of September Richardson's Skuas

were in great numbers in the Tees Bay, pursuing the Terns and small Gulls. At this time both Little Stints and Pigmy Curlews abounded at the Tees mouth, several examples of each being shot.

September 6th.—S.W. gale, fine. A 'rush' of shore-birds took place; Godwits, Whimbrels, Grey Plovers, Pigmy Curlews, Little Stints, etc. On the 13th, with a N. gale and rain, there was another great migratory flight, consisting of Duck, Teal, Grey Plovers, Godwits, Dunlins (*Tringa alpina*), Knots, and Oystercatchers, as also a few Pigmy Curlews. On the 16th shore-birds were more numerous than they have been for several years past. To use a local expression, 'the Tees was full of Grey Plovers.' Several more Pigmy Curlews and Little Stints were shot. On the 17th the first flight of migrant Larks (*Alauda arvensis*) passed over, and the next day the first Snow Bunting (*Plectrophanes nivalis*) was seen in the early morning on the E. sands. 20th.—N. wind, moderate, dull. A flock of about thirty Richardson's Skuas flew high overhead to the N.W., making a continuous screaming call. The first Shore Larks (*Otocorys alpestris*) and several Snow Buntings passed to the N.W. 22nd.—Fine and calm. I was out at sea and shot an adult drake Common Scoter (*Œdemia nigra*) from a large flock, and also an adult Sandwich Tern (*Sterna cantiaca*)—this is a late date on which to see this latter bird. A Great Northern and two Red-throated Divers (*Colymbus glacialis* and *C. septentrionalis*) flew past to the S.E. The next day I went off again, and saw two Manx Shearwaters, one of which I secured; Mussell tells me it is the finest specimen he has ever preserved. I also procured two immature Gannets and two immature Richardson's Skuas, there being several of each observed. 25th.—N.W., light, fine. The first Hooded Crow (*Corvus cornix*) passed to the W. 28th.—At sea I noticed four Great Northern Divers flying to the S.E., and two Glaucous Gulls (*Larus glaucus*) going to the N.W.

October 1st.—N. wind, moderate, dull to rain. A great rush of Ducks, principally Widgeon (*Mareca penelope*). Fifty or sixty large flocks passed; seven which were shot were all immature birds. During the first week in October many Skuas, chiefly Pomatorhine (*Stercorarius pomatorhinus*), were observed at sea in small flocks; the majority were adult white-breasted birds. Numbers of Gannets were also seen three or four miles off. On the 4th the first Goldcrest (*Regulus cristatus*) appeared on the sand-hills. 6th.—I observed a flock of twelve immature Pomatorhine Skuas and a Sandwich Tern out at sea. Two Skuas were shot from a steamer this day. 7th.—A Goosander (*Mergus merganser*) passed to the N.W.

9th.—N.E. gale, very stormy. The first Woodcock (*Scolopax rusticola*) and Short-eared Owl (*Asio accipitrinus*) came over. 18th.—Thirty or forty Pomatorhine Skuas, one only being adult, passed to the N.W. Three Velvet Scoters (*Œdemia fusca*) flew past; one was shot, and proved to be an immature male. Two Fulmar Petrels (*Fulmarus glacialis*), one a fine adult male, were picked up alive on the beach, having been driven ashore by the storm. On the 12th twenty-eight Geese passed to the N.W. On the 13th a Long-tailed Duck (*Harelda glacialis*) and two immature Pomatorhine Skuas were shot, and an immature Ringed Guillemot was picked up alive along the E. sands. The storm continued until he 16th and after it abated Mr. Woodhouse and I went off in a boat in search of Ducks. We found an immense flock of Common Scoters to the E. of Redcar, and, for several days, had capital sport. Mr. Woodhouse, Mr. Emerson, and myself in seven days, between the 18th October and the 19th November, killed and gathered ninety-three Common and two Velvet Scoters; a great many of the wounded birds were lost owing to their diving capabilities and toughness of skin. The biggest bag made in one day was on the 5th November, when Mr. Emerson and I gathered one Velvet and twenty-five Common Scoters. Long-tailed Ducks were also very plentiful throughout the season. Between the 13th October and the end of February at least forty examples have been killed to my knowledge. I shot two myself—one on the 31st October and the other on the 17th November, both being young males; indeed, all those which I examined were immature birds. From the middle of October to the middle of November there was a constant stream of migration, in varying numbers, of Larks, Hooded Crows (*Corvus cornix*), Peewits (*Vanellus vulgaris*), and various small birds, such as Chaffinches (*Fringilla cœlebs*), Blackbirds (*Turdus merula*), Redbreasts (*Erithacus rubecula*), with a few Short-eared Owls and Woodcock. On several days, towards the end of October, Larks, Hooded Crows and Peewits passed incessantly, from daylight to the middle of the afternoon. Oct. 19th.—The last Terns were observed flying towards the S.E. 25th.—A male Ring-ouzel (*Turdus torquatus*) was shot in Bilsdale. 31st.—I saw four Redwings (*T. iliacus*) passing in a S.W. direction.

November 9th.—I was at the Tees mouth in a boat, and shot a male Red-throated Diver (*Colymbus septentrionalis*), with most of the red feathers on the throat remaining. 12th.—A Great Spotted Woodpecker (*Dendrocopus major*) was observed in some gardens in front of Fishermen's Square. 16th.—A large flock of about five hundred Geese was reported by the fishermen who had been some four or five

miles off. I saw an immense flock of Peewits cross over from seaward. 17th.—A Bean Goose (*Anser segetum*) was shot near Marske. 22nd.—A few Purple Sandpipers (*Tringa striata*) were observed at the Tees mouth, and two were shot. 24th.—Several small bodies of Wood Pigeons (*Columba palumbus*) crossed over from the sea to the S.W.

December 2nd.—N.W., light, fine. A large flight of Snow Buntings passed in the early morning, flying to the N.W. 7th.—A Glaucous Gull (*Larus glaucus*) remained on the sands in front of the house nearly all the morning. 9th.—A flock of about 120 'Grey' Geese passed high overhead to the S.W. 26th.—Two small herds of Swans, containing six and eight respectively, were seen at sea.

January 18th, 1888.—Whilst one of the fishermen was setting his lines near Coatham Pier, a Manx Shearwater (*Puffinus anglorum*) remained for a considerable time close to the boat, and showed no alarm until it approached almost within oar's length.

February.—Longtailed Ducks (*Harelda glacialis*) were still numerous. A male was shot in the Tees on the 14th; two others on the 20th; and a flock of about forty was constantly seen off Redcar.

During the stormy weather towards the end of February, a great many Common and Black-headed Gulls (*Larus canus* and *L. ridibundus*) were shot. Large flocks of Fieldfares (*Turdus pilaris*), Redwings (*T. iliacus*), Golden Plovers (*Charadrius pluvialis*), and Stockdoves (*Columba œnas*) were driven from their inland resorts, by the heavy snows and frosts, to the open ground in the vicinity of the coast, which had been clear from snow all the winter. The Fieldfares and Redwings soon lost condition, and grew very bold in search of food. Fourteen Stockdoves were killed at one shot while feeding amongst some cabbages in a field between Redcar and Marske.

March 15th.—Weather stormy, N.E. gale and heavy rain. A Brent Goose (*Bernicla brenta*) was shot on the sands near Redcar Pier. I purchased a very fine adult Velvet Scoter drake (*Œdemia fusca*) from a fisherman, who had found it dead on Coatham Sands. Another equally good specimen was picked up on the 31st; these two are the only adult drakes of this species which have come under my observation here in the course of fifteen years, and it is rather strange that they should have occurred within a fortnight of each other.

April 1st.—Several Wheatears (*Saxicola œnanthe*) were flitting about on the Redcar sand-hills. 3rd.—Seventeen Grey Geese passed overhead, flying eastward.

March 1889.

July 1st.—A male adult Sandwich Tern (*Sterna cantiaca*) was picked up on Coatham Sands, where, on the same date, I found a Fulmar Petrel (*Fulmarus glacialis*), washed up at high-water mark. 28th.—Whimbrels (*Numenius phæopus*) and Turnstones (*Strepsilas interpres*) appeared at the Tees mouth.

August.—The usual shore-birds were in the Tees estuary—Godwits, a few Grey Plovers, Lesser Terns, Knots, Sanderlings, and so forth. 28th.—I shot an immature Ruff (*Machetes pugnax*), which was flying in company with a flock of Sanderlings (*Calidris arenaria*).

September 30th.—N.E. gale. Six Pomatorhine Skuas (*Stercorarius pomatorhinus*) flew past to the N.W. They were all adults, with white breasts, the long tail feathers being plainly discernible from my window.

October 15th.—The Middlesbrough taxidermist received a male Eider (*Somateria mollissima*), immature, which had been shot in the Tees. 17th.—A very fine adult Long-tailed Drake (*Harelda glacialis*) was shot off Redcar.

November 2nd, 3rd and 4th.—A great flight of Ducks and Woodcock took place. Wind N.E., blowing a gale, with rain. 6th.—A Scaup Drake (*Fuligula marila*) was shot on the sands within a few yards of the Esplanade. 8th.—Another splendid example of the Long-tailed Drake was killed in the Tees estuary by a fisherman, from whom I purchased it. 9th.—I shot an immature Red-breasted Merganser (*Mergus serrator*) on Coatham sands. Some time about the middle of December, Mr. Emerson found the remains of an adult Little Gull (*Larus minutus*) near the old Lifeboat House. About the same date a female Great Northern Diver (*Colymbus glacialis*) was shot near the Tees mouth. 29th.—A Little Grebe (*Tachybaptes fluviatilis*) was killed in the Tees estuary.

The season of 1888-9 has been one of the worst I have known for wild fowl—the mild weather, probably, being the reason why so few birds have visited us.

January 1889.

NOTE—CRYPTOGAMIC BOTANY.

Physcomitrella patens in Derbyshire.—At a meeting of the Manchester Cryptogamic Society, held December 17th, 1888, Mr. W. H. Pearson in the chair, Mr. John Whitehead sent specimens of *Physcomitrella patens* from Chapel-en-le-Frith for the society's herbarium. It was interesting to know that this somewhat rare and pretty little moss had been found in abundance on the dried-up muddy bed of the lake at Chapel-en-le-Frith during the dry summer of 1887, by Prof. Barker, late of Owens College. The following gentlemen were elected officers of the society for the ensuing year:—Dr. B. Carrington, president; Mr. G. A. Holt and Mr. Frederick Bower, vice-presidents; Mr. W. H. Pearson, librarian; and Mr. Thomas Rogers, honorary secretary.

Naturalist,

ADDITIONS TO THE ALGÆ OF WEST YORKSHIRE.

WM. WEST, F.L.S.,

Lecturer in Botany and Materia Medica at the Bradford Technical College.

SINCE the issue of the 'Flora of West Yorkshire,' I have examined—with the valued and critical assistance of my son, G. S. West—a large number of gatherings of algæ, some of which are additional species to the district, while others are but new localities, though some of the latter are very interesting. Although I have collected from hundreds of places, extensive districts are almost entirely unrepresented, and those that are fairly represented can by no means be said to be exhausted. Collecting at all periods of the year, many forms are examined and drawn which cannot possibly be determined; for example, species of *Œdogonium*, on account of absence of oospheres, this genus being always easy of recognition in a barren condition because of the screw-like appearance of the projections caused by the remains of the earlier cell-walls, by reason of the peculiar method of growth in length of the cells by intercalary development.

One point I particularly wish to draw the attention of workers to, and that is, that they should make careful observations at all times of the year, and even for several years if possible, with regard to those forms they find in some easily accessible locality. Observations of this kind are of great value, as many of those species generally considered as autonomous are now by many believed to be but different stages of development of other undoubted species. Dr. Hansgirg, of Prague, has studied this phase of the subject attentively and extensively. Students should read his observations, an excellent précis of which is given by that veteran and industrious worker, the Rev. Francis Wolle, in his 'Fresh-water Algæ of the United States.' Dr. Braxton Hicks' paper in the 'Quarterly Journal of Microscopical Science' for 1861 is well worth reading, and those students who will take sufficient trouble to examine suitable corners near upland country paths will find the material necessary for abundant confirmation of Dr. Hicks' observations.

In the following list the species new to West Yorkshire are preceded by an asterisk. Records from gatherings made by others than myself are followed by the names of the collectors.

The classification followed is that of Cooke's Fresh-water Algæ. The Allerton mentioned is three miles W.N.W. of Bradford. The Hawksworth mentioned is five miles N. of Bradford.

March 1889.

Class I.—CHLOROPHYLLOPHYCEÆ.

Order I.—COCCOPHYCEÆ.

Fam. I.—*PALMELLACEÆ.*

*Pleurococcus angulosus Meneg. Penyghent; G. S. West.

*Chlorococcum humicolum Rabh. Baildon; W. and G. S. West.

*Chlorococcum gigas Grun. Adel Bog; W. and G. S. West.

Glœocystis ampla Kütz. Wigton Moor; near Keighley. Baildon; W. & G. S. West. Penyghent; G. S. West.

Glœocystis vesiculosa Näg. Near Keighley; Malham; Wigton Moor. Baildon; W. and G. S. West.

Glœocystis rupestris (Lyngb.) Rabh. Near Keighley; Wigton Moor.

*Glœocystis botryoides Kütz. Near Keighley.

*Schizochlamys gelatinosa A. Braun. Cullingworth. Abundant in a drain ditch, Nab Wood, Bingley.

*Palmella mucosa Kütz. Keighley; Doncaster; Beamsley Beacon; Goole.

*Palmodactylon subramosum Näg. Wigton Moor. This was in nice condition and exactly agreed both as to form and dimensions with the excellent figure of Kirchner in 'Die Mikroskopische Pflanzenwelt des Süsswassers. 1885.'

Dictyosphærium ehrenbergianum Näg. Baildon; W. and G. S. West.

Fam. II.—*PROTOCOCCACEÆ.*

Scenedesmus acutus Meyen. Hawksworth; W. and G. S. West.

Pediastrum boryanum Turp. Austwick; Hawksworth; Wigton.

Fam. III.—*VOLVOCINEÆ.*

Chlamydococcus pluvialis A. Braun. Manningham; W. and G. S. West. This occurred in great quantity in the troughs of mortar machines after very heavy rains.

Pandorina morum Ehrenb. Rombald's Moor; W. and G. S. West.

*Stephanosphæra pluvialis Cohn. Baildon; W. and G. S. West.

Order II.—ZYGOPHYCEÆ.

Fam. I.—*DESMIDIÆ.*

Gonatozygon ralfsii DeBary. Cullingworth; Wigton Moor.

*Gonatozygon brebissonii DeBary. Cullingworth. Penyghent; G. S. West. Adel Bog; W. and G. S. West.

Hyalotheca dissiliens Ralfs. Ingleborough.

Docidium ehrenbergii Ralfs. Cullingworth; Wigton Moor; near Mirfield.

*Var. **granulatum** Ralfs. Wigton Moor.

Docidium clavatum Kütz. Roundhay; W. B. Turner.

***Bambusina brebissonii** Kütz. Ingleborough; Cullingworth.

***Closterium obtusum** Breb. Cullingworth.

Closterium lunula Ehr. Allerton, very large forms, up to 108 μ broad, occurred in a horse-trough.

Closterium acerosum Ehr. Saltaire; Keighley. Baildon; Frizinghall; W. and G. S. West.

Closterium lanceolatum Kütz. Cullingworth; Heaton; Allerton; near Keighley. Rombald's Moor; Frizinghall; W. and G. S. West.

***Closterium gracile** Breb. Wigton Moor.

Closterium ehrenbergii Meneg. Near Keighley; Baildon. Rombald's Moor; Manningham; W. and G. S. West.

Closterium moniliferum Ehr. Near Cautley Spout. Rombald's Moor; W. and G. S. West. Marley; Baildon; Penyghent; G. S. West.

***Closterium leibleinii** Kütz. Wigton Moor; Keighley. Baildon; W. and G. S. West. Frizinghall; G. S. West. Fine typical examples were obtained at the last place from under the ice in winter. Near Mirfield.

Closterium dianæ Ehr. Wigton Moor. Eldwick; Rombald's Moor; Adel Bog; W. and G. S. West.

Closterium venus Kütz. Wigton Moor. Frizinghall; G. S. West.

Closterium striolatum Ehr. Eldwick; Wigton Moor; Frizinghall. Rombald's Moor; Adel Bog; W. and G. S. West.

Closterium juncidum Ralfs. Wigton Moor.

Closterium lineatum Ehr. Wigton Moor. Baildon; W. and G. S. West.

***Closterium ralfsii** Breb. Cullingworth.

Closterium rostratum Ehr. Cullingworth. Eldwick; W. and G. S. West. Wigton Moor.

Closterium setaceum Ehr. Wigton Moor.

***Closterium kützingii** Breb. Goole; W. B. Turner.

Closterium acutum Breb. Cullingworth.

***Closterium subulatum** (Kütz.). Rombald's Moor; W. and G. S. West.

Penium margaritaceum Breb. *Var. **punctatum** Ralfs. Wigton Moor; Cullingworth.

Penium digitus Breb. Eldwick. Frizinghall; G. S. West. Rombald's Moor; W. and G. S. West.

Penium closterioides Ralfs. Cullingworth.

***Penium navicula** Breb. Thornton Moor; W. and G. S. West.

Penium brebissonii Ralfs. Wigton Moor; Cullingworth; Ingleborough; near Keighley. Thornton Moor; Adel Bog; W. & G. S. West. Penyghent; G. S. West.

***Penium truncatum** Breb. Thornton Moor; Adel Bog; W. and G. S. West. Penyghent; G. S. West. Cullingworth.

***Penium mooreanum** Arch. Howgill Fells; Kildwick. This Penium was not in zygospore, but the dimensions and form exactly coincided with that of the barren plant.

Cylindrocystis crassa DeBary. Ingleborough; near Keighley; Adel Bog; W. and G. S. West. Penyghent; G. S. West.

Tetmemorus brebissonii Ralfs. Cullingworth; Ingleborough. Adel Bog; W. and G. S. West.

Tetmemorus granulatus Ralfs. Wigton Moor. Baildon; W. and G. S. West.

Tetmemorus lævis Ralfs. Thornton Moor, abundantly, among *Dicranella squarrosa* Schpr.; W. and G. S. West. Near Hawksworth.

Micrasterias denticulata Breb. Wigton Moor.

Micrasterias papillifera Breb. Cullingworth.

Euastrum ampullaceum Ralfs. Wigton Moor.

Euastrum insigne Hass. Cullingworth; Wigton Moor.

Euastrum didelta Ralfs. Ingleborough.

***Euastrum cuneatum** Jenner. Ingleborough.

Euastrum ansatum Ehr. Wigton Moor. Adel Bog; W. and G. S. West.

***Euastrum circulare** Hass. Cullingworth. Adel Bog; W. and G. S. West.

***Euastrum sinuosum** Lenor. Baildon. Penyghent; G. S. West.

Euastrum pectinatum Breb. Wigton Moor.

Euastrum elegans Breb. Wigton Moor.

Euastrum binale Ralfs.

*Var. **elobatum** Lund. Penyghent; G. S. West.

*Forma **minor** W. West in Journal of Bot. (Nov. 1888). Adel Bog; W. and G. S. West.

Cosmarium quadratum Ralfs. Cullingworth. Adel Bog; W. and G. S. West. Penyghent; G. S. West.

Cosmarium plicatum Reinsch. Adel Bog, among *Sphagnum obesum* Nees et Hornsch., var. *contortum* Schultz.; W. and G. S. West.

*__Cosmarium hammeri__ Reinsch. Baildon.

*__Cosmarium anceps__ Lund. Penyghent; G. S. West.

*__Cosmarium variolatum__ Lund. Baildon; G. S. West.

*__Cosmarium cucumis__ Corda. Near Keighley; Wigton Moor. Rombald's Moor; W. and G. S. West. Baildon; Penyghent; G. S. West.

Cosmarium pyramidatum Breb. Penyghent; G. S. West.

*__Cosmarium pseudopyramidatum__ Lund. Cullingworth.

*__Cosmarium nitidulum__ DeNot. Cullingworth.

*__Cosmarium pseudonitidulum__ Nordst. Cullingworth.

Cosmarium bioculatum Breb. Rombald's Moor; Adel Bog; W. and G. S. West.

Cosmarium tinctum Ralfs. Thornton Moor; Adel Bog; W. and G. S. West.

Cosmarium meneghinii Breb. Rombald's Moor; Baildon; Adel Bog; W. and G. S. West.

*__Cosmarium obliquum__ Nordst. Cullingworth.

Cosmarium crenatum Ralfs. Rombald's Moor; W. and G. S. West. Kildwick.

Cosmarium undulatum Corda. Rombald's Moor; W. and G. S. West.

*__Cosmarium monomazum__ Lund. Penyghent; G. S. West.

Cosmarium tetraophthalmum Breb. Adel Bog; W. and G. S. West.

Cosmarium brebissonii Meneg. Adel Bog; W. and G. S. West.

*__Cosmarium quadrum__ Lund. Cullingworth.

*__Cosmarium quaternarium__ Witt. & Nord. Baildon Moor.

*__Cosmarium punctulatum__ Breb. Wigton Moor; Cullingworth; Ingleborough; moor near Keighley. Thornton Moor; Adel Bog; W. and G. S. West. Baildon; Penyghent; G. S. West.

Cosmarium botrytis Meneg. Near Keighley; Sedbergh. Roundhay; W. B. Turner. Baildon; Adel Bog; Rombald's Moor; W. and G. S. West. Penyghent; G. S. West, etc.

Cosmarium broomei Thw. Wigton Moor; Baildon. Adel Bog; W. and G. S. West.

*Cosmarium ochthodes Nordst. Cullingworth, both in a pool at the bog and in a large trough close to the village. Baildon; Penyghent; G. S. West. Wigton Moor.

*Cosmarium kjellmanni Wille. Rombald's Moor; W. and G. S. West.

*Cosmarium isthmochondrum Nordst. Cautley Spout; near Keighley.

Cosmarium moniliforme Ralfs. Leeming; W. and G. S. West.

Calocylindrus connatus Kirch. Cullingworth.

Calocylindrus cucurbita DeBary. Thornton Moor; Rombald's Moor; W. and G. S. West. Doncaster.

*Calocylindrus thwaitesii (Ralfs). Cullingworth; Frizinghall. Thornton Moor; Adel Bog; Rombald's Moor; W. and G. S. West. Baildon; Penyghent; G. S. West.

*Calocylindrus attenuatus (Breb.). Arncliffe.

*Calocylindrus debaryi (Archer). Adel Bog; W. and G. S. West.

*Calocylindrus pseudarctoum Nordst. et Wittr. Rombald's Moor; W. and G. S. West. This was abundant, together with *Closterium subulatum* (Kütz.), in washings of *Bulbochæte setigera* Ag. and *Potamogeton polygonifolius* Pour. It exactly corresponds with Cooke's figures as regards form, but not as to dimensions. Measurements:—

Rombald's Moor Examples.	Nordstedt's.	Cooke's Figures.
17 —24 μ	17 —21μ	29—32½μ—Length.
13 —17 μ	14 —16μ	19—24 μ—Breadth.
12½—15½μ	13½—15μ	17—21 μ— ,, of isthmus.

*Xanthidium antilopæum Breb. Wigton Moor.

Arthrodesmus incus Hass. Cullingworth Bog.

*Var. convergens Archer. Cullingworth Bog.

Arthrodesmus convergens Ehr. Wigton Moor. Every living specimen of this had a gelatinous investment most delicately striated. Penyghent; G. S. West.

Staurastrum dejectum Meyen. Cullingworth Bog.

*Var. mucronatum Ralfs. Cullingworth Bog.

*Var. apiculatum Breb. Ingleborough. Adel Bog; W. and G. S. West.

Staurastrum dickiei Ralfs. Wigton Moor.

*Staurastrum subcruciatum Cooke et Wills. Wigton Moor. This was very sparingly seen; the form and size agreed exactly with the figure of Cooke, both in front and end view.

*Staurastrum reinschii Roy. Ingleborough, among *Sphagnum cuspidatum* Ehrh. var. *plumosum* Schpr.

Staurastrum hirsutum Breb. Ingleborough, with the last.

Staurastrum pilosum Näg. Adel Bog; W. and G. S. West.

Staurastrum teliferum Ralfs. Wigton Moor.

Staurastrum orbiculare Ralfs. Near Wilsden.

*Staurastrum pygmæum Breb. Near Keighley; Ingleborough; Cullingworth. Rombald's Moor. Penyghent; G. S. West. Near Hainworth; T. Hebden.

*Staurastrum muricatum Breb. Abundant in a ditch in Nab Wood, Bingley. Rombald's Moor; Adel Bog; W. and G. S. West. Near Wilsden.

Staurastrum punctulatum Breb. Heaton; Allerton; near Keighley. Roundhay; W. B. Turner. Rombald's Moor; Adel Bog; W. and G. S. West. Frizinghall; Baildon; Penyghent; G. S. West.

*Staurastrum tricorne (Breb.). Cullingworth.

*Var. β Ralfs. Cullingworth.

Staurastrum polymorphum Breb. Wigton Moor. Rombald's Moor; W. and G. S. West. Penyghent; G. S. West.

Staurastrum gracile Ralfs. Ingleborough.

*Staurastrum margaritaceum Meneg. Ingleborough.

Fam. II.—*ZYGNEMACEÆ.*

Sub-Fam. I.—*ZYGNEMEÆ.*

Zygnema cruciatum (Vauch.). Ingleborough.

*Zygnema stellinum (Vauch.) Kütz. Eldwick. Thornton Moor; W. and G. S. West.

*Zygnema vaucherii Ag. Var. stagnale Kirch. Baildon; W. and G. S. West.

Spirogyra crassa Kütz. Manningham; W. and G. S. West.

Spirogyra porticalis Vauch. Allerton.

*Var. rivularis Hass. Baildon.

Spirogyra condensata Vauch. Near Bradford.

Spirogyra longata Vauch. Frizinghall; Thornton Moor; W. and G. S. West. Near Keighley; Grassington.

*Spirogyra tenuissima Hass. Hawksworth—a form up to 21 μ in thickness, and with cells sixteen or seventeen times as long as broad.

Spirogyra flavescens (Hass.) Cleve. Grassington; Austwick. Roundhay; W. B. Turner. Rombald's Moor; Baildon; W. and G. S. West.

Spirogyra weberi Kütz. Keighley.

Zygogonium ericetorum DeBary. VAR. **aquaticum.** Keighley.

Sub-Fam. II.—*MESOCARPEÆ.*

Mesocarpus parvulus (Hass.) DeBary. Wigton Moor. Adel Bog; Rombald's Moor; W. and G. S. West.

*VAR. **angustus** Hass. Sedbergh. Adel Bog; Baildon; W. and G. S. West. Penyghent; G. S. West.

Mesocarpus scalaris (Hass.) DeBary. Near Keighley; Frizinghall. Marley; G. S. West.

***Mesocarpus recurvus** Hass. Baildon; W. and G. S. West.

Mesocarpus pleurocarpus DeBary. Penyghent; G. S. West.

Staurospermum gracillimum (Hass.). Rombald's Moor; W. and G. S. West. Penyghent; G. S. West.

Staurospermum viride Kütz. Austwick.

ORDER IV.—NEMATOPHYCEÆ.

Fam. III.—*CONFERVACEÆ.*

Microspora fugacissima Ag. Grassington; Sedbergh; Ingleborough. Rombald's Moor; Adel Bog; W. and G. S. West.

Microspora floccosa Ag. Near Keighley. Adel Bog; W. and G. S. West. Penyghent; G. S. West. Nab Wood. Ilkley, etc.

Conferva fontinalis Berk. Adel Bog; Rombald's Moor; W. and G. S. West.

Conferva tenerrima Kütz. Grassington. Penyghent; G. S. West.

Conferva bombycina Ag. Ingleborough; Beamsley Beacon; Adel Bog; W. and G. S. West.

Cladophora glomerata Kütz. Near Keighley. Penyghent; G. S. West.

Fam. V.—*ŒDOGONIACEÆ.*

***Œdogonium rothii** Prings. Near Bradford.

Bulbochœte setigera Ag. Yeadon Dam. Rombald's Moor; W. and G. S. West.

Fam. VI.—*ULOTRICHEÆ.*

Hormiscia moniliformis Kütz. Ingleborough. Baildon; W. and G. S. West.

Hormiscia zonata W. & M. Cautley. Baildon; Eldwick; W. and G. S. West. Penyghent; G. S. West. Roundhay; W. B. Turner.

Hormiscia æqualis (Kütz.) Var. **catæniformis** Kütz. Near Mirfield.

Ulothrix variabilis Kütz. Horton; W. and G. S. West.

*__Ulothrix tenerrima__ Kütz. Near Bradford.

Ulothrix radicans Kütz. Fountain in front of Leeds Town Hall (in as well as out of the water); G. S. West.

Fam. VIII.—*CHÆTOPHORACEÆ.*

Microthamnion vexator Cooke. Allerton; W. and G. S. West.

Class II.—PHYCOCHROMOPHYCEÆ.

Order I.—CYSTIPHORÆ.

Fam. I.—*CHROOCOCCACEÆ.*

Chroococcus turgidus Näg. Ingleborough; Wigton Moor; Elslack.

Glœocapsa caldariorum Rabh. Greenhouses at Horton.

*__Aphanocapsa grevillei__ Rabh. Ingleborough; Howgill Fells; Cautley. Baildon; G. S. West.

*__Microcystis protogenita__ Rabh. Saltaire.

*__Clathrocystis æruginosa__ Henf. Frizinghall; W. and G. S. West.

*__Cœlosphærium kützingianum__ Näg. Ingleborough.

Order II.—NEMATOGENÆ.

Tribe I.—*NOSTOCHINEÆ.*

Fam. I.—*NOSTOCEÆ.*

*__Nostoc piscinale__ Kütz. Near Bradford.

*__Nostoc humifusum__ Carm. Cullingworth.

Cylindrospermum macrospermum Kütz. Halifax; C. P. Hobkirk.

Fam. II.—*LYNGBYÆ.*

Oscillaria tenerrima Kütz. Doncaster. Kildwick.

Oscillaria leptotricha Kütz. Adel Bog; W. and G. S. West.

*__Oscillaria tenuis__ Ag. Var. **viridis.** Manningham Park; G. S. West.

Oscillaria muscorum Carm. Adel Bog; Eldwick; W. and G. S. West. Doncaster.

Oscillaria limosa Ag. Frizinghall; W. and G. S. West. Penyghent; G. S. West. Malham.

*Var. **chalybea** K. Rombald's Moor; Hawksworth; W. and G. S. West.

Oscillaria nigra Vauch. Adel Bog; Baildon; W. and G. S. West.

*__Oscillaria chalybea__ Mertons. York; F. Bewlay. This was sent to me as 'a pest in a conservatory.' Near Keighley.

Oscillaria frölichii Kütz. Baildon; Wigton Moor.

*__Lyngbya vulgaris__ Kirch. Horton Park near Bradford; W. and G. S. West.

*__Lyngbya papyrina__ Kirch. Near Bradford.

*__Lyngbya turfosa__ Carm. Doncaster.

Class III.—RHODOPHYCEÆ.

Fam. II.—*CHANTRANSIACEÆ.*

Chantransia violacea Kütz. Horton Park; W. and G. S. West. This was very fine among *Rhynchostegium rusciforme* B. & S.

Class V.—DIATOMOPHYCEÆ.

Fam. I.—*DIATOMACEÆ.*

Epithemia turgida Sm. Cautley Spout.

*__Epithemia gibba__ Kütz. Cullingworth.

*__Epithemia argus__ Kütz. Near Bradford; Cullingworth.

*__Epithemia alpestris__ Sm. Cullingworth.

Amphora ovalis Kütz. Marley; Cullingworth; near Keighley.

Cocconeis placentula Ehrenb. Marley.

*__Cyclotella kützingiana__ Thw. Cullingworth.

Campylodiscus spiralis Sm. Marley.

Surirella biseriata Breb. Saltaire; Marley; G. S. West. Adel Bog; Leeming; etc.; W. and G. S. West.

*__Surirella linearis__ Sm. Marley; Eldwick; Kildwick; Cullingworth. Adel Bog; W. and G. S. West.

*__Surirella splendida__ Kütz. Horton Park; W. and G. S. West.

Surirella ovata Turp. Chellow Dean; W. and G. S. West. Gooie.

*__Surirella angusta__ Kütz. Chellow Dean; W. and G. S. West.

*__Surirella minuta__ Breb. Allerton; Marley. Horton Park; W. and G. S. West.

*__Surirella pinnata__ Sm. Eldwick. Near Bradford; Chellow Dean; W. and G. S. West.

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WM. DENISON ROEBUCK, F.L.S.,

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WITH THE ASSISTANCE IN SPECIAL DEPARTMENTS OF

J. GILBERT BAKER, F.R.S., F.L.S., Royal Herbarium, Kew;

CHAS. P. HOBKIRK, F.L.S., Dewsbury;

W. EAGLE CLARKE, F.L.S., M.B.O.U., Museum of Science & Art, Edinburgh;

GEORGE T. PORRITT, F.L.S., F.E.S., Greenfield House, Huddersfield;

ALFRED HARKER, M.A., F.G.S., St. John's College, Cambridge;

W. BARWELL TURNER, F.C.S., F.R.M.S., 55, Reginald Terrace, Leeds.

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BOOKS RECEIVED.

T. Mellard Reade—Effects of Contraction during the Cooling of Intrusive Masses of Granite. 8vo reprint, March 1889, 5 pages. [Author.
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YORKSHIRE NATURALISTS' UNION.—ENTOMOLOGICAL SECTION.—The President and Secretaries of the Section will be pleased to receive the names and addresses of those members specially interesting themselves in this branch. The object in view is to circulate a fairly complete list amongst the members of this section, and thereby to facilitate the exchange of information, and also, if sufficient encouragement is given, to publish (in the Annual Report of the Section) at the close of the season a list of Yorkshire Occurrences of Insects.

Address the President:—Mr. N. F. Dobrée, The New Walk, Beverley;

Or the Hon. Secretaries:—Mr. J. H. Rowntree, Westwood, Scarborough; Mr. W. E. Brady, 1, Queen Street, Barnsley.

Cymatopleura elliptica Sm. Hawksworth.

Cymatopleura solea Sm. Hawksworth—a small form, 102 μ in length, agreeing with Smith's figure of *C. apiculata* with the exception of the *apicula*.

*__Cymatopleura apiculata__ Sm. Marley. Horton Park; W. and G. S. West.

*__Cymatopleura hibernica__ Sm. Hawksworth.

Nitzschia sigmoidea Sm. Allerton.

*__Nitzschia brebissonii__ Sm. Gordale.

*__Nitzschia tenuis__ Sm. Allerton. Gordale. Horton Park: Chellow Dean; W. and G. S. West.

Nitzschia linearis Sm. Gordale; Goole.

Nitzchia amphioxys Sm. Goole. Chellow Dean; W. and G. S. West.

Nitzschia dubia Sm. *Var. β. Chellow Dean; W. and G. S. West.

*__Nitzschia acicularis__ Sm. Austwick.

Nitzschia lanceolata Sm. Near Mirfield.

Amphipleura pellucida Breb. Cullingworth.

*__Navicula crassinervia__ Breb. Cullingworth. Adel Bog; W. and G. S. West.

Navicula cuspidata Kütz. Elslack.

Navicula lanceolata Sm. Kildwick; Cullingworth.

Navicula rhomboides (Ehrenb.) Greg. Cullingworth; Baildon; etc.

Navicula rhynchocephala Kütz. Cullingworth; Chellow Dean; W. and G. S. West.

Navicula ovalis Sm. Marley; Cullingworth. Chellow Dean; W. and G. S. West.

*__Navicula minutula__ Sm. Cullingworth.

Navicula affinis Ehrenb. Cullingworth; Chellow Dean; Adel Bog; W. and G. S. West.

Navicula inflata Kütz. Cullingworth; Kildwick.

*__Navicula gibberula__ Kütz. Marley.

Navicula amphirhynchus Ehr. Eldwick.

Navicula amphisbæna Bory. Near Bingley.

*__Navicula dicephala__ Kütz. Kildwick.

*__Navicula cryptocephala__ Kütz. Bradford; Cullingworth; Kildwick; Baildon; Wigton Moor, etc.

Navicula angustata Sm. Cautley Spout. Chellow Dean; W. and G. S. West.

Pinnularia major Sm. Eldwick; near Bradford; etc.

Pinnularia cardinalis Ehr. Doncaster. Adel Bog; W. and G. S. West.

Pinnularia nobilis Ehr. Cullingworth; Baildon; Austwick; Doncaster. Marley; G. S. West. Rombald's Moor; W. and G. S. West.

Pinnularia viridis Sm. Ilkley. Kildwick, etc.

Pinnularia radiosa Sm. Cautley Spout.

*Pinnularia alpina Sm. Cullingworth.

*Pinnularia stauroneiformis Sm. Eldwick; Wigton Moor.

*Pinnularia gibba Ehrenb. Cullingworth; Wigton Moor.

Pinnularia mesolepta Sm. Marley; Cullingworth.

*Pinnularia acrosphæria Rabenh. Eldwick.

Stauroneis linearis Ehrenb. Marley.

Pleurosigma lacustre Sm. Chellow Dean; W. and G. S. West.

Pleurosigma spencerii Sm. Manningham; W. and G. S. West.

*Synedra lunaris Ehrenb. Cullingworth; Sedbergh; Wigton Moor. Chellow Dean; Baildon; Adel Bog; W. and G. S. West. Penyghent, etc.; G. S. West.

Synedra ulna Ehrenb. Doncaster. Woolley. Kildwick. Ilkley, etc.

Synedra splendens Kg. Austwick; Sedbergh; Elslack; Doncaster; Goole; Marley.

*Synedra oxyrhynchus Kütz. Cullingworth.

*Cocconema cistula Ehrenb. Rombald's Moor; W. and G. S. West. Cautley Spout.

Cocconema parvum Sm. Wigton Moor.

Gomphonema acuminatum Ehrb. Sedbergh; Wigton Moor.

Gomphonema capitatum Ehrb. Near Mirfield; Cullingworth.

Gomphonema tenellum Kütz. Marley.

Gomphonema curvatum Kütz. Horton Park; W. and G. S. West.

*Gomphonema ventricosum Greg. Cautley Spout.

Meridion circulare Ag. Elslack. Woolley. Howgill Fells. Saltaire; Marley; etc.; G. S. West.

*Himantidium arcus Sm. Cullingworth; Cautley Spout.

*Himantidium majus Sm. Cullingworth.

*Himantidium soleirolii Kütz. Kildwick.

Himantidium undulatum Sm. Cullingworth.

Himantidium gracile Ehrenb. Elslack. Cullingworth. Leeming; Marley; Adel Bog; W. and G. S. West.

Himantidium pectinale K. Cullingworth.

*Odontidium mesodon Kütz. Horton Park; W. and G. S. West.

*Odontidium mutabile Sm. Marsden; Howgill Fells; Cullingworth.

Odontidium hyemale Kütz. Howgill Fells.

Fragilaria capucina Sm. Adel Bog; W. and G. S. West. Sedbergh, etc.

*Achnanthes exilis Kütz. Cautley Spout. This occurred in immense quantities, the *stipites* being attached to the *stipites* of *Gomphonema geminatum* Ag. and *G. ventricosum* Greg.

Diatoma elongatum Ag. Doncaster.

Tabellaria ventricosa Kg. Cullingworth; Wigton Moor. Leeming; Rombald's Moor, &c.; W. and G. S. West.

Tabellaria flocculosa Kütz. Cullingworth. Frequent all over our millstone grit district.

Tabellaria fenestrata Kütz. Cullingworth.

Melosira orichalcea Kütz. In plenty near Marsden.

Melosira varians Greg. Woolley; Bingley; Steeton.

*Melosira nivalis Sm. Gilstead.

*Melosira granulata Pritch. Chellow Dean; W. and G. S. West.

Asterionella formosa Hass. Chellow Dean; W. and G. S. West.

An asterisk has been prefixed in error to *Staurastrum dejectum* Meyen VAR. *apiculatum* Breb.

The above list comprises 100 species and 11 varieties and forms additional to those already recorded for the riding.

In the 'Flora of West Yorkshire' one diatom has (I think) been numbered twice, '*Frustulia olivacea* Kütz.' in the Addenda being already recorded as '*Gomphonema olivaceum* Ehrenb.'; therefore 381 is the correct number of species of Algæ recorded in the 'Flora,' and not 382. With these additions the total number will now reach 481 species and 26 varieties and forms.

Cosmarium orthostichum (Lund) has also by a mistake been entered in the 'Flora' under *Staurastrum*.

April 1889.

Mr. I. Robinson, of The Wash, Hertford, thinks there may be two other species. He has examined the gathering from Cautley Spout near Sedbergh, and remarks:—'*Synedra amphicephala* Kütz. *S. famelica* Kütz., many. The two last-named are small forms and difficult to identify, as the figures given in different works do not quite closely agree. The latter forms are very numerous. . . I have not found it noticed as a British species, but O'Meara gives several habitats in Ireland for *Synedra amphicephala* Kütz.; his figure of it, however, appears to be identical with Van Heurck's for *S. famelica* Kütz., so I cannot feel very positive as to the identification.' If these two turn out to be the above-named species, they also will be additional. Mr. Robinson also remarks:—'*Gomphonema ventricosum* Greg. There are many sporangial valves of this species which are considerably larger than the normal forms; these latter are figured by Van Heurck (xxv. 15), and are named *G. ventricosum* var. *ornata* Grun. They are, however, most clearly sporangial forms, as I found several sporangia with the valves in situ before the material was treated with acid. I do not know whether they have been observed before, but I have seen no notice of them.'

[The above list contains many rare and extremely critical species, certain of which are so like commoner plants that very nice discretion has to be exercised in their diagnosis, e.g., *Penium mooreanum*, *Cosmarium quadrum*, *C. quaternarium*, and *C. ochthodes*, etc., and above all, *C. obliquum*, the latter being one of the rarest Desmids yet known. As to classification, the anomalies of chlorophyll arrangement are such that, in our present state of knowledge, it would perhaps be better to 'lump' all the forms intermediate between Cosmarium and Penium under Nägeli's genus *Dysphinctium*, relegating those with perfectly cylindrical bodies and obsolete *isthmi* to *Penium*. On this we would remark that the proposals of continental botanists do not meet the anomalies referred to, and we think it better to classify purely by affinity of form, until our knowledge is vastly expanded. The observations of Archer in the Q. J. Mic. Sci., 1866, pp. 71 and 121, may be taken as dealing with the crucial points of these distinctions, and, to this date, Archer's remarks have not been controverted.—W.B.T.]

NOTE—LEPIDOPTERA.

Melanism in Boarmia repandata.—At the February meeting of the Entomological Society of London, Mr. G. T. Porritt exhibited several melanic specimens of this insect from Huddersfield, and—for comparison—two specimens from the Hebrides. Mr. R. M'Lachlan remarked that melanism appeared to be more prevalent in Yorkshire and the north midlands than in the more northern latitudes of the United Kingdom.—H. Goss, Sec. Ent. Soc. Lond.

LIST OF CECIDOMYIDÆ FOUND NEAR TADCASTER.

FRANCIS G. BINNIE.

The arrangement here followed is that of Dr. Schiner's 'Catalogus Systematicus Dipterorum Europæ,' 1864. The chief interest in these minute gall-midges is to be found in their economy and productions rather than in the perfect insects themselves. The name of each species is followed, therefore, by an indication of its food-plant, and the gall is briefly characterised.

Diplosis tritici, the well-known wheat-midge, is the only species in this list which is not a gall-maker, but lives free, often causing considerable injury.

Cecidomyia rosaria Lw. Gall found on various willows; terminal compact cluster of leaves, with central cell containing a single larva. Newton Kyme; Stutton.

Cecidomyia persicariæ L. On *Polygonum persicaria*. Margin of leaf rolled, swollen, and reddish. Stutton.

Cecidomyia salicina Schrk. On *Salix alba*. End of shoot arrested and somewhat twisted. Newton Kyme; Stutton.

Cecidomyia onobrychidis Bremi. On *Vicia cracca*. Folded fleshy leaflets. Near Catterton.

Cecidomyia marginemtorquens Bremi. On *Salix viminalis*. Margin of leaf folded. Willow-garth, Stutton.

Cecidomyia cratægi Winn. On *Cratægus oxyacantha*. End of shoot arrested, forming a tuft of leaves. Common; Tadcaster, etc.

Cecidomyia veronicæ Bremi. On *Veronica chamædrys*. Terminal, forming woolly globular heads. Everywhere; Tadcaster, Spofforth, etc.

Cecidomyia galeobdolontis Winn. On *Galeobdolon luteum*. Axillary woolly gall. Boston Spa.

Cecidomyia urticæ Perris. On *Urtica dioica*. Irregular swellings of mid-rib and principal veins of leaf. Common; Tadcaster, etc.

Cecidomyia ulmariæ Bremi. On *Spiræa ulmaria*. Leaf-gall, hemispherical above, produced into a cone beneath. Everywhere.

Cecidomyia bursaria Bremi. On *Nepeta glechoma*. Oblong-cylindric hairy gall on upper surface of leaf. Boston Spa; Stutton.

April 1889.

Cecidomyia rosarum Hardy. On *Rosa canina*. Folded incrassated leaflet. Near Kirkby Overblow.

Cecidomyia corrugans F. Lw. On *Heracleum sphondylium*. Lobes of leaf puckered and prevented from expanding. Near Catterton (about a mile and a half N.E. of Tadcaster).

Cecidomyia pilosellæ Binn. On *Hieracium pilosella*. Margin of leaf involutely rolled. Near Great Alm's Cliff.

Diplosis botularia Winn. On *Fraxinus excelsior*. Fleshy fold along midrib of leaf. Boston Spa.

Diplosis tritici Kirby. Living free in the heads of wheat. Tadcaster.

Hormomyia piligera Lw. On *Fagus sylvatica*. Cylindrico-conical hairy gall on upper surface of leaf. Tadcaster.

Hormomyia capreæ Winn. On *Salix caprea*. Swellings on midrib and principal veins of leaf, hemispherical above, conical below. Kirkby Overblow.

NOTE—DIPTERA.

A Swarm of Diptera in February.—During a country walk in the neighbourhood of Idle, on February 17th, I witnessed a somewhat remarkable phenomenon. Along the highway, extending for two field lengths, was an immense number of small flies, about half the size of the 'house-fly.' At this particular point, but nowhere else, they were in countless numbers, both on the pavement and on the walls; indeed, I never at any time saw more insects together. Apparently they were all one species, and many of them were infested with a small parasite. A few days previously manure had been spread on the fields, from which I imagined the flies had been brought forth by the unusually warm sunshine which prevailed. However, I secured a few examples, and forwarded them to Mr. R. H. Meade, of Bradford, a well-known authority on this class of insects, who says:—'The little flies have all emerged from the manure, as you supposed, and are specimens of the common *Borborus equinus* Fallen. The larvæ feed on horse-dung, and I have often noticed that the manure spread on fields was full of pupæ. It is not usual for them to hatch in such numbers quite so early in the year, but I have frequently seen a good many of the flies out in mild weather in the winter and early spring.'—H. T. Soppitt, 3, Rosemount, Bolton, Bradford, March 16th, 1889.

NOTES—ORNITHOLOGY.

Hawfinches in Northumberland.—The Hawfinch (*Coccothraustes vulgaris*) is still increasing in numbers in the North, several having been shot last week up the valley of the Tyne.—H. T. Archer, Newcastle-on-Tyne, Feb. 14th, 1889.

Tame Blackbird in the Newcastle Museum.—A female Blackbird (*Turdus merula*) has taken up her abode in one of the curator's rooms in our museum, and although the window is constantly open she only occasionally flies out, but returns before long. In the same room is a live Kestrel, of which the Blackbird has not the least fear.—H. T. Archer, Newcastle-on-Tyne, February 14th, 1889.

Crossbills in Cheshire.—On Jan. 22nd, I saw and watched for some time a flock of about twenty Crossbills (*Loxia curvirostra*); they were feeding on the larches in a plantation bordering Vale Royal New Park, on the outskirts of the Delamere Forest district, and were very tame.—W. I. Beaumont, Knutsford, March 6th, 1889.

NOTES MADE IN 1888 UPON ARION ATER AND SOME OTHER SLUGS.

H. WALLIS KEW, F.E.S., M.C.S.,
Stroud Green, London.

THE following is a summary of the writer's notes in 1888 relating to the slugs. A brown specimen of *Arion ater* was kept in captivity from May to October, notes being taken as to the substances upon which it fed, etc., and a few other slugs were kept for shorter periods. They were stored in a dark cupboard, in small glass jars. Pieces of linen were stretched over the mouths of the jars, on which a few drops of water were placed once or twice a day. The slugs often cleaned the glass, as Limnææ do in aquaria, and they gnawed holes in the linen, and more than once escaped from the jars.

Mr. Roebuck, the Conchological Society's recorder, has obligingly examined and reported upon consignments of living slugs sent to him from time to time, and it has been thought well to affix the mark ! to indicate that the slug referred to, or in the case of collective statements one specimen at least, has been seen by him.

ARION ATER.

This slug appears to creep out and feed during the day more frequently than the other common slugs, with the exception, possibly, of *Limax agrestis*.* In the Lincolnshire marshes and fens in August black specimens were frequently seen wandering about by the road- and drain-sides, and the following notes as to their food were made:—

At Tetney, about 2 p.m.: one feeding on leaf of *Sonchus asper*: cloudy.

At Bourn, about 3 p.m.: one feeding on wart-cress (*Senebiera*): cloudy.

At Gosberton, between 9 and 10 a.m.: considerable numbers crawling in a ditch; one feeding upon a small fungus, another upon a daisy leaf: cloudy.

At Quadring, about noon: a number moving by the sides of the drains; one eating a hole into a leaf of *Plantago major*: bright, a heavy shower in the early morning.

In moist places amongst *Juncus*, *Ranunculus flammula*, and *Mentha aquatica* in Grisel-bottom, Burwell Wood, Lincolnshire, fine adults of the brown form (v. *brunnea* !) crawl about or remain at rest generally unconcealed all day long. They exhibit but little colour

* See Mr. Daniel's observations on the diurnal habits of *Limax cinereo-niger* in the forests in the neighbourhood of Heidelberg. Quart. Journ. of Conch., i. 112.

variation; some few are slightly paler than the rest, and occasionally one may be seen with a yellow foot-fringe.

Near Wood Green, Middlesex, about midday, in September, a red specimen, not quite full grown, was seen crawling upon a path with the sun brightly shining upon it.*

By the Muswell Hill Road, Highgate, I have noted this species feeding, at night, on cabbage-leaves, and on a leaf of elder, which happened to be lying on the ground.

An adult of the v. *brunnea* was kept in captivity, as mentioned above, from May to October, during which time twenty-six substances were eaten, and one, namely, damp paper, was refused. A specimen of the v. *rufa* !, however, taken in a wood in Lincolnshire, when turned out upon a newspaper, after two days' confinement without food, commenced at once to eat the paper, making a number of small holes as it crawled along. The dead bodies of *Arion subfuscus*, *A. hortensis*, *Limax maximus*, *L. flavus*, and *L. agrestis*, a dead *Unio*,† freshly-turned pupæ of *Adimonia tanaceti*, a small part of the abdomen of a dragon-fly (*Diplax striolata*), leaves of lettuce, *Scabiosa succisa*, and *Solanum nigrum*, flowers of *Pedicularis sylvatica*, *Ranunculus flammula*, *R. acris*, *R. repens*, and *R. bulbosus*, and the lichens *Evernia prunastri* and *Ramalina farinacea* were readily fed upon. *Polypodium vulgare*, sea-holly (*Eryngium maritimum*), and berries of *Arum maculatum* were taken in small quantities, and with evident reluctance, as also was Pears' soap. On one occasion an apple was given to the slug, into which it made two small holes, and by means of these in the course of five days it scooped out about a third of the substance of the fruit. The hispid nature of *Picris echioides* did not serve as a protection against the slug. Part of a freshly-gathered plant was given to it in September, and beginning where a small part of the epidermis had been torn away, it ate freely of the stem, and

* In a brick-field at Donington-on-Bain, in April 1886, two adults of *Arion ater* were seen crawling in the sunshine.

† There is a widely spread popular impression that slugs feed exclusively on vegetable substances. That this is not the fact has, of course, long been well known. Lister, in his 'Historiæ Animalium Angliæ,' 1678, mentions having seen *Limax agrestis* feasting on the viscera of a beetle, and since the time of Lister many observers have published notes on the promiscuous feeding of these creatures, *Arion ater* being noted as feeding upon a dead mouse, beef, the dead bodies of snails and slugs, earth-worms, poisonous fungi, etc., etc., and it has also been known to swallow inorganic matter, presumably for the sake of the fragments of organic substances obtainable with it. A specimen devoured sand, just taken from the beach, which contained fragments of animal matter rendering it luminous when trodden on in the dark, until its fæces were composed of pure sand, united together by a little mucus. See note by Dr. Gray, Ann. of Nat. Hist., 1839.

on the two following days parts of the leaves were eaten. The poisonous fungus *Russula emetica*, of which Dr. Cooke kindly sent me a number of specimens, was eaten with impunity.* Bread was devoured greedily, and once the slug took it from my hand.

On the 17th July the slug gnawed a roundish hole, about 5½ mm. in diameter, in the linen covering the mouth of the jar, through which it tried to escape, but appeared to be unable to do so. A new piece of linen was supplied, but on 29th July another hole, about 8 mm. in diameter, was made, through which the slug crawled out of the jar; and it escaped again in September, at a time when it had not been well supplied with suitable food, through a hole 5 or 6 mm. in diameter.

Sixty-two eggs were deposited in September. On the morning of the 23rd, thirteen or fourteen had been laid. The deposition was continued during the day, and completed the same night, the slug having crawled away from the eggs by the following morning.

The fæces were frequently eaten, even when there was a good supply of food in the jar. They vary much in colour, as was noticed by Lister, according to the food. When the slug was feeding on fresh foliage, they were dark green; on flowers of *Ranunculus*, deep yellow; on apple, amber-coloured; on berries of *Arum*, scarlet; on *Ramalina*, pale greyish; on bread, yellowish white.

My friend Mr. G. K. Gude informs me that a specimen of this species, kept by him, devoured slime, detached from its own body, when offered to it.

From the peculiar twitching movement exhibited by *Arion ater* when handled or annoyed, it would appear that it is one of the most irritable of our slugs.

ARION SUBFUSCUS.

By the sides of the Muswell Hill Road, near Highgate Woods, this is the most plentiful slug, and individuals attain a good size.†

* Lister, in the 'Historiæ Animalium Angliæ,' mentions that certain slugs delight in *biting* fungi; and in a note, dated 1672, which forms part of his 'Letters and divers other mixt discourses in Natural Philosophy,' he relates having seen certain odd mushroms, full of juice not to be endured upon the tongue, much eaten by the 'grey meadow naked snail.' And see the writings of M. Recluz (Revue Zoologique, 1841, 10, p. 307), and many others.

† These from Muswell Hill were decidedly amongst the largest examples of *A. subfuscus* that have come under my observation. One of them was—although banded—extremely like *Arion ater* in size, foot-fringe, and in the well-known irritability when handled or disturbed, so like that it was for precaution's sake submitted to Mr. Ashford, who by dissection proved it to be true *A. subfuscus*.—W.D.R.

When searching at night, with a lantern, one may find them in large numbers, crawling on the paths by the road-sides, and in Churchyard Bottom Wood. The form *cinereofusca* ! slightly exceeds *rufofusca* ! in numbers.* In July one was seen feeding upon a crushed slug of its own species, and in September another was noticed eating a cabbage-leaf. On one occasion three were found under a large piece of paper, upon which, judging from the colour of the fæces, they had been feeding. In June I saw this species ! devour slime left from the caudal gland of *Arion ater*.

In June, July, and August specimens were kept in captivity. They ate bread, dead *Amalia marginata*, and leaves of lettuce freely, and also leaves of *Solanum dulcamara* when decomposing. A fungus (*Phallus impudicus*) popularly known as the 'stinkhorn,' was put into a jar in which three slugs were kept on 8th August, and was eaten voraciously during the night; by the morning of the 10th, however, all three slugs were dead. Death was caused, I imagine, not by the poison contained in the fungus, but by its very powerful and fetid smell. More than once my slugs died when bad smells were given off by decomposing matter, which was allowed to remain too long in the jars.

The animals spent much time in following each other about, the head of one being upon the tip of the tail of the other, but copulation was not actually observed.

AMALIA MARGINATA.

An adult of this species, which was kept for a short time, in August, fed on dead larvæ of *Euchelia jacobææ*. Six larvæ, just killed in boiling water, were given to it, three of which were devoured within two hours. It was not, however, till fifteen days later that the sixth was consumed.

LIMAX FLAVUS.

A large specimen, taken on a wall at Hampstead, on 14th June, was kept for a short time, nothing being given it for food except a piece of lump sugar. I never saw the slug gnaw the sugar, and it gradually decreased in bulk, and became darker in colour, and died in nine days. When dead it was of a very dark colour. On putting it into water the dried slime was dissolved, and the dead slug became surrounded by a solution of the *brightest* yellow colour.

* Other slugs I have taken by the Muswell Hill Road are *Arion ater*, vars. *plumbea* !, *brunnea* !, and *rufa* !, *A. hortensis*, *Amalia marginata* !, *Limax agrestis* !, and *L. maximus*, vars. *fasciata* ! and *mulleri*.

LIMAX AGRESTIS.

A field slug was in the jar with the *Arion ater* referred to above from 17th June to 4th July. It was not preyed upon by the *Arion*, although I saw the latter attack it. It was noticed feeding with the *Arion* on a dead *Limax flavus*, and on leaves of lettuce.

This slug will, it appears, bite as a means of defence. On stopping, with my finger, the escape of one which was being attacked from behind by a large *Arion*, it attempted to bite fiercely, and the rasping of its odontophore was distinctly felt. *Arion subfuscus*, *Limax maximus*, and possibly all the slugs, will rasp the skin if the fingers are held to them when they are feeding, and they will continue to do so for a considerable time, but in no case have I found the skin to be abraded.*

Between 9 and 10 p.m., on 11th September, in a wood at Highgate, I observed a pair of field slugs in copulation, on twigs near the ground.

LIMAX MAXIMUS.

This species fed freely upon bread, and it also ate *Russula emetica*, though somewhat sparingly. Ripe berries of *Solanum dulcamara* were refused. A red specimen of *Arion ater*, about half-grown, was in the jar with a fine adult *Limax maximus* v. *mulleri* thirty-three days, and although they were without food more than half the time, the *Arion* was not preyed upon. It was frequently attacked by the *Limax*, and was denuded of its slime, and numerous small pieces of skin were gnawed off both from the body and mantle. Many slugs delight in pulling off and devouring the slime of their fellows. In June, after a search in Hampstead Lane, I turned out the contents of a collecting-box upon a newspaper, and the slugs attacked each other fiercely, pulling off slime, but not inflicting wounds. The box contained a large specimen of *Limax maximus* v. *mulleri*!, a smaller one of v. *fasciata*!, and two adults of *L. flavus*! † No attempt was made by the slugs to defend themselves against the attacks, not even by the large *mulleri* when attacked by the smaller *fasciata*, but they effected their escape by crawling away, as it appeared to me, at an increased speed.

* But see note, 'Slugs biting,' by Mr. Gain, Science Gossip, July 1885.

† Other slugs I have taken in Hampstead Lane during the year are:—*Testacella scutulum*!, *Arion hortensis*!, *Amalia gagates* v. *plumbea*!, *Amalia marginata*!, and *Limax agrestis*.

THE NEW RED SANDSTONE AND THE PHYSIOGRAPHY OF THE TRIASSIC PERIOD.

T. MELLARD READE, C.E., F.G.S., F.R.I.B.A.,
Park Corner, Blundellsands, near Liverpool.

PERHAPS there are few rocks that at first sight appear less interesting than the Triassic Sandstones, yet to the physical geologist the monotonous uniformity of their constitution constitutes their interest. It is certainly tantalising to traverse hundreds of square miles of country and find the only variation in the constitution of the rocks to be in the colour, size, and form of their constituent grains, and the presence or absence of quartzite pebbles. But when we come to reflect upon the cause of this wide-spread similarity, our difficulties, and therefore our intelligent interest begins. The Triassic Sandstones of Lancashire and Cheshire contain extremely few derived fragments of the rocks of the basin in which they lie. A few Carboniferous pebbles and an occasional derived Carboniferous Limestone fossil are all that can be found to reward a careful searcher.

The vast bulk of the grains of which all the sandstones are composed are of quartz, and the nature of a particular stone is due to variations in their size and in their comparative angularity or roundness. In some cases, as in the Upper Bunter at Runcorn, the rock may be described as composed of microscopic pebbles, so perfectly rounded are they; the intense red colouration being due to a coating of ferric oxide. The grains seem to be simply in contact, and there must be very little cementing silica, as the rock crumbles to pieces in the hand, the grains running like small shot. The Upper Bunter of Ness Cliff in Shropshire is in general appearance and brilliancy of colour the same rock, but an examination with the microscope shows that the grains are smaller and angular. This stone is used for building purposes. The Bunter of Bridgenorth in Shropshire is like that of Runcorn. These 'millet seed' grains, though distinguishing the Upper and Lower Bunter, are not confined to them. When, however, we come to examine the true building-stones of the Trias, such as the Keuper of Storeton in Cheshire and of the great quarries of Grinshill in Shropshire, or the Bunter of Woolton, Everton, Pex Hill, and innumerable other places where building-stone is quarried, we find that the rock glistens and sparkles in the sun. An examination with the microscope shows that this is due to a crystal growth upon the individual grains, presenting true reflecting surfaces. This deposition of secondary quartz has been pointed out by Bonney, Sorby, J. A. Phillips, G. H. Morton, and

others, though I am not aware that it has been noticed before as specially characterising the building-stones. In fact it may be said that the value of the building-stone is in direct relation to this deposition of silica. Some of the sandstones are very soft when quarried, but stand the weather remarkably well, as may be seen in the stone of the Town Hall and many other buildings in Liverpool, and the excellent examples in Shrewsbury of Grinshill stone. Such is the fame of these quarries, that the good people of Shrewsbury seem to think all building-stone comes from Grinshill! As I have already said, the bulk of the grains are of quartz, but there is also felspar present, and occasionally mica. The stone varies very much in quality, as it does in most sandstone quarries, the defect of the Storeton stone being the frequent presence of galls of grey marl. The development of the crystals of quartz is doubtless due to the porosity of the stone, which while allowing the circulation of water, also gives interstitial space for the pyramidal growths on the grains. Some of the best of these building-stones, I have proved by experiment, will hold as much as three quarts of water to the cubic foot*; and it is this capacity for absorption that makes the Triassic Sandstones such excellent water-bearing reservoirs. These details, familiar to those who live on the Triassic areas, are interesting in themselves; but they are doubly so when we try to picture how their characteristics came about. How, indeed, can we account for the enormous development of siliceous sands, to the exclusion of materials of the rocks of the basins in which they lie; for local fragments would seem to be principally confined to the conglomerate beds, such as are to be found in great development at Bridgenorth? If the quartz grains are derived from the degradation of granite rocks, what has become of the other constituents of the granite? It is true there are occasional beds of marl intercalated in the sandstones, but it is only in the upper part of the Trias that any great development of marl occurs, and in this are found the salt-beds for which Cheshire is so distinguished.

The distribution of sediment by water is dependent upon the size of the grains and the velocity of the currents; hence it would seem that very uniform conditions must have prevailed over a large area for a lengthened space of time during the laying-down of the Triassic Sandstones. It appears to me that these conditions could not very well obtain in a lake, for lakes as a rule are distinguished for the fineness of the sediment laid down in their deeper parts; and one would also expect to find calcareous beds and fine-grained mud-

* Experiments on the Circulation of Water in Sandstone.—Proc. of Liverpool Geol. Soc., 1883-4.

stones, none of which are to be met with in the great mass of the Triassic Sandstones. On the other hand, river action, as suggested by Prof. Bonney, presents difficulties, owing to the wide expansion of the deposits and the absence of any indications in the rocks of the former existence of definite river channels. When we consider that the Bunter Sandstones at Bootle proved to be over 1,200 ft. thick, and presented only the usual variations in the beds passed through by the boring tool, it also becomes evident that the lower beds, if fluviatile, could not have been laid down in water of that depth. The difficulty might be met by assuming a synclinal sinking to be proceeding pari passu with the accretion of the beds in the river valley; but what evidence is there of such a movement having taken place? Again, the shape and extension of the area of deposit now existing, which is only a remnant of what has been, does not lend itself to this explanation. The Triassic Sandstones envelope, or rather surround, the Pennine chain, and are to be found also in the Vale of Clwyd, flanked on either side by Silurian hills. They exist even in Ireland, and doubtless are in considerable development in the basin of the Irish Sea. If the deposit had taken place in a large lake, we should surely find greater variations and replacements of beds than what are met with in the rocks. The shallow deposits might be sand; the deeper, marl; but this is not the arrangement met with, the marls of the Trias occupying the summit of the series, the sandstones the base. The subject is surrounded with difficulties; there are no fossils to tell us whether the waters at first were fresh or saline, nor can we point with any certainty to the locality from which the quartzite pebbles have been derived. The uniformity of the deposits, their extent, and the prevalence of current-bedding, incline me to think that the Bunter Sandstones have been laid down in a tidal sea; in which case it must have been connected with the open ocean, otherwise a tidal wave of sufficient magnitude to create such wide-spread current-bedding could not have been originated. On the coming-in of the Keuper a different set of conditions obtain; we have the well-known reptilian foot-prints in the Lower Keuper Sandstones at Storeton and Lymm, telling eloquently, with ripple marks, of shelving shores; and these are succeeded by a vast thickness of marls, also full of ripple-marks, pseudomorphs of chloride of sodium, and finally beds of salt, together with gypseous deposits. Doubtless, all these latter were laid down in a lake or lakes. The presence of ferric oxide as a coating to the grains of the sandstones has been considered evidence of their fresh-water origin; but it would appear from microscopic examination that the infiltration of this mineral has been posterior to the

development of the siliceous cement which holds the grains together, and it might, considering the well-known porosity of the sandstone, have been introduced after the formation of the lake.

Much more remains to be done before the physiography of the Triassic period can be graphically reproduced. Those who are interested in the question will find a very good résumé of the various views held by eminent geologists on the subject—which, however, can so far be looked upon only as very sketchy suggestions—in Mr. Jukes Brown's 'Building of the British Isles.'

I am not aware that tidal action has been invoked by any geologist, before this was written, to account for the current-bedding of the Bunter Sandstones. Wind and fluviatile action have been suggested, and possibly the current-bedding in parts of the Trias may be due to these causes. When, however, we consider the extraordinary thickness, especially about Liverpool, of the Bunter Sandstones, as proved in very numerous well-borings of which I have many records, the presence of large pebbles, and the absence of all indications of shore-lines or land-surfaces, it is difficult not to believe that most of the sand has been accumulated in areas where it has constantly been covered with water. If this be so, there is no agent I know of capable of creating currents at the required depths other than tidal action. That the tides act at enormous depths I have elsewhere shown*; while at the same time the area of water simultaneously affected is great. On the other hand, river action is shallow and local, and the channels would have to change their courses frequently, and cover an enormous area of a shape uncommon in fluviatile deposits, to lay down sedimentary masses like the Bunter Sandstone.

Of such a phenomenon we find no indications in the rocks themselves. A tidal sea, fed with sand by rivers from a granitic and quartzite area and bordered by sand-dunes and large tracts of sand-covered country, encroached upon by the waters from time to time, seems to me, so far as my present knowledge extends, the most feasible sort of physical conditions for producing such beds as we find put together in the Bunter. These ideas are, however, put forward simply as suggestions to be considered together with those of other geologists already published and discussed. We need much more information than is at present available before the question can be thoroughly thrashed out. In the meantime I thought it might be of some interest to indicate these provisional views.

* See 'Tidal Action as a Geological Cause'—Proc. of Liverpool Geol. Soc., 1873-4; and 'Tidal Action as an Agent of Geological Change'—Phil. Mag., May 1888.

April 1889.

IS THE STARLING DOUBLE-BROODED?

F. S. MITCHELL, M.B.O.U.,

Clitheroe; Author of 'The Birds of Lancashire.'

THERE is considerable difference of opinion as to whether the Starling (*Sturnus vulgaris*) brings up one or more broods in a season, and as the habits of such a common bird ought to be thoroughly well known and agreed upon, and the season now approaches when the matter may be tested, I suggest that those who believe it to be double-brooded should take steps to prove they are right.

It is obvious that the onus is on this party, otherwise those who, like myself, believe in only one brood, would have to prove a negative.

It is, of course, possible that in different parts of the country, and with a greater or less proportion of nesting holes, habits may be different, but I do not think this likely.

In my own neighbourhood, where every possible hole is occupied, I do not know any case of a second tenancy in the same season, whether by the original pair or any other, and in the considerable number which for years have come under my daily observation, it is certain that only one brood is reared.

This, I think, goes a long way to prove my position, for, with such a scarcity of sites, a pair of birds would hardly give up a comfortable berth, and go into the wide world to seek another, but would be sure to bring up the second lot in the same place. It should be understood that the first brood has been brought up in its entirety, or almost in its entirety, and that no accident has happened to disturb the joys of the family education, for almost any species of bird, under circumstances of this sort, will hasten to have a second trial.

Everyone must feel an interest in the Starling, with its plumed beauty, its bustling, business-like habits, its fund of energy, its quaint attitudes, and its mimicry of almost all its feathered companions. Yet, I must say, it goes too far for me when I see it putting difficulties in the way of the Woodpecker—for instance, by occupying its nesting-hole; and though the latter ought to be easily master, the self-confidence of our energetic friend may carry the day, as the same quality does under so many conditions, avian and other.

[The Editors of *The Naturalist* will be pleased to insert suitable notes bearing upon this point.]

ON THE OCCURRENCE OF EMBERIZA CIOIDES Brandt IN YORKSHIRE.

W. EAGLE CLARKE, F.L.S., Etc.,
Nat. Hist. Dept., Museum of Science and Art, Edinburgh.

It affords me much gratification to be able, through the kindness of Mr. R. W. Chase, in whose fine collection the bird now is, to give the desired—and it may be added most satisfactory—particulars concerning the occurrence of this new European species in Yorkshire.

Mr. Chase writes me thus :—'In June last, when visiting Bempton Cliffs, I called upon Mr. Matthew Bailey at Flamborough, and from amongst his birds I selected two—the one a Pied Sparrow, the other a bird not known to me as British (I rather thought it a variety of *Emberiza schœniclus*), but which Mr. Bailey assured me he had stuffed from the flesh, and that it had been obtained near Flamborough Head. Later on he confirmed this statement by letter, giving the date as November 1886, saying it was obtained by a fisherman on the beach south of the Headland. I sent the bird to Durham, and Canon Tristram kindly identified it as *Emberiza cioides*. He communicated the occurrence, with the foregoing facts, at a meeting of the Zoological Society, January 15th, 1889, and at the request of Dr. Sclater, it has again been sent to the Society. I may add that Prof. Newton has also seen the bird.'

AUTUMN AND WINTER NOTES FROM NOTTS.

F. B. WHITLOCK,
Attenborough.

The open winter of 1888-9, though not marked by an abundance of birds, has, however, produced a fair number of species. I extract the following notes from my diary :—

1888. September 11th.—A Wood Sandpiper (*Totanus glareola*) was sent to me in the flesh, killed on the Trent below Nottingham. It appears to be an adult bird. 16th.—Saw the last of the Common Sandpipers (*Tringoides hypoleucus*), also the first (pair) Grey Wagtails (*Motacilla melanope*).

October 6th.—Saw a few Swallows (*Hirundo rustica*). 8th.—First Redwings (*Turdus iliacus*). 11th.—Surprised a Brent Goose (*Bernicla brenta*) feeding in a shallow part of the Trent. 18th to 24th.—Saw one or two Tufted Ducks (*Fuligula cristata*), Redwings,

and Missel Thrushes (*Turdus viscivorus*), common. No Fieldfares (*Turdus pilaris*) or Hooded Crows (*Corvus cornix*) seen yet. A few Grey Wagtails.

November 7th.—First flock of Fieldfares; Carrion Crows (*Corvus corone*), common. The gales in November—notably the S.W. gale lasting from 19th to 26th—brought inland several interesting birds. In addition to the Manx Shearwater already recorded in *The Naturalist*, a Grey Phalarope (*Phalaropus fulicarius*) was caught in a yard at Radford, and I myself saw a small flock of these birds flying over the Trent. I also saw a Dunlin (*Tringa alpina*). Two Petrels were seen at Awsworth, one of which was shot; it proved to be the Fork-tailed species (*Procellaria leucorrhoa*). I bought several Jack Snipe (*Gallinago gallinula*) in our market that had been shot near Nottingham.

December 1st to 7th.—The Hooded Crows arrived; they have been unusually common this winter. A few Goldcrests (*Regulus cristatus*) arrived about the same time. 13th.—A Water Rail (*Rallus aquaticus*) trapped and sent to me. 26th.—Saw an odd Golden Plover (*Charadrius pluvialis*) and a few Snipe (*Gallinago cælestis*). Lapwings (*Vanellus vulgaris*) abundant.

1889. January 1st to 16th.—A few Grey Wagtails on the drains, with an occasional Kingfisher (*Alcedo ispida*). I was shown a Spotted Crake (*Porzana maruetta*), one of a pair killed below Nottingham during the last autumn. Goosander (*Mergus merganser*) killed on the Trent on the 8th; adult male. A few Golden Plover about. 17th to 31st.—Saw Mallards (*Anas boscas*), Teal (*Querquedula crecca*), and an odd Tufted Duck; also a Dunlin and a flock of Waders (? Knots, *Tringa canutus*). Small birds scarce, except Larks, which were very common. A few Little Grebes (*Podiceps fluviatilis*) on the Trent and tributaries.

February 2nd.—Bought a Ring Dove (*Columba palumbus*); the crop contained 102 beech-nuts. 7th.—Saw thirteen Teal, two Tufted Ducks, two Wigeon (*Mareca penelope*), and a few Mallards on the Trent. 8th to 22nd.—Small birds more numerous by the Trent. Reed Buntings (*Emberiza schæniclus*) and Meadow Pipits (*Anthus pratensis*) the most common. Flushed a Sandpiper with white upper-tail coverts from a drain, probably a Green Sandpiper (*Helodromas ochropus*). 24th to 28th.—Saw a few Grey Wagtails and a solitary Coot (*Fulica atra*); also a fine Peregrine Falcon (*Falco peregrinus*). Meadow Pipits and Reed Buntings very common.

In addition to the above notes, I can record a Sand-Grouse (*Syrrhaptes paradoxus*), killed on the 10th November at Cropwell Bishop. I had the pleasure of examining this bird.

Naturalist,

BIBLIOGRAPHY:

Papers and records published with respect to the Natural History and Physical Features of the North of England.

MAMMALIA, 1886 and 1887.

THE present instalment includes not only titles for the years specified, but also those published in *The Naturalist* itself for the two preceding years 1884 and 1885; these were designedly omitted from former instalments of the bibliography, but it is now felt desirable to include for the future all titles, from our own as well as from other journals.

As before, the purely sporting and hunting notes, which occupy so large a space in the 'Field' and similar journals, find no place in our bibliography, save in those exceptional instances which involve a natural history fact of interest.

ANON. [Editor of Naturalist]. **Lincolnshire.**

[Exportation of Stoats (*Mustela erminea*) **and Weasels** (*M. vulgaris*) **from Lincolnshire** to New Zealand; commented on]. Nat., Jan. 1885, p. 143.

ANON. [signed E. G. B.]. **Northumberland South.**

Weasel [*Mustela vulgaris*] **swimming** [across Tyne, Sep. 9th, 1885]. Field, Sep. 19th, 1885, p. 423.

ANON. [signed J. A.]. **Cheviotland.**

Memoir of the late John Towlerton Leather, Esq., F.S.A., of Leventhorpe and Middleton Hall [gives an anecdote of the capture of a Badger (*Meles taxus*) in Detchnant Wood]. Proc. Berw. Nat. Club for 1885 [pub. 1886], xi. 229.

ANON. [signed R. H. H.]. **Yorkshire.**

Foxes [*Vulpes vulgaris*] **chasing Hare** [(*Lepus europæus*); in Yorkshire]. Field, Jan. 16th, 1886, p. 84.

ANON. [not signed]. **Lanc. W.**

A Man Attacked by Otters [(*Lutra vulgaris*), two in number, at Catshaw, Wyresdale]. Land and Water, Feb. 13th, 1886, p. 150; and Nat. Hist. Journ., April 15th, 1886, x. 62.

ANON. [not signed]. **Derbyshire.**

Derby Naturalists' Society [record of a pair of Otters (*Lutra vulgaris*) shot near Derby]. Young Nat., April 1886, vii. 78.

ANON. [signed 'Gyrfalco']. **Lincolnshire.**

Bats flying in the Daytime [in Lincolnshire, 12th March, 1886, 'a common bat']. Land and Water, April 3rd, 1886, p. 324.

ANON. [signed 'Kentdale,' probably J. Watson]. **Westmorland.**

Kendal Otter Hounds.—Wanton Destruction of Otters [(*Lutra vulgaris*) in Westmorland]. Land and Water, April 17th, 1886, p. 365.

ANON. [not signed]. **Cumberland, Westmorland.**

Otter Hunting and Otter Hound Packs [statistics of the packs kept; these include the Carlisle, the West Cumberland (Cockermouth), the Egre-

mont (Egremont near Carnforth), and the Kendal packs; some details are also given as to the scarcity or abundance of Otters (*Lutra vulgaris*) in the several districts]. Field, May 15th, 1886, p. 618.

ANON. [signed W., probably John Watson]. **Cumb., Westm., Furness, Lanc. W.**

The Kendal Otter Hounds [with records of Otters (*Lutra vulgaris*) on the Lune and the Wenning, at Coniston Lake, at Windermere, at Levens Bridge near Kendal, at Thirlmere and Blea Tarn, on the Duddon, in Eskdale, near Penrith, in the Eden, and near Grange]. Field, June 12th, 1886, p. 773; July 10th, 1886, p. 78; June 11th, 1887, p. 804; July 2nd, 1887, p. 44; Aug. 20th, 1887, p. 321; and Oct. 1st, 1887, p. 519.

ANON. [signed 'Hemp,' 'Cockermouth,' 'Gaylad,' and 'Derwent']. **Cumb.**

The West Cumberland Otter Hounds [on the river Ellen, at Netherhall, Derwent Bridge, &c.; at Ouse Bridge and at Thirlmere Lake, several Otters; on the Cocker and near Cockermouth; in the rivers Derwent and Marron, Bassenthwaite Lake, etc.]. Field, June 26th, 1886, p. 857; July 10th, 1886, p. 78; Sep. 4th, 1886, p. 347; and July 30th, 1887, p. 175.

ANON. [not signed]. **Westmld., Cumbld., York Mid W.**

Important Discovery of the Remains of Extinct Animals [in Caverns in Westmorland and Cumberland, and (probably) Yorkshire; the remains found included human bones and those of *Bos primogens* [sic] and *B. longifrons*, grisly (?), brown and cave bears, wolf, wild boar, wild cat, badger, horse, several weasels, fox, red and fallow deer, and—most important of all, a large and perfect skull of the beaver discovered at Sedbergh, just on the border of Yorkshire and Westmorland]. North Eastern Daily Mail; rep. Nat. World, July 1886, iii. 139.

ANON. [signed 'York']. **Yorkshire.**

The Mole [*Talpa europæa*], **its Merits and Demerits** [summing up that 'we cannot afford to grow moles in any part of Yorkshire']. Field, Sep. 11th, 1886, p. 413.

ANON. [not signed]. **Isle of Man.**

Accounts of the Calf Island in 1708 [including an item as follows: 'The Rabbets of s^d Isle this year being 180 cupp^ll at 2^d per cupp^ll . . . 01 : 10 : 00]. Manx Note Book, No. 8, Oct. 1886, vol. 2, p. 190.

ANON. [not signed]. **Linc. S.**

Otters [*Lutra vulgaris*]—**An Appeal to Masters of Hounds** [to hunt the Welland at Stamford and Deeping St. James, and its tributary the Gnash, infested with Otters, which, within living memory, have never been so numerous]. Field, Oct. 16th, 1886, p. 555.

ANON. [par. from 'Times']. **York S.E.**

The Mammoth [*Elephas primigenius*] **in Yorkshire** [a large tusk, 10 ft. long, found in the sand and gravel-pit on Castle Hill, Elloughton]. Field, May 28th, 1887, p. 756.

ANON. [signed 'The Veteran']. **Lanc. S., York Mid W.**

Capt. Yate's Otter Hounds [at Harracksford, Bradford, Grindleton, and Sawley]. Field, June 11th, 1887, p. 804.

ANON. [signed 'Falcon']. **Northumb. S.**

Otter Hunting in North Tyne [at Falstone, Bellingham, etc.]. Field, July 9th, 1887, p. 52.

ANON. [signed 'L. T.']. **Durham.**

Otter Hunting in the Wear [at Witton, Wolsingham, Chester-le-Street, and Durham]. Field, July 9th, 1887, p. 52.

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

Ackworth Reports.—Natural History Society [albino *Lepus cuniculus*, Bulldog Bat (what is this?) at Stapleton Park, and *Crossopus fodiens* at Ackworth]. Nat. Hist. Journ., Sep. 15th, 1887, xi. 128.

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

Penistone Harriers [the oldest pack known, dating anterior to A.D. 1260; historical details given]. Field, Sep. 24th, 1887, p. 485.

E. ANNE. **Northumberland S.**

The Marten [*Martes sylvestris*] **in Northumberland** [on the North Tyne, July 1871]. Nat., Sep. 1886, p. 278.

J. W. ASHTON. **Cheshire.**

Rat [*Mus decumanus*] **attacking Hedgehog** [*Erinaceus europæus*; at Bodenhall, July 16th, 1886: the hedgehog was half-grown and the rat an old doe suckling young]. Field, July 24th, 1886, p. 123.

JAMES BACKHOUSE, junr. **York N.W.**

The Yorkshire Naturalists' Union at Hawes [28th June, 1884: Mole (*Talpa europæa*) noted swimming in Whitfield Gill stream]. Nat., Aug. 1884, p. 18.

JAMES BACKHOUSE, junr. **York Mid W.**

The Yorkshire Naturalists' Union at Boroughbridge [May 25th, 1885: *Vulpes vulgaris* noted]. Nat., July 1885, p. 279.

JAMES BACKHOUSE, junr. **York Mid W.**

The Yorkshire Naturalists' Union at Blubberhouses [Sep. 26th, 1885; Field Vole (*Arvicola agrestis*) noted]. Nat., Nov. 1885, p. 379.

JAMES BACKHOUSE, junr. **York N.E.**

Yorkshire Naturalists at Gormire Lake and Thirkleby Park [with note on a Badger (*Meles taxus*) caught at Kirkby Knowle, near Thirsk]. Nat., Aug. 1887, p. 237.

EDWARD T. BALDWIN. **Furness.**

Badger [*Meles taxus*] **in North Lancashire** [between Broughton-in-Furness and Foxfield]. Nat., Aug. 1886, p. 238.

HENRY BENSON. **Westmorland and Furness.**

Hedgehog [*Erinaceus europæus*] **attacking Chickens** [at Windermere]. Zool., Nov. 1886, x. 457.

THOMAS BIRKS. **York S.E., Linc. N.**

Grampus (*Orca gladiator*) **in the Humber** [captured on Whiston Ness, Nov. 1st, 1885; specimen now in British Museum]. Nat., Dec. 1885, p. 386.

W. G. BLATCH and A. C. HORNER. **Notts.**

[Squirrels (*Sciurus vulgaris*) **and Fallow Deer** (*Cervus dama*) **in Sherwood Forest,** casually mentioned in an account of a beetle-hunting excursion]. Ent. Mo. Mag., Feb. 1887, xxiii. 213.

WM. E. BRADY. **York S.W.**

Badger [*Meles taxus*] **near Barnsley** [a male, 35 lbs, taken at Wortley, April 22nd, 1884]. Nat., Sep. 1884, p. 34.

WILLIAM D. BRAITHWAITE, Secretary. **York S.W.**

Ackworth School Natural History Society [many Badgers (*Meles taxus*) now (April 18th) breeding in Brockendale]. Nat. Hist. Journ., May 16th, 1887, xi. 80.

W. D. BRAITHWAITE, Secretary. **York S.W.**

Ackworth Natural History Society [a fine female Badger (*Meles taxus*) procured from Camp's Mount, near Askern]. Nat. Hist. Journ., June 15th, 1887, xi. 106.

T. W. Brewis. **York S.W.**

Captures of the Badger (*Meles taxus*) **in Yorkshire** [four instances from Earl Fitzwilliam's estate in South Yorkshire]. Nat., Aug. 1886, p. 238.

Thomas Bunker. **York S.W.**

Fishes [also Porpoises and Bottle-noses] observed near Goole [none of the cetacea captured]. Nat., Oct. 1886, p. 309.

Thomas Bunker. **York S.E., York S.W.**

Capture of a Rudolphi's Rorqual (*Balænoptera borealis*) **at Goole** [on Sep. 5th, 1884; details given of capture and description and measurements of the specimen]. Nat., Nov. 1884, pp. 87-88.

Dipton Burn. **Westmorland, Cumberland, York N.W.**

Discovery of the Remains of Extinct Animals in Westmorland [and Cumberland, also at Sedbergh: remains of numerous extinct cave mammals, *Bos primigenius* and *B. longifrons*, brown and cave bears, wolf, boar, cat, badger, horse, weasels, deer, and human bones and implements; large and perfect skull of beaver at Sedbergh]. Sci. Goss., July 1886, p. 166.

Thomas Carter. **York Mid W.**

Movements of Grouse in Hard Weather [and an editorial note speaks of Hares (*Lepus timidus*) and Rabbits (*L. cuniculus*) dying in great numbers in Wharfedale]. Zool., March 1886, x. 108.

J. E. Clark. **York N.E.**

Rabbits [*Lepus cuniculus*] **in Distress** [damaging trees and bushes by gnawing, after heavy snow, near Byland Abbey]. N. H. J., June 15th, 1886, x. 104.

H. Clarke. **Isle of Man.**

[Long-eared Bat (*Plecotus auritus*) **shot at Bride** in Sep. 1885. exhibited to the Isle of Man Nat. Hist. and Antiqu. Soc., with a reference to Kermode's statement in Manx Note Book, i. 121, that he had not seen one taken on the island]. Manx Note Book, No. 5, Jan. 1886, vol. 2, p. 48.

W. Eagle Clarke. **York N.E.**

The Yorkshire Naturalists' Union at Helmsley [Aug. 4th, 1884: Water Vole (*Arvicola amphibia*) caught in Beckdale]. Nat., Sep. 1884, p. 41.

W. C. Clarkson. **York Mid W.**

Lesser Horse-Shoe Bat [*Rhinolophus hipposideros*] **in Nidderdale** [near Pateley Bridge, Sep. 23rd, 1886]. Nat., Nov. 1886, p. 339.

T. D. A. Cockerell. **Cheshire.**

A September Walk through . . . Cheshire . . . [*Sciurus vulgaris* noted at Congleton, Sep. 11th, 1885]. Nat., Feb. 1886, p. 57.

Alfred Heneage Cocks. **Off Yorkshire Coast.**

The Fin-whale Fishery of 1886 on the Lapland Coast ['the last Whale I met with was only about fifty miles from the Yorkshire coast . . . on the morning of October 10th. On the fishing-ground known to trawlers as the "Great Silver Pits" (20 to 40 fathoms) . . . a small whale—perhaps a Lesser Rorqual [*Balanoptera* ———]—was steadily breakfasting on the fish,' etc.]. Zool., June 1887, xi. 210.

R. Barrington Cooke. **York N.E.**

Polecats [*Mustela putorius*] **in Yorkshire** [five seen, 25th and 26th June, 1887, on the banks of Jugger Howe Beck, an upper tributary of the Derwent, Fylingdales Moor: details given]. Field, July 9th, 1887, p. 50.

John Cordeaux. **York S.E.**

The Spurn [with notes of mammalian bones (*Bos longifrons*, *B. primigenius*, *Cervus elaphus*, *C. megaceros*, *Sus scrofa*, *Rhinoceros*, *Trichecus*, etc.) in the Holderness gravels]. Nat., Aug. 1884, p. 2.

JOHN CORDEAUX. **York N.E., Durham.**

[Large Seal—surmised to be *Halichœrus gryphus*—at Tees mouth, 18th Nov. 1883]. Migration Report for 1883; rep. Nat., Sep. 1884, p. 43.

JOHN CORDEAUX. **Linc. N.**

Wild Cat [*Felis catus*] **in Lincolnshire** [shot in March 1883, at Bullington Wood near Wragby, a wood in which the Marten (*Martes sylvestris*) occurs almost every year, and in which *Mustela putorius* is common]. Nat., Sep. 1884, pp. 33-34.

JOHN CORDEAUX. **York S.E.**

The Yorkshire Naturalists' Union at Spurn Point [3rd September, 1884; *Sorex vulgaris* and *Erinaceus* noted]. Nat., Nov. 1884, p. 92.

JOHN CORDEAUX. **Linc. N., Linc. S., York S.W.**

Lincolnshire [with notes of *Bos primigenius* fossil at Grimsby; *Cervus elaphus*, *Bos longifrons*, *Canis lupus*, *Sus scrofa*, *Felis catus* fossil at Aylesby; of *Cervus elaphus*, an original herd, at Grimsthorpe Park; of *Felis catus* near Wragby, *Martes*, *Mustela putorius*, *Lutra*, *Meles*, *Phoca vitulina*, *Halichœrus gryphus*, *Myoxus*, *Arvicola riparia*, *Sorex minutus*, *Crossopus*, and *Physeter bidens*; and to the great herds of *Cervus elaphus* at Hatfield Levels]. Nat., Jan. 1886, pp. 7-9.

JOHN CORDEAUX. **Linc. N.**

Some Footprints in the Snow [as observed at Great Cotes, Lincs., of *Mus sylvaticus*, *Arvicola agrestis*, *A. amphibia*, *Sorex*, *Mustela erminea*, *M. vulgaris*, *M. putoria*, *Canis vulpes*, *Lepus europæus*, *Erinaceus*, *Talpa*, and *Lepus cuniculus*]. Nat., March 1887, pp. 72-74.

R. D. DARBISHIRE. **Linc. N.**

Note on the Fishes [and Marine Mammals] of Grimsby about 1300 [extract from the 'Lay of Havelok the Dane'; references made to Whales or Grampuses, Seals, Porpoises (*Phocæna communis*)]. Nat., Oct. 1884, p. 60.

W. DUCKWORTH. **Cumberland.**

Porpoise [*Phocæna communis*; **caught at Skinburness** on Solway, May 6th, 1886; measurements and weight given]. Trans. Cumb. and Westm. Ass., No. xi. 1885-86 (pub. 1886), p. 150.

J. N. DUFTY. **Linc. N.**

Badger [*Meles taxus*] **in Lincolnshire** [at Housham and Somerby]. Nat., April 1886, p. 113.

J. J. DUNNINGTON-JEFFERSON. **York S.E.**

Curious Accident to a Hare [(*Lepus timidus*), near York; broke its neck by running against a flock of sheep]. Field, Oct. 30th, 1886, p. 653.

D. EMBLETON. **Durham, Northumberland S.**

Black Rat [*Mus rattus*] **at Newcastle** [historical particulars of its occurrence in Northumberland and Durham]. Nat., Jan. 1885, p. 128.

D. EMBLETON. **Durham, Westmorland, York N.W.**

A Catalogue of the Place-names in Teesdale [including some derived from the Cow, the Ox, the Stot, the Hart, the Buck, the Hind, the Roe, the Ewe, the Lamb, the Fox, the Badger, the Beaver, the Hare, Swine, and the Coney; see pp. xiii. 9, 10, 11. 18 (Ox), 22 (Badger). 47 (Hart), 49 (Ewe), 53 (Swine), 58 (Hind), 62 (Boar), 68 (Fox). 76 (Badger, Fox), 77 (Hare), 96 (Lamb), 97 (Wether, Hind), 99 (Badger). 99, 101 (Swine), 101 (Hart), 110 (Badger), 113 (Deer), 124 (Cow, Sheep, and Stot), 128 (Hare), 139, 141 (Hart), 151 (Coney or Rabbit), 153 (Beaver), 153 (Buck), 153 (Horse), 153 (Hind), 159 (Badger), 177 (Stot), 185 (Hare, Hart), 186 (Fox), 193 (Wether), 203 (Fox), 203 (Hare), 207 (Boar), 207 (Beaver), 214 (Fox)]. Nat. Hist. Trans. of Northd., Durh. and Newc., vol. ix. part i. (1887), pp. i-xviii. and 1-223.

EDWD. ELMHIRST. **Linc. N.**

The Hen Harrier in Lincolnshire Sixty Years Ago [on the waste lands or commons between Market Rasen and Caistor about 1824-5; in which were abundance of all kinds of game and vermin, Foxes (*Vulpes vulgaris*), Badgers (*Meles taxus*), Polecats (*Mustela putorius*), Stoats (*M. erminea*), Weasels (*M. vulgaris*), Rats (*Mus decumanus*), and Hedgehogs (*Erinaceus europæus*) being enumerated; and particular note made of a quite white Badger taken at Claxby, and exhibited at the famous Exeter Change Menagerie some 60 years ago]. Field, Nov. 27th, 1886, p. 800.

J. W. LINNÆUS M. TRISTRAM FAWCETT. **Northumberland S.**

Badgers [*Meles taxus*] **in Northumberland** [at Low Staples, May 1885]. Nat., April 1886, p. 112.

J. W. LINNÆUS M. TRISTRAM FAWCETT. **Durham.**

Badgers [*Meles taxus*] **in Durham** [five occurrences quoted, with dates]. Nat., April 1886, p. 112.

J. W. LINNÆUS M. TRISTRAM FAWCETT. **Durham.**

Captures of Otters [*Lutra vulgaris*] **in County Durham** [in two Weardale localities]. Nat., April 1886, p. 113.

FRANCIS R. FITZGERALD. **York Mid W.**

Pied Variety of the Short-tailed Field Vole [(*Arvicola agrestis*) at Harrogate, July 1886]. Zool., Dec. 1886, x. 485.

THOMAS FORD. **York N.W.**

Singular adventure with a Stoat [(*Mustela erminea*), which had seized a hooked trout in Crackpot Beck, Swaledale]. Field, Nov. 7th, 1885, p. 671.

RILEY FORTUNE. **York Mid W.**

[Variety of Field Vole (no doubt *Arvicola agrestis*), pied with white and grey, on Killinghall Moor, Yorkshire]. Garner, 1886, p. 14.

LEONARD GAUNT. **York S.E.**

The Yorkshire Naturalists' Union at Pocklington [24th June, 1885; Whiskered Bat (*Vespertilio mystacinus*) noted]. Nat., Aug. 1885, p. 308.

LEONARD GAUNT. **York S.W.**

The Yorkshire Naturalists' Union at Askern [20th May, 1886; *Talpa* and *Crossopus* noted]. Nat., June 1886, p. 189.

G. H. CATON HAIGH. **Linc. N.**

Notes on Bats in North Lincolnshire [which are five in number—*Scotophilus noctula*, common; *S. pipistrellus*, abundant; *Vespertilio nattereri*, once seen; *V. daubentonii*, local rather than rare; and *Plecotus auritus*, common; notes on occurrence and habits given; *Barbastellus* and *V. mystacinus* indicated as likely to be found]. Zool., April 1887, xi. 142-144.

ALLAN B. HALL. **York N.E.**

Notes from Thirsk [Otters (*Lutra vulgaris*) in Codbeck]. Nat. Hist. Journ., Feb. 15th, 1887, xi. 16. [Badger (*Meles taxus*) caught in a steel trap]. Nat. Hist. Journ., May 16th, 1887, xi. 85.

C. C. HANSON. **York S.W.**

Foumarts [*Mustela putorius*] **near Huddersfield** [on Marsden moors, Feb. and March, 1884]. Nat., April 1886, p. 113.

JAMES HARDY. **Northumberland S. and Cheviotland.**

Report of Meetings of Berwickshire Naturalists' Club, for the year 1885. . . . Rothbury [24th June; the last Wolf (*Canis lupus*) of the district slain at a place now called Wolf's Fauld or Wolf's Holes]. Proc. Berw. Nat. Club for 1885 [pub. 1886], xi. 36.

JAMES HARDY. **Northumberland S.**

Report of Meetings of Berwickshire Naturalists' Club for the year 1885. . . . Haughton Castle, Simonburn Church, and Chipchase Castle, North Tyne [30th July; horns of *Cervus elaphus* dredged from the Tyne near Dunston in 1875]. Proc. Berw. Nat. Club for 1885 [pub. 1886], xi. 63.

JOHN HARRISON. **York N.E.**

[The (probably) last Yorkshire Marten-Cat (*Martes sylvestris*).] Nat. Hist. Journ., April 15th, 1887, xi. 60.

J. E. HARTING. **York S.E., Notts., Durham, Northumberland S.**

Beavers [*Castor fiber*] **and their ways** [Beverley, Yorkshire, and Bevercotes, Notts., referred to as place-name evidence of former occurrence in Britain (p. 273); laws and customs instituted for Newcastle-on-Tyne by Henry I., and confirmed by subsequent royal charters, specified among the exports from the Tyne the skins of Foxes (*Vulpes vulgaris*), Martens (*Martes sylvestris*), Sables [probably Polecats (*Mustela putorius*)], Beavers, Goats (*Capra hircus*), and Squirrels (*Sciurus vulgaris*) (p. 282)]. Zool., July 1886, x. 273 and 282.

J. E. HARTING. **Northumberland, Linc. N.**

The Origin of the Domestic Cat [(*Felis catus*); in which the example shot in 1853 at Eslington, Northumberland, is considered as the last genuine Wild Cat seen in England, the Lincolnshire example of 1883 (Bullington Wood) being regarded as a reversion from the domestic to the wild type]. Field, Nov. 27th, 1886, p. 800.

J. E. HARTING. **York Mid W.**

Irish Deer [*Megaceros hibernicus*; with a foot-note alluding incidentally to its having been found at Cowthorpe in Yorkshire]. Field, Dec. 18th, 1886, p. 884.

J. E. HARTING. **York N.W., Durham.**

Remarks on British Bats [of which generic tables are given; reference made to Northallerton being the northernmost station for the Noctule (*Vesperugo noctula*), and to the Cleadon specimen in the Newcastle Museum ascribed to *V. serotinus* being probably *V. noctula*]. Zool., May 1887, xi. 161-171.

J. E. HARTING. **Yorkshire, Durham.**

Northern Limit of the Range of the Noctule [*Vesperugo noctula*] in Great Britain [giving in full Messrs. T. Southwell's and W. Denison Roebuck's reasons for believing the Newcastle Museum specimen of the 'Serotine' from Cleadon to be a Noctule; copious extracts from 'The Naturalist' as to other Durham occurrences]. Zool., July 1887, xi. 260-262.

J. E. HARTING. **Northumbld., Cumbld., Yorksh., Lancsh., Derbysh.**

On the Bank Vole, Arvicola glareolus (Schreber) [including a summary of what is known of its distribution in Britain, records being cited for Northumberland, Cumberland, Yorkshire, Lancashire, and Derbyshire; and one from Allonby, Cumberland, is figured on the plate]. Zool., Oct. 1887, xi. 361-371, and plate v.

J. E. HARTING. **York N.W., York Mid W., York S.W., Linc. N.**

The Mole, Talpa europæa (Linn.) [reference made to its being observed on the top of Ingleborough, Yorkshire, and on the highest point of the Lincolnshire North Wolds; to Mr. George Roberts' observations on the soils it frequents; to its swimming the Yorkshire Greta; and to albinoes in Nidderdale and elsewhere]. Zool., Dec. 1887, xi. 441-448, and plate vi.

J. F. HILLS [, Secretary]. **York N.E.**

York, Bootham, Natural History Club [Polecat (*Mustela putorius*), queried, Sandsend near Whitby]. Nat. Hist. Journ., Sep. 15th, 1887, xi. 132.

WILLIAM HODGSON. **Cumberland, Westmorland, Furness, Yorkshire.**

The Hill Naturalist [a full and popularly written account—in systematic order—of the Mammals of the Lake hills; *Felis catus*, *Sciurus*, *Mus sylvaticus*, *Arvicola agrestis*, *A. amphibia*. *Mus decumanus*, *Lepus vulgaris*, *L. cuniculus*, *Talpa*, *Cervus elaphus*, *Vulpes*, *Mustela vulgaris*, *M. erminea*, *M. putorius*, *Martes*, *Meles*, *Erinaceus*, *Lutra*, *Sorex vulgaris*, and *S. fodiens* are noted]. Trans. Cumb. and Westm. Assoc., No. xi (1885-6, pub. 1886), pp. 27-39.

J. HOPKIN and T. SOUTHWELL. **Linc. N.**

Sperm Whale [*Physeter macrocephalus*] **stranded at Grimsby in 1563** [account extracted from the Harleian MSS. by Mr. Hopkin; commented on by Mr. Southwell; this is the earliest known British occurrence]. Nat., May 1885, p. 228.

ROBERT J. HOWARD. **Lanc. S.**

The past Winter and the Rabbits [(*Lepus cuniculus*), which were severely punished by the protracted severity of the winter in the Blackburn district]. Zool., June 1886, x. 241.

W. R. HUGHES [Secretary, and ten others]. **Cheviotland, Cheshire, Lanc. S.**

[Report] on the Present Condition of the Existing Herds of British Wild White Cattle [(*Bos taurus*); dealing with the Chillingham, Lyme Park, and Somerford (near Congleton) herds, with casual notices of the descendants of the Middleton herd; the Lyme herd ceased to exist about four years ago, but otherwise the report does not deal with extinct herds]. Brit. Assoc. Rep.; and Zool., Nov. 1887, xi. 401-414.

PETER INCHBALD. **York Mid W.**

The Whiskered Bat [*Vespertilio mystacinus*] **in Nidderdale** [captured near Pateley Bridge, June 10th, 1887, by Wm. Storey]. Field, June 18th, 1887, p. 882.

PETER INCHBALD. **York Mid W.**

[Long-eared] Bat [*Plecotus auritus*] **capturing moths** [at Harrogate; method described]. Field, July 23rd, 1887, p. 149.

JAMES INGLEBY. **York Mid W.**

Whiskered Bat (*Vespertilio mystacinus*) **at Warsill**, near Pateley Bridge [a large colony]. Nat., April 1885, p. 202.

JAS. INGLEBY. **York Mid W.**

Weasel [*Mustela vulgaris*]**'s Method of Carrying its Young** [described; locality not stated, presumably Eavestone near Ripon]. Nat., March 1886, p. 67.

W. B. JACQUES. **Lanc. W.**

Curious Death of a Rabbit [(*Lepus cuniculus*) at Goosnargh, Lancs.; neck broken in running]. Field, Oct. 30th, 1886, p. 653.

J. M. JEFFCOTT. **Isle of Man.**

'The Seven Sleepers,' according to Manx tradition [included the Craitnag or Bat (*Vespertilio pipistrellus*, etc.), the Doallag or Dormouse (*Myoxus avellanarius*), and the Graynoge or Hedgehog (*Erinaceus europæus*); etymologies given]. Nat., Aug. 1884, pp. 14-15.

J. E. KELSALL. **Derbyshire, Notts., York Mid W., Cheshire.**

The Distribution in Great Britain of the Lesser Horse-shoe Bat [(*Rhinolophus hipposideros*); collected records for Derbyshire, Notts., Yorkshire, and Cheshire, which are the only northern counties for which it has been noted]. Zool., March 1887, xi. 89-93.

H. Wallis Kew. **Linc. N.**

Otter [*Lutra vulgaris*] **near Louth, Lincolnshire** [one, caught at Maltby Springs, April 3rd, 1885]. Nat., Dec. 1885, p. 393.

H. Wallis Kew. **Linc. N.**

Field Notes [eight hedgehogs (*Erinaceus europæus*) in Muckton Wood, and twenty-six weasels (*Mustela vulgaris*) and three stoats (*M. erminea*) in Burwell Wood, all killed by keepers]. Nat. World, Jan. 1886, p. 2.

H. Wallis Kew. **Linc. N.**

Another Post-glacial Ravine (Hubbard's Valley, near Louth) and its inhabitants [the Noctule (*Vesperugo noctula*) noted]. Nat. World, March 1886, iii. 41.

H. Wallis Kew. **Linc. N.**

In the Woods [near Louth] in Summer [Stoats (*Mustela erminea*), Weasels (*M. vulgaris*), Hedgehogs (*Erinaceus europæus*) on 'keeper's trees' noted]. Nat. World, July 1886, iii. 121-124.

E. P. Knubley. **York Mid W.**

The Yorkshire Naturalists' Union in Upper Nidderdale [in 1886; *Mus sylvaticus* and *Arvicola riparia* noted]. Nat., Aug. 1886, p. 253.

L. Lee. **? Notts.**

Rat's Teeth [one with the upper incisors curved and 1½ inch long; note dated from Nottingham]. Sci. Goss., Sep. 1886, p. 214.

R. B. L[ee]. **Westmorland.**

Otters [*Lutra vulgaris*] **frequenting a Salmon Pool** [on the Kent in Westmorland]. Field, June 5th, 1886, p. 733.

R. B. L[ee]. **Cumberland, Westmorland, Furness.**

Otter Hunting during 1886 [description of the Otter-hound packs, prefaced by interesting reminiscences, anecdotes, and extract from a churchwarden's accounts]. Field, Oct. 30th, 1886, p. 626.

R. B. L[ee]. **Cumberland.**

Extraordinary Run with a Single Hound [after a Fox (*Vulpes vulgaris*) on some of the roughest and wildest ground near Buttermere, including the summit of High Style (2643 ft. alt.), 11th November, 1887]. Field, Nov. 26th, 1887, p. 804, and Dec. 10th, p. 880.

F. Arnold Lees. **York N.W.**

Badgers [*Meles taxus*] **and Red Deer** [*Cervus elaphus*] **in Upper Wensleydale** [two Badgers let off in Fossdale are still there; a semi-wild Deer is ranging the moorlands]. Nat., May 1885, p. 228.

T. Lister. **York S.W.**

Notes from Barnsley [a pair of Otters (*Lutra vulgaris*) in the Dearne]. Nat. Hist. Journ., June 15th, 1886, x. 106.

R. Lofthouse. **York N.E.**

Records of Captures of Badgers [*Meles taxus*] **in Yorkshire** [eight instances of various dates for Cleveland localities given]. Nat., April 1886, p. 113.

R. Lofthouse. **York N.E., Durham.**

The River Tees: its Marshes and their Fauna [remains of *Bos primigenius*, of Mastodon, Deer, etc., dredged in the river; particulars as to the former occurrence and extinction of *Phoca vitulina* and *P. gryphus*; *Phocæna communis*, *Lutra vulgaris*, *Arvicola amphibia*, *Mus decumanus*, *M. rattus*, *Lepus timidus*, *Mus sylvaticus*, *Arvicola agrestis*, *Sorex tetragonurus*, *S. fodiens*, *S. remifer*, *Mustela vulgaris*, and *Talpa* also noted]. Nat., Jan. 1887, pp 1-16.

H. A. Macpherson. **Cumberland.**

The Habits of the Greater Horse-Shoe Bat [with incidental mention that six species of Bats have occurred in Cumberland, of which *Barbastellus*—obtained at Carlisle by T. C. Heysham, and now in F. Bond's collection—is the most interesting]. Nat., Nov. 1886, p. 337.

H. A. Macpherson and W. Duckworth. **Cumberland, Westmorland.**

Zoological Record for Cumberland, 1886 [including detailed notes on the occurrence of a colony of *Vespertilio nattereri* at Castletown, the establishment of a few Roe Deer (*Capreolus caprea*) at Wigton, mortality among the Red Deer (*Cervus elaphus*) of Martindale, occurrences of the Pine Marten (*Martes sylvestris*), and, at Thirlmere, of the Badger (*Meles taxus*), and notes upon the Cumbrian Bats, viz.—*V. nattereri*, *V. mystacinus*, *V. daubentonii*, *Plecotus*, *Barbastellus*, and *Vesperugo pipistrellus*]. Trans. Cumb. and Westm. Assoc., part xii (1886-87, pub. 1887), pp. 43-45.

H. A. Macpherson. **Cumberland.**

The Roe-deer [*Capreolus caprea*] **in Cumberland** [a limited number established near Wigton (not Netherby) in the north of the county; editor of Zoologist adds that the species was abundant in Cumberland in the reign of Charles I., when thirty-one of them were transported from Naworth Woods to Wimbledon Park; an account is given at pp. 47-48 of Harting's 'Essays on Sport and Natural History']. Cumb. Assoc. Trans., 1887, p. 44; reprinted in Zool., Oct. 1887, p. 382.

R. Morton Middleton, Jun. **Durham.**

Black Rat [*Mus rattus*] **at West Hartlepool** [March 9th, 1885, in a ship-yard]. Nat., May 1885, p. 228.

F. O. Morris. **? York S.E.**

Circular Notes . . . No. 1.—The Rook and the Fox [(*Vulpes vulgaris*); anecdote of fox mobbed by rooks—presumably at Nunburnholme]. Land and Water, April 17th, 1886, p. 374.

C. T. Musson. **Notts.**

Mussels Eaten by Animals and Birds [at various places in Notts; attributed to Rats or Water-Voles, species not stated]. Nat., March 1885, p. 181.

T. H. Nelson. **Durham, York N.E.**

Effects of Heavy Snow upon Grouse [and upon Hares (*Lepus timidus*) in Lower Teesdale]. Zool., March 1886, x. 108.

T. H. Nelson. **York N.E.**

Badgers [*Meles taxus*] **in North Yorkshire** [several were turned out on the Hutton Hall Estate near Guisborough a few years ago; possibly some recorded captures may have been herefrom]. Nat., May 1886, p. 143.

T. H. Nelson. **Durham.**

Otters [*Lutra vulgaris*] **in Durham** [on the Wear and its tributary the Bedburn in 1884]. Nat., June 1886, p. 173.

T. H. Nelson. **Durham.**

Noctule [*Vesperugo noctula*] **in Durham** [near Bishop Auckland in 1885]. Nat., June 1886, p. 173.

T. H. Nelson. **York N.E.**

Badgers [*Meles taxus*] **in North Yorkshire** [four captured at Ingleby, Cleveland, May 1886]. Nat., Aug. 1886, p. 238.

T. H. Nelson. **Cheviotland.**

A Naturalist's Ramble on the Farne Islands [with passing references to *Phoca vitulina* and *Lepus cuniculus*]. Nat., April 1887, pp. 116-128.

T. H. Nelson. **Cheviotland.**

A Visit to Chillingham Park [and a full account of the famous White Cattle there, with woodcut; the park also contains Red and Fallow Deer (*Cervus daphus* and *C. dama*)]. Nat., Aug. 1887, pp. 229-234.

CHAS. OLDHAM. **Lanc. S.**

Freshwater Shells Eaten by Rats [(supposed to be *Mus decumanus*) at Birch, near Manchester]. Nat., July 1885, p. 274.

J. PARKER. **Derbyshire.**

Strength of the Mole [(*Talpa europæa*); in the writer's house-cellar (at The Cross, Repton) the tiles were thrown up in one corner, and by the side was a mound of earth; a trap was set, and a mole of extraordinary size caught]. Field, Dec. 6th, 1884, p. 771.

RD. PAVER-CROW. **York Mid W.**

Large [12½ oz.] **Stoat** [*Mustela erminea*] near Boroughbridge. Nat., April 1886, p. 113.

A. E. PEASE. **York N.E.**

The Cleveland Hounds as a Trencher-Fed Pack [a book published by Longmans; see Review in Field, Jan. 15th, 1887, pp. 68-69].

T. N. POSTLETHWAITE. **Cumberland.**

Deep drop for a Weasel [(*Mustela vulgaris*); one jumped 30 or 40 feet into water, and then swam across; Cumberland]. Nat., Jan. 1885, p. 128.

A. W. PRICE. **Northumberland S.**

Squirrel [*Sciurus vulgaris*] **attacked by a Small Bird** [at Riding Mill on Tyne]. Nat., April 1885, p. 202.

T. MELLARD READE. **Lanc. S.**

An Ingenious Rat [*Mus decumanus*] **'s Nest** [in Dale Street, Liverpool; description given]. Nat., Jan. 1887, p. 21.

GEORGE ROBERTS. **York S.W., York Mid W., York N.W., York N.E.**

Records of Captures of Badgers [*Meles taxus*] in Yorkshire [a synoptic list of twelve recorded instances, with references]. Nat., Feb. 1886, p. 36.

GEORGE ROBERTS. **York S.W., York N.W., York Mid W., York N.E.**

Additional [six] Records of Captures of the Badger (*Meles taxus*) in Yorkshire [synoptically given, with references]. Nat., March 1886, p. 67.

JOHN E. ROBSON. **Durham.**

Variety of the Common Hare [(*Lepus timidus*); shot in Castle Eden Dene; light silver-grey]. Young Nat., Nov. 1886, vii. 234.

W. DENISON ROEBUCK. **Durham.**

The Noctule Bat [*Vesperugo noctula*] **in Co. Durham** [a specimen in the Newcastle Museum, taken 1836, near Cleadon, is labelled 'Vespertilio serotinus']. Nat., April 1885, p. 202.

WM. DENISON ROEBUCK. **Cheshire.**

Whiskered Bat [*Vespertilio mystacinus*] **in Cheshire** [found at Fernilee (misprinted Fermlee) near Whaley Bridge, by C. Oldham, 30th May, 1885]. Nat., April 1886, p. 113.

WM. DENISON ROEBUCK. **Durham.**

Noctule [*Vesperugo noctula*] **in County Durham** [newspaper paragraph as to its occurrence in Winston Lane near Barnard Castle]. Nat., April 1886, p. 113.

York Mid W.

W. DENISON ROEBUCK, W. EAGLE CLARKE, and WILLIAM STOREY.

Upper Nidderdale and its Fauna. . . . Mammals [an annotated list of 30 species]. Nat., July 1886, pp. 195-197.

H. HARDEY SIMPSON. **Cheshire.**

Weasels [*Mustela vulgaris*] **preying upon Moles** [(*Talpa europæa*) near Bowdon]. Field, May 1st, 1886, p. 570.

M. M. SIMPSON. **Derbyshire, Cheshire, Lanc. S.**

A Sportsman of the Last Century [i.e. Sir Ashton Lever, in whose game accounts for 1751 are mentioned leverets and hares (*Lepus europæus*) taken or killed at Mottram, on the Derbyshire side, at Knutsford, in Outerton, and in Alkrington, Tonge, and Foxdenton]. Land and Water, March 6th, 1886, p. 236.

H. H. SLATER. **Durham, Northumberland.**

The Bank Vole [*Arvicola glareolus*] **in Durham** [and South Northumberland; about Durham city—in the writer's school days—the Bank Vole occurred, but was decidedly rare as compared with the Field Vole (*A. agrestis*)]. Zool., Dec. 1887, xi. 462-463.

T. SOUTHWELL. **Northumberland S., Durham.**

Black Rat [*Mus rattus*] **at Newcastle** [captured July 1884; reference made to its known occurrence at Stockton-on-Tees]. Nat., Nov. 1884, p. 88.

THOS. SOUTHWELL and WM. EAGLE CLARKE. **York S.E., Linc. N.**

On the Occurrence of Sowerby's Whale (*Mesoplodon bidens*) **on the Yorkshire Coast** [just inside Spurn Head, Sep. 11th, 1885: the first specimen on record for England]. Nat., Dec. 1885, pp. 385-386; and Zool., Feb. 1886, p. 70.

THOMAS SOUTHWELL. **Linc. N.**

Balænoptera musculus at Skegness [April 3rd, 1887; particulars and description given]. Nat., May 1887, pp. 139-140.

T. SOUTHWELL. **Linc. N.**

Common Rorqual [*Balænoptera musculus*] **at Skegness** [young female stranded, April 3rd; measurements given]. Zool., May 1887, xi. 190-191.

T. SOUTHWELL. **Durham, Yorkshire.**

The supposed Serotine in the Newcastle Museum [stating that it is really a Noctule (*Vesperugo noctula*), and referring to Mr. Roebuck's Yorkshire experience]. Zool., June 1887, xi. 234.

R. STANDEN. **Lanc. W.**

Badgers [*Meles taxus*] **in North Lancashire** [at Whittingham, near Preston, a family captured, May 1884]. Nat., Jan. 1885, p. 128.

ROBERT STANDEN. **Lanc. W.**

Former occurrence of Badgers [*Meles taxus*] **in North Lancashire** [mostly antiquarian matter]. Nat., Feb. 1886, p. 36.

F. V. STARKEY. **Cheshire.**

Large Otter [*Lutra vulgaris*] **in Cheshire** [in the brook at Wrenbury; length 48½ in., weight 30 lb.]. Field, Feb. 20th, 1886, p. 243.

THOMAS STEPHENSON. **York N.E.**

Porpoise [*Phocæna communis*] **near Whitby** [caught on a hook, May 24th, 1886]. Nat., Sep. 1886, p. 278.

THOMAS STEPHENSON. **York N.E.**

Whitby Notes.—Mammalia [a skull in the Museum is labelled *Delphinus* (*Hyperoödon*) *bidentatus*; this was stranded at Whitby many years ago; *Phocæna communis* caught at Whitby, 29th September, 1886]. Nat., Nov. 1886, p. 339.

WILLIAM STOREY. **York Mid W.**

Albino Mole [*Talpa europæa*] **in Nidderdale** [taken at Brimham]. Nat., Nov. 1884, p. 88.

WM. STOREY. **York Mid W.**

Capture of a Badger [*Meles taxus*] **in Nidderdale** [at Brimham rocks; the only occurrence in the dale for forty years]. Nat., April 1885, p. 202.

W. Storey. **York Mid W.**

Badgers [*Meles taxus*] **in Nidderdale** [female taken alive in 1849]. Nat., May 1885, p. 228.

William Storey. **York Mid W.**

Red Deer [*Cervus elaphus*] **in Nidderdale** [a pair in Harefield Woods, June 1885; doubtless escaped from Studley; in 1880, 1881, 1882, and 1884, kids seen in Sawley Woods, near Studley]. Nat., Feb. 1886, p. 36.

Wm. Storey. **York N.W., York Mid W.**

Albino Moles [*Talpa europæa*] **in Coverdale and Nidderdale** [at Cover Head and at Angram]. Nat., Feb. 1886, p. 36.

Wm. Storey. **York Mid W.**

Cannibalism in the Long-eared Bat [(*Plecotus auritus*) at Pateley Bridge]. Nat., Jan. 1887, p. 21.

R. A. Summerfield. **York Mid W.**

Badgers [*Meles taxus*] **at Stainley near Ripon** [two specimens, winter of 1883-4]. Nat., May 1885, p. 228.

J. Thompson. **Cumberland or Westmorland.**

The Marten Cat [*Martes sylvestris*] **in Cumberland** [two trapped at Martindale 'last week'; is not this in Westmorland?]. Field, Oct. 30th, 1886, 633.

J. E. Walker. **Cumberland.**

Rats [*Mus decumanus*] **and Music** [at Wigton School, Cumberland; account of effects produced on the animals]. Nat. Hist. Journ., March 15th, 1887, xi. 37.

John Watson. **Westmorland.**

Discovery of Fossil Remains in Westmorland [after sundry historical and bibliographical references—among others, to the last British Wild Boar (*Sus scrofa ferus*) having been killed at Over Staveley in Westmorland—an account of results of exploration of caves in the mountain limestone near Kendal; the species represented are Roe deer (*Cervus capreolus*), Red deer (*C. elaphus*), Fox (*Canis vulpes*), Marten (*Martes sylvestris*), Wild Boar (*Sus scrofa ferus*), Badger (*Meles taxus*), and others—ruminants and carnivora —and domestic animals; in another cave were Wolf (*Canis lupus*), Boar, Deer, etc.]. Field, June 13th, 1885, p. 792.

John Watson. **Cumberland.**

[Churchwardens' accounts for Crosthwaite, Cumberland, 1762; containing references to *Canis vulpes*, *Mustela martes*, *Felis catus*, and *Mustela putorius*]. Nat., Nov. 1886, p. 346.

John Watson. **Westmorland.**

Westmorland Heronries [with an incidental note of *Arvicola amphibia* being fed on by the herons]. Field, Jan. 22nd, 1887, p. 109.

John Watson. **Cumberland, Westmorland.**

The Extinct Animals of the Lake District [as known from cave-exploration and historical evidence; notes concerning *Ursus* (two species), *Sus scrofa*, *Canis lupus*, *Cervus elaphus*, *C. dama*, *C. capreolus*, *Castor fiber*, *Felis catus*, *Bos taurus*, *B. longifrons*, *B. primigenius*, *Mustela*, *Megaceros hibernicus*, *Equus caballus*, *Meles taxus*, and *Martes*]. Nat., Feb. 1887, pp. 39-45.

J. Whitaker. **Notts.**

A Pied Hare [(*Lepus timidus*) **at Rainworth** near Mansfield, shot Jan. 1887]. Zool., June 1887, xi. 233.

Wm. Yellowley. **Northumberland S., Cheviotland.**

The Marten [*Martes sylvestris*] **in Northumberland** [at West Chirton near North Shields, and at Harehope, Alnwick; details of the occurrences]. Nat., Aug. 1886, p. 238.

ADDITIONS TO THE LIST OF SOME HEMIPTERA-HETEROPTERA OF LINCOLNSHIRE.

JAMES EARDLEY MASON,
The Sycamores, Alford.

SINCE my list appeared in *The Naturalist* of October last, I have ascertained the occurrence in the Alford district of the following additional species.

LYGÆIDÆ.

Gastrodes ferrugineus L. Well; abundant on Scotch fir (*Pinus sylvestris*), 10th and 20th October, 1888.

CAPSIDÆ.

Teratocoris saundersi D. & S. Mablethorpe; sandhills, one male, 18th August, 1888.

Phytocoris pini Kirsch. Well; one, 23rd August, 1888.

Calocoris striatus L. Well Vale; hawthorn, two adult and many immature, 25th June, 1888.

Calocoris roseomaculatus DeGeer. Well; Rest-harrow (*Ononis arvensis*), one, 16th August, 1888.

Chlamydatus ambulans Fall. Well; several, 23rd August, 1888.

Dicyphus stachydis Reut. Well; some on *Lychnis diurna* in June, in company with *D. globulifer*, and abundant on *Stachys sylvatica* in August and October.

Dicyphus epilobii Reut. Well; two on *Epilobium hirsutum*, 18th October, 1888.

Harpocera thoracica Fall. Well Vale; one female, 16th June, 1888.

Psallus roseus Fall. Well; one, 23rd August, 1888. Authorpe, two, 7th July, 1888.

The *Dicyphi* and the *Phytocoris pini* have been verified by Mr. Edward Saunders.

It may be worth recording that on the 23rd August, 1888, I took two of the rare *Dicyphus constrictus* on the very spot where, in September, 1886, the first two English specimens fell to my net. The food-plant will be found to be *Lychnis diurna* or *Stachys sylvatica*, in all probability, perhaps both.

13th March, 1889.

No. 166. MAY 1889.

THE NATURALIST:

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CONDUCTED BY

WM. DENISON ROEBUCK, F.L.S.,

Sunny Bank, Leeds;

WITH THE ASSISTANCE IN SPECIAL DEPARTMENTS OF

J. GILBERT BAKER, F.R.S., F.L.S., Royal Herbarium, Kew;

CHAS. P. HOBKIRK, F.L.S., Dewsbury;

W. EAGLE CLARKE, F.L.S., M.B.O.U., Museum of Science & Art, Edinburgh;

GEORGE T. PORRITT, F.L.S., F.E.S., Greenfield House, Huddersfield;

ALFRED HARKER, M.A., F.G.S., St. John's College, Cambridge;

W. BARWELL TURNER, F.C.S., F.R.M.S., 55, Reginald Terrace, Leeds.

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BOOKS RECEIVED.

W. West—List of Desmids from Massachusetts. 6-page reprint, with plates, 8vo. 1888. [The Author.
Albert C. Seward—On Calamites undulatus. 2-page reprint, with plate, 8vo. 1888. [Mr. Harker.
Alfred Harker—On Local Thickening of Dykes, etc. 2-pp. rep., 8vo. 1889. [Author.
Internat. Geol. Congress.—Reports on Classification and Nomenclature. 15-page reprint, 8vo. 1888. [Mr. Harker.
T. D. A. Cockerell—Larva of Gnophæla vermiculata G. & K. 8-page reprint, 8vo. 1888. [The Author.
T. D. A. Cockerell—On the Citation of Localities. 3-page rep., 8vo. 1889. [Author.
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British Association—Report of 1888 Meeting (Bath). [The Association.
Liverpool Nat. Field Club—Proceedings for 1888. 8vo. [The Club.

EXCHANGE.

Notices of Exchange inserted free of charge to Subscribers.

Books for Sale or Exchange.—Mrs. Merrifield's Natural History of Brighton and Vicinity, 1860, 228 pages, 8vo, cloth, 3/-, post free; Gloyne on Geographical Distribution of Land Shells, 1877, 8vo, sewed, 40 pages, 2/-; Pidgeon on the Marine Conchology of Torbay, 1875, 8vo, sewed, 22 pages, 1/-. Foreign or British conchological works or back numbers of 'The Naturalist' (Hobkirk and Porritt's Series) desired in exchange. Address—X.Y.Z., c/o Editors of 'Naturalist.'

YORKSHIRE NATURALISTS' UNION.—ENTOMOLOGICAL SECTION.—The President and Secretaries of the Section will be pleased to receive the names and addresses of those members specially interesting themselves in this branch. The object in view is to circulate a fairly complete list amongst the members of this section, and thereby to facilitate the exchange of information, and also, if sufficient encouragement is given, to publish (in the Annual Report of the Section) at the close of the season a list of Yorkshire Occurrences of Insects.

Address the President:—Mr. N. F. Dobrée, The New Walk, Beverley;
Or the Hon. Secretaries:—Mr. J. H. Rowntree, Westwood, Scarborough;
Mr. W. E. Brady, 1, Queen Street, Barnsley.

ORNITHOLOGICAL NOTES FROM N.E. LINCOLNSHIRE AND HOLDERNESS.

JOHN CORDEAUX, M.B.O.U.,
Great Cotes, Ulceby, Lincolnshire.

Pochard (*Fuligula ferina*). On the lake at Croxby I saw, on January 26th, about one hundred Wild Duck (*Anas boschas*) and twelve Pochard swimming in somewhat close order. All these were males, nine of them in full plumage, and three young males of the previous summer in transition. There was not a single female Pochard anywhere visible on the water.

Ruff (*Machetes pugnax*). One was shot at Hollym near Withernsea, about January 20th, and taken to Mr. Philip Loten, of Easington. This makes the second obtained in Holderness during the winter of 1888-9.

Common Sheldrake (*Tadorna cornuta*). Mr. Haigh informs me that a flock of about two hundred have for some weeks lately frequented the coast near Grainthorpe Haven.

Snipe (*Gallinago cœlestis*). February 12th. A white Snipe has been seen lately in this parish, once at very close quarters, when feeding on the narrow belt of ooze on the side of a drain.

Snow-Bunting (*Plectrophanes nivalis*). Some small flocks on the coast in March, continuing to the middle of the month. The contrasting black and white of the plumage makes them now very conspicuous in their short flights along the shore.

Bittern (*Botaurus stellaris*). On Tuesday, March 19th, one was surprised and taken alive as it attempted to rise from a reedy drain in Humberstone Marshes, by Mr. S. D. Newton, of Grimsby. It was kept in captivity until the Saturday, when it escaped, and on the following Tuesday was recaptured by two Ordnance surveyors in the Cemetery at Cleethorpes, making no efforts to escape at the time. Another is recorded in 'The Field' for March 16th, as lately shot on Broomfleet Island on the Humber.

Sand-Grouse (*Syrrhaptes paradoxus*). In the last week in February a flock numbering about one hundred was seen in the parish of Summercotes, on the coast, and I am told that, notwithstanding the 'Sand-Grouse Protection Act,' two were shot.

Scaup (*Fuligula marila*). A considerable flock off the coast in this parish, apparently equally males and females.

Golden Plover (*Charadrius pluvialis*). March 30th. Two flocks in the marsh; with a glass I could see that there were many black-breasted birds amongst them, and others in transition, scarcely one that was not more or less marked with black.

Jack Snipe (*Limnocryptes gallinula*). On April 6th I flushed one from a small patch of turnips in this parish.

NOTES—ORNITHOLOGY.

Is the Starling double-brooded?—In regard to this interesting subject, I can vouch for the following facts:—In 1866 I knew of a nest of the Starling (*Sturnus vulgaris*) which contained a family of young just ready for taking wing, and a batch of eggs partially incubated at the same time. In 1888 I knew of two nests that twice contained young. In 1885 I noticed a curious circumstance in regard to the breeding of the Rook (*Corvus frugilegus*). In one Rook's nest I found three eggs about two-thirds sat, and four fresh-laid eggs.—JOHN WARD, Lofthouse, April 21st, 1889.

Flamborough Bird Notes.—An Osprey (*Pandion haliaetus*) was shot at Flamborough last November by a farmer's son. The same gentleman also in December shot the Red-legged Partridge (*Caccabis rufa*)—two very rare occurrences. On March 30th and 31st, quantities of Hooded Crows (*Corvus cornix*) were seen to leave our shores, with the wind very much in their favour. April 5th, I observed quantities had to put back on account of the stormy weather and a strong head wind. I also observed from the South Landing, a flock of Wild Geese, ten in number, making towards the point of the Headland; I took them to be the White-fronted species (*Anser albifrons*). The light-keeper informs me of several flocks of the Canadian Geese passing the Headland. The wind continues to blow from the east, hazy with a slight fog—just the sort of weather that generally brings over the summer migrants. Several have already arrived; two Redstarts (*Ruticilla phœnicurus*) seen in my garden this morning (April 6th). Since April 6th several Woodcocks (*Scolopax rusticola*) have been seen on the Headland; no doubt they will take their departure the first opportunity. April 9th—the Great Shrike (*Lanius excubitor*), which when discovered had three mice fastened on a thorn. April 8th, the Wheatear (*Saxicola œnanthe*), and April 13th the Ring Ouzel (*Turdus torquatus*) observed.—MATTHEW BAILEY, Flamborough, April 15th, 1889.

With reference to the Woodcock, one was picked up under the telegraph wire at Spurn Head on the 16th of April. Mr. Loten informs me that it was a much lighter coloured bird than the autumn immigrants.—W. E. CLARKE.

NOTE—MOLLUSCA AND COLEOPTERA.

Slugs, &c., in South Lincolnshire.—On the 28th December, Mr. Joseph Burtt Davy, mindful of the fact that but little is known as to South Lincolnshire mollusca, sent me a few slugs. There were a couple of small specimens of *Limax lævis* and a very juvenile *Arion subfuscus* from under a piece of wood in a hedge-bottom at Fulbeck Grange; a few typical *Limax agrestis* and abundance of var. *sylvatica* under stones at Fulbeck Grange; and an adult example of var. *reticulata* on a clod of earth in a wheat-field at Caythorpe Lowfields—all taken on the 26th Dec. He also sent bleached examples of *Limnæa ovata* and of *Helix nemoralis* var. *libellula* 0034%, picked out of the rejectamenta of the Brant at Fulbeck Grange. He also sent a couple of beetles from Fulbeck Grange, which the Rev. W. C. Hey identifies as of the excessively common species *Calathus melanocephalus* and *Tachyporus chrysomelinus*.

On the 8th of January, his cousin, Mr. Theodore Burtt, of Brandon Lodge, Grantham, sent me several slugs he found there under a log of wood on the 3rd. One was an adult and characteristic specimen of the beautiful var. *ferussaci* of *Limax maximus*, and with it were several young ones of the same species and a typical *L. agrestis*.—W. DENISON ROEBUCK, Leeds, Jan. 15th, 1889.

Naturalist,

THE SUCCESSION OF THE SILURIAN ROCKS OF INGLETON AND THE INCLUDED TRAP-DYKES OF MOST INTEREST.

ROBERT R. BALDERSTON.

For a long period it has been supposed that only two trap-dykes of any great interest and thickness are to be observed in the Silurian rocks of Ingleton, although allusion has been made by various authorities to a 'large series of trap-rocks' as being found, of vast vast thickness, amongst the Green Slates of this district, but whether these were regarded as dykes, intrusions, lava-flows or volcanic ejectamenta redeposited along with beds that were plainly composed of sedimentary ash, has been a point very vaguely demonstrated.

As the result of a considerable amount of labour recently spent in the examination of the beds in question, I have drawn up a list of those rocks which appear to me more or less clearly entitled to be regarded unequivocally as igneous intrusions or eruptive, whilst associating those other rocks, which have until recently been classified as 'a great series of trap-rocks,' with the sedimentary division. This has been done owing partly to a study of the questionable series in relation to their mineralogical appearance and constitution, and in part to their physical relation to the slates and ash-beds with which they are associated. To this group of rocks, which is harder and often more massive than the typical slate, I shall refer under the term 'Galliard,' a name of local application, and one not likely to give a too definite and perhaps erroneous description as would the words 'grit,' or 'trap.' The galliards have been described—and more particularly group 6 of my appended series—as 'massive felspathic trap of great thickness, and intersected by numerous bands of quartz,' they have been also further correlated with the interbedded felstones of the Lake District; a close examination, however, discloses that these rocks are not so massive as has been supposed:—

1. That in many places they are distinctly notable for slaty cleavage, but have a crystalline character.
2. That in a still greater number there is only a partially-obliterated slaty cleavage, the crystalline or coarser element having only partly invaded the cleavage planes.
3. That where the more massive character is conspicuous, the bedding planes very frequently divide the rock regularly, and in correspondence with the coincident cleavage, into thin or thick slabs, or occasionally, in rarer instances, large well-defined blocks.

May 1889.

4. That the quartz bands and veins usually seen in the galliards, and less frequently in the slates, pass in any direction and irregularly along the course of faultage, shrinkage, and other cracks indiscriminately, but that the quartz bands of the true trap-dykes of the Green Slate series run in parallel lines, at regular intervals, across the faces of such dykes, as the result of a single uniform cause, shrinkage or cooling and filling of the consequent cracks.

It may still further be remembered, that had any great bulk of the galliard element been thrown up in the form of dykes, we should naturally be led to infer that the thickness of the stratified series would not so nearly correspond on each side of the fold, as it evidently does. A few may have been lava-flows or intrusions interbedded prior to contortion, so as to have participated in the subsequent folding. As a whole, the galliards, in many respects, differ essentially from most of the genuine dykes found here, but do so in a less degree when compared with the undoubted felstones, a class to which they more nearly approximate, and one which was perhaps ejected nearer the time of the deposition of the beds amongst which they are found.

Among the twelve dykes described, three, if not four varieties of trap may be recognised, Nos. 1, 2, and 3, forming one group, with the first slightly divergent from the other two. The next group consists of 5 and 8, the constituents and appearance of these rocks allying them to the darker hued and less acid division of the Helmsgill dykes, which possibly have too great a proportion of orthoclase to be regarded as true kersantites. The third group is comprised by the series described as number 9, and this possibly may be a very compact and much altered kersantite, but at some points there is a considerable presence of quartz as a porphyritic or accidental constituent, and on the whole exact identification is difficult. The last division comprises Nos. 4, 6, 7, 10, 11, and 12, which are felstones, slightly hornblendic and containing a little mica, more especially on, or near the surfaces of joints. The sub-marine lava-flows belonging to No. 4, differ little from the Great Dyke itself, but may be regarded as felstone rhyolite, the four beds being almost synchronous and evidently due to one eruption.

The total number of exposures of the Traps of the subjoined list is more than fifty-five, and of these, nearly half belong to the Great Black Dyke, which has not yet been described.

The Galliards, or 'sub-aerial traps' of Ingleton Dale, I have grouped among the sedimentary rocks, whatever may have been the origin of their ingredients, and my doing this may be regarded as

due to the satisfactory identification of the succession and repetition of these beds on each side of the centre of the fold, and the physical features of the beds themselves. The thickness of the main divisions so closely corresponds as to be sufficiently conclusive, whilst that of the constituent and repeated beds of special character is rather remarkable and not a very pleasant and satisfactory argument for the support of the trap theory. Certain difficulties necessarily present themselves to one working out these results, as the galliards are not such a homogeneous series as may have been supposed; beds of green slate and felspathic ash are included, galliard gradually passing into slate and ash, thus showing along the outcrop of the same beds different stages of metamorphosis, whilst in the centre group of purple, purple-black and iron-stained slates, thin metalliferous veins, associated with chloritic vein-stuff, and all the attendant features of thin extinction-dykes may be occasionally observed as more characteristic of this group than of the Green Slates and galliards. There, however, the most prominent object is the large mass of Syenitic Gneiss, variously designated 'Basalt,' 'Conglomerate and Grits,' 'Quartz-Diorite,' etc., as the fancy of the observer may have suggested, sufficient to stagger the field-geologist at the very outset. Yet this rock was never ejected from a deep centre, either as dyke or lava-flow, as is proved by the physical condition and arrangement of its constituents. We observe bands of slate running through it for a greater or less distance undisturbed, thinner and more isolated bands similarly unchanged either in strike or dip; finally, thin slabs, pieces, particles, maintaining their original relation to the green and other slates of the valley, and without definite signs of fusion in what must have been a veritable sea of molten matter, were the eruptive nature of the rock to be granted. Neither can we detect on the margins of this mass a sufficiency of evidence in the form of ramifications, extinction-dykes, metamorphosis of the adjacent slates, etc., to justify the conclusion that it is igneous and not itself metamorphic. In the included slate bands themselves, isolated and coarse-grained nuclei similar to the surrounding rock may be obtained, and every stage and degree of change are to be seen in various situations.

In the face, then, of physical impossibilities and so much evidence against an igneous origin, we are constrained to reject this hypothesis, as well as the proposed alternative attributing a conglomeratic origin to the rock, for either assumption leads to absurdity, and the only decision left to us is, that the rock in question was once part of the slate group, the oldest of the series and most metamorphosed, without any very decided tendency to a schistose

individualisation of constituents. Further than this I will not go, except to suggest that these purple and iron-stained slates and gneiss, which form the natural base of the Green Slates of the Lower Llandeilo period, belong to the Arenig group. An older date we cannot at present assign to the series without disproving the existence of the fauna alleged to be found in its upper division, though there are serious grounds for doubt.

The thickness of the Lower Silurians of this district is practically identical with the width of outcrop, as the dark, calcareous, and green slates are bedded almost vertically, their cleavage, which is commonly and correctly regarded as almost, or for the most part, coincident with the bedding, being frequently actually vertical, and always at such a high average inclination that the deduction from the measurement of the width of outcrop to obtain the actual thickness of the beds is so small as, for all practical purposes, to be absolutely nil.

The stratification of the Lower Silurians in no way directly corresponds with that of the Upper division, a very marked unconformability existing between the two series, and if at any point there should happen to be an appearance of conformability, this is merely due to the rolling nature of the bedding of the upper group, a feature not observed in the underlying series, in which the folding of the beds was complete previous to the Upper Silurian epoch. This point appears to have escaped the attention of the field geologist, and the dilemma to which its non-recognition leads has obviously been avoided or explained by the suggestion of a fault at every place where the relations of the two series are exposed, and appear to be otherwise irreconcilable. Such a conclusion, if true, forms a very easy solution of the question, and one not taxing the brain with much thought as to how the various formations were originally related.

UNCONFORMABILITY.		
Middle Llandeilos.	*Upper Silurians.*	
Dip 72° to S.W.	Nearly level	Dowgill and Brackenbottom.
Strike of Cleavage to N.W....	To W. by N.	
Dip 70° to S.S.W.	60° to N.E.	Wharfe.
,, 84° to S.W.	Nearly level	Ingleton.
,, 70° to S.W. approximate	Nearly level at point of overlap	Helmsgill.
All *full* of trap-dykes ...	Dykes absent.	

It is plain, however, that an indented sea-coast with somewhat abrupt estuaries, such as the fjörds of Norway, but on a smaller scale, existed in the district along the flanks of the Upper Silurian

sea, and that the Upper Silurian conglomerate and tricleaved mudstones were first laid down in this area, which was often more channelled and therefore deeper at the points where the softer and more perishable Middle Llandeilo calcareous shales occurred. Fossil, though somewhat indistinct, remains are to be found in the mudstones and shales first laid down in such localities as the base of the Upper Silurians. Existing sections through the coast-line or across the estuaries and valleys of the period have in several cases been described as "great faults," and the incorrect diagnosis has, perhaps, been strengthened by some slight dislocation of the formations in such localities, areas of greatest weakness and least cohesion. It is easy to judge what geological conditions would ensue on, what we may allow might be an uncommon example, the submersion of something much less stupendous than the Sogne Fjörd of Norway.

To me the evidence is unsurmountable that the Lower Silurians run under the Upper division as moderately uniform and distinct folds, almost vertical, but with a slight inclination to the S.W., never to the N.E.; to me these folds appear altogether independent of those of the Upper series, which may be observed overlying the subjacent beds almost horizontally as at Easegill and Pecca, or, elsewhere, dipping at high angles to various parts of the compass in a manner not observed in the rocks below, the successive folds of which can be clearly identified, notwithstanding the few and distant exposures before us. Who will be so bold as to allege any similar uniformity in the upper series? We advise those who are sceptical on the subject to which we have drawn their attention, to once more study the physical features of Wharfe, Helmsgill, Easegill, Pecca, Crummach, Coombe, and Barkin Beck, Dowgill Bottom, etc., from every standpoint and think out the problem for themselves.

DETAILED ACCOUNT OF THE TRAP-DYKES.

No. 1.—Iron-grey Dyke. (i) In the Twiss valley, less than 6 ft. from the Tow Scar Fault, and there having a width of 24 ft. to 27 ft., and a divergent branch 12 ft. wide, cutting through and dislocating No. 2. (ii) By the Skirwith road, separated from the fault by about 75 ft. of dark, calcareous, cleaved slates, and here only $7\frac{1}{2}$ ft. wide. Externally much decomposed in the former position. Iron-grey to black-green is the characteristic colour of the sound rock. The pale-grey variety is more compact; there are only two exposures. Its line is evidently flexuous, a fact proved by its not appearing in the Doe or intermediate positions, where it has, perhaps, been for some distance faulted downwards. This dyke may be regarded as a mica-syenite,

SUCCESSION IN S.W. LIMB OF ANTICLINAL FOLD, FROM S.W. TO N.E.

	Feet.
GROUP 9.—UPPER SILURIANS (lying almost horizontally, but in a dislocated manner, on Group 8).	
(i) Soft tricleaved, black mudstones, indistinctly fossiliferous, with one or more interbedded trappean bands	45
(ii) Four marine rhyolites, with brecciated base. about 5 ft.	
UNCONFORMABILITY AND CONGLOMERATE.	
GROUP 8.—LOWER SILURIANS (*Middle Llandeilos*).	
(i) Blue-black, calcareous, cleaved slates:—	
a. Upper, with ash beds, thin bands — Skirwith 561 and Doe 291	384
b. Calcareous, cleaved slates, alone	
Dykes Nos. 1, 2 & 3, average thickness — Doe 18	
(ii) Grey-black Limestone, rendered semi-crystalline by the great Dyke No. 4; hardly a definite bed — Doe 75	
GROUP 7.—*Lower Llandeilos* (Morris).	
Great Felstone Dyke, No. 4 — Doe 36	
(i) Felspathic ash, cleaved slates (perhaps belonging to Group 8) — Doe 91	486
Black Dyke, No. 5, and Lane Dyke, No. 6 — Doe 6	
Felspathic ash and shivery slates — Doe 141	
(ii) Great Quarry, green slates — Doe 208	
In these Felstone Dyke, No. 7 — Doe 2	
GROUP 6.—GALLIARD SERIES (followed along strike).	
Galliards and slaty ash 69; ,, coarser grained 66; ,, green or greyish blue 270; ,, warm grey 120; ,, compact violet, micaceous 24; ,, grey, followed by some slate 60 — (i) Galliards, green 201 (i); ,, greyish 75; (ii) ,, violet grey 45 (ii); ,, greenish 9; ,, shivery and slate 180	720
The Great Black Dyke, No. 8 3; Galliards, green 180 — (iii) Great Black Dyke (double) 10 (iii); G., green and a purple band 200	
Doe Gill 792 — Skirwith 720	

SUCCESSION IN N.E. LIMB OF FOLD, FROM N.E. TO S.W.

Feet.	
	No further exposure to N.E.
330†	93 Ash beds, and beds of trappean or altered appearance, about (i)
	27 Seata Falls Dyke, No. 12, with altered rock.
	210 Slates, much not exposed (ii)
720	564 Galliard (or what for the most part not exposed).
	96 Slates in situ.
	60 Galliard in situ one edge.

Group 5.—SLATE SERIES.			
Green Cross Dyke, average 5			
(i) Green Slates 325			330 Slates or slaty galliard .. (i)
(ii) Galliards 99			105 Galliards .. .. .. (ii)
(iii) Slates 195	1,404	1,404	195 Slates .. .. (iii)
(iv) Galliards 30			21 Galliard .. .. (iv)
(v) Slates 663			663 { 222* Slates faulted away, *missing*; 2 Fault Dyke .. .. .. ; 58 Slates .. .. ; 381 Slaty Galliard .. .. .. } (v)
(vi) Galliards, about 21			
(vii) Slates 66			90 Slates .. .. .. (vi and vii)
Group 4.—GALLIARD SERIES.			
(i) Galliards 210			105 Galliards.
(ii) Slates 240	696	735	30 Slates.
(iii) Galliards 246			555 Galliard, perhaps in part slate.
			15 Slate.
			30 Galliard.
Group 3.—SLATE SERIES.			
(i) Green Slates 1,020	1,020	1,020	1.020 Green Slates .. .. .. (i)
Group 2.—GALLIARD SERIES.			
(i) Galliards, rusty, greenish within 825	825	816	816 Galliards .. .. (i)
Group 1.—SLATE SERIES.			
Greenish, iron-stained, dark and purplish slates, with massive Syenitic Gneiss, 1,368 ft. full thickness .. .. ½=684	684	684	684 Greenish, iron-stained, dark and purplish slates, with massive Gneiss. There is probably a fault between this group and Group 2, to the N.E., that has removed some of the purple slates.
Total to top of Group 7 5,835		5,709†	† Part of Group 7 not exposed—*222 ft. faulted away.

NOTE.—An example of the difficulties experienced in this survey may be seen in Group 6, where the variation in character of the beds traced along the strike, or line of outcrop, is, perhaps, greater than the average variation in the repeated beds of each particular group when taken, as far as possible, on a single line at right angles to the strike.

being composed of:—orthoclase of red and pale tints; perhaps a little greenish oligoclase; black and brown biotites; dark green hornblende; occasional large crystals of quartz; pyrites; a few amygdaloid nodules; and having in one place two zeolitic bands running through it. Its extreme points of exposure are 1584 yards apart.

No. 2.—Lower Violet or Orange Dyke. (i) In the Twiss, 8 ft. wide, and 6 in. from No. 1. (ii) In the Doe, 5 ft. wide and 168 ft. from the Tow Scar Fault; (iii) by the Skirwith Road $\frac{1}{2}$ an inch from No. 1. In the first position it is for the most part much decomposed; in the second altered at one end; in the third fairly fresh. The colour varies from orange, through purplish in the Doe, to violet and violet-grey in the two other exposures. Its line is apparently nearly straight, though slightly running across the bedding so as to get nearer the south to the S.E. This dyke is a granitic trap, approaching minette, and is composed of:—orthoclase of red and pale tints; hornblende, black to green; biotite, black to brown; quartz, more than No. 1; idocrase, of a yellowish green tint; foliated, micaceous pseudomorphs, after schorl; chalcedonic nodules; pyrites; and beautifully crystallised enclosures of granitel. Its extreme points of exposure are 1,584 yards apart.

No. 3.—Red or Upper Violet Dyke. (i) In the Twiss, 18 ft. wide, and running 36 ft. to 45 ft. from No. 2, but their respective points of exposure, where best examined, are about 54 yds. distant from each other. (ii) In the Doe; width 13 ft. and 18 ft. from No. 2. (iii) In the Skirwith Road, where I regard it as confluent with No. 2; 9$\frac{1}{3}$ ft. wide, and $\frac{1}{2}$ in. from No. 1. In the first position, in deep water, the condition of the trap is good, but the extinction-dyke section a short distance from the stream, is hardly recognisable; in the second position, very good; and in the third, fairly fresh. In the Twiss the colour is violet-grey, but the pale grey, compact variety is also seen here; in the Doe the tints are orange, to purplish red; and by the Skirwith Road, violet to pale red. The line of exposure is similar to that of No. 2, which may be regarded as an almost parallel branch of this the greater dyke. The description of trap is therefore the same, although in the Doe section of this dyke the chalcedonic nodules are not notably present; but the enclosures of granitel are abundant and of schistose, hornblendic gneiss less common. The extreme points of exposure are 1,639 yds. in the cleaved black slates and calcareous-ash slate series.

No. 4.—The Great Felstone Dyke and its four Rhyolites. (i) In Pecca Hill, three exposures. (ii) In the Twiss below, apparently less than 36 ft. wide, with some 170 ft. of cleaved black slates and dark limestone between it and No. 3. The width of the

dyke up the hill seems to be quite as great. (iii) In the Doe, 36 ft. wide, with 180 ft. of same series between it and No. 3. (iv) In Easegill, 40 yds. from the second bend of the stream above the Foss. This dyke generally has the appearance of a fine freestone, of dirty yellowish-brown colour; in some stages of change it has a granular character, and when blasted is white, with a pale bluish tint; it is extremely altered everywhere, but shows its character best in its lava-flow in Easegill, and fairly in the dyke sections, where I have recently blasted the rock both in the Twiss and Doe valleys. The line of exposure is decidedly flexuous or devious, as compared with the felspathic ash, dark limestone, and black cleaved slates in which it is found. In the top of Pecca Hill it is not more than 90 ft. from the Green Slates; in the river just below it is as much as 270 ft. from the same slates; in the Doe valley the distance is 240 ft.; whilst at Easegill it amounts to not less than 462 ft., and probably 150 ft. more. This dyke is evidently a much-decomposed felstone, consisting of minute granular quartz, pale felspar, hardly distinguishable hornblende, thin scales of black or pale mica, pyrites, and infiltrations through cracks from the black slates, leaving dark stains and patches. The extreme points of exposure are $1\frac{3}{4}$ miles. Rhyolites.—At Easegill, at the base of the tricleaved mudstones which fill a depression in the Upper Silurian sea, are four submarine layers of felstone rhyolite, with a total thickness of about 5 ft., and three thin bands and films of indurated mudstone sediment between. The under surface of the lowest flow has a decidedly brecciated appearance. Some portions of the beds are identical in constitution and degree of change with the Great Dyke itself, but one section yields a compact whitish-grey exposure. Near the top of Pecca Hill the Great Dyke also spreads out into similar lava-flows, separated by shale, and there is not the slightest doubt that this little section of Upper Silurians rests directly and almost horizontally on the practically vertical, black-cleaved slates.

No. 5.—The Black Dyke. (i) Three exposures south of the Slate Quarries of the Doe. (ii) One south of Skirwith. The width varies from 6 ft. to 3 ft. Three of the exposures, with the exception of the crust, are sound, but the one to the N.W. is much jointed and decomposed, and except at this point there seems to be little variation in the character of the rock. The line of exposure near the Doe, where there are 93 ft. of ash between it and No. 4, is nearly straight, but to the S.E. it seems to have worked nearer to the S. Western edge of the ash bed. This dyke is a divergent granitic trap, approaching very closely kersantite, but has too much orthoclase present. Constituents: orthoclase, red and pale; oligoclase,

green, a little; hornblende, green; mica, black, pale green, and silvery; idocrase, some; schorl pseudomorphs, a few; quartz, seldom observed. The extreme points of exposure are 748 yds. apart.

No. 6.—The Lane Dyke. One exposure only, and this in and close to Twistleton Lane, and on the exact prolongation to N.W. of No. 5, but is evidently a branch of No. 4; it much resembles the Upper Dyke at Coombe near Dent; width, 21 in.; altered and weathering quickly; bluish white, weathering yellow. Constituents: pale grey felspar; hornblende, almost indistinguishable; mica, black and pale, small; quartz, occasional clusters; a few stains, suspiciously like those of No. 4; texture very compact. Exposure not more than 10 yds.

No. 7.—The Quarry Felstone Dyke. (i) At Pecca Slate Quarry, here about a foot thick. (ii) In the Slate Quarry, N.W. of the Doe, and here 2 ft. thick; other exposures undoubtedly in the same series of slates, besides minor and thinner bands, which are, no doubt, branches from the main outburst; 331 ft. of slate and ash between position (ii) and dyke No. 5. The condition of the trap is moderately fresh, but the compactness varies; the line of exposure seems to vary little, but in the Doe quarry has evidently crossed to a point a little nearer the N. Eastern edge of the slates. Constituents: composed of a slightly granular to compact mixture of quartz; pale to warm tinted; felspar; small scales of mica; and a little hornblende. Extreme points of exposure named, 968 yds.

No. 8.—The Great Black Dyke; has twenty-one or more exposures; near the Skirwith Road, or to the S.E., 555 ft. of Galliards and a little slate intervene between it and the line of No. 7; in Doe Gill the amount is about 630 ft.; and in the Twiss 770 ft., where it has actually run into Group 5 of the stratified series, which is a great Green Slate series. (i) At Thornton Foss, just below the pool, two exposures, about 3 ft. wide, and much decomposed; the dyke runs from this point under Silurian conglomerate to the S.E., for a considerable distance covered by Scar Limestone, etc. (ii) In the Twistleton fields and lane again comes to the surface, just within the N. Eastern edge of the Galliard series, Group 6, where it yields eight exposures or more, varying from 5 ft. to 10 ft. in width, which, for the most part, are much decomposed. (iii) In the Doe, one long and sharply-flexed exposure, $1\frac{2}{3}$ ft. wide, in good condition, but having much porphyritic calcspar, and the adjacent beds greatly altered for a considerable distance. In the gully on the opposite side of the stream, but lower down the river, is a chloritic extinction-dyke that may belong to this dyke or to No. 9, which both, where last seen near this

situation, converge towards the same point. (iv) In the Skirwith fields, N. to N.E., are nine exposures, most of which are 4 ft. or more in width; those to the S.E. are very sound, and of a paler, smoky to silver-grey colour, of great hardness, and considerable compactness; here, too, the dyke bifurcates into two parallel branches. This dyke approaches kersantite and the darker or less acid division of the Helmsgill traps, and is not unlike No. 5. Constituents: orthoclase, red and pale nests; hornblende, green, minute; mica, black, pale green and silvery; calcspar, substitution products of red orthoclase in some situations. Extreme points of exposure, $1\frac{1}{4}$ miles.

No. 9.—The Green Cross Dyke Series. Eleven or twelve exposures of the four main dykes, with several belonging to minor branches; 180 ft. of green galliards intervene between (i) at the point a little above the Breast Springs Foss and dyke No. 8. (i) 5 ft. to $1\frac{1}{2}$ ft. wide; five principal exposures, that showing the finest section running at a strong angle across the bedding, and coming obliquely from a high breast of slate in the upper quarries of the Doe belonging to Group 5 of the stratified series; here it is regularly jointed, nearly horizontally, into large cubical blocks, the joints being occupied by thick bands (mainly quartz, but with a little felspar, calcite and chloritic matter), which die away quickly in fusiform extensions in the slate on each side. (ii) 4 ft. to 2 ft. wide, seen best a few feet from (i), close to the river Doe, at a point a little below the quarry, and, perhaps, more notable for reddish-brown iron decomposition products. Both these dykes rise alongside each other to a great height, gradually approximating as they get nearer the top of the rocks to the S.E. of the river. (iii) About 150 ft. above the quarries another band crosses the river. (iv) 210 ft. further a fourth dyke of the same series may be seen in a gully on the N.W. side of the river; this also is crossed by parallel but oblique bands of quartz, and thus regularly jointed. Besides the foregoing, there are several thin branches, and the whole may be regarded as one series springing from a double central dyke, running strongly across the bedding, and giving off branches in a plumose manner along the lines of stratification. There are slight variations in compactness, amount of substitution products, porphyritic calcspar, apatite, rusty stains and chloritic matter. The rock is much altered everywhere, and its shrinkage blocks and green colouring matter are prominent features. Its constituents are: hornblende, green; quartz, not unfrequently porphyritic, or as a substitution product in some places; calcspar; apatite, clusters; ferrous and chloritic products; micaceous matter, black and altered; felspars, probably triclinic.

The extreme points of exposure of (i) are about 176 yds. apart, and of (ii) 55 yds.

No. 10.—Foss Foot Traps. At the base of Thornton Foss, very little below the horizon of No. 9, are several trap-bands, forming a network with thin layers of felspathic ash, one of the ash beds curiously running through a layer of the trap. These appear to be felstones, but are more or less altered.

No. 11.—The Dale Fault Dyke is about 2 ft. wide, and 8,408 ft. from No. 9. (i) A good exposure in the Dale Fault Gully on the N. Western side of the valley. (ii) Another in the river at the lower end of Seata, where it is considerably contorted. This is a felstone dyke in better condition than No. 4. Constituents: quartz, reaching $\frac{1}{16}$ in. in size; mica, black $\frac{3}{32}$ in., white $\frac{1}{32}$ in.; felspar, pale $\frac{1}{32}$ in.; hornblende, a little, minute; pyrites. Extreme points of exposure, 400 yds.

No. 12.—The Seata Falls Dyke. Width, including much altered rock to N.E., 27 ft.; 1,581 ft. of slates and galliards intervene between this trap and No. 11. The exposure, which is not more than 10 yds. in length, is situated at the foot of the Seata rapids. Like Nos. 4 and 11, this felstone trap is much altered, but at one point the original character is apparent; the band is, perhaps, identical with several of a somewhat similar nature in the N.E. portion of the black cleaved slates of the Lower Silurians, near Norber in Crummach Dale. Constituents: quartz, reaching $\frac{1}{12}$ in.; mica, $\frac{3}{32}$ in. broad; felspar, $\frac{1}{32}$in.; hornblende, pale greenish; pyrites.

NOTE—MAMMALIA.

Extracts from Lancashire Churchwardens' Accounts.—The following items, extracted from various parish accounts of the 17th and 18th centuries, may prove of some interest:—

Rochdale: Churchwarden's Accounts, 1640.
P[d] for two Hedghoggs ... ... 00 00 06[d]

The same, 1642.
P[d] for 3 Fox heades 00 3 00

The Accts of Mark Nield, Churchwarden for ye Township of Oldham, 1734.
Disburs'd
for 8 Hedge hogs 0 1 4

The Accts. of James Butterworth, Churchwarden for ye Township of Ryton.
Disbursed
for 8 Hedge hogs 0 1 4

The accounts of Saml Smethurst, Churchwarden for Chaderton, 1735.
Disburs'd
Hedge Hog 0 6 2

The accounts of Miles Greaves, Churchwarden of ye Township of Crompton, for ye year of our Lord 1735.
Disbursed
Hedge Hog 0 6 2

I imagine that in the last two cases the 6 is a misprint for 0, in the reprint from which I have taken them, as twopence appears to have been the market value of a Hedgehog about Oldham a century and a half ago.—J. GRAFTON MILNE, Albert Square, Bowdon, 13th April, 1889.

Naturalist,

NOTES AND NEWS.

Among the 'fifteen' selected this year for the honour of F.R.S. is Prof. T. McKenny Hughes, of Cambridge, author of many papers on the geology of Yorkshire and Westmorland, and President of the Chester Natural History Society.

Our reprinting from the British Association Report the particulars of the Museums of the North of England, which appeared in our February number, has been the means of eliciting information as to a couple of museums of the first rank which have, by some strange mischance or other, escaped the attention of the British Association Committee.

One of them is the very extensive museum at the Hull Royal Institution, belonging to the Literary and Philosophical Society of that town, which dates from the year 1823, and includes collections in ethnography and all branches of natural science. The printed guide (of about 100 pages) is now before us, but unfortunately dates so far back as 1860. The museum is open to the public on Saturdays, and at any other time by introduction.

The other is the Nottingham Museum, the property of the Corporation of that town, of which Mr. J. W. Carr, B.A., is the curator, and which—as we are informed—contains one of the best invertebrate collections in the provinces.

By the appointment of Mr. Lionel E. Adams, B.A., to the Head-mastership of the Grammar School at Penistone, the ranks of Yorkshire conchologists—not too numerous—receive a notable addition. The nephew of the famed authors of 'The Genera of Mollusca,' Mr. Adams is himself known as a successful investigator and as author of a manual of the British land and freshwater mollusca which is not beyond the reach of most collectors.

We are very pleased to learn that the Rev. W. H. Painter (of Knypersley, near Congleton) expects to publish his Flora of Derbyshire before very long, and we hope that the requisite number of subscribers will be forthcoming. The author has been engaged on its preparation for many years, and proposes to write it on practically the same model as Mr. Baker's 'Flora of the Lake District.' He will include in the work an introductory chapter on the geology and the botanical bibliography of the county.

The appointment of Keeper of the Manchester Museum has been conferred upon Mr. W. E. Hoyle, M.A., M.R.C.S., M.C.S., who was formerly identified with the staff of the 'Challenger' office at Edinburgh, and whose papers on Cephalopoda are well known. Mr. J. Ray Hardy, whose ability and energy are so highly appreciated and well known in Manchester, remains as sub-keeper.

Much useful material is contained in Part IV. of the Transactions of the Leeds Geological Association, which includes abstracts of papers read and accounts of excursions made during 1888. The inaugural address of the President, Mr. J. E. Bedford, F.G.S. (whose portrait is given as a frontispiece), deals with the 'Oil-fields of America and Russia.' Mr. W. Cheetham contributes a paper entitled 'From the Millstone Grits to the Silurians,' and abstracts are given of papers by Messrs. G. W. Lamplugh, B. Holgate, F.G.S., and Prof. Green, F.R.S. The excursions—chronicled by the energetic Secretary, Mr. S. A. Adamson, F.G.S.—are eleven in number, four of which were excursions of the Yorkshire Naturalists' Union. The Association has, however, struck out a special line, which must be commended to geologists as a good example, viz., the organising of a series of excursions for the study of a particular subject. The subject chosen is the rather neglected one of the Yorkshire Permians, and two excursions among these rocks were made last year under the guidance of Mr. Holgate. The Association resumed operations in the field on March 31st, with a third Permian excursion, from Garforth to Newthorpe. At the ordinary meeting for March, Mr. C. D. Hardcastle read a detailed and instructive paper on 'The Physical Features of the Ingleton District,' a full report of which appears in the Leeds newspapers.

UP BUCKDEN PIKE WITH THE ANEROID.

WM. DENISON ROEBUCK, F.L.S.

Not very much, if any, direct observation of the altitudes to which mollusca ascend the Yorkshire hills appears to have been made; so that a transcript of the notes made during an ascent of the Wharfedale face of Buckden Pike by Mr. W. Eagle Clarke and myself on the 29th of May, 1886, may be of use as a direct record of observed facts. We started from the inn at Buckden (about 700 ft. alt.) and took the road which goes obliquely northwards through Rakes Wood, a scanty coppice clothing the lower slopes of the mountain. Under the plentiful blocks of scar limestone, up to 900 ft. in height, we found *Arion ater*, *Limax agrestis*, and *Arion bourguignati*. We also detected *Zonites cellarius* (fine), *Vitrina pellucida*, *Zua lubrica*, and *Clausilia rugosa*. At 1,000 ft. we found *Arion ater*, at 1,030 ft. plenty of typical *Limax agrestis*, and one at 1,080 ft. At 1,100 ft. a light-coloured example of *Arion bourguignati*, and on the scars of limestone which line the footpath at 1,150 ft. we found *Helix hispida*, *Pupa umbilicata*, and *Helix rupestris*. Just above Rakes Wood the mountain pasture is reached through a gate at 1,200 ft. Here we found *Balea perversa*, *Helix rupestris*, and *H. hispida*, a single *Arion bourguignati*, and numerous typical *Limax agrestis*. One small specimen of the latter, a single dead *Zonites cellarius*, and plenty of *Helix rupestris*, with *H. hispida* and *Pupa umbilicata*, were found on scars of limestone at 1,280 ft. A range of scars at 1,450 ft. produced numerous *Clausilia dubia* and *Helix hispida*, and another, at 1,800 ft, the highest on that side of the Pike, produced a dead *Zonites cellarius*, *Pupa umbilicata*, and numerous *Helix rupestris*, and a few darkish examples of *Limax arborum* (type). At 1,850 ft. several *L. agrestis* occurred under stones in the corner of an enclosure, and at 2,010 ft. we found our last mollusc, *Arion ater*, crawling on the coarse grass. A short time later the summit of the Pike, 2,302 ft. in height, was reached, when the aneroid, on being consulted, registered to within a very few feet of the true height. Time did not permit of our working down the Wensleydale slope of the Pike until we reached a steep precipice overhanging the head of Coverdale, where, at about 1,500 ft., we collected a couple of specimens of *Helix arbustorum* var. *alpestris*, several each of *Clausilia rugosa*, *Cl. dubia*, and *Helix rupestris*, and one each of *Helix hispida* and *Zonites crystallinus*, and noticed numerous *Limax agrestis* and *Arion bourguignati*. These observations are only scanty, and it is much to be wished that numerous others should be made of the same character, so that we may learn the actual vertical range of the mollusca.

BIBLIOGRAPHY:

Papers and records published with respect to the Natural History and Physical Features of the North of England.

BIRDS, 1886.

THE present instalment includes, in addition to the titles for 1886, such as have been overlooked for 1884 and 1885, and also those of papers published in the first two volumes of this journal which had been designedly omitted in former instalments. The present one thus brings the bibliography down to date in the complete form which it is designed to assume for the future.

A word or two here will not be out of place in explanation of the plan adopted in giving the gist of each article. Important articles are dealt with very briefly, and long lists are summarised in a statement of the total number of species dealt with. With regard to short notes, however, and those dealing with but a limited number of species, it seems essential to enumerate *all* the species mentioned, whether common or not, as the province of this series of bibliographies is not so much to indicate such articles as are important as it is to aim at completeness, and to give withal such indication of the contents of each note as will enable the reader to form his own judgment as to its importance.

Sporting notes do not find a place here, unless involving a natural history fact of interest; and it will here suffice to refer readers to the columns of the 'Field,' 'Land and Water,' and other sporting papers, for information as to bags of grouse and other game.

The scientific names used are in accordance with the B.O.U. list of British Birds, with spelling corrected to accord with the law of priority in nomenclature.

ANON. [Editor of Naturalist]. **York N.W., York S.E., York N.E., York S.W.**

[Duck Decoys in Yorkshire enumerated]. Nat., Sep. 1884, p. 44.

ANON. [signed J. W.]. **Northumberland S.**

Pied Flycatcher [*Muscicapa atricapilla*] **breeding in Northumberland** [at Ridley Hall, Bardon Mill]. Field, June 13th, 1885, p. 792.

ANON. [Editor of Naturalist]. **York S.E.**

The Yorkshire [Spurn] Example of the Rustic Bunting [(*Emberiza rustica*); is now in the York Museum]. Nat., Nov. 1885, p. 364.

ANON. [not signed]. **Isle of Man.**

The [Manx] Legend of the Lhondoo and the Ushag-Reaisht, or the Blackbird and the Mountain-Plover [*Turdus merula* and ——— ?]. Manx Note-Book, No. 5, Jan. 1886, ii. 37.

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

[Notes made by the Hull Field Naturalists' Society; *Locustella nævia* noted, abnormal number of eggs of *Parus cæruleus* and *Erithacus rubecula*, and unusual numbers of *Eudromias morinellus*]. Nat., Feb. 1886, p. 63.

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

Grouse [*Lagopus scoticus*] **driven from the Moors** [to near Ilkley, Arthington, and even Harewood, by severity of weather]. Land and Water, Feb. 6th, 1886, p. 138.

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

Grouse [*Lagopus scoticus*] **in Yorkshire** [affected by the severe weather in Wensleydale]. Land and Water, Feb. 13th, 1886, p. 162.

ANON. [signed 'A Yorkshire Sportsman']. **York N.W., York S.W., Durham, Lanc. S.**

The Exodus of Grouse [*Lagopus scoticus*] from the Yorkshire moors [confirmatory of James Carter's records; also stating that on moors between Burnley and Halifax, artificial feeding prevented the exodus]. Field, Feb. 13th, 1886, p. 208.

ANON. [signed 'M.E.C.']. **Lanc. W.**

Early Throstle [*Turdus musicus* nesting Feb. 11th, 1886, at Hillam, Cockerham, Lancashire]. Nat. Hist. Journ., March 15th, 1886, x. 43.

ANON. [signed 'J. O. J. P. (Thornleigh, Chester)']. **Cheshire.**

Occurrence of the Blackcap [*Sylvia atricapilla*] **in March** [on the 13th, near Thornleigh, Chester]. Field, March 20th, 1886, p. 361.

ANON. [signed 'Avis']. **Notts.**

Redshank [*Totanus calidris*] **breeding in Notts.** [four nests in one small grass-field by the Trent near Newark: Editor adds a quotation from Sterland and Whitaker's book]. Field, April 24th, 1886, p. 528.

ANON. [signed 'C.M.V.']. **Linc. S.**

A curious instance of protective sagacity . . . [in nidification of a pair of Swans (*Cygnus olor*) at Washingboro' near Lincoln]. Sci. Goss, May 1886, p. 119.

ANON. [not signed]. **Linc. S.**

Wild Animals paid for by Churchwardens in Bucks [and at Wigtoft, Lincolnshire, where between 1512 and 1519, occurs the item 'Payd to Robt. Baddenelle for stopping caudows out, 0. 0. 4.'—i.e., for stopping Jackdaws (*Corvus monedula*) out of the church]. Zool., June 1886, x. 252.

ANON. [newspaper paragraph]. **Cumberland.**

Great Destruction of Migrants in Cumberland by hunger and cold [particularizing *Hirundo rustica* and *Cotile riparia*]. Nat. Hist. Journ., June 15th, 1886, x. 108.

ANON. [signed 'F.R.']. **York Mid W.**

Sparrow [*Passer domesticus*] **in a Sunday School** [at Beamsley, Yorkshire, Sunday, 15th August, 1886]. Nat. World, Sep. 1886, iii. 166.

ANON. [signed 'J.S.M.']. **York S.E.**

Late Stay of Swifts [(*Cypselus apus*); several flying about the cliffs above Filey Brig, September 13th, 1886]. Field, Sep. 18th, 1886, p. 441.

ANON. [not signed]. **Isle of Man.**

Accounts of the Calf Island in 1708 [including an item as follows: The Puffins [*Fratercula arctica*] of ye sd Isle this year being 2618 birds at 1d ... ...13 : 05 : 06]. Manx Note-Book, No. 8, Oct. 1886, vol. 2, p. 190.

ANON. [signed 'W.W.']. **Isle of Man.**

Snipe Shooting in the Isle of Man [recording large bags of Snipe (*Gallinago cælestis*), and the presence of Jack Snipe (*G. gallinula*) and of Woodcock (*Scolopax rusticola*) in plenty, etc.]. Field, Dec. 25th, 1886, p. 919.

JOHN AITCHISON. **Cheviotland.**

On the Occurrence and Migration of Birds in the Belford District, for 1885 [notes referring to a very large number of species, including some rarities and an albino]. Proc. Berw. Nat. Club for 1885 [pub. 1886], xi. 246-247.

FREDK. J. ALDER. **Linc. N.**

Corncrake [*Crex pratensis*] **in November** [on the 23rd, shot at Worlaby near Louth]. Field, Nov. 27th, 1886, p. 800.

H. T. ARCHER. **Cheviotland.**

Peregrine Falcon [*Falco peregrinus*] **in Northumberland** [a fine female shot, Simonside Hills, Cheviot]. Nat., Oct. 1884, p. 58.

H. T. ARCHER. **Northumberland.**

Early Appearance of the Snow-Bunting [*Plectrophanes nivalis*] in Northumberland [15th Sep., 1884]. Nat., Oct. 1884, p. 58.

H. T. ARCHER. **Northumberland S.**

Spotted Eagle [*Aquila nævia*] **in Northumberland** [at Cresswell, shot 31st Oct., 1885; identified as *A. nævia* by John Hancock; but see article by J. H. Gurney]. Nat., Dec. 1885, p. 387.

H. T. ARCHER. **? Northumberland S. or ? Durham.**

Hawks [*Accipiter nisus*, *Tinnunculus alaudarius*, and *Falco æsalon*] **mobbed by Small Birds** [wagtails, etc.] Nat., June 1886, p. 181.

H. T. ARCHER. **? Northumberland S.**

Jackdaw [*Corvus monedula*] **and Young Birds** [eating a nestling Sparrow (*Passer domesticus*); presumably at Newcastle]. Nat., July 1886, p. 215.

H. T. ARCHER. **Northumberland S.**

Birds deserting their Nests [at Newcastle-on-Tyne *Turdus merula*, *T. musicus*, *Accentor modularis*, and *Erithacus*; and on the Northumbrian moors *T. viscivorus*, *T. musicus*, *T. merula*, *Cinclus aquaticus*, *Lagopus scoticus*, *Numenius arquata*, *Gallinago cælestis*, and *Vanellus vulgaris*, some of which were deserted; blame cast on *Corvus corone* and *Larus fuscus*]. Nat., July 1886, p. 215.

J. J. ARMISTEAD. **Cumberland.**

Notes on Some of the Birds occurring in the Solway District [being a full list—with annotations—of 176 species]. Nat., Aug. 1885, pp. 293-298; and March 1886, pp. 69-78.

J. RHODES ASHWORTH. **Notts.**

Emberiza melanocephala in Nottinghamshire [second English occurrence; shot in June or July 1884, between Radcliffe and Bingham]. Zool., Feb. 1886, x. 73.

JAMES BACKHOUSE, junr. **York N.W.**

The Yorkshire Naturalists' Union at Hawes [28th June, 1884; *Cinclus*, *Motacilla melanope*, *Lagopus scoticus*, *Numenius arquata*, *Charadrius pluvialis*, *Ruticilla phœnicurus*, *Pratincola rubetra*, *Turdus torquatus*, *Sylvia curruca*, and *Tringoides hypoleucos* noted]. Nat., Aug. 1884, p. 18.

J. BACKHOUSE, Jun. **York N.E.**

Little Gull [*Larus minutus*] **at Whitby** [July 15th, 1884, in company with *Rissa tridactyla*]. Nat., Sep. 1884, p. 32.

J. Backhouse, Jun. **York Mid W.**

Curious Nesting-place [at Holgate, York] for a Reed Bunting [(*Emberiza schœniclus*); nest built against stem of Austrian pine]. Nat., Oct. 1884, p. 58.

J. Backhouse, Junr. **York Mid W.**

Capture of a Bittern [*Botaurus stellaris*] **in Yorkshire** [one killed Dec. 1884, at Grimston Park, near Tadcaster]. Nat., Feb. 1885, p. 149.

James Backhouse, junr. **York Mid W.**

The Yorkshire Naturalists' Union of Boroughbridge [25th May, 1885; *Garrulus*, *Accipiter nisus*, *Fulica*, *Columba œnas*, *Ruticilla phœnicurus*, *Turdus torquatus*, *Phylloscopus sibilatrix*, *Sitta*, and *Saxicola œnanthe* noted]. Nat., July 1885, p. 279.

James Backhouse, junr. **York N.E.**

The Yorkshire Naturalists' Union at Whitby [3rd Aug., 1885; *Columba livia*, *C. œnas*, *Dendrocopus major*, *Anthus obscurus*, *Tinnunculus*, *Ardea cinerea*, *Larus ridibundus*, *L. argentatus*, and *Phalacrocorax carbo* noted]. Nat., Oct. 1885, p. 348.

James Backhouse, Jun. **Durham, Westmorland, York N.W.**

Notes on the Avi-Fauna of Upper Teesdale [being a detailed and fully annotated list of 117 species, prefaced by a brief topographical introduction]. Nat., Oct. and Nov. 1885, pp. 353-364.

James Backhouse, junr. **York Mid W.**

The Yorkshire Naturalists' Union at Blubberhouses [26th Sep., 1885; *Phylloscopus trochilus*, *Turdus torquatus*, *Totanus canescens*, *Anas boschas*, *Anser*, *Clangula glaucion*, *Querquedula crecca*, *Carduelis*, and *Ægialitis hiaticula* noted]. Nat., Nov. 1885, p. 379.

J. Backhouse, jun. **York.**

[Pied] Variety of the Fieldfare [(*Turdus pilaris*) near York: description given]. Zool., Feb. 1886, x. 72.

J. Backhouse, junr. **York Mid W.**

Swallows and the late Storm [of May 1886; great destruction by cold and starvation near York of *Hirundo* and *Chelidon*]. Nat., July 1886, p. 214.

James Backhouse, junr. **York Mid W.**

Thrush [*Turdus musicus*] **laying in a Blackbird** [*T. merula*]**'s Nest** [at Holgate, York]. **Late Stay of the Redwing** [(*T. iliacus*); to May 4th, 1886, at Holgate, York]. Nat., July 1886, p. 215.

James Backhouse, junr. **York S.E.**

The Yorkshire Naturalists' Union at Flamborough Head [14th June, 1886; *Turdus musicus*, *T. merula*, *T. viscivorus*, *Erithacus*, *Corvus frugilegus*, *C. monedula*, *C. cornix*, *Passer domesticus*, *Alauda arvensis*, *Ligurinus*, *Emberiza citrinella*, *E. miliaria*, *Anthus pratensis*, *A. obscurus*, *Sturnus*, *Accentor modularis*, *Troglodytes*, *Columba livia*, *Larus argentatus*, *L. canus*, *Rissa*, *Fratercula*, *Alca torda*, *Lomvia troile*, *Motacilla lugubris*, *Phylloscopus trochilus*, *P. rufus*, *Sylvia atricapilla*, *Hirundo*, *Chelidon*, *Cypselus*, *Cotile*, *Muscicapa grisola*, *Acrocephalus phragmitis*, *Anthus trivialis*, *Cuculus*, and *Crex*; some were nesting]. Nat., July 1886, p. 216.

James Backhouse, Jun. **York S.W., S.E., N.E., and Mid W.**

A Yorkshire specimen of Sturnus unicolor, and other uncommon Birds, in a York collection [the *S. unicolor* shot near Howden, 1840; *Loxia curvirostra* at Sand Hutton, Sledmere, and Stockton-on-Forest in 1866; *Lanius collurio* at Melbourne; *Pastor roseus* at Dunnington, 1850; *Upupa epops* near Selby, 1858; *Porzana maruetta*, Foss Islands, 1848; *Syrrhaptes paradoxus*, Stockton-on-Forest and Haworth Moor, 1863; *Œdicnemus scolopax*, near York; *Gallinago major*, Everingham Park; and *Larus minutus*, Bridlington, 1868]. Nat., Oct. 1886, pp. 307-308.

J. Backhouse, Jun. **Westmorland, Durham.**

Notes on the British Shrikes and their European Allies [*Lanius collurio* breeds occasionally as far N. as Westmorland and Durham]. Nat. Hist. Journ., Oct. 15th, 1886, x. 137-141.

Matthew Bailey. **York S.E.**

Flamborough Bird Notes [respecting *Hirundinidæ*, *Motacillæ*, *Ruticilla phœnicurus*, *Saxicola œnanthe*, two splendid examples of *Iynx*, *Lomvia troile*, *Fratercula*, *Alca torda*, *Sternæ*, *Stercorarii*, *Sula*, and *Puffini*]. Nat., Nov. 1885, p. 364.

Matthew Bailey. **York S.E.**

Flamborough Bird Notes [anent *Hirundo*, *Corvus cornix*, *Regulus cristatus*, *Turdus torquatus*, *Scolopax rusticola*, *Larus minutus*, and *Procellaria pelagica*]. Nat., Jan. 1886, p. 18.

Matthew Bailey. **York S.E.**

Birds at Flamborough [*Colymbus arcticus*, *Uria grylle*, and *Larus glaucus*]. Nat., March 1886, p. 78.

Matthew Bailey. **York S.E.**

The Shore Lark [(*Otocorys alpestris*) **shot at Flamborough** in Jan. 1886; two were shot out of a flock in Feb. 1865; abundance at Flamborough of *Columbia livia*, *Turdus pilaris*, *T. iliacus*, *Vanellus*, *Charadrius pluvialis*, *Sturnus*, *Alauda*, *Turdus musicus*, and *T. merula*]. Land and Water, March 6th, 1886, p. 228.

Matthew Bailey. **York S.E.**

Arrivals and Departures of Birds in the North [at Flamborough; dates given for *Motacilla lugubris*, *M. melanope*, *Corvus cornix*, *Anser brachyrhynchus*, and *Querquedula circia*]. Land and Water, April 3rd, 1886, p. 324.

Matthew Bailey. **York S.E.**

Flamborough Bird Notes [arrival of *Motacilla lugubris* and *M. melanope*; departure of *Corvus cornix*; non-arrival of *Hirundo*; occurrence of *Anser brachyrhynchus* and *Querquedula circia* (Garganey); and arrival of *Saxicola œnanthe* and *Sylvia curruca*]. Nat., May 1886, p. 150.

M. Bailey. **York S.E.**

Sea Birds and the Fish Supply [speaking of the immense numbers of sea birds, their great destruction of fish, the absurdity of closing the shooting on March 1st, and the food-value of the sea-birds]. Land and Water, May 8th, 1886, p. 441.

M[atthew]. B[ailey]. **York S.E.**

Arrivals of Summer Visitants at Flamborough [in 1886: *Saxicola œnanthe*, April 2nd; *Sylvia curruca*, April 11th; *Hirundo rustica*, April 24th; *Ruticilla phœnicurus* and *Muscicapa atricapilla*, April 26th]. Land and Water, May 8th, 1886, p. 441.

Matthew Bailey. **York S.E.**

Arrival of Summer Birds at Flamborough [*Hirundo rustica*, *Ruticilla phœnicurus*, *Muscicapa atricapilla*, and *Turtur communis* noted, with dates, April 24th to May 11th]. Nat., June 1886, p. 188.

Matthew Bailey. **York S.E.**

Flamborough Bird Notes [anent the departure of *Hirundo rustica*, *Saxicola œnanthe*, and *Motacilla lugubris*]. Nat., Oct. 1886, p. 308.

Matthew Bailey. **York S.E.**

Flamborough Bird-notes [arrival of *Scolopax rusticola*, *Regulus cristatus*, and *Corvus cornix*; abundance of sea-birds—*Puffinus anglorum*, *P. griseus*, *Stercorarii*, *Sula*, *Lomvia troile*, *Alca torda*, *Larus minutus*, *Sterni*, *Uria grylle* (one), and *Rissa* in thousands]. Nat., Nov. 1886, p. 340.

MATTHEW BAILEY. **York S.E.**

Variety of the Kittiwake [(*Rissa tridactyla*); shot at Flamborough Head, 23rd Oct., 1886; Editorial suggestion that it agrees fairly well, from Bailey's description, with a stage of plumage of *Pagophila eburnea*]. Nat., Dec. 1886, p. 374.

E. T. BALDWIN. **Lanc. W.**

Quail [*Coturnix communis*] **in North Lancashire** [at Pilling, one seen Oct. 16th, 1885]. Nat., Jan. 1886, p. 17.

EDWARD T. BALDWIN. **Furness, York Mid W.**

Grouse [*Lagopus scoticus*] **and the [severe] Weather** [a Caithness instance quoted; also reference to light-coloured Grouse at Holker, Furness]. Nat., March 1886, p. 68.

FRANS. BARTHOLOMEW. **Linc. S.**

Rooks [*Corvus frugilegus*] **building in January** [1886, at Waddington Heath, Lincoln; snowing same day]. Field, Jan. 30th, 1886, p. 132.

JOSEPH BEANLAND. **Yorkshire.**

Cuckoo [*Cuculus canorus*] **in Skylark** [*Alauda arvensis*]**'s Nest** [at Cookridge, near Leeds]. Nat. World, Aug. 1886, iii. 153.

WILLIAM E. BECKWITH. **Lincolnshire and Yorkshire.**

The Green Sandpiper [(*Helodromas ochropus*); Lincolnshire and Yorkshire observations quoted to show that this is a winter rather than a transient visitant to Britain]. Field, March 13th, 1886, p. 314.

F. BESANT. **Linc. S.**

A Nest of the Long-tailed Titmouse [(*Acredula rosea*) described, presumably at Sibsey Vicarage near Boston]. Zool., Dec. 1886, x. 485-486.

F. BESANT. **Linc. S.**

Swallow [*Hirundo rustica*?] **nesting in a Tree** [at Sibsey Vicarage near Boston]. Zool., Dec. 1886, x. 486.

GEORGE BOLAM. **Cheviotland.**

Occurrence in Northumberland [at Berwick] of the Red-breasted Flycatcher [(*Muscicapa parva*), 5th Oct., 1883, young male; described]. Nat., Aug. 1884, p. 9.

GEORGE BOLAM. **Cheviotland, Northumberland S.**

Ornithological Notes [from North Northumberland, etc.; *Aquila nævia* Gmel. at Cresswell; winter capture of *Turdus torquatus*; *Otocorys alpestris* at Berwick, 12th December, 1885; *Fulmarus glacialis* at Alnmouth, 20th February, 1886; *Procellaria leucorrhoa* at Branxton, December 1885, and at Swalwell-on-Tyne in March 1886; *Plegadis falcinellus* at Mindrum, 25th August, 1885; *Somateria spectabilis* at the Farne Islands; extension of range of *Turtur communis*; *Bernicla leucopsis* at Holy Island, winter of 1885-6; and nesting of *Muscicapa luctuosa* at Alnwick and elsewhere]. Proc. Berw. Nat. Club for 1885 [pub. 1886], xi. 258-263.

B. B. H[AWORTH]. B[OOTH]. **York S.E.**

Reed Warbler [*Acrocephalus streperus*] **nesting at a distance from water** [and in one instance in a yew, 10 ft. high, at Hullbank, Inver Hull, East Yorkshire; interesting details and editorial corroboration]. Field, June 27th, 1885, p. 843.

B. B. HAWORTH BOOTH. **York S.E.**

Cat and Kingfisher [(*Alcedo ispida*); the cat brought in for her kittens a live Kingfisher; Editor suggests she caught it in a hole; locality doubtless Hullbank, Inver Hull, but not further indicated than 'East Yorkshire']. Field, Oct. 23rd, 1886, p. 609.

F. BOYES. **York S.E.**

Brent Geese [(*Bernicla brenta*); citing East Riding experience in criticising a point in Mr. Chapman's article]. Field, Dec. 11th, 1886, p. 856.

W. D. BRAITHWAITE, Secretary. **York S.W.**

Ackworth School Natural History Society [with notes of *Lanius collurio* at Ackworth, and of *Podiceps cristatus*, *Tachybaptes fluviatilis*, and *Fuligula ferina* at Hemsworth Dam]. Nat. Hist. Journ., Nov. 15th, 1886, x. 169.

T. W. BREWIS. **York S.W.**

Late Brood of Swallows [(*Hirundo rustica*) at Ravenfield, near Rotherham, Oct. 10th, 1885]. Nat., Feb. 1886, p. 48.

S[TANLEY]. BRIGG. **York Mid W.**

Northern Spring Migration of Birds [an account of flocks (supposed of Ducks or Plovers) heard passing over Keighley, 27th April, 1886]. Nat. World, June 1886, iii. 119.

W. FITZHERBERT BROCKHOLES. **Lanc. W.**

Effects of Sudden Cold upon Summer Birds [at St. Michael's-on-Wyre and Garstang; great destruction of *Hirundo*, *Chelidon*, *Cotile*, *Cypselus*, and *Crex* during the cold snap of mid-May 1886]. Zool., June 1886, x. 248.

MONTAGU BROWNE. **Derbyshire, Lanc. S., Linc. S.**

Notes on the Vertebrate Animals of Leicestershire [with records of *Plegadis falcinellus* for Derby; several *Ectopistes migratorius* killed near Liverpool the same year that one was killed in Leicestershire; to which Editor remarks, probably escaped from some dealer or from the docks; records for Belvoir (which may be considered as also for South Lincolnshire) of *Turdus viscivorus* (p. 333); *Daulias luscinia* (338); *Phylloscopus trochilus* (416); *Acredula caudata rosea* (419); *Certhia* and *Carduelis* (462); *Coccothraustes valgaris* (463); *Fringilla cœlebs* (464); *Linota cannabina* and *Pyrrhula europæa* (465); *Corvus cornix* (17); *C. frugilegus* with white wings (18); *Caprimulgus* (20); *Dendrocopus major* (21); *Asio brachyotus* (161); *Pernis* (164); *Falco æsalon* (166); *Ardea cinerea* (197); *Bernicla canadensis* and *Anas boschas* (200); *Querquedula crecca*, *Fuligula cristata* and *Clangula glaucion* (201); *Columba œnas* (234); *Coturnix* (235); *Charadrius pluvialis* (327); *Sterna fluviatilis* (409); *Podiceps cristatus* (413); and *Tachybaptes fluviatilis* (414); and a record of *Limosa lapponica* at Swarkstone, Derbyshire (p. 331)]. Zool., Sep. 1885, pp. 333 and 338; Nov., pp. 416 and 419: Dec., pp. 462 to 465; Jan. 1886, pp. 17, 18, 20, 21; April, pp. 161, 164, 166; May, pp. 197, 198, 200, 201; June, pp. 234-235; Aug., pp. 327 and 331; and Oct.. pp. 409, 413, and 414.

THOMAS BUNKER. **York S.W.**

Nesting of the Twite [*Linota flavirostris*] **on Thorne Waste** [in April 1884; a few details given]. Nat., Aug. 1884, p. 9.

ARNOLD E. BUTLER. **? York N.E.**

[A Tail-less and Pied Sparrow (*Passer domesticus*) seen in York]. Nat. Hist. Journ., May 15th, 1886, x. 80.

E. P. P. BUTTERFIELD. **Furness, York S.W.**

Ornithological Notes from Windermere and Bingley [young *Scolopax rusticola* at Windermere, and *Coccothraustes vulgaris* at Manywells]. Nat., Oct. 1884, p. 58.

A. W. BYRON. **Notts.**

Woodcock Shooting in Nottinghamshire [in a wood called Cuckney Hay, sixteen Woodcock (*Scolopax rusticola*) were shot on the 17th Dec., 1886]. Field, Dec. 25th, 1886, p. 919.

W. J. CAIN. **Isle of Man.**

Manx Rhyme about the Cuckoo [(*Cuculus canorus*) with English translation]. Manx Note-Book, No. 6, April 1886, vol. 2, p. 94.

W. J. CAIN [translator]. **Isle of Man.**

Manx Ballad. Ushag Veg Ruy [=Little Red Bird of the Black Turf Ground; given in Manx, with an English translation in verse]. Manx Note-Book, No. 7, July 1886, vol. 2, pp. 128-129.

J. CAMBRIDGE. **Durham.**

The Iceland Gull [*Larus leucopterus*] **at Hartlepool** [a young bird shot Oct. 18th, 1886]. Young Nat., Nov. 1886, vii. 234.

JAMES CARTER. **York N.W.**

Blackbird [*Turdus merula*] **and Thrush** [*T. musicus*] **nesting on the ground** [giving the writer's experience at Masham; a Robin (*Erithacus rubecula*) 's nest with five clear white eggs—quite spotless—also recorded]. Field, June 13th, 1885, p. 792.

JAMES CARTER. **York N.W. and Mid W.**

The Grouse [*Lagopus scoticus*] **on the Yorkshire Moors** [driven down into the valleys about Masham and in Wensleydale about the end of January by severe weather]. Field, Feb. 6th, 1886, p. 171.

JAMES CARTER. **York N.W. and Mid W.**

Effects of Snow in Yorkshire [on bird-life; great havoc made by the eleven weeks' severe weather]. Field, March 20th, 1886, p. 361.

J. CARTER. **York N.W. and Mid W.**

Arrival of Summer Birds [**at Masham:** *Saxicola œnanthe*, 31st March; *Phylloscopus rufus*, 24th March; *P. trochilus*, April 2nd; *Sylvia atricapilla*, April 1st; *Cotile*, March 21st; *Hirundo*, April 11th]. Field, April 17th, 1886, p. 477. [*Pratincola rubetra*, April 24; *Muscicapa atricapilla*, April 25th; and *Tringoïdes hypoleucos*, April 24th]. Field, May 1st, 1886, p. 570.

JAMES CARTER. **York N.W.**

Occurrence of Gannet [*Sula bassana*] **inland** [at Swinton Park near Masham, October 3rd, 1886, a young male about two years old; arrival noted also of *Corvus cornix* at Masham, on October 4th]. Field, Oct. 9th, 1886, p. 518.

JAMES CARTER. **York N.W.**

Notes from [Masham in] North [West] Yorkshire [Woodcock (*Scolopax rusticola*), Oct. 8th and 16th; Redwings (*Turdus iliacus*) arrived Oct. 9th, 1886]. Field, Oct. 23rd, 1886, p. 609.

THOMAS CARTER. **York N.W.**

Green Sandpiper [*Helodromas ochropus*] **at Masham** [several seen; dates given for three years]. Nat., Oct. 1884, p. 58.

THOMAS CARTER. **York N.W.**

Breeding of the Hawfinch [*Coccothraustes vulgaris*] in North Yorkshire [at Masham and at Swinton Park]. Nat., Nov. 1884, p. 91.

T. CARTER. **York N.W.**

Goosanders [*Mergus merganser*] **at Masham,** Yorkshire [3rd Jan. 1885, four seen on the Yore; also *Anas boschas*, *Clangula glaucion*, and *Querquedula crecca*]. Nat., July 1885, p. 269.

T. CARTER. **York N.W.**

Arrival of Summer Birds [at Masham: *Cotile riparia*, March 21st]. Field, March 27th, 1886, p. 400.

T. CARTER. **York N.W.**

Notes from [Masham in] North Yorkshire [chronicling severe weather in mid-May and great destruction of birds, particularly Swallows (*Hirundo rustica*), Martins (*Chelidon urbica*), and Sand Martins (*Cotile riparia*); notes

upon Swifts (*Cypselus apus*), Wood-wren (*Phylloscopus sibilatrix*), Spotted Flycatcher (*Muscicapa grisola*), Willow-wrens (*Phylloscopus trochilus*), Grouse (*Lagopus scoticus*), and Black-headed Gulls (*Larus ridibundus*) are also given]. Field, May 22nd, 1886, p. 648.

T. CARTER. **York N.W.**

The [severe] Weather [of May 1886] and the Swallows [*Hirundo, Chelidon, Cotile*, also *Cypselus, Phylloscopus sibilatrix, P. trochilus*, and *Muscicapa grisola*, and occurrence of *Larus ridibundus*, at Masham]. Nat., June 1886, p. 182.

THOMAS CARTER. **York N.W.**

Notes from [Masham in] North Yorkshire [Nesting of *Erithacus, Gallinago cœlestis, Accentor, Fringilla cœlebs*, and *Syrnium aluco*, all sitting on less than the usual complement of eggs; supposed breeding of Green Sandpiper (*Helodromas ochropus*); increase in numbers of *Columba œnas*; nesting of *Gallinula chloropus, Cuculus, Motacilla lugubris, Fringilla cœlebs*, and *Turdus merula*; *T. pilaris* seen May 8th; *Hirundo* suffering from inclemency]. Zool., July 1886, x. 297-298.

THOMAS CARTER. **York N.W. and Mid. W.**

Marfield Pond, Masham, and its Bird-Life [*Spatula clypeata* reared young in 1869; Geese, *Gallinula, Tachybaptes, Fulica, Totanus calidris, Tringa alpina, Helodromas, Procellaria pelagica, Ardea cinerea, Numenius arquata, Charadrius pluvialis, Larus ridibundus, L. argentatus, L. fuscus, Limnocryptes, Scolopax rusticola, Gallinago cœlestis, Rallus aquaticus, Bernicla brenta, Fuligula cristata, Cygnus bewicki, Mergus serrator, Fuligula ferina, Anas boschas, Œdemia nigra, Rissa tridactyla, Hæmatopus, Mareca, Querquedula crecca, Clangula glaucion, Fuligula marila, Caprimulgus, Pyrrhocorax graculus* and *Corvus frugilegus* noted; many likely to not again resort, as the pond is now drained]. Nat., Aug. 1886, pp. 231-234.

JAMES M. CHADWICK. **Lanc. S.**

Night-jar [*Caprimulgus europæus*] **at Eccles** [unusual in a noisy town]. Nat., June 1885, p. 251.

S. CHADWICK. **York N.E.**

Curious Site for a Wren [*Troglodytes parvulus*]**'s Nest** [at Rillington Station; in an ash-pit, in 1882, 1883, and 1884]. Nat., Jan. 1885, p. 126.

J. CHALONER. **York Mid W.**

Land-rail [*Rallus aquaticus*] **near Tadcaster in December** [1884, at Healaugh; unusual at this time of year]. Nat., Feb. 1885, p. 149.

J. CHALONER. **York Mid W.**

Little Auk (*Mergulus alle*) **near Tadcaster in July** [1885, at Newton Kyme, one picked up, apparently dead some days; editorial note appended that its occurrence during the breeding season is very remarkable, indeed unprecedented for Britain]. Nat., Aug. 1885, p. 299.

J. CHALONER. **York Mid W.**

Grouse [*Lagopus scoticus*] **and the Weather** [much affected by unusual inclemency in Feb. 1886, at Walton near Boston Spa, Yorkshire]. Nat., March 1886, p. 68.

ABEL CHAPMAN. **Cheviotland and Northumberland S.**

The Ornithology of Upper Coquetdale [notes on *Falco peregrinus, Turdus torquatus, Phylloscopus sibilatrix, Motacilla melanope, Linota flavirostris, Columba œnas, Totanus calidris, Ægialitis hiaticula, Mergus serrator*, and *Clangula glaucion*, supplementary to John Cordeaux's notes]. Nat., Feb. 1885, pp. 150-151.

ABEL CHAPMAN. **Durham.**

Wood Pigeons [(*Columba palumbus*); detailed notes on their habits, movements, and migration; also on the increasing numbers and habits, etc., of the Stock-dove (*C. œnas*); all the notes refer apparently to county Durham]. Field, April 17th, 1886, pp. 476-477.

ABEL CHAPMAN. **Durham.**

Little Gull [*Larus minutus*] **in County Durham** [shot on Whitburn Sands near Sunderland, Aug. 28th, 1886; description given, from which Editor of Zool. suggests the possibility of its being a young *Xema sabinii*]. Nat., Oct. 1886, p. 308; and Zool., Nov. 1886, x. 457.

A. C[HAPMAN]. **Northumberland S., Durham.**

Brent Geese [(*Bernicla brenta*); a full and detailed account of their habits, dates of arrival, etc., etc., on the Northumbrian and Durham coasts]. Field, Nov. 27th, 1886, pp. 770-771.

A. C[HAPMAN]. **Northumberland S., Durham.**

Wildfowl of the North-East Coast: their haunts and habits [described at length; the species referred to are *Bernicla brenta*, *Anas boschas*, *Mareca penelope*, *Querquedula crecca*, *Fuligula marila*, *Clangula glaucion*, *Mergi*, *Limosæ*, *Tringa canutus*, *Hæmatopus ostralegus*, *Larus ridibundus*, *L. glaucus*, *Podiceps*, *Phalacrocorax carbo*, etc.]. Field, Dec. 25th, 1886, p. 918.

ALFRED CRAWHALL CHAPMAN. **Northumberland S., Cheviotland, Durham.**

Ornithological Notes from the Northumberland Coast [notes on both *Limosæ*, *Calidris*, *Strepsilas*, *Squatarola*, *Tringa striata*, *T. canutus*, *T. subarquata*, *T. minuta*, *T. temmincki*, *T. alpina*, both *Numenii*, *Totanus calidris*, *T. glareola*, *T. fuscus*, *T. canescens*, *Machetes*, both *Phalaropi*, *Stercorarius crepidatus*, *Helodromas ochropus*, *Mareca*, *Bernicla brenta*, *Hæmatopus*, *Ardea cinerea*, *Ægialitis hiaticula*, *Anas boschas*, *Querquedula crecca*, *Gallinago cælestis*, *Tringoides hypoleucos*, *Charadrius pluvialis*, *Tadorna cornuta*, *Somateria mollissima*, *Spatula*, *Œdemia*, *Stercorarius parasiticus*, *Larus canus*, *L. fuscus*, *L. ridibundus*, *Mergus serrator*, *Colymbus arcticus*, *C. septentrionalis*, *Rissa*, *Sterna cantiaca*, *S. macrura*, *S. fluviatilis*, *S. dougalli*, *S. minuta*, *Sula*, *Phalacocorax carbo*, *Lomvia troile*, and *Puffinus*—their movements and habits]. Nat., Feb. 1886, pp. 37-44.

ALFRED CRAWHALL CHAPMAN. **Durham.**

Notes on the Cuckoo [(*Cuculus canorus*) a young one, in the dull red and barred plumage, killed against the Souter Point (electric) Lighthouse, at 2 a.m., on August 6th, 1885; giving thus evidence as to when it moults]. Zool., June 1886, x. 244; and Nat., Aug. 1886, pp. 237-238.

ALFRED CRAWHALL CHAPMAN. **Northumberland.**

The Pied Flycatcher [*Muscicapa atricapilla*] **in Northumberland** [notes on habits and nidification; place unstated]. Nat., Nov. 1886, pp. 341-342.

ALFRED C. CHAPMAN. **Cheviotland.**

Lesser White-fronted Goose [*Anser erythropus* L.] **on the Coast of Northumberland** [shot near Holy Island, 16th Sep., 1886; full measurements, comparative descriptions, and account of the capture given]. Field, Dec. 11th, 1886, p. 872.

EDWD. CHAPMAN. **York N.W.**

Occurrence of the Hawfinch [*Coccothraustes vulgaris*] **in Wensleydale** [at Wensley Hall, where it breeds]. Nat., March 1886, p. 84.

E. CHAPMAN. **York N.W.**

List of Wensleydale Birds [135 species mentioned, with localities, etc.]. Nat., June 1886, pp. 183-188.

E. CHAPMAN. **York N.W.**

Little Grebe [*Tachybaptes fluviatilis*] **in Wensleydale** [an addition to the writer's Wensleydale list]. Nat., Sep. 1886, p. 277.

R. W. CHASE. **Cheviotland.**

King Eider [*Somateria spectabilis*] **at the Farnes** [an adult male shot April 25th, 1885, males having been noticed for several years, but not obtained; previous occurrence on Nov. 13th, 1873 noted]. Zool., Feb. 1886, x. 76.

R. W. CHASE. **York N.W., Linc. N., Northumberland S., Cheviotland.**

[Birds exhibited to] Birmingham Natural History and Microscopical Society [*Cinclus aquaticus*, Richmond, Yorkshire, August 8th, 1884 (variety with white feathers in wings and tail); *C. melanogaster*, Humber Bank, Lincolnshire, Oct 24th, 1885; *Sterna macrura* and *S. fluviatilis* in the down from Farne Islands; *Locustella nævia*, nest from Blaydon, June 9th, 1886]. Midl. Nat., 1886, p. 310.

R. MILLER CHRISTY. **York N.E.**

Variation in size of the Water Rail [(*Rallus aquaticus*); illustrated in part by measurements of Easingwold and York examples]. Zool., Sep. 1886, 368.

WILLIAM EAGLE CLARKE. **York Mid W.**

Additions to the Avifauna of Washburndale [viz. *Linota cannabina*, *Larus ridibundus*, and *L. canus*; and a note on *Clangula glaucion*]. Nat., Aug. 1884, p. 19.

WM. EAGLE CLARKE. **Durham, Northumberland S.**

Breeding of the Hawfinch [*Coccothraustes vulgaris*] **in Durham and Northumberland** [in 1884, at Winlaton and at Riding-Mill-on-Tyne]. Nat., Aug. 1884, p. 19.

W. EAGLE CLARKE. **York N.E.**

The Yorkshire Naturalists' Union at Helmsley [4th August, 1884: Pied Flycatcher (*Muscicapa atricapilla*) and Nuthatch (*Sitta cæsia*) noted in considerable numbers]. Nat., Sep. 1884, p. 41.

WM. EAGLE CLARKE. **York Mid W.**

Variety of the Crow (*Corvus corone*) [described as of a brindled appearance; shot near Settle, Oct. 27th or 28th, 1885]. Nat., Jan. 1885, p. 18.

WM. EAGLE CLARKE. **I. of Man, Linc. S. and N., Chesh., Notts., Lanc. S., Cumbld., York N.W., Mid W., S.W., and S.E.**

Observations of the Arrival of Summer Visitant Birds in the North of England in 1885 [for numerous localities for *Turdus torquatus*, *Saxicola œnanthe*, *Pratincola rubetra*, *Ruticilla phœnicurus*, *Daulias luscinia*, *Sylvia cinerea*, *S. curruca*, *S. atricapilla*, *S. hortensis*, *Phylloscopus rufus*, *P. trochilus*, *P. sibilatrix*, *Acrocephalus streperus*, *A. phragmitis*, *Locustella nævia*, *Motacilla raii*, *Anthus trivialis*, *Muscicapa grisola*, *M. atricapilla*, *Hirundo rustica*, *Chelidon*, *Cotile*, *Cypselus*, *Cuculus*, *Turtur communis*, *Crex pratensis*, *Tringoides hypoleucos*, and *Sterna minuta*]. Nat., June 1885, pp. 247-251.

W. EAGLE CLARKE. **York Mid W.**

[The Avifauna of Washburndale includes *Mareca*, *Clangula glaucion*, *Ægialitis hiaticula*, *Totanus calidris*, *T. canescens*, *Hæmatopus*, *Phalacrocorax carbo*, *Sterna macrura*, *Larus canus*, and *L. ridibundus*, species attracted by the Leeds Corporation Reservoirs]. Nat., Nov. 1885, p. 380.

WM. EAGLE CLARKE. **York S.E.**

Occurrence of the Desert Chat (*Saxicola deserti*) **in Yorkshire** [one shot between Easington and Kilnsea, October 17th, 1885; first English, second British, specimen]. Nat., Dec. 1885, p. 387.

W. EAGLE CLARKE. **York Mid W.**

Grouse [*Lagopus scoticus*] **and the** [severe] **weather** [near Leeds; reasons assigned for the phenomenon]. Nat., March 1886, p. 68.

W. Eagle Clarke [signed 'Eds.'] **York Mid W.**

The [severe] weather [of May 1886] and the Swallows [*Hirundo*, *Chelidon*, and *Cotile*, also *Cypselus*]. Nat., June 1886, p. 182.

W. Eagle Clarke . . . and William Storey. **York Mid W.**

Upper Nidderdale and its Fauna . . . Birds [an annotated list of 123 species, of which 62 are residents, 28 summer, 11 winter, and 23 casual, visitants]. Nat., July 1886, pp. 197-204.

W. E. C[larke]. **York Mid W.**

Greenshank [*Totanus canescens*] **in [Washburndale,** five observed Sep. 26th and 27th, 1886]. Nat., Nov. 1886, p. 340.

T. D. A. Cockerell. **Lanc. S., Cheshire.**

A September Walk through Lancashire, Cheshire, and Staffordshire [Sep. 9th to 11th, 1885; *Motacilla lugubris* and *Hirundo rustica* between Rainhill and Warrington; the *Motacilla* also in Cheshire: *Vanellus* near Knutsford]. Nat., Feb. 1886, pp. 56-57.

John Cordeaux. **York S.E.**

The Spurn [noting rarities (*Emberiza rustica*, *Turdus varius*, *Cyanecula*), migrants (*Puffinus anglorum*, *Turdus iliacus*, *T. torquatus*, *Pernis apivorus*, *Scolopax rusticola*. *Regulus cristatus*, *Limosa lapponica*, *Linota flavirostris*, *Tringa canutus*, *Squatarola*), and breeding birds (*Sterna minuta*, *Ægialitis hiaticula*, *Anthus*, *Linota*, *Cuculus*, and *Tadorna*)]. Nat., Aug. 1884, pp. 1-8.

John Cordeaux. **Linc. N.**

Wild Cat [and Kite (*Milvus ictinus*)] **in Lincolnshire** [Bullington Wood, near Wragby, was the last Lincolnshire haunt of the Kite; a pair nested in 1870]. Nat., Sep. 1884, p. 34.

John Cordeaux. **York S.E.**

The Yorkshire Naturalists' Union at Spurn Point [3rd Sep., 1884—*Saxicola œnanthe*, *Phylloscopus trochilus*, *Acrocephalus phragmitis*, *Caprimulgus europæus*, both *Numenii*, *Calidris*, *Strepsilas*, *Tringa canutus*, *Larus marinus*, *L. fuscus*, *L. argentatus*, *L. ridibundus*, *L. canus*, *Rissa*, *Sterna macrura*, *S. fluviatilis*, *S. minuta*, *Phalacrocorax carbo*, *Pastor roseus*, *Totanus glareola*, *T. cancscens*, *Squatarola helvetica*, and *Tringa alpina* noted]. Nat., Nov. 1884, p. 92.

John Cordeaux. **Cheviotland, Northumberland S.**

Ornithological Notes from Upper Coquetdale [a list of all the species observed—53 in number—in the summer of 1884; localities, local names, etc., given]. Nat., Dec. 1884, pp. 105-110.

John Cordeaux. **York S.E., Linc. N.**

Ornithological Notes from the East Coast in the Spring of 1885 [large arrival of *Muscicapa atricapilla* and *Ruticilla phœnicurus* at Flamborough and Spurn; a *Stercorarius catarrhactes* at Flamborough; trips of *Eudromias morinellus* in Cotes marshes and near Spurn; *Lomvia troile*, *Alca torda*, *Fratercula*, *Rissa*, *Columba livia*, *C. œnas*, *Larus argentatus*, *Phalacrocorax carbo* at Flamborough Cliffs; *Corvus corone* and *Tinnunculus* in Cotes marshes]. Nat., July 1885, pp. 267-269.

John Cordeaux. **Linc. N. and S.**

Lincolnshire [with mention of *Fulica*, *Botaurus stellaris*, *Acrocephalus phragmitis*, *A. streperus*, *Milvus*, *Buteo*, *Anas boschas*, *Asio brachyotus*, *Anser*, *Phalacrocorax*, *Podiceps*, *Colymbus*, *Grus*, *Platalea*, *Ciconia*, *Recurvirostra*, *Limosa ægocephala*, *Machetes*, *Circus æruginosus*, *Hierofalco gyrfalco*, *Eudromias morinellus*, *Hæmatopus*, *Sterna macrura*, *S. fluviatilis*, *S. minuta*, *Ægialitis hiaticula*, *Tadorna cornuta*, *Circus cyaneus*, *Porzana maruetta*, *Gallinago cœlestis*, *Totanus calidris*, *Falco subbuteo*, *Alauda arvensis*, *Emberiza citrinella*, *Fringilla cœlebs*, *Turdus merula*, *T. musicus*, *T. iliacus*, *Plectro-*

phanes, *Passer montanus*, *Linota cannabina*, *L. flavirostris*, *Corvus cornix*, *Tringa canutus*, *Squatarola*, *Spatula*, *Querquedula crecca*, *T. alpina*, *Œdicnemus*, *Tachybaptes fluviatilis*, *Larus ridibundus*]. Nat., Jan. 1886, 1-15.

JOHN CORDEAUX . . . [and] . . . MICHAEL DRAYTON. **Linc. N. and S.**

The Birds of the Lincolnshire Fens and Wolds in 1612 [Michael Drayton's verse describing the ornithological glories of Lincolnshire are annotated by J. Cordeaux; reference is made to *Anas boschas*, *Querquedula crecca*, *Mergus merganser*, *Mareca*, *Clangula glaucion*, *Mergus albellus*, *Fulica*, *Gallinula*, *Cinclus*, *Rallus aquaticus*, *Tachybaptes*, *Fratercula*, *Cygnus ferus*, *Grus*, *Ardea cinerea*, *Gallinago cælestis*, *Totanus calidris*, *Botaurus stellaris*, *Anseres*, *Lari*, *Hæmatopus*, *Numenius arquata*, *Phalacrocorax carbo*, *Pandion*, *Charadrius pluvialis*, *Squatarola*, *Coturnix*, *Crex*, *Vanellus*, *Limosa lapponica*, *L. ægocephala*, *Tringa alpina*, *T. canutus*, *Eudromias*, and *Otis tarda*]. Nat., Dec. 1886, pp. 363-368.

JOHN CORDEAUX. **Linc. N.**

Tree Sparrow [*Passer montanus*] **in North Lincolnshire** [Nov. 13th, 1886, in large numbers at Great Cotes; notes on habits]. Nat., Dec. 1886, p. 368.

J. CORDEAUX and W. EAGLE CLARKE. **Cheshire, Lancs., Cumberland, Northumberland, Yorkshire, Isle of Man, Lincs.**

[Seventh] Report on the Migration of Birds in the Spring and Autumn of 1885 [with much detailed information; reviewed in Nat., Sep. 1886, p. 282; also in Zool., Nov. 1886, pp. 460-464 (excerpts given)]. Seventh Report (Vol. II., No. 2—Edinburgh: Printed by M'Farlane & Erskine, . . . 1886, 8vo, 174 pages and map.

A. N. CURZON. **Cheshire.**

Hen Harrier [*Circus cyaneus*] **in Cheshire** [shot early in Nov. 1886. on the Wild Boar Clough Moors, near Macclesfield; pronounced by H. Saunders to be a young female]. Field, Dec. 18th, 1886, p. 884.

W. C. DAWSON. **York Mid W.**

Arrival of Summer Birds [at Otley, Feb. 29th[sic], Sand Martin (*Cotile riparia*)]. Field, April 3rd, 1886, p. 428.

F. W. DICKINSON. **York S.W.**

Yorkshire and Nottinghamshire Naturalists at Anston Stones [30th April, 1885; *Daulias luscinia*, *Ruticilla phœnicurus*, *Pratincola rubetra*, *Phylloscopus sibilatrix*, *Sylvia atricapilla*, *Acrocephalus phragmitis*, *Locustella nævia*, *Motacilla rail*, *Cuculus*, *Cypselus*, *Turtur*, *Crex*, *Larus ridibundus*, *Coccothraustes vulgaris*, *Emberiza schœniclus*, *Garrulus*, *Alcedo*, *Gallinula*, *Fulica*, and *Anas boschas* noted]. Nat., June 1885, p. 260.

JAMES DIXON. **Durham.**

The Great Northern Diver [*Colymbus glacialis*] **at Hartlepool** [captured in mid-December 1885]. Young Nat., Jan. 1886, vii. 16.

T. DUCKWORTH. **Cumberland.**

Our Summer Visitants [the Grasshopper Warbler (*Locustella nævia*), Redstart (*Ruticilla phœnicurus*), Wood Warbler (*Phylloscopus sibilatrix*), Tree Pipit (*Anthus trivialis*), and Spotted Flycatcher (*Muscicapa grisola*) are noticed at length; localities in the English Lake-district are given, with remarks on local names, habits, etc.]. Trans. Cumb. and Westm. Assoc., No. x (1884-85, pub. 1885), pp. 29-42.

W. DUCKWORTH. **Cumberland.**

[Nesting of the Blackheaded and Lesser Blackheaded Gulls (*Larus ridibundus* and ————?) **in Cumberland]**. Trans. Cumb. and Westm. Assoc., No. x (1884-85, pub. 1885), pp. 44 and 56.

W. DUCKWORTH. **Cumberland, Westmorland.**

Destruction of Swallows [in Cumberland and Westmorland, caused by the 'cold snap' of May 1886, affecting *Cypselus*, *Hirundo*, *Chelidon*, and *Cotile*]. Trans. Cumb. and Westm. Assoc., No. xi (1885-86, pub. 1886), pp. 148-149.

JOHN N. DUFTY. **Notts.**

Varieties of Common Birds [all near Tuxford; an albino nestling Green finch (*Ligurinus chloris*) at Moorhouse; white Sand Martin (*Cotile riparia*); white Sparrow (*Passer domesticus*); pied Cuckoo (*Cuculus canorus*); white-headed Ring-Ouzel (*Turdus torquatus*); Wheatear (*Saxicola œnanthe*) the colour of a Gull's back; and an almost-white Pheasant chick (*Phasianus colchicus*)]. Field, Oct. 23rd, 1886, p. 609.

J. N. DUFTY. **Notts.**

Albino [Greenfinch (*Ligurinus chloris*), nestling, found at Moorhouse near Tuxford; reported on by Robert Service]. Nat. World, Nov. 1886, iii. 217.

J. J. DUNNINGTON-JEFFERSON. **York S.E.**

[Unusual number (22) of Magpies (*Pica caudata*) on the wing together, Oct. 18th, 1886, near York]. Field, Oct. 30th, 1886, p. 653.

ED[ITOR OF ZOOLOGIST]. **York S.E.**

Rooks [*Corvus frugilegus*] **nesting on Chimney-tops** [and on house-tops at Kingston-on-Hull in 1846]. Zool., Sep. 1886, x. 365.

ED[ITOR OF FIELD]. **Linc. N.**

Gannet [*Sula bassana*] **inland** [at Brigg, Lincs., five in a turnip-field]. Field, October 16th, 1886, p. 555.

EDS., N.H.J. **York S.W.**

Ackworth Reports [of curious nestings of *Troglodytes parvulus*, *Erithacus rubecula*, and *Muscicapa grisola*]. Nat. Hist. Journ., Nov. 15th, 1886, x. 167.

EDWD. ELMHIRST. **Linc. N.**

The Hen Harrier [*Circus cyaneus*] **in Lincolnshire sixty years ago** [nesting in great numbers on the commons in the parish of Middle Rasen about 1824-1825; full and detailed particulars given; provincially named 'gorse-hawk'; other birds mentioned as of 1824 and 1825 are *Phasianus*, *Perdix cinerea*, *Scolopax rusticola*, *Gallinago cœlestis*, *Crex pratensis*, *Querquedula crecca*, 'Plovers,' *Corvus cornix*, *Pica caudata*, *Garrulus glandarius*, *Milvus ictinus*, 'Buzzards,' *Accipiter nisus*, *Falco subbuteo*, *F. œsalon*, and *Tinnunculus alaudarius*]. Field, Nov. 27th, 1886, p. 800.

JOHN EMMET. **York Mid W.**

Curious death of a Swift [(*Cypselus apus*); killed against telegraph wire; near Boston Spa?]. Nat., Aug. 1885, p. 299.

JOHN EMMET. **York Mid W.**

Hawfinch [*Coccothraustes vulgaris*] **and Water Rail** [*Rallus aquaticus*] **near Boston Spa,** Yorkshire [a hen of the former caught at Healaugh, May 11th, 1885; latter bred at Boston Spa in 1884 and 1885]. Nat., Aug. 1885, p. 299.

JOHN EMMET. **York N.E. and Mid W., Cumbd., Westmd.**

Swallows and the late Storm [of May 1886; great destruction of *Hirundo*, *Chelidon*, *Cotile*, and *Cypselus* at Malton, Newton Kyme, Bassenthwaite, Appleby, Windermere, Mexborough, etc.]. Nat., July 1886, p. 214.

JOHN EMMET. **York Mid W.**

The Hawfinch [*Coccothraustes vulgaris*] **Nesting at Boston Spa** [in 1886]. Nat., Sep. 1886, p. 277.

THOMAS FORD. **Lincs.**

Late Stay of Swifts [(*Cypselus apus*), at Caistor, Lincs., Sep. 10th, 1886; usually all gone by end of August; only once seen previously after Sep. 1st]. Field, Sep. 18th, 1886, p. 441.

RILEY FORTUNE. **Northumberland, Westmorland, Yorkshire.**

Abnormal Nesting Sites [Long-tailed Tit (*Acredula rosea*) in deserted squirrel's-drey, Robin (*Erithacus rubecula*) in a workman's breakfast-can;

Naturalist,

Waterhen (*Gallinula chloropus*) in trees, once in fir-tree—all in Northumberland; Wren (*Troglodytes vulgaris*) in a lantern, Westmorland; and in Yorkshire a Wheatear (*Saxicola œnanthe*) built only two or three feet below the nest of a Peregrine (*Falco peregrinus*)]. Field, May 24th, 1886, p. 123.

R. Fortune. **York N.W.**

Swallow [House Martin—*Chelidon urbica*] **'s Nest on the Face of a Clock** [at Sedbergh Station, where they have built for some years]. Field, July 10th, 1886, p. 74.

Riley Fortune. **York Mid W., Durham.**

Curious Nests of a Spotted Flycatcher [*Muscicapa grisola*] **and Missel Thrush** [(*Turdus viscivorus*): the first, a nest made of bookbinder's paper-cuttings, at Harrogate; the second of sheep's wool, on the edge of Muggleswick Moor, co. Durham]. Field, Aug. 14th, 1886, p. 274.

Riley Fortune. **York Mid W. and N.E., Cheviotland.**

The Turtle Dove [*Turtur communis*] **in Yorkshire** [and Northumberland; at Weeton near Harrogate, near Guisborough, nesting near Alnwick, and seen at Chathill]. Nat., Nov. 1886, p. 342.

W. W. Fowler. **Linc. N.**

Thick-knee [*Œdicnemus scolopax*] **and Temminck's Stint** [*Tringa temminckii*] **in Lincolnshire** [at Gainsborough and Lincoln respectively]. Nat., Sep. 1884, p. 32.

H. E. Fox. **Cheviotland.**

Destruction of Bird-life at the Farne Islands [deprecatory of the Farne Islands Association and its action]. Nat., Dec. 1884, p. 111.

Samuel C. Fox. **Notts.**

Egyptian Nightjar [notice of the stone put up where the Mansfield example of *Caprimulgus ægyptiacus* was shot]. Nat. World, June 1886, iii. 117.

Ralph Payne-Gallwey. **York Mid W.**

Former Occurrence of Black Game [*Tetrao tetrix*] **on the Blubberhouses Moors** [extract from the Game-book for 1798, showing that it occurred in the boyhood of the then keeper]. Nat., Nov. 1885, p. 364.

Ralph P. Gallwey. **York N.E.**

Wigeon [*Mareca penelope*] **Nesting [in confinement] in Yorkshire** [at Thirkleby Park, Thirsk, four pairs of pinioned birds]. Field, July 31st, 1886, p. 197; Zool., Oct. 1886, x. 416.

R. P. Gallwey. **Not Linc. S.**

Duck Decoys [the one (Crowland) mentioned by Dr. Parsons is *not* in Lincolnshire, but in Northamptonshire]. Nat., Nov. 1886, p. 340.

Ralph Payne-Gallwey. **Westmld., Derbysh., Lanc. S., Linc. N. and S., Notts., York N.W., N.E., and S.E.**

The Book of Duck Decoys: their Construction, Management, and History [a complete history of Decoys and Decoying, with full instructions in the craft and for the construction of the Decoy; a concise history of all known decoys, with many interesting particulars of their careers, is furnished, arranged under counties]. London: John Van Voorst, Paternoster Row, MDCCCLXXXVI. [quarto (small), pp. xx. 214, 32 illustrations]. Reviewed by W. E. Clarke in Nat., Sep. 1886, pp. 280-281 [the list of north-country decoys extracted].

Leonard Gaunt. **York S.E.**

The Yorkshire Naturalists' Union at Pocklington [24th June, 1885: *Ruticilla*, *Pratincola rubetra*, *Phylloscopus rufus*, *P. trochilus*, *P. sibilatrix*, *Sylvia cinerea*, *Acrocephalus phragmitis*, *Muscicapa grisola*, *Anthus trivialis*, *A. pratensis*, *Hirundo*, *Chelidon*, *Cypselus*, *Crex*, *Erithacus*, *Turdus viscivorus*, *T. musicus*, *T. merula*, *Troglodytes*, *Parus major*, *P. cæruleus*,

Motacilla lugubris, *Accentor*, *Pyrrhula*, *Ligurinus*, *Linota rufescens*, *L. cannabina*, *Fringilla cœlebs*, *Passer domesticus*, *Emberiza miliaria*, *E. citrinella*, *Sturnus*, *Corvus monedula*, *C. frugilegus*, *C. corone*, *Certhia*, *Alauda arvensis*, *Columba palumbus*, *Syrnium aluco*, *Phasianus*, *Perdix cinerea*, *Ardea cinerea*, *Vanellus*, *Gallinula*, and *Anas boschas*]. Nat., Aug. 1885, p. 308.

LEONARD GAUNT. **York S.W.**

The Yorkshire Naturalists' Union at Askern [20th May, 1886; *Phylloscopus trochilus*, *Ruticilla phœnicurus*, *Anthus trivialis*, *Hirundo*, *Chelidon*, *Cotile*, *Cypselus*, *Phylloscopus rufus*, *Acrocephalus phragmitis*, *Sylvia cinerea*, *Muscicapa grisola*, *Pratincola rubetra*, *Corvus frugilegus*, *C. corone*, *Sturnus*, *Turdus merula*, *T. musicus*, *T. viscivorus*, *Parus major*, *P. cæruleus*, *Troglodytes*, *Accentor modularis*, *Erithacus*, *Carduelis*, *Fringilla cœlebs*, *Emberiza citrinella*, *Passer domesticus*, *Alauda arvensis*, *Anthus pratensis*, *Motacilla lugubris*, and a *Larus*, species not stated, noted; also that *Tachybaptes* had occurred this year, and that *Turdus musicus* was nesting on the ground]. Nat., June 1886, p. 189.

[?] W. GRAHAM [signed 'W.G. (Eden, Cumberland)']. **Cumberland.**

Mortality amongst Swallows [at Eden, Cumberland; species not stated]. Land and Water, May 15th, 1886, p. 463.

[MISS] C. H. GREET. **Cheviotland.**

Curious Nesting Place of the Great Tit [*Parus major*; in a letter-box at Norham Castle]. Proc. Berw. Nat. Club for 1885 (pub. 1886), xi. 245.

J. H. GURNEY. **Northumberland S.**

Notes on the Two Spotted Eagles inhabiting the European Continent [the Northumberland Spotted Eagle (Cresswell, Oct. 1885] is referred to *Aquila clanga* Pall.]. Nat., Feb. 1886, pp. 45-47.

J. H. GURNEY, Jun. **Linc. S.**

Little Auk (*Mergulus alle*) **occurring in July** [1872, on board a ship in the Wash]. Nat., Oct. 1885, p. 344.

J. H. GURNEY, Jun. **York N.E.**

Sparrowhawk [*Accipiter nisus*] **and Viper** [in York, killing each other]. Nat., Jan. 1886, p. 17; rep. Nat. Hist. Journ., Feb. 15th, 1886, x. 19.

J. H. GURNEY, jun. **York S.E.**

A Suggested Explanation of the Occurrence of the Sardinian Starling (*Sturnus unicolor*) in England [at York]. Nat., Nov. 1886, p. 340.

G. H. CATON HAIGH. **Linc. N.**

Occurrence of the Green Sandpiper [*Helodromas ochropus*] in winter [as observed in North Lincolnshire]. Field, Feb. 6th, 1886, p. 172.

ALLAN B. HALL. **Yorkshire.**

Thirsk. Bird Notes [concerning the nesting of *Vanellus vulgaris*, *Cinclus aquaticus*, *Syrnium aluco*, *Cuculus canorus*, *Corvus corone*, *Ardea cinerea*, *Gallinago cœlestis*, *Accipiter nisus*, *Cotile riparia*, and *Ruticilla phœnicurus*]. Nat. Hist. Journ., June 15th, 1886, x. 106.

C. C. HANSON. **York S.W.**

Ornithological Notes from West Yorkshire [Little Auk (*Mergulus alle*) picked up, Outlane near Stainland, 21st Nov. 1884; male Grey Shrike (*Lanius excubitor*) shot, Wike near Brighouse, 22nd Nov. 1884; three Redbreasted Mergansers (*Mergus serrator*) shot near Kirkheaton, 2nd Dec. 1884]. Nat., Jan. 1885, p. 127.

C. C. HANSON. **York S.W.**

Eagle Owl near Huddersfield [at Fixby, Jan. 1st, 1885; referred to *Bubo virginianus*; note added from J. H. Gurney that the information given is not sufficient for specific determination]. Nat., April 1886, p. 114.

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WM. DENISON ROEBUCK, F.L.S.,

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WITH THE ASSISTANCE IN SPECIAL DEPARTMENTS OF

J. GILBERT BAKER, F.R.S., F.L.S., Royal Herbarium, Kew;

CHAS. P. HOBKIRK, F.L.S., Dewsbury;

W. EAGLE CLARKE, F.L.S., M.B.O.U., Museum of Science & Art, Edinburgh;

GEORGE T. PORRITT, F.L.S., F.E.S., Greenfield House, Huddersfield;

ALFRED HARKER, M.A., F.G.S., St. John's College, Cambridge;

W. BARWELL TURNER, F.C.S., F.R.M.S., 55, Reginald Terrace, Leeds.

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J. E. Marr—(1) On some well-defined Life-zones in the lower part of the Silurian of the Lake-District, 1878; (2) Cambrian and Silurian Beds of Dee Valley compared with Lake District, 1880; (3) Pre-Devonian Rocks of Bohemia, 1880; (4) Classification of Cambrian and Silurian Rocks, 1881; (5) Some Sections in the Lower Palæozoic Rocks of Craven, 1881; (6) Cambrian and Silurian Rocks of Scandinavia, 1882; (7) Lower Palæozoic Rocks of Haverfordwest, 1885; (8) Lower Palæozoic Rocks near Settle, 1887; (9) The Work of Ice-Sheets, 1887; (10) Glacial Deposits of Sudbury, 1887; (11) Homotaxis, 1887; (12) Superimposed Drainage of the English Lake-District, 1889—8vo, v.d. [The Author—per A. Harker.
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YORKSHIRE NATURALISTS' UNION.—ENTOMOLOGICAL SECTION.—The President and Secretaries of the Section will be pleased to receive the names and addresses of those members specially interesting themselves in this branch. The object in view is to circulate a fairly complete list amongst the members of this section, and thereby to facilitate the exchange of information, and also, if sufficient encouragement is given, to publish (in the Annual Report of the Section) at the close of the season a list of Yorkshire Occurrences of Insects.

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Or the Hon. Secretaries:—Mr. J. H. Rowntree, Westwood, Scarborough;
Mr. W. E. Brady, 1, Queen Street, Barnsley.

JAMES HARDY. **Northumberland S., Cheviotland.**

Report of Meetings of Berwickshire Naturalists' Club, for the year 1885. . . . Rothbury [24th June; *Fringilla cœlebs*, *Lagopus scoticus*, *Anthus pratensis*, *Muscicapa atricapilla* (Alnwick), *Pratincola rubetra*, *Saxicola œnanthe*, *Linota cannabina*, *Emberiza miliaria*, *Muscicapa grisola*, *Phylloscopus trochilus*, *Acrocephalus phragmitis*, *Turdus musicus*, *T. merula*, *Cuculus canorus*, *Columba palumbus*, *Sturnus vulgaris*, *Motacilla lugubris*, *Ruticilla phœnicurus*, *Crex pratensis*, *Charadrius pluvialis*, *Numenius arquata*, *Turdus viscivorus*, *Larus ridibundus* (breeding-places cited), *Alauda arvensis*, *Hirundo rustica*, *Chelidon urbica*, and *Cotile riparia*, all noted casually]. Proc. Berw. Nat. Club for 1885 [pub. 1886], xi. 31-50.

JAMES HARDY. **Northumberland S., Durham.**

Report of Meetings of Berwickshire Naturalists' Club for the year 1885. . . . Haughton Castle, Simonburn Church, and Chipchase Castle, North Tyne [30th July; *Cypselus apus* noted (p. 59); *Columba œnas* nesting at Dunston]. Proc. Berw. Nat. Club for 1885 [pub. 1886], xi. 63.

J[AMES]. H[ARDY]. **York Mid W. and S.W.**

Memoir of the late John Towlerton Leather, Esq., F.S.A., of Leventhorpe [with mention of two Rookeries at Leventhorpe, one of which the Rooks are deserting for Swillington]. Proc. Berw. Nat. Club for 1885 [pub. 1886], xi. 228.

R. P. HARPER. **York N.E.**

Tengmalm's Owl [*Nyctala tengmalmi*] **in Yorkshire** [two near Scarborough and one on Ayton Moor; particulars given]. Zool., May 1886, x. 214.

R. P. HARPER. **York N.E.**

Fearlessness of the Spotted Flycatcher [(*Muscicapa grisola*), a pair of which have built in the most frequented situation at the Spa, Scarborough]. Zool., Sep. 1886, x. 366.

JAMES J. HARRISON. **York S.E.**

Brent Geese [*Bernicla brenta*] **coming Inland** [a pair of old ones shot on the carrs at Brandesburton near Hull, eight miles from the sea, on 13th Nov., 1885]. Zool., May 1886, x. 215.

JOHN HARRISON. **York Mid W.**

Common Buzzard [*Buteo vulgaris*] **Nesting in Confinement** [at Wilstrop Hall near York; a full and interesting account]. Nat. Hist. Journ., June 15th, 1886, x. 105.

J. E. HARTING. **Durham, York N.E. and S.E., Cumberland.**

Wild Swans [(*Cygnus ferus*); gives dates on which observed at Lighthouses and Light-vessels, Teesmouth, Spurn, Bridlington, Redcar, and Monkhill, Carlisle]. Field, Feb. 20th, 1886, p. 243.

J. E. HARTING. **Linc. N.**

On the Former Nesting of the Spoonbill in Middlesex [with a reference to its being mentioned (as the 'Shoveler') by Drayton in 1622, among the notable birds of the Isle of Axholme]. Zool., March 1886, x. 88.

ALFRED HEATH. **York N.E.**

Destruction of Swallows [(*Hirundo rustica*, *Chelidon urbica*, and *Cotile riparia*) at Rounton Grange, near Northallerton, from the severity of the weather]. Land and Water, May 22nd, 1886, p. 486.

RICHARD HILL. **York N.E.**

Grouse [*Lagopus scoticus*] **perching on a Tree** [near Sinnington, N.E. Yorkshire]. Field, Feb. 6th, 1886, p. 172.

W. HODGSON. **Cumberland.**

Curlews [*Numenius arquata*] **in the Solway District** [moving across to their breeding-grounds, March 1885]. Nat., Aug. 1885, p. 299.

WILLIAM HODGSON. **Cumberland, Westmorland, Furness.**

The Hill Naturalist [; a popular account of the 'feathered occupants of the hills,' the species being taken in systematic order]. Trans. Cumb. and Westm. Assoc., No. xi (1885-6, pub. 1886), pp. 19-27.

WILLIAM HODGSON [signed 'Little Rod']. **Cumberland.**

Arrivals and Departures of Birds in the North [at Carlisle and Flimby; *Hirundo rustica* (March 25th), *Saxicola œnanthe* (March 28th), and *Phylloscopus trochilus* (March 28th); early dates]. Land & Water, Ap. 3rd, 1886, p. 324.

A. S. HUTCHINSON. **Derbyshire.**

Occurrence of the Green Sandpiper [*Helodromas ochropus*] **in Winter** [one shot early in February 1886 near Burton-on-Trent. The Wood Sandpiper (*Totanus glareola*) also shot near the waterworks reservoir, Breadsall near Derby, Sep. 1885]. Field, Feb. 20th, 1886, p. 243.

PETER INCHBALD. **Yorkshire.**

Wheatear [*Saxicola œnanthe*] **disgorging pellets** [a caged bird]. Field, March 27th, 1886, p. 400.

P. INCHBALD. **York Mid W.**

Arrival of Summer Birds [at Harrogate—*Phylloscopus rufus*, March 28th; *P. trochilus*, April 7th; *Ruticilla phœnicurus*, April 15th; *Anthus trivialis*, April 14th; *Cotile*, April 11th; *Hirundo*, April 12th; *Pratincola rubetra*, April 25th; *Sylvia cinerea*. April 25th; *S. curruca*, April 27th, and *Crex pratensis*, April 27th, 1886]. Field, April 3rd, 10th, 17th, and May 1st, 1886, pp. 428, 459, 477, and 570.

PETER INCHBALD. **York Mid W.**

Appearance of the Redwings [*Turdus iliacus*] in Yorkshire [a flock at Harrogate, 10th Oct., 1886]. Field, Oct. 16th, 1886, p. 555.

J. INGLEBY. **York Mid W.**

Curious Site for Missel Thrush [*Turdus viscivorus*]**'s Nest** [in May 1875, in Gateup Gill, and in Nidderdale]. Nat., Aug. 1885, p. 299.

W. JARDINE. **Cumberland.**

Local Superstitions [anent the Cuckoo (*Cuculus canorus*), etc.]. Trans. Cumb. and Westm. Assoc., No. xi (1885-86, pub. 1886), p. 44.

J. M. JEFFCOTT. **Isle of Man.**

'The Seven Sleepers,' according to Manx Tradition [included the Cooag = Cuckoo (*Cuculus canorus*), the Cloghan-ny-cleigh = Stonechat (i.e. Wheatear, *Saxicola œnanthe*), and the Gollan-geayee = Swallow (*Hirundo rustica*); etymologies, etc., given]. Nat., Aug. 1884, pp. 14-15.

WILLIAM JEFFERY. **Lanc. S. or W?**

The Knot [(*Tringa canutus*) near Preston]. Sci. Goss., Jan. 1886, p. 23.

P. Q. KEEGAN. **Cumberland.**

Scarcity of Partridges [(*Perdix cinerea*) in Cumberland]. Sci. Goss., Dec. 1886, p. 282.

H. WALLIS KEW. **Linc. N.**

Field Notes [on 6th May a nest of Tree-creeper (*Certhia familiaris*) found near Louth, and Heronry in Muckton Wood visited]. Nat. World, Jan. 1886, pp. 1-2.

H. WALLIS KEW. **Linc. N.**

A Postglacial Ravine [at Welton Vale near Louth: breeding of the Moorhen (*Gallinula chloropus*) and of several common birds referred to, and occurrence of Heron (*Ardea cinerea*) noted]. Nat. World, Feb. 1886, iii. 21-22.

H. WALLIS KEW. **Linc. N.**

Another Postglacial Ravine [Hubbard's Valley near Louth] and its inhabitants [Hedge-Sparrow (*Accentor modularis*) feeding on *Triphæna pronuba*, Blackcap (*Curruca atricapilla*), and eighteen other birds referred to]. Nat. World, March 1886, iii. 41.

H. Wallis Kew. **Linc. N.**

Shells of the Ponds and Streams [with a note of the Hooded Crow (*Corvus cornix*) feeding near Louth on Anodons, which it has been seen to pick out of the river and break against the branches of trees]. Nat. World, April 1886, iii. 61.

H. Wallis Kew. **Linc. N.**

In the Woods in April [3rd, 1885; near Louth; traps for catching Jays (*Garrulus glandarius*) noted]. Sci. Goss., April 1886, p. 79.

H. Wallis Kew. **Linc. N.**

Missel Thrush (*Turdus viscivorus*) [in Welton Vale, near Alford, re-laying after destruction of eggs]. Nat., April 1885, p. 201.

H. Wallis Kew. **Linc. N.**

In the Woods [near Louth] in Summer [*Accipiter nisus*, *Tinnunculus*, *Garrulus*, *Pica*, *Corvi*, on keeper's trees; and Heronry referred to]. Nat. World, July 1886, iii. 121-124.

H. Wallis Kew. **Linc. N.**

On the Lincolnshire Wolds [at Donington-on-Bain; *Cotile*, *Cuculus*, *Accipiter nisus*, *Corvus frugilegus*, and nest of *Turdus musicus* noted]. Nat. World, Aug. 1886, iii. 141-143.

H. Wallis Kew. **Linc. N.**

Evenings in Spring [near Louth; *Daulias luscinia* noted as comparatively scarce]. Nat. World, Sep. 1886, iii. 162.

H. Wallis Kew. **Linc. N.**

Notes from the Greensand [at Donington-on-Bain; nesting colony of Sand-Martins (*Cotile riparia*)]. Nat. World, Nov. 1886, iii. 202.

J. R. Kewley. **Lanc. S.**

Birds' Nests [at Gateacre near Liverpool; young *Turdus merula* found choked in nest: nest of *T. musicus* found filled with water and deserted; young *Erithacus rubecula* found suspended by a horsehair round its leg]. Field, May 29th, 1886, p. 706.

E. P. Knubley. **York Mid W.**

Occurrence of the Hawfinch (*Coccothraustes vulgaris*) **near Boroughbridge** [at Staveley, 10th March, 1886; notes also anent *Turdus torquatus* and *Saxicola œnanthe*]. Nat., May 1886, p. 150.

E. P. Knubley. **York Mid W.**

The Yorkshire Naturalists' Union in Upper Nidderdale [July 1886; *Regulus cristatus*, *Acredula rosea*, *Certhia*, *Motacilla melanope*, *Linota rufescens*, *Alcedo*, *Turdus torquatus*, *Cinclus*, *Saxicola œnanthe*, *Ruticilla phœnicurus*, *Phylloscopus rufus*, *P. trochilus*, *P. sibilatrix*, *Locustella nævia*, *Motacilla raii*, *Muscicapa atricapilla*, *Cotile*, *Chelidon*, *Hirundo*, *Cypselus*, *Crex*, *Charadrius pluvialis*, *Tringoides hypoleucos*, and *Numenius arquata* noted]. Nat., Aug. 1886, p. 253.

Philip W. Lawton. **York S.E.**

Occurrence of Tengmalm's Owl [*Nyctala tengmalmi*] **on the Yorkshire Coast** [shot at Holmpton in Holderness, 18th October, 1884]. Nat., Dec. 1884, p. 110.

Philip W. Lawton. **York S.E.**

Dotterel [*Eudromias morinellus*] **at Easington in Holderness** [seven seen, October 11th and 13th; unusual in autumn]. Nat., Dec. 1884, p. 110.

L. Lee. **Notts.**

Late Swallows [(*Hirundo rustica*) and Sand-Martins (*Cotile riparia*) at Nottingham]. Sci. Goss., Jan. 1886, p. 23.

F. A. Lees. **York N.W.**

Notes on the Avifauna of Wensleydale—Breeding of Redwing [*Turdus iliacus*] **and Dunlin** [(*Tringa alpina*); the latter on Dodd Fell, the former at Gayle; notes on *Certhia*, *Asio brachyotus*, *Emberiza schœniclus*, *Coturnix*, *Turdus viscivorus*, *T. merula*, *T. musicus*, *Alcedo* (all breeding), *Caprimulgus*, *Crex*, and *Turdus pilaris*]. Nat., Nov. 1885, pp. 364-5.

F. E. Lester. **Cumberland.**

Owls' Pellets [at Penrith; their contents]. N. H. Journ., June 15th, 1886, x. 107.

B. B. LeTall. **York N.E.**

Rooks [*Corvus frugilegus*] **nesting in Church Spires** [one at the top of Heworth Church steeple, York, this year]. Zool., Nov. 1886, x. 457.

W. Lipscomb. **York S.W.**

Grouse [*Lagopus scoticus*] **and their Food** [on the moors near Walshaw, Hebden Bridge; *Juncus squarrosus*, when seeding, preferred]. Field, Oct. 16th, 1886, p. 574.

Thos. Lister. **York S.W.**

Birds observed near Barnsley in 1885 [numerous species mentioned]. Field, Feb. 6th, 1886, p. 172.

Thomas Lister. **York S.W.**

South Yorkshire Bird Notes for 1885 [*Cinclus*, *Motacilla lugubris*, *Turdus musicus*, *T. viscivorus*, *T. merula* (including pied varieties), *T. pilaris*, *T. iliacus*, *Alauda arvensis*, *Parus major*, *Corvus frugilegus*, *Saxicola œnanthe*, *Acrocephalus phragmitis*, *Motacilla melanope*, *Chelidon urbica*, *Columba œnas*, *Garrulus glandarius*, *Numenius arquata*, *Totanus calidris*, *Muscicapa atricapilla*, *Anthus trivialis*, *A. pratensis*, *Cypselus apus*, *Crex pratensis*, *Caprimulgus europæus*, *Hirundo rustica*, *Coccothraustes vulgaris*, *Sturnus*, *Corvus monedula*, *Gallinago cœlestis*, 'Wild Geese,' *Phylloscopus trochilus*, *Accipiter nisus*, *Perdix cinerea* (white), *Pratincola rubetra*, and *Gallinago major*]. Nat. Hist. Journ., April 15th, 1886, x. 62-63.

T. Lister. **York S.W.**

Arrival of Summer Birds [at Barnsley; *Pratincola rubetra*, April 26th, *Crex pratensis*, April 19th]. Field, May 1st, 1886, p. 570.

T. Lister. **York S.W.**

Notes from Barnsley [concerning Heron (*Ardea cinerea*) and white Sparrows (*Passer domesticus*)]. Nat. Hist. Journ., June 15th, 1886, x. 106.

J. W. McIntyre. **Notts.**

Odd Place for a Nightingale [*Daulias luscinia*]**'s Nest** [in a piece of oak felled at Sherwood Forest, with a living young bird; editor suggests it was a young Robin (*Erithacus rubecula*)]. Field, June 26th, 1886, p. 861.

H. A. Macpherson and William Duckworth. **Cumbld., Westmorld., Furness, Durham, York S.E., Northbld. S., I. of Man.**

The Birds of Cumberland critically studied, including some Notes on the Birds of Westmorland [with an introduction on physical features, migration, bibliography, faunistic changes, &c. The list includes 250 species, being 84 Residents, 81 Periodical Visitants, and 85 Irregular and Accidental Visitants. Casual references:—migration of *Muscicapa atricapilla* at Flamborough and Spurn (p. 35); *Circus cinereaceus* at Wolsington Park, Durham; *Caccabis rufa* having strayed from Yorkshire; *Limosa lapponica* off the Northumberland coast; and the breeding of *Uria grylle* in the Isle of Man (190); and several records are for Furness and Lancashire]. Carlisle: Chas. Thurnam & Sons, 11, English Street.—1886. [8vo—206 pages—with coloured map and coloured plate]. Reviewed in detail—with references to numerous species—in Nat., June 1886, p. 192; Zool., June 1886, x. 260-264; and Field, June 5th, 1886, p. 731.

H. A. Macpherson. **Cumberland, Northumberland S.**

Smew [*Mergus albellus*] **in Cumberland** [near Carlisle, on the Eden; and one on the Tyne, Dec. 1883]. Nat., Sep. 1884, p. 32.

H. A. Macpherson. **Cumberland.**

Hawfinch [*Coccothraustes vulgaris*] **in Cumberland** [one seen near Carlisle, 20th April, 1884]. Nat., Sep. 1884, p. 32.

H. A. Macpherson. **Cumberland.**

Garganey [*Querquedula circia*] **in Cumberland** [two examples, 1882 and 1884 ; details given]. Nat., Sep. 1884, p. 32.

H. A. Macpherson. **Westmorland, Cumberland.**

The Pied Flycatcher [*Muscicapa atricapilla*] **in Westmorland** [at Lowther Castle ; account of their habits as observed 19th May, 1884]. Nat., Jan. 1885, pp. 125-126.

H. A. Macpherson. **Cumberland.**

The Whimbrel [*Numenius phæopus*] **in Cumberland** [criticizing adversely a statement that this bird is rare on the coast of Cumberland in autumn ; instances cited]. Nat., Feb. 1885, p. 149.

H. A. Macpherson. **Cumberland.**

The Hawfinch [*Coccothraustes vulgaris*] **in Cumberland** [breeding in Heysham's time near Carlisle ; and a male killed near Carlisle in Dec. 1884]. Nat., Feb. 1885, p. 149.

H. A. Macpherson. **Cumberland.**

Wild Fowl in Cumberland [*Fuligula cristata*, *Clangula glaucion*, *Anas boschas*, *Spatula clypeata*, *Querquedula crecca* and *Mareca penelope* on a preserved sheet of water, 31st March and 9th April, 1885]. Nat., Aug. 1885, p. 299.

H. A. Macpherson. **Cumberland.**

Solway Bird-notes [additional to J. J. Armistead's list ; *Asio brachyotus*, *Loxia curvirostra*, and *Larus marinus* breed on the English side, but *Larus canus* does not, and *Muscicapa atricapilla* does not breed within a dozen miles ; *Sterna minuta* ceased to breed in 1882 ; Mr. Armistead's list includes *Dendrocopus minor* by error for *major* ; *Fuligula cristata*, *Mergus merganser*, and *Tringoïdes hypoleucos* also noted]. Nat., May 1886, p. 150.

H. A. Macpherson. **Cumberland.**

Breeding of the Lesser Redpole [(*Linota rufescens*) ; and brief note on its habitat in Cumberland]. Zool., July 1886, x. 298.

H. A. Macpherson and William Duckworth. **Cumberland, etc.**

Nesting of the Shoveller [*Spatula clypeata*] **in Cumberland** [on the salt marshes of the Solway in 1886 ; incidental reference made to Yorkshire, Durham, Northumberland, Notts., Lincolnshire, and Lancashire]. Nat., Aug. 1886, pp. 235-236.

H. A. Macpherson. **Cumberland.**

Sparrows [*Passer domesticus*] **and Corn Crops** [to which they are destructive in Cumberland]. Field, Sep. 25th, 1886, p. 451.

James Eardley Mason. **Linc. N.**

Pied Flycatcher [*Muscicapa atricapilla*] **in North Lincolnshire** [at Alford, May, 1886]. Nat., July 1886, p. 215.

James Eardley Mason. **Linc. N.**

Quail [*Coturnix communis*] **Nesting in Lincolnshire** [at Maltby-le-Marsh, 6th July, 1886]. Nat., Sep. 1886, p. 277.

M. O. Matthews. **York N.E.**

Gannet [*Sula bassana*] **Inland** [at Crayke, near Easingwold, 2nd Nov. 1886 ; measurements stated]. Field, Nov. 13th, 1886, p. 723.

R. F. Matthews. **Cumberland.**

Woodcock [*Scolopax rusticola*] **Nesting near Carlisle** [at Bardon Mill in May 1886]. Field, May 29th, 1886, p. 706.

R. Morton Middleton. **Durham.**

[Partial Albinism in Corvus monedula at Castle Eden, co. Durham]. Proc. Linn. Soc., April 3rd, 1884 [published Oct. 1886], p. 9.

F. S. MITCHELL. **Lanc. S. and W., Furness.**

The Birds of Lancashire [a full and detailed account of the distribution, faunistic position, local vernacular nomenclature, habits, etc., of the 256 birds (85 Residents, 31 Summer Visitants, 65 Winter Visitants, and 75 Occasional Visitants) which have been recorded for Lancashire inclusive of Furness, with a brief introduction dealing with physical features, remarks upon the fauna, on insufficiently-verified species, dates of arrival of migrants, the bibliography of the subject, and the writer's sources of information ; the whole illustrated by a rough map of the county, coloured plates of Lancashire rarities, illustrations of duck-decoys and other views]. Illustrated by J. G. Keulemans, Victor Prout, etc. London : John Van Voorst, Paternoster Row. MDCCCLXXXV. [Small 8vo, 224 pages and 11 plates]. Reviewed in Nat., Aug. 1885, p. 310.

F. S. MITCHELL. **York Mid W., Lanc. W.**

The Raven [*Corvus corax*] **in Bowland** [a pair managed to nest in 1885 and 1886]. Nat., May 1886, p. 129.

F. O. MORRIS. **York S.E.**

Circular Notes. . . . No. 1.—The Rook [*Corvus frugilegus*] and the Fox [anecdote of fox mobbed by thousands of rooks—presumably at Nunburnholme]. Land and Water, April 17th, 1886, p. 374.

R. MORTIMER. **York S.E.**

Stone Curlews [*Œdicnemus scolopax*] **on the Yorkshire Wolds** [at Fimber, Burdale, and Thixendale, it has bred for four years past ; formerly very common ; Note also on Stockdove (*Columba œnas*) nesting on the side of a corn-stack at Wharram]. Nat., Feb. 1886, p. 48.

S. L. MOSLEY. **Lanc. S.**

British Birds : their Nests and Eggs [*Plectrophanes nivalis*, thirty captured on Mr. Gregson's warren at Crosby]. Young Nat., Feb. 1885, vi. 40.

N. NEAVE. **Cheshire.**

Sanderling (*Calidris arenaria*) **near Macclesfield].** Nat. Hist. Journ., Oct. 15th, 1886, x. 152.

T. H. NELSON. **Durham.**

Grouse [*Lagopus scoticus*] **and the Snowstorm** [driven off the Weardale and other moors, much destruction ensuing]. Field, Feb. 13th, 1886, p. 208.

T. H. NELSON. **York N.W., Durham.**

Grouse [*Lagopus scoticus*] **and the [severe] Weather** [at Richmond and in Durham ; large numbers driven off the moors]. Nat., March 1886, p. 68.

T. H. NELSON. **Durham.**

Effects of Heavy Snow upon Grouse [(*Lagopus scoticus*) ; driving them from the Weardale moors down into the low country of Teesdale and near Bishop Auckland ; suffering also shared by the Cushat (*Columba palumbus*)]. Zool., March 1886, x. 108.

T. H. NELSON. **Durham.**

The [severe] Weather [of May 1886] and the Swallows [*Hirundo* and *Cotile*, at Bishop Auckland and Durham]. Nat., June 1886, p. 182.

T. H. NELSON. **Durham, Lake District.**

Swallows [*Hirundo rustica* and *Cotile riparia*] **dying of Cold [and Hunger]** in May [1886, in Weardale, at Durham, near Bishop Auckland, and in the Lake District]. Zool., June 1886, x. 249.

T. H. NELSON. **York N.E.**

Autumn Migration of Birds on the Yorkshire Coast [at Redcar and Saltburn ; notes on *Regulus cristatus*, *Turdus pilaris*, *Alauda arvensis*, *Vanellus vulgaris*, *Scolopax rusticola*, *Asio brachyotus*, *Colymbus septentrionalis*, *Turtur communis*, *Falco peregrinus*, *Sula bassana*, *Lomvia troile*, *Alca torda*, *Stercorarius crepidatus*, *S. catarractes*, *S. pomatorhinus*, *Œdemia fusca*, *Anas boschas*, *Mareca penelope*, *Querquedula crecca*, and *Corvus cornix*]. Field, Oct. 23rd, 1886, p. 610.

FRANCIS NICHOLSON. **Cheshire, Lanc. S.**

Breeding of the Reed Warbler (*Acrocephalus streperus*) **in Cheshire** [on several of the meres; a record also quoted for Wigan; note also given that the Marsh Warbler (*A. palustris*) does *not* visit Cheshire]. Nat., March 1885, p. 182.

F. NICHOLSON. **Lanc. S.**

[Ring-Ouzel (*Turdus torquatus*), **Merlin** (*Falco æsalon*), **and Dipper** (*Cinclus aquaticus*) within 12 or 15 miles of Manchester; skins exhibited]. Proc. Manch. Lit. and Phil. Soc., Sep. 20th, 1886, xxvi. 6.

F. NICHOLSON. **Lanc. S.**

[Fork-tailed Petrel (*Procellaria leucorrhoa*) **shot on the Lancashire coast** between Southport and Formby]. Proc. Manch. Lit. and Phil. Soc., Oct. 11th, 1886, xxvi. 7.

CHAS. F. OAKLEY. **York S.W.**

The Common Skua (*Lestris cartarractes* [sic]) [one captured, Oct. 1st, 1885, at Halls Farm, Uppermill, near Oldham; details given]. Nat. World, Feb. 1886, iii. 39-40.

CHARLES OLDHAM. **Cheshire.**

Breeding of the Reed Warbler [*Acrocephalus streperus*] **in Cheshire** [on the margins of Pick-mere, near Northwich, May 1884]. Nat., Feb. 1885, p. 149.

CHARLES OLDHAM. **? Cheshire or Lanc. S.**

Swallows and the late Storm [of May 1886; destruction of *Cotile* and *Hirundo* by cold and starvation on the Mersey bank]. Nat., July 1886, p. 214.

H. F. PARSONS. **Linc. S.**

Duck Decoys [one at Crowland suggested as additional to Sir R. Payne-Gallwey's list]. Nat., Oct. 1886, p. 308.

A. PATERSON. **York S.W.**

Orange-legged Hobby [*Tinnunculus vespertinus*] **near Doncaster** [shot in Wadworth Wood, April 1884; fine female]. Nat., Oct. 1884, p. 58.

ADRIAN PEACOCK. **York S.W.**

The Twite [*Linota flavirostris*] **near Thorne Waste** [nested in Eastoft parish, 1875]. Nat., Feb. 1885, p. 148.

H. G. PEARSON. **Furness.**

Young Skylarks [*Alauda arvensis*] **fed by an Older Nestling** [place not stated; note dated from Barrow-in-Furness]. Nat., Feb. 1886, p. 48.

H. G. PEARSON. **Furness.**

Quail [*Coturnix communis*] **in North Lancashire** [at Rampside, 7th Nov., 1885]. Nat., Feb. 1886, p. 48.

A. E. PEASE. **York N.E.**

Grouse [*Lagopus scoticus*] **and their Food** [on moors near Hutton Hall, Guisborough; 287 Cranberries, besides heather-shoots]. Field, Oct. 23rd, 1886, p. 609.

W. P[ENNEY]. **York N.E., Northumberland.**

The Little Bittern, or Little Heron (*Ardea minuta*, Linn.) [enumeration of British occurrences; the northern ones are—Northumberland, and near Redcar, 1852]. Land and Water, April 24th, 1886, p. 393.

JOHN PERCIVAL. **York N.W.**

Nesting of the Quail [*Coturnix communis*] **in Wensleydale** [near Carperby, July 1884; particulars given]. Nat., Sep. 1884, p. 32.

GEO. T. PORRITT. **York Mid W.**

Curious Nest of Song-Thrush [(*Turdus musicus*) at Copgrove Woods near Boroughbridge, 25th May, 1885; description given]. Nat., July 1885, p. 269.

G. T. Porritt. **York S.W.**

Curious place for a Cuckoo [*Cuculus caorus*] **'s Egg** [on Thorne Waste, July 1885, in a slight hollow, but no nest]. Nat., Oct. 1885, p. 344.

T. N. Postlethwaite. **Linc. N. or S.**

Cuckoo [*Cuculus canorus*] **Laying in a Pollard Willow** [close to Lincoln city, some years ago; the nests laid in were either of *Passer domesticus* or *P. montanus*]. Nat., Jan. 1885, p. 127.

T. N. Postlethwaite. **Cumberland.**

Ornithological Notes from South Cumberland [i.e., Millom district; arrival of *Hirundo rustica*, *Chelidon urbica*, *Crex pratensis*, *Cuculus*, *Phylloscopus trochilus*, *Certhia*, and *Tringoïdes hypoleucos*; nesting of *Turdus viscivorus*, *T. merula*, *T. musicus*, *Motacilla raii*, *Numenius arquata*, *Gallinago cœlestis*; arrival of *Pratincola rubicola*, *P. rubetra*, and *Saxicola œnanthe*; non-arrival of *Caprimulgus*; occurrence of *Tadorna cornuta*; habits of young *Vanellus*; arrested decrease of *Crex*; occurrence of *Alcedo ispida*, *Asio otus*, *Turdus torquatus*; scarcity of *Troglodytes*; abundance of *Coccothraustes chloris*; and breeding of *Scolopax rusticola*]. Zool., July 1886, x. 300-301.

Thomas Raine. **York Mid W.**

Occurrence of the Great Grey Shrike [*Lanius excubitor*] **near Leeds** [in the breeding season; details given]. Nat., Aug. 1885, p. 298.

F. G. S. Rawson. **York S.W.**

Birds near Halifax [*Gallinula chloropus* and *Tringoïdes hypoleucos* nesting; *Alcedo ispida*, *Motacilla melanope*, *M. raii*, *Ruticilla phœnicurus*, *Linota rufescens*, *Pratincola rubetra*, *Muscicapa grisola*, *Sylvia cinerea*, *Anthus pratensis*, *Saxicola œnanthe*, *Cotile riparia*, *Crex pratensis*, *Tinnunculus alaudarius*, *Corvus monedula*, *Passer montanus*, *Sylvia atricapilla*, *Alauda arvensis*, *Sturnus*, *Turdus viscivorus*, and *Œdemia nigra* noted]. Nat., April 1885, p. 201.

F. G. S. Rawson. **York S.W.**

Bird-notes from Thorpe, near Halifax [anent nesting of *Passer montanus* and *Columba palumbus* in 1886]. Nat., Sep. 1886, p. 277.

James T. T. Reed. **Durham.**

[Immense] Flocks of Skylarks [*Alauda arvensis*] **on the Durham Coast** [between Ryhope and Seaham, Feb. 6th, 1886]. Nat., March 1886, p. 67.

James T. T. Reed. **Durham.**

Grouse [*Lagopus scoticus*] **and the [severe] Weather** [one picked up near Seaham, co. Durham, Feb. 1st, 1886]. Nat., March 1886, p. 68.

J. T. T. Reed. **Durham.**

Pochard [*Fuligula ferina*] **and Hooded Crow** [*Corvus cornix*] **in Durham** [shot near Sunderland, Oct. 7th, 1886]. Nat., Nov. 1886, p. 340.

C. T. S. Birch Reynardson. **Linc. S.**

Food of [*Columba palumbus*] **the Wood Pigeon** [roots of *Anemone nemorosa*; presumably at Holywell Hall, Stamford]. Field, Feb. 13th, 1886, p. 201.

George Roberts. **York S.W.**

Winter Nests [at Lofthouse near Wakefield; Sparrow (*Passer domesticus*), Wren (*Troglodytes parvulus*), and Rook (*Corvus frugilegus*)]. Zool., Feb. 1886, x. 72.

Geo. Roberts. **? York Mid W.**

Corn Bunting [*Emberiza miliaria*]—**Diversity of Eggs** [in size; locality not stated, presumably Lofthouse near Wakefield]. Nat., March 1886, p. 67.

John E. Robson. **Durham.**

Fulmar Petrels [*Fulmarus glacialis*] **near Hartlepool** [two taken, Oct. 1885]. Nat., Jan. 1886, p. 17.

JOHN E. ROBSON. **Durham.**

Variety of the Kestrel [(*Tinnunculus alaudarius*) shot in a Dene near Hartlepool]. Young Nat., July 1886, vii. 148.

JOHN E. ROBSON. **Durham.**

The Little Gull [(*Larus minutus*) shot on Whitburn Sands, near Sunderland, Aug. 28th, 1886; earliest previous date Sep. 2nd]. Young Nat., Oct. 1886, vii. 211.

JOHN E. ROBSON. **Durham.**

The Stormy Petrel [*Procellaria pelagica*] **at Hartlepool** [several seen; one captured]. Young Nat., Nov. 1886, vii. 236.

JOHN E. ROBSON. **Durham.**

The Red-throated Diver [*Colymbus septentrionalis*] **at Hartlepool.** Young Nat., Sep. 1887, viii. 180.

A. S. ROWNTREE and others. **Yorkshire.**

[York Bird-notes: Peewit (*Vanellus vulgaris*), Wild Geese, Rooks (*Corvus frugilegus*), Blackbirds (*Turdus merula*), and Thrushes (*T. musicus*) noted]. Nat. Hist. Journ., March 15th, 1886, x. 41.

B. S. ROWNTREE. **York Mid W. and N.E.**

York [Bird-Notes; Gannet (*Sula bassana*) between Hessay and Poppleton; Siskins (*Chrysomitris spinus*) at Holgate; two piebald Blackbirds (*Turdus merula*) shot at Castle Howard]. Nat. Hist. Journ., April 15th, 1886, x. 63.

W. H. ST. QUINTIN. **York N.E.**

Notes on Wildfowl in Yorkshire [in the park at Scampston Hall, *Anas boschas*, *Querquedula crecca*, *Fuligula cristata*, *F. ferina*, *F. marila*, *Clangula glaucion*, *Anser cinereus*, *A. segetum*, *A. albifrons*, *A. brachyrhynchus*, *Bernicla canadensis*, *B. brenta*, in a state of semi-domestication, some nesting]. Zool., Feb. 1886, x. 73-74.

W. H. ST. QUINTIN. **Derbyshire.**

Two Cuckoos [*Cuculus canorus*] **fed by one pair of [Pied] Wagtails** [(*Motacilla lugubris*), in Derbyshire]. Zool., Oct. 1886, x. 415-416.

J. H. SALTER. **York N.E.**

Scarbro' Bird Notes [Purple Sandpiper (*Tringa striata*), Snow Bunting (*Plectrophanes nivalis*), Golden-eye (*Clangula glaucion*), Common Bunting (*Emberiza miliaria*), Sheldrake (*Tadorna cornuta*), and Stonechat (*Saxicola rubicola*)]. Nat. Hist. Journ., March 15th, 1886, x. 44.

W. CECIL SCOTT and WALTER BOOTH. **York N.E.**

The Yorkshire Naturalists' Union at Pickering [Aug. 1886; *Tinnunculus*, *Accipiter nisus*, *Muscicapa grisola*, *Cinclus*, *Turdus viscivorus*, *T. musicus*, *T. merula*, *Accentor*, *Erithacus*, *Ruticilla phœnicurus*, *Pratincola rubicola*, *P. rubetra*, *Acrocephalus phragmitis*, *Sylvia cinerea*, *S. curruca*, *Phylloscopus sibilatrix*, *P. trochilus*, *P. rufus*, *Troglodytes*, *Parus major*, *P. cæruleus*, *P. caudatus*, *Motacilla lugubris*, *M. melanope*, *Anthus pratensis*, *A. trivialis*, *Alauda arvensis*, *Emberiza miliaria*, *E. citrinella*, *Fringilla cœlebs*, *Passer domesticus*, *Ligurinus*, *Linota cannabina*, *Pyrrhula*, *Sturnus*, *Corvus corone*, *C. frugilegus*, *C. monedula*, *Pica caudata*, *Garrulus*, *Hirundo*, *Chelidon*, *Cotile*, *Cypselus*, *Columba palumbus*, *Phasianus*, *Lagopus scoticus*, *Perdix cinerea*, *Charadrius pluvialis*, *Vanellus*, *Gallinago cœlestis*, *Crex*, and *Gallinula* noted; three were nesting]. Nat., Sep. 1886, p. 273.

HENRY SEEBOHM. **Lanc. S.**

On the Black-throated Wheatear, Saxicola stapazina, and its allies [one shot near Bury, Lancashire, spring of 1878]. Zool., May 1886, x. 193-5.

H. SEEBOHM. **Cheviotland.**

[Lesser White-fronted Goose (*Anser albifrons minutus*) shot near Holy Island; details given]. Proc. Zool. Soc., Nov. 16th, 1886, p. 420; and Field, Nov. 20th, 1886, p. 750.

ROBERT SERVICE. **Cumberland.**

Disappearance of the Chough (*Pyrrhocorax graculus*, L.) from the Stewartry of Kirkcudbright [with a brief reference to its imminent extinction in Cumberland also]. Trans. Nat. Hist. Soc. Glasgow, New Series, vol. i [for 1884-85, pub. 1886], pp. 117-122.

HENRY SIDNEY. **York N.E.**

A Tame Woodcock [(*Scolopax rusticola*) at Ingleby near Northallerton; one visited a cottage to pick up food daily during the late snow-storm]. Field, April 3rd, 1886, p. 428.

P. L. SIMMONDS. **Lincolnshire, Northumberland, Yorkshire.**

The Animal Food Resources of Different Nations, with mention of some of the Special Dainties of Various People derived from the Animal Kingdom. ['The knot (*Tringa canutus*) . . . come to market chiefly from Lincolnshire' (p. 178). 'The number of eggs of the gulls—herring gull (*Larus argentatus*, *L. marinus*, *L. canus*, etc.,—sent to shore from the Fern Islands, . . . for culinary purposes, is said to be prodigious' (p. 199). Reference in detail made to the taking of eggs of Guillemots (*Uria troile* and *U. grylle*) and Razor-bills (*Alca torda*) at Flamborough (p. 199).] London: E. and F. N. Spon . . . 1885 [8vo, cloth, pp. 461].

M. M. SIMPSON. **Derbyshire, Lanc. S., York S.W., Cheshire.**

A Sportsman of the Last Century [being a few extracts from an 'Account of Game' shot by Sir Ashton Lever, of Alkrington Hall, Lancashire, from 1751 to 1755; the localities mentioned are Bleak Stone Edge towards Booth Deen; Mottram, on the Derbyshire side; Knutsford in Outerton, Alkrington, Tonge, Foxdenton, Withington, Birch, and Prestwick Woods; the birds are *Lagopus scoticus*, *Caprimulgus*, 'Sandpipes,' *Vanellus*, *Perdix*, 'Rail,' *Limnocryptes gallinula*, and *Scolopax rusticola*]. Land and Water, March 6th, 1886, p. 236.

H. H. SLATER. **Cheviotland.**

A Winter Visit to the Farne Islands [when *Phalacrocorax carbo*, *Somateria mollissima*, *Sula bassana*, *Clangula glaucion*, *Anas boschas*, *Tringa striata*, *Strepsilas interpres*, *Tringa alpina*, *Totanus calidris*, *Lomvia troile*, and *Podiceps griseigena* were noted]. Nat., Nov. 1884, pp. 89-91.

HENRY H. SLATER. **York S.E.**

Occurrence of the Barred Warbler (*Sylvia Nisoria*) **on the Coast of Holderness** [a young female, taken 28th Aug., 1884; the first Yorkshire (second British) example]. Nat., Nov. 1884, p. 91.

THOMAS SOUTHWELL. **York N.W.**

Whiskered Tern (*Hydrochelidon hybrida*) **in Yorkshire** [one, shot 1842, on the Swale at Hornby Castle; addition to Yorkshire list; history of specimen given]. Nat., Dec. 1885, p. 393.

THOMAS STEPHENSON. **York N.E.**

Notes from Whitby [on *Tachybaptes fluviatilis*, *Larus leucopterus*, *L. glaucus*, *Fulica atra*, and *Clangula glaucion*]. Nat., April 1885, p. 201.

THOMAS STEPHENSON. **York N.E.**

Bird-notes from Whitby [Jan. to May 1886; *Totanus calidris*, *Larus ridibundus*, *Rallus aquaticus*, *Muscicapa atricapilla*, *M. grisola*, and *Turtur communis* noted]. Nat., Sep. 1886, p. 277.

H. J. STOBART. **York N.E.**

Late Stay of Swifts [(*Cypselus apus*); one seen flying about Saltburn-by-the-Sea all day on Sep. 12th, 1886, amongst a lot of *Chelidon urbica*]. Field, Sep. 18th, 1886, p. 441.

W. STOREY. **York Mid W.**

Woodcock [*Scolopax rusticola*] **Breeding in Nidderdale** [near Pateley Bridge, July 1884; particulars given]. Nat., Sep. 1884, p. 32.

WM. STOREY. **York Mid W.**

Albino Birds in Nidderdale [*Hirundo rustica* at Dacre Banks, 31st Aug., 1884; a pair of the same there in 1882, and *Sturnus vulgaris* at Pateley Bridge in 1884]. Nat., Jan. 1885, p. 127.

W. STOREY. **York Mid W.**

Water-rail [*Rallus aquaticus*] **in Nidderdale** [shot on Hardcastle Moor, Oct. 30th, 1884, and one at Bewerley a few days previously]. Nat., Jan. 1885, p. 127.

WM. STOREY. **York Mid W.**

Bird-notes from Nidderdale [Sheldrake (*Tadorna cornuta*) shot out of four, Pateley, 6th Dec., 1884; Great Grey Shrike (*Lanius excubitor*) noted in Harefield Wood, 27th Dec., 1884, also in 1883; Goldfinches (*Carduelis elegans*) near Pateley, noted as having bred in 1882 and 1883]. Nat., Feb. 1885, p. 149.

WM. STOREY. **York Mid W.**

Bird-notes from Nidderdale [on *Fuligula marila*, *Loxia curvirostra*, and *Helodromas ochropus*]. Nat., April 1885, p. 201.

WM. STOREY. **York Mid W.**

Nidderdale Ornithological Notes [*Ampelis garrulus* in Bewerley Woods, *Hæmatopus ostralegus* on Greenhow Hill, May 1880, and habits in captivity of *Syrnium aluco*]. Nat., Aug. 1885, p. 298.

WM. STOREY. **York Mid W.**

Lapwing [*Vanellus vulgaris*]**'s Nest with Five Eggs** [twice near Pateley Bridge]. Nat., Aug. 1885, p. 299.

WILLIAM STOREY. **York Mid W.**

Lesser Spotted Woodpecker [*Dendrocopus minor*] **and Grasshopper Warbler** [*Locustella nævia*] nesting in Nidderdale. Nat., Feb. 1886, p. 48.

WILLIAM STOREY. **York Mid W.**

Light-coloured Grouse [*Lagopus scoticus*] **in Nidderdale** [on Grimwith Moor, a few years ago; three cream-coloured birds shot, now at the Grouse Inn at Drygill]. Nat., Feb. 1886, p. 48.

WM. STOREY. **York Mid W.**

Cormorant [*Phalacrocorax carbo*] **and Green Woodpecker** [*Gecinus viridis*] in Nidderdale [details and dates given]. Nat., May 1886, p. 150.

WM. STOREY. **York Mid W.**

Woodcock [*Scolopax rusticola*], **Wryneck** [*Iynx torquilla*], **and Hawfinch** [*Coccothraustes vulgaris*] in Nidderdale [localities and dates given]. Nat., June 1886, p. 188.

WM. STOREY. **York Mid W.**

Brent Geese (*Bernicla brenta*) **and Great Grey Shrike** (*Lanius excubitor*) in Nidderdale [details of occurrences given]. Nat., Sep. 1886, p. 278.

WM. STOREY. **York Mid W.**

Greenshank [*Totanus canescens*] **in Nidderdale** [near Pateley Bridge, in Oct. 1886]. Nat., Nov. 1886, p. 340.

WM. STOREY. **York Mid W.**

Albino Blackbird [*Turdus merula*] **in Nidderdale** ['telegraphed' at Pateley, Oct. 2nd, 1886]. Nat., Nov. 1886, p. 340.

WM. STOREY. **York Mid W.**

Cream-coloured Skylark [*Alauda arvensis*] **in Nidderdale** [on Hayshaw Moor, Sep. 10th, 1886]. Nat., Nov. 1886, p. 340.

CHARLES STUART. **Cheviotland.**

The Migration of Birds [in Northumberland and on the Border], with a few Notes on the Weather of 1885 [*Muscicapa atricapilla* nesting in Alnwick Park, *Lagopus scoticus* on the wing near Harbottle]. Proc. Berw. Nat. Club for 1885 [pub. 1886], xi. 238 and 240.

W. E. Stubbs [signed 'Lyulph (Carlisle)']. **Cumberland.**

The Eden [inclemency of season exemplified by no fewer than fifty-two Swallows (*Hirundo rustica*) being picked up dead in Rickerby House grounds, May 12th and 13th]. Field, May 15th, 1886, p. 629.

R. A. Summerfield. **York Mid W.**

Reed Warbler [*Acrocephalus streperus*] **Nesting near Ripon** [in 1886; furthest northern record known]. Nat., Sep. 1886, p. 277.

Thos. R. Summerson. **Durham.**

White-winged Rook [(*Corvus frugilegus*); seen at Haughton-le-Skerne, near Darlington, Nov. 10th, 1886, amongst a flock of ordinary birds]. Field, Nov. 20th, 1886, p. 750.

W. E. Teschemaker. **York S.E.**

Little Gull [*Larus minutus*] **in Yorkshire** [shot near Filey, end of Feb. 1886; description given]. Land and Water, April 10th, 1886, p. 347.

J. Thompson.. **Westmorland.**

Gannets [*Sula bassana*] **inland** [on the fells between Martindale and Mardale]. Field, Oct. 30th, 1886, p. 633.

John Thomson. **Cheviotland.**

Natural History Observations in 1885 [made about Maxton, Roxburghshire, but with a Northumbrian note; *Fringilla montifringilla* in thousands in farm-yard close to Alnwick, 29th Jan.]. Proc. Berw. Nat. Club for 1885 [pub. 1886], xi. 251.

H. G. Tomlinson. **? Derbyshire.**

Nidification of Ring Ouzel [*Turdus torquatus*] **and Missel Thrush** [*T. viscivorus*—presumably near Burton-on-Trent]. Nat., Feb. 1886, p. 48.

H. G. Tomlinson. **Derbyshire.**

How to Form a Rookery [account of successful attempt at The Woodlands, Burton-on-Trent]. Nat., June 1886, p. 188.

Sigismund C. De Trafford. **Lanc. S.**

Dotterel [*Eudromias morinellus*] **in Lancashire** [at Croston Hall near Preston; two shot out of four, May 1st]. Field, May 8th, 1886, p. 607.

Julian G. Tuck. **Cheviotland.**

Harlequin Duck [*Cosmonetta histrionica*] **on the Northumberland Coast** [near the Farne Islands, first week of Dec. 1886; a young male; description given; Editor refers to Mr. Whitaker's Filey (1862) specimen as the only genuine British-killed example in any collection]. Field, Dec. 11th, 1886, p. 872.

T. Tully, Jun. **Cumberland.**

White Starling [(*Sturnus vulgaris*), shot Sep. 29th, 1886, near Thurstonfield, Carlisle]. Field, Oct. 23rd, 1886, p. 609.

A. W. Walker. **York S.E.**

Little Auk [*Mergulus alle*] **at Settrington, East Yorkshire** [a fine mature male picked up alive, latter end of Nov. 1884]. Nat., Jan. 1885, p. 127.

F. T. W[alker]. **York Mid W.**

A Sheep's Eyes eaten out by Crows [near Pateley Bridge]. Nat. Hist. Journ., March 15th, 1886, x. 43.

Robert Wallis. **York S.W.**

Late Swallows [(*Hirundo rustica*?) at Wakefield, 16th January, 1886]. Nat. Hist. Journ., Feb. 15th, 1886, x. 19.

[Lord] Walsingham. **York Mid W.**

Additions to the Avifauna of Washburndale [viz., *Hæmatopus ostralegus* and *Sterna arctica*]. Nat., Aug. 1884, p. 19.

LORD WALSINGHAM and SIR RALPH PAYNE-GALLWEY. **North of England in general.**

Shooting . . . [vol. i.] **Field and Covert** [and vol. ii.] **Moor and Marsh** [profusely illustrated, and containing various incidental references to the natural history of *Lagopus scoticus*, *Perdix cinerea*, *Phasianus colchicus*, *Scolopax rusticola*, *Gallinago cœlestis*, *Anser segetum*, *A. brachyrhynchus*, *Fuligula cristata*, *Clangula glaucion*, *Somateria mollissima*, *Œdemia nigra*, and *Mareca penelope*; two vols. of the Badminton Library, 8vo.] 1886. Reviewed at length in Field, Aug. 28th, 1886, pp. 312-313; and [by John Cordeaux, with additional notes anent *Lagopus scoticus* in Yorkshire, the former occurrence of *Tetrao urogallus* in Durham, and *Scolopax rusticola* in Lincolnshire] in Nat., Jan. 1887, pp. 23-32.

H. SNOWDEN WARD. **Cheshire.**

Migratory Birds and their old haunts [quoting observations made at Wallasey on the notes uttered by *Cuculus canorus*]. Sci. Goss., Oct. 1886, p. 239.

J[OHN]. W[ATSON]. **Cumberland, Westmorland.**

Mortality amongst Swallows [*Hirundo*, *Chelidon*, and *Cotile*] **in the Lake District** [very great; other birds, such as *Corvus frugilegus*, *Ardea cinerea*, *Fulica atra*, and *Gallinula chloropus*, also suffering in large numbers]. Field, May 22nd, 1886, p. 648.

JOHN WATSON. **Northbld. S., Cumbld., Westmld., Furness.**

Notes on the Eagles of the Lake District [detailed observations concerning *Aquila chrysaëtos*, *Haliaëtus albicilla*, *Aquila clanga*, and *Pandion haliaëtus*, and Crosthwaite Churchwardens' entries as to Eagles, *Corvus corax*, *Milvus*, etc.]. Nat., Nov. 1886, pp. 343-346.

W. L. WELLS. **Linc. N.**

Louth Naturalists' Society [ornithological report; nests of *Alauda arborea*, *Anthus pratensis*, *Caccabis rufa*, and *Emberiza schœniclus* noted; *Pratincola rubetra* and *P. rubicola* reported as numerous on the coast sand-hills]. Nat. World, Aug. 1886, iii. 158.

E. W. WEST. **Derbyshire.**

Great Grey Shrike [*Lanius excubitor*] **in Derbyshire** [on the Longshawe Moors, shot '29th ult.' in mistake for a 'blue-back'—local name for Fieldfare (*Turdus pilaris*)]. Field, March 20th, 1886, p. 361.

LEONARD HENRY WEST. **York S.E.**

A Great Grey Shrike (*Lanius excubitor*) [recently shot on the Humber Bank near Brough; a Kingfisher (*Alcedo ispida*) also shot near the Humber]. Nat. World, Feb. 1886, iii. 37.

J. WHITAKER. **Notts.**

Great Tit [*Parus major*] **and Bees** [at Rainworth Lodge near Mansfield; the bees fed on by the birds]. Nat., Aug. 1884, p. 19.

J. WHITAKER. **Notts.**

Spring Birds near Mansfield [being notes on *Phylloscopus rufus*, *P. trochilus*, *Cuculus*, *Crex*, *Accentor*, *Turtur*, *Sylvia hortensis*, and *Daulias*]. Nat., Aug. 1884, p. 19.

J. WHITAKER. **Notts.**

Tufted Duck [*Fuligula cristata*] **at Rainworth, Notts.** [a wounded male not assuming summer plumage]. Nat., Oct. 1884, p. 58.

J. WHITAKER. **Notts.**

Puffin [*Fratercula arctica*] **in Notts.** [picked up alive at Mansfield Woodhouse, Nov. 12th, 1884; new to the county avifauna]. Nat., Jan. 1885, p. 127.

J. WHITAKER. **Notts.**

Woodcocks [*Scolopax rusticola*] **in Notts.** [in large flights; large flocks of Fieldfares (*Turdus iliacus*) also]. Nat., Feb. 1885, p. 149.

J. WHITAKER. **Notts.**

Grey Lag Goose [*Anser ferus*] **in Nottinghamshire** [shot at Papplewick 16th February, 1885]. Nat., April 1885, p. 201.

J. WHITAKER. **Notts.**

Notes from Rainworth, Notts. [on *Corvus cornix*, *Falco peregrinus*, and *Parus major*]. Nat., April 1885, p. 201.

J. WHITAKER. **York N.E.**

Little Owls [*Athene noctua*] **in Yorkshire** [two near Scarborough]. Nat., Sep. 1885, p. 336.

J. WHITAKER. **Notts.**

The Chiff Chaff [(*Phylloscopus rufus*); **first heard** at Rainworth Lodge 24th March, 1886]. Land and Water, March 27th, 1886, p. 299.

J. WHITAKER. **Notts.**

Velvet Scoter [*Œdemia fusca*] **in Nottinghamshire** [shot on Welbeck Lake, Nov. 6th, 1884, preserved in the collection at Welbeck Abbey; first and only Notts. record]. Zool., April 1886, x. 182.

J. WHITAKER. **Notts.**

Varieties of Common Birds [White Jays (*Garrulus glandarius*) at Clumber; White Woodcock (*Scolopax rusticola*) in Notts.; and several Notts. varieties of *Passer domesticus*]. Zool., April 1886, x. 182.

J. WHITAKER. **Notts.**

The Willow Wren [(*Phylloscopus trochilus*) **arrived** 30th March, 1886, at Rainworth Lodge]. Land and Water, April 3rd, 1886, p. 324.

J. WHITAKER. **Notts.**

Arrival of Summer Birds [at Mansfield: *Phylloscopus rufus*, March 24th; *P. trochilus*, March 30th; *P. sibilatrix*, April 3rd; *Saxicola œnanthe*, April 6th]. Field, April 3rd and April 10th, 1886, pp. 428 and 459.

J. WHITAKER. **Notts.**

Early Arrival of the Wood Wren [(*Phylloscopus sibilatrix*); on the 3rd April, 1886, at Rainworth Lodge; the Wheatear (*Saxicola œnanthe*) on the 6th]. Land and Water, April 10th, 1886, p. 347.

J. WHITAKER. **Notts.**

Bittern [*Botaurus stellaris*] **in Nottinghamshire** [three instances cited]. Zool., May 1886, x. 213.

J. WHITAKER. **Notts.**

Curious Nesting-place of a Pied Wagtail [(*Motacilla lugubris*); on the ground in a turnip-field, Notts.]. Zool., July 1886, x. 295.

J. WHITAKER. **Notts.**

Notes on Notts. Birds [*Botaurus stellaris* shot close to Nottingham and one seen in Bestwood Park; amusing anecdote of *Fuligula cristata* and *Cygnus olor* on a pond at Rainworth]. Nat., Sep. 1886, p. 278.

J. WHITAKER. **Notts.**

Breeding of the Shoveller [*Spatula clypeata*] **in Nottinghamshire** [at Rainworth Lodge; particulars of nesting and habits given]. Zool., Sep. 1886, x. 364.

F. B. WHITLOCK. **Derbyshire, Notts.**

Notes on the Breeding of the Cuckoo [*Cuculus canorus*] **and Ring Ouzel** [(*Turdus torquatus*) as observed in Derbyshire and Notts.]. Nat., Jan. 1886, p. 17.

F. B. WHITLOCK. **Derbyshire.**

Birds of the Derbyshire Peak [being an annotated list of 68 species observed by the writer during four or five seasons]. Nat., May 1886, pp. 130-2.

F. B. WHITLOCK. **Notts.**

Dunlins [*Tringa alpina*] **and Black Tern** [*Hydrochelidon nigra*] **near Nottingham** [particulars of occurrences given]. Nat., July 1886, p. 215.

JOHNSON WILKINSON. **Derbyshire.**

Notes on the Birds of the Derbyshire Peak [supplementary to F. B. Whitlock's list; as to *Falco peregrinus* and *Lagopus scoticus*]. Nat., June 1886, p. 188.

A. G. WOLLEY-DOD. **Cheshire.**

Incubation under Difficulties [of Pheasants (*Phasianus colchicus*) and of Landrails (*Crex pratensis*), at Edge Hall, Malpas]. Field, July 24th, 1886, p. 123.

JAMES WOOLMAN. **Cumberland.**

Late Swallows [(*Hirundo rustica*) **at Wigton,** 7th Nov., 1885]. Nat. Hist. Journ., Feb. 15th, 1886, x. 19.

F. A. WRATHALL. **York N.E.**

Ayton Bird Notes [for Feb. and March 1886: *Turdus pilaris*, *T. iliacus*, *Chrysomitris spinus*, *Linota rufescens*, *Motacilla melanope*, *Charadrius pluvialis*, *Corvus frugilegus*, *Turdus torquatus*, *T. viscivorus*, and *T. musicus*]. Nat. Hist. Journ., April 15th, 1886, x. 63.

E. B. WRIGGLESWORTH. **Linc. N. or S.**

Little Auk [*Mergulus alle*] **in Lincolnshire** [Nov. 1884]. Nat., Jan. 1885, p. 127.

NOTES AND NEWS.

Good service is being done by Mr. Osmund W. Jeffs, of Liverpool, in bringing before the Local Scientific Societies' Committee of the British Association the important question of organizing a uniform system of Geological Photography. Photography as a means of preserving permanent record of geological sections of a temporary character, such as those in railway cuttings, quarries, gravel-pits, etc., which in the first case are turfed over, and in the others disappear altogether, is of inestimable value, and it is much to be desired that means of registration and of securing uniformity of action as proposed by Mr. Jeffs should be provided either by the British Association or by the leading scientific societies of each county.

A striking instance of the value of the photographic camera to geological science is to be noted in connection with the Leeds Geological Association and its visits some years ago to several sections in the Lower Coal Measures at Hunslet and Newtown, near Leeds. The beds then viewed were those known as the Beeston bed, the Crow bed, the Black bed, and the Better bed. These were all exposed in huge excavations made for the purpose of brick-making, and as this was being actively carried on at the time, the sections were undergoing change and would be in time rendered inaccessible. Fortunately these sections were all photographed by Mr. F. W. Branson, F.C.S., and henceforward the Association possesses a permanent record of these valuable sections.

Precisely the same thing occurred in the working of the Skipton and Ilkley Railway, which exposed a number of most interesting sections, which, in due time, were turfed over and lost to view. Before this was done, however, they had been photographed by Messrs. Wilson and A. E. Nichols, and so the value of the sections preserved to as full an extent as was practicable.

The same kind of work has without doubt been extensively done elsewhere in the north, and in many instances by geologists not specially identified with scientific societies.

If such gentlemen would communicate to the secretaries of the Yorkshire Naturalists' Union, or, in other counties, to the principal working Society of their county, proper record would be kept, and information given thereon at the Newcastle Meeting of the British Association, when Mr. Jeffs will again bring forward the subject—this time (we may hope) bringing about a completed scheme of registration and record. Information sent in for this purpose should state the date of the picture, name and address of photographer, and locality and compass-bearings of the sections, with such other details as it may be desirable to add.

NOTES—ORNITHOLOGY.

Black Redstart at Scarborough.—On Christmas Day, a fine female specimen of the Black Redstart (*Ruticilla tithys*) was shot in Cayton Bay, near Scarborough, which has been preserved by Mr. W. J. Clarke, through whose courtesy I have recently had an opportunity of examining the bird, which I find correctly identified, and apparently a mature female.—J. Backhouse, Jun., York, May 1889.

Dotterel, etc., on the Pickering Moors.—On May 2nd, when crossing over the moor between Allerston Warren and Lockton, I saw three Dotterel (*Eudromias morinellus*)—two males and one female. This is a species I have never seen before; when I got close to them I had no difficulty in making them out. I see from Yarrell that their breeding haunts in England are the High Cumberland Fells and perhaps these were on their migration thither or may be going further north. The Golden Plover (*Charadrius pluvialis*) breeds on the Moor and I was looking for their nest when I came upon the Dotterel. How soon on their arrival do the Ring-Ouzels (*Turdus torquatus*) begin their work of incubation! The first I saw was on the 26th of April, and I don't think there were any here much sooner, and yet to-day, May 2nd, I found a nest with four eggs and was told of another nest also with four.—Herbert Prodham, Allerston, Pickering, 3rd May, 1889.

Flamborough Bird-Notes.—Since I last wrote, several more summer visitants have arrived on the Headland, including the Whitethroat (*Sylvia cinerea*) and the Cuckoo (*Cuculus canorus*). The first arrival of the Pied Fly-catcher (*Muscicapa atricapilla*) was on Monday morning, May 6th. The other day the light-keeper's son brought me in a Whitethroat and Redstart (*Ruticilla phœnicurus*) which had, no doubt, like several other birds, unfortunately been killed with flying against the light. Mr. Tom W. Woodcock, farmer, informs me of his having seen on the Headland a male and female of the Great Shrike (*Lanius excubitor*). I was also informed of one seen May 3rd. This makes five seen this season, a number which I consider very extraordinary.—Matthew Bailey, Flamborough, May 14th, 1889.

Nightingale at Ripley, Yorkshire.—The Nightingale (*Daulias luscinia*) has this year favoured the woods of Ripley with its presence. It arrived on May 12th (a rather late date), and at the time of writing is in splendid song. Two things are particularly noticeable about the song, one being that at the beginning of many bars it utters the alarm note of the Willow Wren, and so perfect is this, that for several times I was deceived and thought there was a Willow Wren in close proximity. The other is the dragging in now and then of the harsh note of the Sedge Warbler. It has the 'water bubble' note to perfection and several long drawn-out notes were exquisite in their melody; they seemed to denote 'Eternal passion, eternal pain.' One series of notes especially gave one the impression, while they held him rooted to the spot, that someone had the bird in his hand and was crushing the life out of its little body. I have often remarked how eminently suited the particular place where they have settled was for the Nightingale. It is on the grit. The birds are being strictly watched, I am glad to say.—Riley Fortune, Harrogate, May 19th, 1889.

Nightingale at Staveley, near Boroughbridge.—This locality has once more been favoured with the presence of a pair of Nightingales (*Daulias luscinia*), who have taken up their residence in a small wood about one mile from the village of Staveley. The song was first heard early in May and identified by Mr. F. A. Hartley, of Low Hall. Accompanied by a small party, I visited the wood on Saturday, the 18th of May. We arrived on the ground about nine in the evening, and though rook-shooting had been continued in the immediate vicinity until dusk, we were soon rewarded by hearing the unmistakable notes of the nightingale, at first uttered in a tentative manner, but by degrees becoming more continuous. As we wended our way homeward, even when more than half-a-mile distant from its haunt, we could still hear the bird pouring forth its song. We trust that this pair will not share the fate of those who visited the neighbourhood of Knaresborough last year. For in that case the farmer on whose land the birds had taken up their abode shot the male bird, in order to secure his hedges from the depredations of the crowds who came nightly to hear the songster.—E. P. Knubley, Staveley Rectory, 21st May, 1889.

NOTES UPON THE BOTANY OF DERBYSHIRE.

Rev. W. H. PAINTER.

The county of Derby occupies an intermediate position between the northern and the midland counties. Its flora, therefore, forms a link between these two great divisions of England.

In this county the three zones of Watson's agrarian region occur; the infer-agrarian zone embracing all the low-lying part of the county; the mid-agrarian zone ascending from 150 to 350 yards; and the super-agrarian zone ascending from the limits of the last-mentioned one to the summits of Kinder Scout (1,981 feet) and Axe Edge (1,751 feet). Hence on the highest hills we meet with plants both of the Highland and Scotch types of distribution, *Rubus chamæmorus* and *Arbutus uva-ursi* for instance, ceasing here in their march southwards, the former on Axe Edge, and the latter on Kinder Scout.

From its central position but few plants, either of Watson's Germanic or Atlantic types of distribution, occur in the county; the prevailing ones being those of the British and English types. The percentage may be taken thus:—Plants of the British type, 66·5; those of the English type, 25·5; and the remaining types, 8·0 per cent.

The flora of the North-Western part of the county, which is commonly called the Peak District, is such as might be expected from its geological character. Here the Carboniferous system in all its divisions occurs, with thin seams of coal near Whaley Bridge. The dales for which Derbyshire is famous occur in the Greater Scar Limestone; this is surmounted by the Yoredale rocks, which again are succeeded by the Grit rocks. Hence, in this part of the county we have most of the plants which might be expected to be found upon the Limestone, with the exception of *Geranium sylvaticum*, which neither my fellow-workers nor myself have met with, though it is recorded in Topographical Botany.

The *Hieracia* are represented by *H. pallidum* Fr., (?) *H. argenteum* Fr., *H. murorum* L. pt., *H. cæsium* Fr. var. *smithii* Baker, the true *H. cæsium* not having been met with; *H. vulgatum* Fr. and its vars. *rubescens* and *nemorosum* Back.; *H. tridentatum* Fr., *H. prenanthoides* Vill., *H. umbellatum* L., and *H. boreale* Fr.

The Roses include *R. spinosissima* L.; *R. involuta* Sm. and vars.; *R. mollis* Sm. and var.; *R. tomentosa* Sm. and vars.; *R. canina* L., several varieties according to Mr. Baker's monograph; and *R. arvensis* L. In the southern part of Derbyshire, *R. rubiginosa* L. and *R. micrantha* Sm., have been met with.

The Coal-Measures form a district of their own, extending from a few miles south of Sheffield to near Trent Junction. The flora of this part of the county is by no means remarkable.

The New Red Sandstone formation prevails in the southern part of the county, i.e., that part which is bounded on the north by an imaginary line drawn from Ashbourne to Duffield and thence to Trent Junction; on the west, by Staffordshire; on the south by Leicestershire; on the east by Leicestershire and Nottinghamshire. But in the south-eastern part of this division there occurs at Tickenhall an outlier of the Mountain Limestone, with some of the characteristic plants. In this district the plants peculiar to the inferagrarian zone are to be met with, and here the *Rubi* flourish.

The rivers of the county are for the most part of insignificant size; the principal ones being the Trent, which forms the boundary on the S.E., between Derbyshire and Leicestershire and Nottinghamshire; the Dove, which runs through Dovedale and forms the county boundary on the Staffordshire side; the Derwent, the whole course of which is within the county; the Wye, the Lathkill, and the Alport, which run through the principal dales; the Amber, a tributary of the Derwent; the Etherow, on the extreme north; the Hope, which flows through Hope Dale; the Rother, which is near Chesterfield; and the Erewash, a tributary of the Trent, and which serves as a county boundary. But though the rivers are of no great size, their smallness is compensated for by the beauty of the scenery through which they flow; that of Dovedale, Ashwood Dale, Chee Dale, Miller's Dale, Cressbrook Dale, Monsal Dale, and Lathkill Dale being peculiar to themselves; the great masses of Limestone which form the different Tors, such as Chee Tor, Matlock High Tor, Pickering Tor, and Tissington Spires (the two latter in Dovedale), adding to their beauty.

Thus it will be seen that if Derbyshire does not possess so rich a flora as its great northern neighbour, yet the one that is met with is not to be looked down upon. And what has been done in the county towards working out its flora from Ray's time down to the present shows that much may yet be done. The writer of these notes will therefore be thankful if fellow-botanists will communicate to him any facts which they may glean from time to time, and which may not be mentioned in his forthcoming Flora of Derbyshire.

NOTES AND NEWS.

We learn from Mr. H. M. Platnauer, curator of the York Museum, that he would be glad if naturalists would assist him with information as to any facts of importance bearing upon the subject of Hybridism in the Animal Kingdom. He is in correspondence on the subject with a French naturalist who takes a special interest in the subject.

Naturalist,

AT THE FOOT OF THE WOLDS.

S. A. ADAMSON, F.G.S.,

Hon. Sec. of the Leeds Geological Association, of the Yorkshire Boulder Committee, and of the Geological Section of the Yorkshire Naturalists' Union, etc.

THE Easter Monday of 1889 will long be remembered by those members of the Leeds Geological Association who were present, for the brilliancy of the weather, the practical character of the work engaged in, and the congenial manner in which the day was spent. It was decided that the excursion should be to Brough-on-the-Humber and vicinity, so that the Post-tertiary gravels and also some of the Oolitic rocks (the latter of which dip under the Chalk of the Wolds) could be examined.

The excursion was under the leadership of Mr. B. Holgate, F.G.S., and the members had also the utmost kindness shown to them by Mr. Lyon, of Castle House, the proprietor of the gravel pits which the party had travelled to see. The Hull Geological Society had also decided to join the Leeds hammermen, and thus when the two Societies met upon the platform at Brough there was quite a formidable array of geologists bent upon learning as much as possible of the nature and conditions of deposition of the strata at the foot of the Wolds. Mr. F. F. Walton, F.G.S., the President of the Hull Geological Society, who has minutely examined every section in the district, was present, and the information he so freely imparted during the day added materially to the value of the excursion.

As the train sped on in the beautiful April morning many familiar scenes were pointed out; the Newthorpe Quarries, Sherburn Church, Brayton Barf, and Hambleton Haugh were passed, and soon we were passing the fine old abbey of Selby. Crossing the Ouse, the remnants of Wressel Castle on the one side, and the lofty tower of Howden Church on the other, were noted. The calm broad estuary of the Humber looked magnificent with the gleaming sunlight thrown across it, and presently the party, in the best of spirits, alighted at Brough in the midst of introductions and congratulations. They passed through the village and ascended the low eminence of Mill Hill, on the top of which a gravel-pit has been excavated. This hill is really an Oolitic outlier, capped by Post-Tertiary gravels, and there is a tract of low-lying ground between it and the Wolds. Mr. Lyon took charge of the party here, and conducted them to different parts of the pit, where he informed them that an immense curved tusk of the mammoth (*Elephas primigenius*) had been discovered. It was said to have been about 13 ft. in length when

first uncovered, but unfortunately was in a very friable state and crumbled into fragments. A mammalian bone had just been bared, but it was impossible to determine it. However, instructions were left to avoid, if possible, a repetition of the catastrophe attending the former.

Mr. Lamplugh gives the following section of this pit:—Top soil, &c., 2½ feet; rough stony gravel, with some sand, and containing pebbles of flint, sandstone, red chalk, oolitic limestone, and other local rocks, also a few well-worn erratic pebbles of felstone, quartzite, &c., besides rolled lumps of clay and thin seams of clay and of carbonaceous matter, about 9 feet; yellow sand with stony layers, the stones included similar to those in gravel above, about 5 feet; then succeed some hard grey or whitish clays, probably belonging to estuarine Oolites, but thickness uncertain. In the yellow sand the mammoth's tusk was found. There was little to add to the above enumeration of pebbles found in this gravel by the members, but a large block of mountain limestone was broken, and many good examples of *Gryphæa incurva* were obtained from the gravel. Flints, of course, were predominant. This pit showed splendid examples of cross-bedding. The varying currents must have been swift, in fact, almost torrential. Here and there in the upper gravels 'pipes,' or roughly-shaped pillars, descending from the top soil, are to be seen; these have probably been caused by the decomposition of tree roots and stems, the cavities being filled up by earthy and calcareous matter, which have since, by percolation of water, become very compact and hard, so much so, that we were told they could be left standing as pillars whilst quarrying or digging was going on. After a lengthened but deeply interesting stay in this pit, Mr. Lyon conducted the party to ascend the towers of his mansion close by, named Castle House. This was for the view to be there obtained, which, as the house stands in a grand position on the summit of Mill Hill, is very wide and magnificent. In front we were looking over the fertile vale of York, with spires and towers of village churches dotted here and there; a dark pall of smoke indicated the locality of Goole; then could be seen the confluence of Ouse and Trent, forming the majestic Humber; very prominent, too, was the Oolitic escarpment at Whitton, in Lincolnshire; further east the Chalk Wolds of that county; then, turning round, we had a fine prospect of our own Yorkshire Wolds. When standing on this vantage-point, one must think of the scene in bygone centuries, when probably from this very hill the Roman general would watch the passage of his legions over the Humber, on their way from Lindum to Eboracum, for did not the eastern branch of Ermyn Street, coming

direct from Lincoln to the Humber shore, continue again on the north shore at Petuariam or Brough, and proceed to the then Imperial City of York?

Leaving the hill, and returning to the Ellerker Road, we entered a small hollow, where there was an exposure of Oolitic limestone, described by Mr. Walton as 'flaggy, thin, soft, yellow, and irregularly bedded with numerous fossils.' Among others have been found *Terebratulæ*, *Trigoniæ*, *Rhynchonellæ*, *Pinna*, *Modiola*, &c. On the west of the road, a little further on, we entered the large Brough Gravel Pit. This had many points in common with the one we had visited at Mill Hill; the 'pipes,' however, were much more conspicuous and numerous. A large block of quartzite, about 3 ft. in diameter, with outer surface slightly smoothed, was noted. In one part of the quarry, about 3 ft. below the surface, the workmen had disinterred some human bones, accompanied by fragments of rude pottery, these probably, from the roughness of their make, being British. Some of the bones were examined, and as far as a hurried inspection could decide, were said to be portions of the pelvis and femur of a female. Recently a skull, with teeth in perfect preservation, was found in this quarry.

Further on a detour was again made from the road and the 'Cockle Shell' Quarry visited. This would have been a most instructive section had it been possible to examine it, but very unfortunately the quarry was flooded and hence only what may be termed a bird's-eye view could be obtained. Mr. Walton explained that the section we saw above the water level was rubbly oolite, 6 ft.; compact limestone, 2 ft. 6 in.; thin, brown rubbly oolite, 2 ft.; compact limestone, 3 ft.; rubbly limestone, 10 ft. Another small exposure of the Lower Oolites was subsequently examined, some fields being crossed for that purpose. This was a good section, and some fine specimens were obtained of characteristic fossils of the Millepore Limestone. And now the bags began to be heavy and fatigue felt. Thus some of the party considered enough field-work had been done, preferring to walk leisurely through the fine park of Mr. Christopher Sykes, at Brantinghamthorpe, on the return to Elloughton. Others, more enthusiastic, pressed manfully over the fields, passing Ellerker Mill on the way to another quarry. This is known as the Long Quarry, and certainly repaid a visit; indeed, if time had allowed, a close and detailed examination would have been made. The chief feature seemed to be, in this section, a bed containing a number of nodules or concretions stained on the surface with iron, but not showing concentric rings when broken. The topmost bed of limestone was false-bedded in places; then

followed sand with thin seams of limestone, under which came soft sandstone containing the nodules already alluded to, followed again by limestone. This section was reluctantly left, but time pressed, and the fields were crossed to Brantingham. It was a pleasant walk from thence to Elloughton, where tea was provided at the Half Moon.

After tea Mr. B. Holgate, F.G.S., proposed a vote of thanks to Mr. Lyon for his unremitting attention and kindness during the day, and also took an opportunity of expressing the pleasure the Leeds geologists had had in spending a day with their brethren of Hull. Mr. Walton, F.G.S., seconded the resolution in similar terms; after which Mr. Lyon suitably replied.

NOTES—ORNITHOLOGY.

Goldfinch near Ripon.—I noted the appearance of a cock Goldfinch (*Carduelis elegans*) here on the 21st inst. With the exception of a doubtful case in 1886, I have not previously seen one in this locality.—R. A. SUMMERFIELD, North Stainley Vicarage, Ripon, May 24th, 1889.

Turtle-Dove and Nightingale near Goole.—One of these birds (*Turtur communis* Selby) was shot at Rawcliffe on the 8th of May, and sent to me for identification. It proved on dissection to be a male. I regret the fact of its being killed, but can rejoice at another species being added to our local list of birds.

The Nightingale (*Daulias luscinia*) is reported to be at Rawcliffe again. I hope it will not be disturbed or killed.—THOMAS BUNKER, Goole, May 13th, 1889.

Ornithological Notes from Easington, near Spurn.—April 13th, Ring-Ouzel (*Turdus torquatus*) some seen near Kilnsea; also a Black Redstart (*Ruticilla tithys*). Ring-Ouzels were also seen near Easington on the 15th. May 2nd, Cuckoo (*Cuculus canorus*) first heard. May 5th, Wood Sandpiper (*Totanus glareola*) seen at Easington. May 11th, Osprey (*Pandion haliaëtus*) seen at Kilnsea. May 12th, Pied Flycatcher (*Muscicapa atricapilla*) at Easington. —P. W. LOTEN, Easington, Hull, May 13th, 1889.

Missel-Thrush and Waterhen near Hull.—A pair of these birds (*Turdus viscivorus*) have built in the fork of a laburnum in the old burying-ground, in the very centre of Hull and close to the Railway Dock. On April 21st there were two eggs in the nest, and on the 24th, four, but each egg was pierced with a small hole.

At Roos, on the 24th, a Waterhen (*Gallinula chloropus*) was sitting on five eggs, the nest being placed on a branch, over a pond, and about six inches above the water.—JOHN STEARS, Hull, May 6th, 1889.

NOTE—BOTANY.

From Oxlip to Primrose.—At the last meeting of the Huddersfield Naturalists' Society, Mr. C. Wall exhibited two flowers, indistinguishable from those of the Common Primrose. Some years ago he obtained a plant of Common Oxlip, from near Malham, and planted it in his garden. Every year, the flowers grew more like those of the Common Primrose, until this year, when the flowers were indistinguishable from those of the latter species. I enclose the two flowers. —S. L. MOSLEY, Beaumont Park, Huddersfield, 23rd May, 1889.

[The Yorkshire 'Oxlip' is a hybrid between the Primrose and Cowslip, and may be traced by gradual transitions into both its parts. It must not be confounded with *P. elatior* Jacq., which is a genuine species, abundant in Essex.—J.G.B.]

NOTES ON FUNGI: WITH LIST OF SPECIES COLLECTED CHIEFLY IN EAST YORKSHIRE.

WALTER W. STRICKLAND,
Richmond, Surrey.

Some little time ago the Editors consented to afford me space in the pages of *The Naturalist* to publish a list of fungi presented by myself to the British Museum. I have gone carefully through the specimens and compared them with those in the classified collection at the South Kensington Natural History Museum, and I have now the pleasure of forwarding the list, which I believe is tolerably correct. I wish at the same time to make a few remarks as to the object with which the collection was originally made; also to say a word or two about the difficulties with which a correct identification of species of fungi is beset, and, further to point out how fascinating is the study of mycology, how much there is yet to be learnt and how much useful work in this field of natural history may be done by amateurs provided with a microscope and sufficient graphic skill to draw tolerably correct sketches of the fructification and sporidia of the minute, and especially of the asciferous, fungi.

In the first place, then, this collection was originally made for self-instruction. It therefore contains many extremely common and widely diffused species, but for the same reason it presents a fair general scheme of mycology: thus very nearly all the families and most of the orders are represented in it by fairly typical specimens, while, on the other hand, some of the groups which particularly interested me, such for example as the Myxogastres, the Pucciniæ, and the Sphæriaceous fungi comprise a considerable number of specimens. Every species of British *Phragmidium* (most of these however are not uncommon) was found, dried, and made a note of, and also a great number of *Pucciniæ* are recorded. The rare and curious *Xenodochus carbonarius*, growing on the greater burnet, was found near the fish-ponds at Hildenley. In the case of the agarics, I have not attempted a systematic catalogue of them; it would have swelled out the list unnecessarily; I have contented myself with forwarding the names of some of the more uncommon forms found. I regret that more time was not devoted to the Polyporei; there are, however, notes of several curious and scarce forms found at Boynton and Sledmere.

June 1889.

And now a word as to the difficulties in the way of identifying species. In the case of the Hymenomycetes these difficulties are rapidly disappearing, thanks to the admirable series of plates in course of publication by Dr. M. C. Cooke; henceforth it will be an easy matter to identify British species by comparing them with the plates, although much, I imagine, has yet to be learnt as to the variability of the different genera and species. Fungi, so wonderfully rich in varieties of form, are more than any other large group of plants parasitic and epiphytal; whole genera of minute fungi are specifically named from their hosts; consequently, the species would seem to have been evolved posterior to the evolution of the genus, and, in many cases, of the species, of the host. What are we to say, for example, of *Oidium chartarum* which is specified as growing upon paper, or *Zasmidium* with its predilection for dark cellars and wine-bins? We may, I think, infer that very many species of fungi, unlike the patriarchal diatoms and foraminifera, are of comparatively recent date, and from their great diversity of form and wide distribution it may also be inferred that, like the higher Phanerogams, they are liable to considerable variation in the present day. However, I will return to this subject by-and-bye. It is in the case of the minute fungi that the difficulties of identification are still rife, and a feeling of dissatisfaction is apt to be left in the mind after the most careful examination and comparison. Sometimes the specimen in the herbarium is found to be destitute of the characteristic fruit, and a complete comparison with the specimen for identification cannot therefore be made. Sometimes the specimen for identification is itself defective. Then again, mycology being a recent branch of natural history, the series of specimens in the herbarium is by no means complete, and the student is thrown back upon the technical descriptions in the handbooks—descriptions which, unless the host is very specific or the individuality of the species well marked, are often liable to mislead, from the indefinite pictures which they produce in the mind. Here it is that the worker may find a useful field for his labours. What is wanted are good and abundant specimens, with the date of finding recorded, together with the habitat and the nature of the host. There should also be a careful sketch of the fructification as well as a note of the colour of the spores or sporidia. This sketch should be made of the apparent size of the object under the object-glass, and the power of the object-glass should also be noted. No species should be admitted unless the normal fructification is present. Abnormal fructification should be specially noted, but the species should be kept separately. Careful sketches of fructification are particularly needed amongst Ascomycetous fungi; most of all

perhaps among the minute Pezizæ and Sphæriæ, where the cups and perithecia are often very minute and very much alike in the different species. Most of the spores and sporidia have now been measured, the relative sizes are therefore known, and sketches made under the same object-glass will show the relative size with sufficient accuracy for determination, when coupled with the differences in the form of the asci, paraphyses, and sporidia, together with septation and colour. Let us suppose a herbarium in which the whole series of Ascomycetous fungi is complete, each specimen being good and abundant, with a sketch of the fructification, ascus, paraphyses, and sporidium, the colour of the latter being noted and the power of the object-glass used in delineation. The specimen to be identified, I assume, has been similarly treated. All the elements for a precise determination will now be present. The relative size of the sporidium can be observed by comparing it with that of some well-marked species, such as *Sphæria pulvis-pyrius*, of which the size can be discovered by reference to the handbooks. The sketch of the fructification can then very easily be compared with the sketched fructification of the specimens in the herbarium; this, together with the difference in the host and the growth and form of the perithecia or, in the case of the Pezizæ, of the cups, will in most cases suffice for a complete identification and the specimen will fall into its proper place in the herbarium.

The difficulty of identification may also be looked at from another point of view. I have already noted that the species of fungi being, very many of them, parasitic on comparatively recent species of phanerogams, must be themselves comparatively recent, and that from the immense variety of forms which characterises this group of cryptogams, and their wide diffusion, we may infer that they are, like the host they grow upon, themselves liable to considerable variation. Here, then, we have the process of species-making going on before our eyes in comparatively simple organisms, and one may be permitted to hope that here, if anywhere, some of the causes which are at work to produce species should be, so to say, caught in the act. To the evolutionist, therefore, the fungi ought to be a particularly interesting subject of study. The famous phrase, 'the survival of the fittest,' perhaps covers a larger field than was at first consciously realised; certainly it means the survival of the fittest to exist, and the survival of those forms which fit themselves into and thrive within the spare and hitherto unoccupied holes and corners of the great mansion-house of mother nature.

We have in fungi a number of highly variable forms built upon a simple pattern, yet exhibiting an astonishing diversity; and moreover,

we have in them a group of organisms which, being parasitic upon comparatively recent highly-developed phanerogams, must themselves be comparatively recent species, and consequently specially liable to variation. This fact of their very general parasitism, and their great variety of forms, leads me to look at the difficulty of identification of the species from yet another point of view. What part has the host to play in the creation of a new species? The answer to this question is one of very general interest, for we are all parasites of the earth we live on. Let us take as examples two typical highly-evolved parasitic fungi. Everyone knows the common autumn toadstool, which grows so abundantly on all sorts of rotting stumps close to the ground, or on logs of wood half-buried underneath it, scientifically known as *Agaricus* (*Armillaria*) *melleus*. It has a dirty-honey-coloured, somewhat scaly pileus; it is gregarious; has a stringy, straight stem, with a dingy ring; and seems to flourish indiscriminately on all sorts of hosts. It is a general and very common type. Now let us turn to its near relation (own brother, I might say), a fungus, however, of much more elaborate form and of much rarer occurrence, the beautiful *Agaricus* (*Armillaria*) *mucidus*, one of the most wonderful of our native agarics. No one who has once seen it can fail to recognise the slender, dove-coloured, satiny stem, with its grey, ruffle-like ring, dusted above with the mealy-white spores; the ivory-like gills, rounded and wide apart; and the dome-like, semi-transparent porcelain pileus, of a colour between umber and sepia, clothed with its shining glutinous coat. Now, this much less common, much more specialised, fungus is almost invariably parasitic upon beech trees; it is, therefore, difficult to avoid a suspicion that it is the descendant of some Armillaria of more catholic tastes, like the extremely common *A. melleus*, which flourished, possibly before beech trees were, indiscriminately upon various decaying trees, and whose spores afterwards settled on the decaying branches of beech trees, there throve, and there evolved another form. I believe it is eaten by Squirrels, but still it is difficult to believe that the beautiful form of the plant has been evolved through its greater attractiveness to these animals and to the eyeless grubs and worms which also feed upon it. There seems to be some connection between the fall of the sap in trees and the appearance of certain forms of fungi. Thus the unmistakable *Agaricus* (*Pholiota*) *squarrosus* appears at the foot of ash trees past their prime, just as the sap sinks down in autumn. Is, then, the beautiful form of *Agaricus* (*Armillaria*) *mucidus* due to the quality of the sap and juices of its host? So that the beautiful form is a by-product or side manifestation, so to say, of the general health, vigour, and symmetry produced by the new blood poured into its veins from its

beech-tree host? And if this be so, and we knew how to raise fungi from their spores, could we evolve *Agaricus* (*Armillaria*) *mucidus* or a similar form from *Agaricus* (*Armillaria*) *melleus* by sowing the spores of the latter fungus on a suitable host, and selecting the seedlings which deviated most from the parent plant in the direction of the rarer form?

Now let us take the other example, the beautiful and highly specialised *Marasmius hudsoni*, decidedly local in the east of England and certainly one of the most beautiful of our British species. There are various forms of minute *Marasmii* that grow upon leaves, leaf-stalks, twigs or sticks—but this one, the most specialised of all in form, is also the most specialised in its habitat. The pileus and slender stem of this exquisite little fungus are light ochre, whitey-brown-paper or tan-colour. It differs from all British Marasmii, however, indeed, so far as I know, from all gilled fungi except *Agaricus* (*Mycena*) *epipterygius* in certain states, by being covered with long purple hairs, each hair being crowned with a small purple sphere of crystal. This singular and beautiful little plant is always or nearly always found growing upon dead holly-leaves. Here again, remembering the viscid nature of the holly and the unique appendages of this little fungus, one cannot help suspecting that there is some connection between the nature of the host and the singularity of form in the parasite growing upon it. And this suspicion may perhaps gain confirmation if we reflect upon the fact that the Marasmii are by nature dry leathery plants, while *Agaricus* (*Mycena*) *epipterygius*, like several of the Mycenæ, is clothed with a glutinous secretion, and, as I have said above, is the only other fungus I know of which in certain states produces similar hairs, each hair being crowned by a tiny globule of colourless crystal. Before leaving the Marasmii I may mention the curious variety of *Marasmius peronatus* I found in an oak copse near Seamer Beacon, where the pilei of all the plants found were spathulate and much resembled the fallen oak leaves round about them; the stem in this curiosity of natural history being upright, but lateral as regards the aborted pileus. Let us take another class of fungi, the Myxogastres. Observe the earlier states, say, of a Stemonitis or a Trichia. Go out on a dewy morning in autumn and pick up a rotten piece of wood in a damp dingle, and you will probably find it pubescent from the stroma of some Sphæria: the fine hairs of the stroma will be crowned with globules of dew. But look a little further. Here is also a pubescence of black awl-like hairs, but the dewy globules are opaque white, like specks of paste. They are, in fact, miniature specimens of Stemonitis or Trichia and will develop in course of time into spherical peridia,

containing a quantity of spiral threads and disc-like spores, or a more or less rounded or cylindrical capillitium of anastomosing threads with a mass of spores entangled among the meshes. Now here, surely, it is not any mysteriously inherited properties in the fungal protoplasm which are responsible for the characteristic form of the mature plant, but something much stronger than any law of inheritance—the ever present law of gravity which determines both the spherical form of the globules of dew and that of the minute paste specks of the nascent fungus; or again, look at the army of species of Sphæriæ and Pezizæ, almost all of them parasitic and very many of them parasitic upon specific hosts. Let us take two well-marked species, *Sphæria moriformis*, a small black species (almost all Sphæriæ are black or brown) and *Sphæria acuta*. *Sphæria moriformis* grows on dead wood and has a wrinkled perithecium like a mulberry: *Sphæria acuta* has a smooth perithecium ending in a sharp but not attenuated nib like a bullfinch's. The normal form of the sporidium in *S. moriformis* is a long shuttle-shaped cell, rounded at each end and with a single septum in the middle of it. But occasionally sporidia of exactly the same shape are found with six or seven septa. *Sphæria acuta*, on the other hand, has a sporidium of much the same shape and size as that of *S. moriformis*, but the common form is 6-7-septate. There is, however, a less common form of sporidium of exactly the same shape as the polyseptate one, but with only a single septum in the middle. The abnormal fruit of *S. acuta* is in fact the same as the normal fruit of *S. moriformis*; the abnormal fruit of *S. moriformis* is the same or nearly the same as the normal fruit of *S. acuta*. Does not this lead one to suspect either that the two species are descended from some form frequenting all sorts of decaying wood, like *Sphæria moriformis*, *Sphæria acuta* being the more specialised descendant, or, that when the sporidia of either form are sown on different hosts under such conditions that they germinate, the perithecia become *Sphæria moriformis* on dead wood and *Sphæria acuta* on decaying nettle-stems? Here again I would ask what is the exact effect of the host on the form of the fungus parasitic upon it? Is *Sphæria acuta* nibbed because it is of direct advantage to it to be nibbed, or is its conical form a by-effect of the juices of the host upon the parasite which certainly thrives upon nettle-juice, for it is one of the commonest of British Sphæriæ.

Let me take as a final instance one of the minute Pezizæ which grow upon dead wood. And let me first premise that the colour of the spores and the sporidia, and very frequently of the whole plant in fungi, is constant enough to be one of the most useful means of discriminating between species. Thus the great group of agarics are

divided into sub-groups according to the colour of their spores, which is constant for these several sub-groups; and what can more strikingly define a species than the verdigris-green of *Peziza æruginosa*?

Nature, however, when studied in her living self, is apt to deal out sharp blows to our species-making. Thus, for example, when looking up the minute Pezizæ I came upon a piece of rotten wood, stained black in some places by the mycelium of some Valsa or Diatrype. Over this piece of wood a family of Pezizæ had spread itself. They were obviously one and the same family, but where the wood was stained black they grew as *Peziza cinerea*, where it was not so stained they were *Peziza cerea*, or some other white-cupped Peziza. To make the certainty of the specific unity of the family quite complete, the Pezizæ which grew half on the black-stained, half on the unstained wood had cups one-half of which was one species and one-half the other; *Peziza cinerea* on the black, *Peziza cerea* on the unstained, portion of the host. Here the influence of the host in forming the species or variety of the parasite seems to be pretty well demonstrated; although we see at the same time from this example how arbitrary some of the specific distinctions we make in our classifications often really are.

In the above remarks on the difficulties of specific identification, I have indirectly pointed out how many problems of great and general interest have yet to be solved in connection with the life-history of our native fungi. These problems can only be solved by going direct to nature, by watching her in her living moods, by delineating accurately what has been observed, and by noting surrounding conditions with the like accuracy. A comparison of the sketches of the fructification of a few common Sphæria growing in their native haunts by a large number of observers, noting accurately the conditions under which the fungi were found, the season of the year, the hosts they grew upon, etc., might produce wholly unexpected results, and some clear idea might be obtained as to (1) how far our army of species are true species, (2) whether they are in some cases temporarily modified by the hosts they grow upon, and (3) how far the peculiar forms of species are due (*a*) to inheritance, (*b*) to the direct action of mechanical forces, and (*c*) to the nature of the hosts they grow upon.

It is in the hope that these desultory remarks may induce some of my readers to devote their leisure hours to interrogating nature on these points that I have set them down, persuaded that systematic observations and systematic sketches of fructification, and especially of abnormal forms, will materially contribute to the solution of many of the unguessed riddles connected with cryptogamic botany.

June 1889.

ORDER I.—AGARICINI.

Agaricus (Lepiota) procerus Scop. Grindale Plantation. Autumn.

Agaricus (Lepiota) rachodes Vitt. Meadows by Esk, above Egton.

Agaricus (Lepiota) cristatus Fr. Variety with a definite black umbo and hemispherical pileus. Oliver's Mount, Scarborough.

Agaricus (Armillaria) mucidus Fr. The Grove, Boynton.

Agaricus (Pleurotus) ulmarius Bull. On elm, Boynton, near Botanical Garden.

Agaricus (Pleurotus) ostreatus Jacq. November and December. The Grove, Boynton.

Agaricus (Pleurotus) serotinus Schrad. The Pond Wood, Boynton.

Agaricus (Pleurotus) septicus Fr. The Pond Wood, Boynton.

Agaricus (Pleurotus) mitis P. Boynton, Pond Wood, November 1885.

Agaricus (Pleurotus) applicatus Batsch. Boynton, Pond Wood, June 1880.

Agaricus (Mycena) purus P. Grindale Plantation.

Agaricus (Mycena) parabolica A. & S. Grindale Plantation.

Agaricus (Mycena) sanguinolentus A. & S. Raincliffe, near Scarborough.

Agaricus (Mycena) iris Berk. Pond Wood, Boynton.

Agaricus (Mycena) (? species). On alder log, in Arncliffe Wood, October 1880. Saffron and vinous juice.

Agaricus (Mycena) rosella Fr. Boynton.

Agaricus (Mycena) sudorus Fr. Boynton.

Agaricus (Mycena) tenerrimus Berk. Boynton, June 1880.

Agaricus (Pluteus) cervinus Schæff. Pond Wood, Boynton, October 1885.

Agaricus (Pluteus) chrysophæus Schæff. Near Pond, Boynton, July 1880.

Agaricus (Leptonia) incanus Fr. Boynton Meadows, July 17th, 1880.

Agaricus (Psalliota) sylvaticus Schæff. The Pond Wood, Boynton.

Hygrophorus pratensis Fr. The Grove, Boynton.

Hygrophorus russo-coriaceus B. & Mill. The Grove, Boynton, and cliffs beyond Scawby.

Hygrophorus chlorophanus Fr. The Grove, Boynton.

Hygrophorus (mouse-coloured, probably **murinaceus** Fr.). Meadow between Ayton and Scarborough.

Hygrophorus wynniæ B. & Br. The Pond Wood, Boynton. Winter.

Gomphidius glutinosus Fr. West Lawn, Boynton.

Lactarius deliciosus Fr. Outside fir plantation between Flockton and Seamer.

Cantharellus infundibuliformis Fr. The Grove, under silver fir, Boynton. Autumn.

Cantharellus brownii B. & Br. The Grove, Boynton.

Nyctalis parasitica or **asterophora** Fr. Below Egton Bridge, September-October.

Marasmius peronatus Fr. Variety with irregular pileus and decurrent gills. Oak copse, Seamer Moor, August 15th, 1880. Looked on the ground exactly like a withered oak leaf. All the other specimens found had the same form, and were much eaten by slugs. Perhaps the regular-formed ones had been attacked and eaten down.

Marasmius hudsoni Fr. Between Egton and Grosmont, August 1880.

Marasmius insititius Fr. On dead leaves and twigs, Raincliffe Wood, near Scarborough.

Panus stypticus Fr Pond Wood, Boynton, November 1886.

ORDER II.—POLYPOREI.

Boletus luridus Schæff. Edge of Pond Wood, under silver fir, Boynton.

Boletus laricinus Berk. Boynton, near saw-mill, July 1880.

Polyporus leptocephalus Fr. Boynton, Pond Wood, March 1880.

Polyporus nummularius Fr. Sledmere, November 1884.

Polyporus applicatus Fr. January 1880.

Polyporus alligatus Fr. Pond Wood, Boynton.

Polyporus adiposus B. & Br. Pond Wood, Boynton.

Polyporus abietinus Fr. On fir (felled) outside Pond Wood, Boynton.

Polyporus armeniacus Berk. On bark of felled fir, Boynton.

ORDER III.—HYDNEI.

Hydnum repandum L. Arncliffe Woods, October 1880.

Hydnum zonatum Batsch. Littlebeck, August 1880.

Hydnum auriscalpium L. On fir cones, Grindale Plantation, near Boynton.

Hydnum ferruginosum Fr. Pond Wood, Boynton, October.

Hydnum alutaceum Fr. Boynton, Pond Wood, March 21st, 1880.

Hydnum membranaceum Bull. Pond Wood, Boynton.

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Radulum orbiculare Fr. On birch, Pond Wood, Boynton, March 8th, 1880.

ORDER IV.—AURICULARINI.

Craterellus cornucopioides Fr. Arncliffe Woods, October 1880.

Thelephora palmata Fr. Boynton, Pond Wood, November 1884.

Cyphella (probably **capula** Fr.). Boynton, Pond Wood, July 24th, 1880. Spores white.

ORDER V.—CLAVARIEI.

Clavaria umbrina Berk. Pond Wood, Boynton, July 20th, 1880.

Calocera cornea Fr. On oak, Boynton Low Wood, June 1880. Spores brown.

Typhula erythropus Fr. Raincliffe Wood, near Scarborough.

Typhula phacorrhiza Fr. (? habitat—probably Raincliffe.)

ORDER VI.—TREMELLINI.

Exidia glandulosa Fr. Boynton, The Grove, on oak, March 5th, 1880.

Hirneola auricula-judæ Berk. Walcot Hill Top, Lincolnshire.

ORDER VII.—HYPOGŒI.

Melanogaster ambiguus Tul. Hollokill Wood, October 1885.

ORDER IX.—TRICHOGASTRES.

Geaster rufescens Fr. Pond Wood, near Grove, Boynton.

Scleroderma vulgare Fr. Boynton, November 1884.

ORDER X.—MYXOGASTRES.

Reticularia applanata Fr. Boynton, February 1882.

Reticularia umbrina Fr. Boynton, May 14th, 1880.

Reticularia maxima Fr. Boynton.

Æthalium septicum Fr. On pine-stump, above Robin Hood's Bay, August 1880.

Ptychogaster albus Corda. Under fir, Boynton Grove, October 1888.

Diderma umbilicatum P. North Wood, Boynton, January 1880.

Diderma cyanescens Fr. North Wood, Boynton, February 8th, 1880.

Didymium nigripes Fr. Boynton, Pond Wood, February 8th, 1880.

Physarum nutans P. North Wood, Boynton, July 22nd, 1880.
VAR. **aureum** Pers. Pond Wood, Boynton, July 24th, on rotten oak.

Physarum album Fr. Pond Wood, Boynton, February 29th, 1880.

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CONDUCTED BY

WM. DENISON ROEBUCK, F.L.S.,

Sunny Bank, Leeds;

WITH THE ASSISTANCE IN SPECIAL DEPARTMENTS OF

J. GILBERT BAKER, F.R.S., F.L.S., Royal Herbarium, Kew;

CHAS. P. HOBKIRK, F.L.S., Dewsbury;

W. EAGLE CLARKE, F.L.S., M.B.O.U., Museum of Science & Art, Edinburgh;

GEORGE T. PORRITT, F.L.S., F.E.S., Greenfield House, Huddersfield;

ALFRED HARKER, M.A., F.G.S., St. John's College, Cambridge;

W. BARWELL TURNER, F.C.S., F.R.M.S., 38, Sholebroke Avenue, Leeds.

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BOOKS RECEIVED.

Congrès Géologique International, Londres, 1888.—(1) Explications des Excursions, W. Topley, 8vo, 205 pages (with Maps); (2) Catalogue de l'Exposition Géologique, 8vo, 54 pages; (3) Supplément au Catalogue, 8vo, 4 pages; (4) Discours de M. le Prof. J. Prestwich, Président des Congrès, 8vo, 12 pages; (5) Etudes sur les Schistes Cristallins, 8vo, 127 pages; (6) Résumés des Rapports des Sous-Comités Américains, 8vo, 30 pages; (7) Den Theilnehmern an dem vierten internationalen Geologen-Congress in London, 1888, überreicht von J. Lehmann, 8vo, 48 pages; (8) Reports of the British Sub-Committees on Classification and Nomenclature, 2nd ed., 8vo, 178 pages. [The Congress.

J. A. Harvie-Brown and T. E. Buckley.—A Vertebrate Fauna of the Outer Hebrides, 1888. 8vo, cloth, 279 pages. [The Authors.

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P. F. Lee—First Suppl. Flora of Dewsbury, 8vo. rep., 16 pages, 1889. [Author.

Yn Lioar Manninagh, No. 2, April 1889. [Isle of Man Nat. Hist. Soc.

S. L. Mosley—British Birds: their Nests and Eggs. 59 parts. [The Author.

Manchester Geological Society—Trans., vol 20, part 8, 1889. [The Society.

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Science Gossip, No. 294, for June 1889. [Messrs. Chatto & Windus, publishers.

The Midland Naturalist, No. 138, for June 1889. [Birmingham Nat. Hist. Soc.

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Grevillea, quarterly record of Cryptog. Bot., No. 84, June 1889. [Dr. M. C. Cooke, ed.

Mineralogical Magazine, Vol. 8, No. 39, May 1889. [Mineralogical Society.

The Sedberghian, Vol. 10, No. 3, May 1889. [Mr. Hugh Richardson.

The Selborne Mag., Vol. 2, No. 18, June 1889. [Elliot Stock, Publisher.

YORKSHIRE NATURALISTS' UNION.—ENTOMOLOGICAL SECTION.—The President and Secretaries of the Section will be pleased to receive the names and addresses of those members specially interesting themselves in this branch. The object in view is to circulate a fairly complete list amongst the members of this section, and thereby to facilitate the exchange of information, and also, if sufficient encouragement is given, to publish (in the Annual Report of the Section) at the close of the season a list of Yorkshire Occurrences of Insects.

Address the President:—Mr. N. F. DOBRÉE, The New Walk, Beverley;
Or the Hon. Secretaries:—Mr. J. H. ROWNTREE, Westwood, Scarborough;
Mr. W. E. BRADY, 1, Queen Street, Barnsley.

The Editors of 'The Naturalist' would be pleased to receive offers of suitable papers for insertion during the next few months.

Angioridium sinuosum Grev. Lea, North Lincolnshire. Spores dimpled, accompanied by numerous spermatia.

Badhamia pallida Berk. The Grove, Boynton, July 1880.

Craterium minutum Fr. Raincliffe Wood, August 15th, 1880.

Stemonitis ferruginea Ehrb. Pond Wood, July 1st, 1880.

Stemonitis obtusata Fr. Nursery Gardens, November 15th, 1885.

Enerthenema elegans Bowm. Boynton Pond Wood, November 1884.

Arcyria punicea Fr. Glaisdale, June 27th, 1880.

Arcyria (probably) **punicea** Fr. On rotten birch, July 24th, 1880.

Arcyria on *Lastrea dilatata*. Not described in Cooke. Comes very near **Arcyria cinerea**. Pond Wood, Boynton, July 24th, 1880.

Arcyria umbrina Schum. Pond Wood, Boynton, February 8th, 1880.

Arcyria nutans Fr. Pond Wood, Boynton.

Trichia rubiformis P. Boynton Botanical Gardens, February 4th, 1880.

Trichia fallax P. Boynton Pond Wood, February 8th, 1880.

Trichia chrysosperma DC. Boynton North Wood, February 8th, 1880.

Perichæna abietina Fr. Pond Wood, Boynton, January 1880.

ORDER XI.—NIDULARIEI.

Cyathus vernicosus DC. Turnip-field, Walcot, Lincolnshire.

Crucibulum vulgare Tul. Lea, Lincolnshire.

Sphærobolus stellatus Tode. Low Wood, Boynton, Nov. 1884.

ORDER XII.—SPHERONEMEI.

Coniothyrium glomeratum Corda. Spores minute, hyaline, very numerous.

Phoma samarorum Desm. Boynton.

Sphæropsis geniculata B. & Br. Silver Fir, Boynton, January 8th, 1880.

Sphæropsis epitricha B. & Br.

ORDER XIII.—MELANCONIEI.

Melanconium magnum Berk. Walnut, May 1880.

ORDER XIV.—TORULACEI.

Torula pulveracea Corda. Boynton, Pond Wood, February 8th, 1880.

ORDER XV.—PUCCINIEI.

Xenodochus carbonarius Schl. Fish-ponds, Hildenley.

Phragmidium mucronatum Link. Cliffs above Carnelian Bay, November 16th, 1879.

Phragmidium acuminatum Fr. Cliffs above Carnelian Bay, November 16th, 1879.

Phragmidium bulbosum Schl. Jacob's Ladder, Scarborough, November 2nd, 1874.

Phragmidium gracile Grev. Raincliffe Woods, August 11th, 1880.

Phragmidium obtusum Link. Oliver's Mount, November 13th, 1879.

Triphragmium ulmariæ Link. Cliffs above Carnelian Bay, November 15th, 1879.

Puccinia arundinis Hedw. Seamer, Willow Garth, November 11th, 1879.

Puccinia striola Link. On sedge, Low Wood, Boynton, May 1884.

Puccinia polygonorum Link.

Puccinia glechomatis DC.

Puccinia scorodoniæ Link. Wood near Scawby, Lincolnshire.

Puccinia betonicæ DC. Yorkshire.

Puccinia compositarum Sch. Above Carnelian Bay, November 15th, 1879. Oliver's Mount, November 14th, 1879.

Puccinia galiorum Link. North Wood, Boynton, November 9th, 1879.

Puccinia calthæ Link. Marsh near Throxenby, Scarborough, August 15th, 1880.

Puccinia lychnidiarum Link. Oliver's Mount, November 13th, 1879.

Puccinia epilobii DC. Boynton, July and August, 1884.

Puccinia heraclei Grev. Near Egton Bridge (on sweet cicely), 1881.

ORDER XVI.—CÆOMACEI.

Ustilago longissima Tul. Pond Wood, Boynton, November 7th, 1879.

Urocystis pompholygodes Schlecht. Pond Wood, Boynton, November 7th, 1879.

Coleosporium tussilaginis Lev. Pond Wood, Boynton, November 7th, 1879.

Cystopus candidus Lev. Frodingham, July 1880, on shepherd's purse.

Trichobasis sp. On *Conium maculatum*, Appleby, July 9th, 1880.

Trichobasis geranii B. Near Egton Bridge, August 1881.

Trichobasis polygonorum Berk. Pond Wood, Boynton, November 7th, 1880.

Trichobasis rubigovera Lev. Appleby, Lincolnshire, July 1880.

Trichobasis suaveolens Lev. Whilton towing-path, July 5th, 1880.

ORDER XVII.—ÆCIDIACEI.

Æcidium berberidis Pers. Appleby Vicarage Garden, Lincolnshire, July 7th, 1880.

Æcidium urticæ DC. Low Wood, Boynton, growing near sedge covered with *Puccinia*.

Æcidium compositarum Mart. (VAR. **tussilaginis**). Cliffs, Filey, November 6th, 1879.

Æcidium primulæ DC. Arncliffe Wood, July 27th, 1880.

ORDER XVIII.—ISARIACEI.

Pachnocybe subulata or **albida** Berk. Boynton, North Wood, January 1880. (Agrees with the description of *albida*, only the spores are minute.)

ORDER XIX.—STILBACEI.

Stilbum tomentosum Schrad. February 15th, 1880.

Stilbum rigidum P. Boynton Botanical Gardens, February 4th, 1880.

ORDER XX.—DEMATIEI.

Periconia glaucocephala Corda. Pond Wood, Boynton, February 1880.

Sporocybe nigrella Berk. On dead sedge, Glaisdale, June 27th, 1880.

Helminthosporium obovatum Berk. Low Wood, Boynton, February 22nd, 1880.

Helminthosporium oosporon Corda (?). Boynton, February 6th, 1880, on woodbine.

Helminthosporium velutinum Link. Boynton.

Cladosporium herbarum Lk. On a band-box in a wood near Binsdale.

Cladosporium epiphyllum Nees. On poplar and oak leaves, Boynton, near pond, January 1880.

ORDER XXI.—MUCEDINES.

Polyactis vera B (?). Boynton.

Nematogonum aurantiacum Desm. Hollokill Wood, October 26th, 1885.

ORDER XXIV.—MUCORINI.

Pilobolus crystallinus Tode. Boynton.

ORDER XXVII.—PERISPORIACEI.

Uncinula bicornis Fr. Boynton.

ORDER XXVIII.—ELVELLACEI.

Morchella esculenta Pers. Dry part of Pond Wood, Boynton.

Helvella lacunosa Afz. Boynton Pond Wood, November 1884.

Helvella ephippium Lev. The Lawn, Walcot, Lincolnshire.

Verpa digitaliformis (?) Pers. Under a hedge, April, Bridlington Road.

Leotia lubrica Pers. Littlebeck and Raincliffe, November 11th, 1884.

Peziza cochleata Huds. On an ash stock near saw-yard, Boynton. The plant was very large and weighed several pounds.

Peziza leporina Batsch. Littlebeck.

Peziza coccinea Jacq. Boynton, February 10th, 1880. Very large, nearly two inches across.

Peziza scutellata L. Boynton, July 1st, 1880.

Peziza stercorea Pers. Boynton, March 14th, 1880.

Peziza virginea Batsch. Boynton, Low Wood, March 14th, 1880.

Peziza villosa Pers. Boynton.

Peziza apala B. & Br. Boynton Low Wood, July 20th, 1880.

Peziza bicolor (?) Bull. Boynton, Hollokill Wood.

Peziza cæsia Pers. ? (no fruit found). Boynton, February 19th, 1880.

Peziza cinerea Batsch. Boynton, January 1880.

Peziza (?cornea B. & Br.). Grass stems, near Scarborough, January 1880.

Helotium æruginosum Fr. Pond Wood, Boynton, October.

Patellaria olivacea Batsch. Near third Bridge, Boynton, January 19th, 1880.

Patellaria alvata or **clavispora** Cooke. Spores pointed at both ends.

Ascobolus brunneus Cooke. The Grove, Boynton, February 15th, 1880.

Bulgaria inquinans Fr. On oak, October 16th, 1884.

Stictis versicolor Fr. On sycamore and hornbeam. Boynton, Low Wood, February 10th, 1880.

ORDER XXIX.—TUBERACEI.

Elaphomyces granulatus Fr. Under beech, Hollokill Wood, Boynton, October 20th, 1885.

ORDER XXX.—PHACIDIACEI.

Phacidium ilicis Fr. Wassand.

Phacidium pini Schm. Appleby, Lincolnshire, July, 1880.

Phacidium coronatum Fr. Boynton.

Hysterium curvatum Fr.

Hysterium pulicare Pers. Boynton, February 22nd, 1880.

Hysterium herbarum (?). Stalks and capsules of bluebells, Oliver's Mount, January 1880.

Hysterium commune Fr. Boynton, near pond, January 1880.

Trochila lauro-cerasi Fr. Whitwell, July 23rd, 1880.

Heterosphæria patella Grev.

ORDER XXXI.—SPHÆRIACEI.

Torrubia militaris Fr. Boynton Grove, September 29th, 1880.

Nectria cinnabarina Fr. Boynton Low Wood, January 1880.

Nectria punicea Schm. Boynton.

Nectria peziza Fr. Boynton, July 19th, 1880, on elder.

Nectria episphæria Fr. Boynton, Pond Wood, February 1880.

Ustulina vulgaris Tul. Boynton.

Hypoxylon concentricum Grev. Boynton, Pond Wood, February 29th, 1880.

Hypoxylon multiforme Fr. On birch, Pond Wood, Boynton, February 19th, 1880.

Hypoxylon rubiginosum Fr. Low Wood, Boynton, January 9th, 1880.

Hypoxylon fuscum Fr. Boynton, November.

Hypoxylon atro-purpureum or **multiforme** Fr. Grove, Boynton, February 18th, 1880.

Hypoxylon serpens Fr. Boynton, 1880.

Nummularia bulliardi (?) Tul. Boynton.

Eutypa lata Tul. Boynton, January 4th, 1880.

Eutypa spinosa Tul. Low Wood, Boynton, February 11th, 1880, on elm.

Dothidea junci Fr. Near Scarborough, January 1880.

Dothidea graminis Fr. Kirkham Hill, July.

Dothidea ribesia Pers. Boynton, April 1880.

Diatrype aspera Fr. Pond Wood, Boynton, February 8th, 1880.

Diatrype corniculata B. & Br. Low Wood, February 10th, 1880.

Valsa prunastri Fr. On sloe, Sands Wood, Boynton, March 8th, 1880.

Valsa syngenesia Fr. On elder, Hollokill Wood, Boynton, February 29th, 1880.

Valsa hypodermia Fr. On wood, near gamekeeper's cottage, Boynton, February 15th, 1880.

Valsa ceratophora Tul. On elm.

Valsa leiphemia Fr. Pond Wood, Boynton, February 15th, 1880.

Cucurbitaria laburni DeNot. The Grove, Boynton, May 12th, 1880.

Cucurbitaria berberidis Gray. Boynton Pond Wood, February 19th, 1880.

Cucurbitaria cupularis Fr. Boynton, January 7th, 1882.

Sphæria aquila Fr. Boynton, February, on rotten elm.

Sphæria hispida Tode. Boynton Low Wood, January 1st, 1880.

Sphæria mutabilis Pers. On poplar, Boynton, February 8th, 1880.

Sphæria moriformis Tode. Hollokill Wood, Boynton, February 1880.

Sphæria spermoides Hoffm. Boynton Pond Wood, February 29th, 1880.

Sphæria pulvis-pyrius Pers. Boynton Low Wood, January 18th, 1880.

Sphæria pulveracea Ehr. Boynton, February 1882.

Sphæria vilis Fr. Boynton Pond Wood, January 17th, 1880.

Sphæria (culmifraga ?) Fr. Boynton, May 1880.

Sphæria ampullacea Cooke. Boynton Pond Wood, February 8th, 1880.

Sphæria scirpicola (?) DC.

Sphæria (probably) **scirpicola** Var. **graminis** DC. Near Scarborough.

Sphæria sabuletorum B. & Br.

Sphæria fuscella B. & Br. Boynton, Kilham Lane, March 1880.

Sphæria herbarum Pers. Spores brown. On furze, near Bridlington Quay, February 6th, 1880.

Sphæria lunariæ B. & Br. Near Scarborough, January 1880.

Sphæria acuta Moug. Boynton, North Wood, January 1880.

Sphæria doliolum Pers. Boynton.

Sphæria setacea Pers. Boynton, February 14th, 1880.

Stigmatea robertiani Fr. Boynton Botanical Gardens, March 1st, 1880.

Stigmatea polygonorum Fr. Boynton, May 14th, 1880.

Stigmatea sp. On *Epilobium*, Boynton, Pond Wood, July 1880.

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Papers and records published with respect to the Natural History and Physical Features of the North of England.

INSECTS: HEMIPTERA,

1884, 1885, 1886, 1887, 1888.

ALFRED BELL. **Furness.**

Post-glacial Insects [a list of recorded forms, including *Cimex*, sp., from Ulverstone]. Ent., Jan. 1888, p. 2.

EDWARD A. BUTLER. **Cumberland.**

Pond Life: Insects [*Gerris rufoscutellata* found at Carlisle (p. 16)]. Small 8vo, cl., 128 pp. ('Young Collector' series: Swan, Sonnenschein & Co.), 1886.

JOHN CORDEAUX. **York S.E.**

Food of Crossbills [shot July 14th and 15th, at Kilnsea; stomachs crammed with nymphs of *Philænus spumarius*]. Nat., Sep. 1888, p. 276.

J. W. DOUGLAS. **Cheshire.**

Notes on Some British Coccidæ (No. 4) [*Lecanium hibernaculorum* Boisd., *L. hemisphæricum* Targ.-Tozz., and *Pulvinaria camellicola* Sign., sent by P. Cameron on hothouse plants from Sale]. Ent. Mo. Mag., Sep. 1886, xxiii. 77-82. **(No. 5)** [reprinting Hardy's note of occurrence of *Pseudococcus fagi* Baerensp. in Ravensworth Woods]. Ent. Mo. Mag., Dec. 1886, xxiii. 153. **(No. 9)** [*Lecanium clypeatum* n. sp., the mature form from Mr. P. Cameron, of Sale, on *Bryophyllum calycinum* and *Asparagus plumosus*]. Ent. Mo. Mag., Aug. 1888, xxv. 59.

JAMES EDWARDS. **Cheviotld., Northbld., Lincs., Derbysh., York N.E.**

A Synopsis of British Homoptera-Cicadina [the North of England records are:—*Cixius brachycranus* Fieb., Gosforth; *Liburnia perspicillata* Boh., Cheviots, one example (Hardy); *L. boldi* Scott? near Newcastle-on-Tyne; *L. melanopachys* Scott, Gosforth, October; *Triecphora vulnerata* Illig., very abundant in Lincolnshire and Derbyshire, usually on long grass; and *Agallia brachyptera* Boh., North Cliff, Scarborough, amongst newly-cut grass, end of June]. Trans. Ent. Soc. Lond., 1886, pp. 54, 64, 70, 72, 97, and 128.

W. W. FOWLER. **York S.E.**

[Deræocoris seticornis at Filey]. Nat., March 1886, p. 66.

W. W. FOWLER. **'Lincoln.'**

[Exhibition of minute Acari (species not stated), which had been doing injury to fruit-trees near Lincoln, to Ent. Soc. Lond., October 6th, 1886.] Zool., Nov. 1886, x. 459, and other journals.

JAMES HARDY. **Durham.**

Coccus Fagi in the Ravensworth Woods [Aug. 1884]. Proc. Berw. Nat. Club, vol. x, part ii (1885), p. 607.

JAMES HARDY. **Durham.**

Aneurus lævis (Fab.) **at Gibside.** Proc. Berw. Nat. Club, vol. x, part ii (1885), p. 608.

JAMES HARDY. **Durham.**

Report of Meetings of Berwickshire Naturalists' Club for the year 1885 [*Psylliodes affinis*, *Aphis fabæ* vel *rumicis*, *A. pruni* vel *arundinis*, *A. galeopsidis* Kalt., *A. rosarum*, *A. rumicis*, *A. lythri*, and *A. dianthi* noted at Dunston-on-Tyne]. Proc. Berw. Nat. Club for 1885 (pub. 1886), xi. 63-64.

WILLIAM HOUGHTON. **Yorkshire.**

On Aphis rumicis, Linn., as a Pest on the Mangel-Wurzel Crops in Shropshire in the Autumn of 1885 . . . [states incidentally, on the authority of Mr. Buckton, that this Aphis committed very marked ravages in Yorkshire in 1854, many hundred acres of turnip-fields being utterly ruined]. Ann. and Mag. Nat. Hist., July 1886, Series 5, vol. 18, p. 2.

H. WALLIS KEW. **Linc. N.**

A Half-Day's Ramble on the Lincolnshire Coast [at Mablethorpe, April 3rd, 1886; *Notonecta glauca* and *Nepa cinerea* noted]. Nat., June 1886, p. 173.

H. WALLIS KEW. **Linc. N.**

In the Woods [near Louth] in Summer [*Triecphora sanguinolenta*, *Corixa geoffroyi*, and *Notonecta glauca* noted]. Nat. World, July 1886, iii. 121-124.

H. WALLIS KEW. **Linc. N.**

Triecphora vulnerata Illig. **near Louth,** Lincolnshire [plentiful at Kenwick and occurs in other places]. Nat., Oct. 1886, p. 306.

JAS. EARDLEY MASON. **Linc. N.**

Acanthosoma hæmorrhoidalis washed up on the Coast of Lincolnshire [at Mumby Chapel some years ago, in great abundance]. Nat., Mch. 1887, p. 66.

JAS. EARDLEY MASON. **Linc. N.**

Dicyphus constrictus, Boh. [taken at Well near Alford, 29th Sep., 1886, two; details given]. Ent. Mo. Mag., July 1888, xxv. 36.

JAS. EARDLEY MASON. **Isle of Man.**

Hemiptera-Heteroptera in the Isle of Man [near Castletown, Sep. 1887; 26 species enumerated]. Nat., Aug. 1888, p. 244.

JAMES EARDLEY MASON. **Linc. N., Linc. S.**

A list of Some [122] Hemiptera-Heteroptera of Lincolnshire, with notes on collecting [an important paper, with full details of locality and date, etc.]. Nat., Oct. 1888, pp. 287-297; and additions, April 1889, p. 128.

J. J. NIXON. **Derbyshire.**

Great Capture of Water Beetles [also many *Nepa cinerea*, and one *Notonecta glauca*, in the mud of a dried-up dyke near Little Eaton]. Young Nat., Feb. 1885, vi. 37.

GEO. T. PORRITT. **York S.W.**

Triecphora vulnerata in Edlington Wood, Yorkshire [12th June, 1886, abundant; named by J. W. Douglas]. Nat., Aug. 1886, p. 251.

GEORGE ROBERTS. **Yorkshire.**

Topography and Natural History of Lofthouse and its Neighbourhood [etc.]. Vol. ii. Leeds: printed for the Author, 1885 [viii + 258 pages, 8vo; references to *Coccus cataphractus* at p. 109; Frog-hopper (*Philænus spumarius*) at pp. 133, 137, 145, 147; and to Aphides at p. 145].

ISABEL ROBSON. **Durham, York N.E. and S.E.**

A Plague of Flies [Aphides? at Stockton and Whitby, and all along the coast to Hull; information vague]. Young Nat., Dec. 1886, p. 252.

H. T. SIMS. **'Lincoln.'**

Reduvius personatus at Lincoln [one found on a sack in Lincoln in July 1885]. Ent. Mo. Mag., Oct. 1885, xxii. 115.

TUFFEN WEST. **York Mid W. or S.W.**

Half-an-Hour at the Microscope [Denny's record of the occurrence (in Dove-cotes) near Leeds of *Cimex columbarius* Jen. repeated]. Journ. of Microscopy and Nat. Sci., Oct. 1884, iii. 251.

THE YORKSHIRE NATURALISTS' UNION AT HOLMFIRTH.

The 78th Meeting was held at Huddersfield on Whit-Monday, the 10th June, for the investigation of Holmfirth, Bilberry Reservoir, Ramsden Edge, and Harden Moss.

The barometer having fallen from 30·384° on the 5th to 29·634° on the 9th, and, as might be expected with a leaden and ill-boding sky, it was a matter of no small congratulation to the members to find so good an attendance on this, the first excursion of the year. Two routes were arranged: the geologists proceeded to Holmebridge, thence by way of Ramsden Clough and Netherby Clough to the Reservoir, afterwards returning to Holmfirth; the second route, taken by the zoologists and botanists, was by way of Holmebridge to the Reservoir, and at this point the party divided into their various sections, each one taking its own course and enjoying the ramble of research in true naturalists' fashion, eventually rejoining their geological friends at Holmfirth. The whole party then journeyed by rail to Huddersfield, where a very important proceeding took place, viz., the refreshment of the inner man. It is to be regretted that the threatening aspect of the weather was the means of preventing the attendance of many lady friends at the excursion; the Union was, however, favoured with the presence of two or three at tea.

After tea and the usual sectional meetings, the general meeting was held at 6.30, Mr. Chas. P. Hobkirk, F.L.S., President of the Botanical Section, in the chair.

The minutes of the last meeting having been read and confirmed, the following societies were admitted into the Union:—Huddersfield Naturalists' Society and the Purlwell Wesleyan Field Club, Batley.

Sixteen new members were elected, viz.:—Reg^{d} G. Alexander, M.A., M.D., F.L.S., Halifax; Thos. Atkinson, Whitby; G. W. Kilner Crosland, Huddersfield; J. Percy A. Davis, Halifax; Wm. Fletcher, Pickering; A. E. Hall, Sheffield; the Right Rev. Wm. W. How, D.D., Bishop of Wakefield; Henry Johnson, Barnsley; T. P. Longster, Malton; J. E. Mason, S.S.C., Alford (Lincs.); Thomas Mitchelson, Pickering; E. Naylor, Bradford; F. H. Potter, Leeds; R. F. Scharff, B.Sc., Ph.D., Dublin; W. W. Strickland, Richmond (Surrey); John Wm. Wheldon, Pickering.

On calling the roll it was found that the undermentioned fifteen societies were represented:—Clayton-West, Barnsley, Ovenden, Elland-cum-Greetland, Leeds, Leeds Y.M.C.A., Leeds Geological, Dewsbury, Halifax Scientific Society, Harrogate, Ellesmere School,

Practical N.S., Conchological Society, Huddersfield and Purlwell Naturalists' Societies.

On the motion of Mr. J. W. Davis, seconded by Mr. Benjamin Holgate, a hearty vote of thanks was accorded to Mr. F. R. Jones for granting the Union permission to visit Harden Moss, and for personally pointing out its interesting features; to the various gentlemen who so kindly led the several parties during the day, and also to the contributors to the excursion programme.

The Rev. E. P. Knubley, M.A. (or in the event of his inability to attend, Mr. C. P. Hobkirk, F.L.S.), was elected delegate to the forthcoming meeting of the British Association at Newcastle.

The Secretaryship of the Marine Zoological Committee being vacant, Mr. J. Percy A. Davis was elected to fill this position.

Time being somewhat short, and some of the sections being not officially represented, the reports were necessarily curtailed. More detailed accounts have, however, since been supplied.

Mr. Edgar R. Waite, secretary of the Vertebrate Section, stated that on reaching the Reservoir the party separated; two or three of the ornithologists tramped round the Reservoir, and were not long in discovering the origin of its name, the banks being simply one mass of Bilberries. They then joined some of the other members who had gone by the road, and proceeded together up Marsden Clough, down which flows one of the two streams by which the Reservoir is supplied; here were found two Ring Ouzels' nests—one containing eggs and the other not quite completed; nests of Blackbirds and Thrushes were also found containing eggs. The moors were next reached, where about a dozen Ring Ouzels were seen. The party then made for Harden Moss, from whence they returned to Holmfirth, having had a very enjoyable ramble, notwithstanding the unfavourable aspect of the weather, and it was a matter of agreeable surprise to all that they were able to reach their various homes without having seen a single drop of rain. The Secretary, who had compared notes with Mr. S. L. Mosley, reported that 44 birds had been seen, viz., 29 residents and 15 migrants. The following is a complete list:—Missel Thrush, Song Thrush, Blackbird, Ring Ouzel, Wheatear, Whinchat, Redstart, Redbreast, Whitethroat, Willow Warbler, Hedge Accentor, Dipper, Great Tit, Blue Tit, Wren, Pied Wagtail, Yellow Wagtail, Meadow Pipit, Tree Pipit, Swallow, Martin, Sand Martin, Greenfinch, House Sparrow, Chaffinch, Linnet, Redpole, Twite, Corn Bunting, Yellow Bunting, Starling, Magpie, Jackdaw, Rook, Skylark, Cuckoo, Sparrow Hawk, Kestrel, Ring Dove, Red Grouse, Corn Crake, Lapwing, Snipe, Sandpiper. The mammals were represented by the Rabbit and the Weasel.

For the Conchological Section, in the absence of its secretary, Mr. John Emmet, F.L.S., who had to leave before the general meeting, Mr. Roebuck stated that the well-known unfavourable geological character of the high ground to which the excursion was restricted had prevented much work in this department of research. Only three species were reported, viz., *Zonites cellarius* and the two ubiquitous slugs, *Limax agrestis* and *Arion bourguignati*, the latter, however, being of interest as a genuine addition to the published lists for Huddersfield.

With respect to the Entomological Section, Mr. G. T. Porritt, F.L.S., states that so far as this section is concerned the excursion was almost an entire failure. Of Neuroptera the only species taken were *Sialis fuliginosa*, *Nemoura meyeri*, *N. variegata*, and *Hemerobius humuli*.

The following lists are supplied by Mr. S. L. Mosley:—The Lepidoptera noted were *Pieris rapæ*, *Fidonia atomaria*, on moor, *Emmelesia albulata*, *Gelechia ericetella*, *Phoxopteryx myrtillana*, larvæ of *Hybernia progemmaria*, *Cheimatobia brumata*, *C. boreata*, *Oporabia filigrammaria*, *Larentia didymata*, *Cidaria populata*, and *Notodonta camelina*. The Coleoptera included *Notiophilus biguttatus*, *Carabus catenulatus*, *Nebria brevicollis*, *Calathus melanocephalus* and var. *nubigena* on Harden Moss, *Pterostichus madidus*, *P. nigrita*, *Harpalus latus*, *Patrobus excavatus*, *Bembidium littorale*, *Ocypus olens*, *Xantholinus linearis*, *Aphodius fimetarius*, *Phyllobius argentatus*, *P. alneti*, *Hylurgus piniperda* (Harden Fir Wood), *Byrrhus pilula* (Bilberry Mill), and *Leistus ferrugineus* (Harden Moss); of Diptera: *Culex pipiens*, *Tipula oleracea*, *T. maculosa*, and two species not determined, *Sargus cuprarius* (pupæ found and since bred), *Syrphus ribesii*, *Syritta pipiens*, and *Lucilia cæsar*; of Hymenoptera: *Formica fusca*, *Myrmica rubra*, *Andrena cineraria* (saw holes in banks, probably made by this species, which has been taken on these high grounds, and also *A. fulva*); *Bombus terrestris*; and a pendant nest of a Wasp was brought to the meeting, probably *Vespa sylvestris*, but the insect had been squashed, a somewhat unorthodox proceeding at a naturalists' meeting; of Hemiptera-Homoptera: *Aphis aucupariæ*, of which a mountain ash above the reservoir was full.

Mr. P. Fox Lee, Phanerogamic Secretary for the Botanical Section, who, with the President (Mr. C. P. Hobkirk, F.L.S.) and a large number of botanical members, reported for that section, stated that a total of 150 observations had been made of the spring and early summer plants, mostly in flower and fruit. Nothing new or very remarkable had been noticed, save a few young plants of

what it is hoped will turn out under cultivation to be *Cystopteris fragilis* Bernh., a fern recorded for Ramsden Rocks in the neighbourhood. Other noteworthy plants gathered during the day near Bilberry Reservoir and at Harden Moss being *Cardamine amara* L. (very fine specimens of the purple-anthered bitter-cress), *Salix aurita* L., *Carex præcox* Jacq., *C. pilulifera* L., *Nephrodium filix-mas* var. *borreri* Newm. (with several forms ranging from the type to the densely-scaled rachis and bright golden yellow fronds of true *borreri*), *N. oreopteris* Desv. (luxuriant and typical), *Polypodium phegopteris* L., and *P. dryopteris* L.

In the absence of Mr. M. B. Slater, F.L.S., Cryptogamic Secretary of the Section, Mr. C. P. Hobkirk reported that the following mosses were found:—*Dichodontium pellucidum*, *Dicranella squarrosa*, *D. heteromalla*, *Ceratodon purpureus*, *Philonotis fontana*, *Funaria hygrometrica*, *Bryum argenteum*, *Mnium punctatum* cum fr., *Brachythecium rivulare*, *Plagiothecium undulatum* (all more or less common species). Hepatics: *Diplophyllum albicans*, *Nardia scalaris*, *Jungermannia barbata* (all sterile, the three latter sent to and determined by Mr. Slater). Algæ, determined by C. B. Crawshaw and C. P. Hobkirk: *Conferva tenerrima*, *Ulothrix tenerrima*, *U. variabilis*, *Spirogyra flavescens*, and a few scraps of *Spirulina tenuissima*.

The Secretary of the Geological Section (Mr. S. A. Adamson, F.G.S.) writes:—The geologists had an unrivalled opportunity of studying the geology of the wild and romantic moorland district lying south-west of Holmfirth. The picturesque glens or gorges (locally termed cloughs), each with its little rivulet draining the lofty watershed of the eastern flanks of the Pennines, often display on their sides good sections of those divisions of the Millstone Grit series known as the Third Grits and the Kinderscout. The party were ably led by Mr. Joseph Field, of Huddersfield, who has closely studied in detail the geology of the district; and they further had the advantage of the well-known experience of Mr. James Spencer, of Halifax. The temperature of the day was well suited for the arduous ascents which had perforce to be made here and there, as a cool and bracing wind prevailed; the fierceness of the sun's rays of the previous week was now neutralised by the grey and leaden clouds which swept slowly across; these were, too, in unison with the bleak and rugged scenery all around.

The party on leaving Holmfirth Station passed through the devious windings of the narrow streets, pausing at the bridge to note the level the waters attained on that fateful day in 1852, when the unrestrained torrents of the Bilberry Reservoir inflicted so much devastation and death on this peaceful valley. The road was now

taken from Holmfirth in the direction of Holmebridge, the valley of the Holme being thickly studded with substantial stone-built dwellings, and frequently with busy manufactories. It was a gradual ascent all the way from 460 ft. above sea-level at Holmfirth to 610 ft. at Holmebridge—on either side lofty grit-capped hills lined the valley. The party now left the main road and turned on Brownhill Lane on the way to Ramsden Clough, passing on the way the two reservoirs recently constructed for the water supply of Batley. All the way the scenery had become grander and more impressive. They were now at an elevation of 800 ft., and before them the dark, imposing heights of Ramsden Edge, Holme Moss, etc., rose steeply to an altitude of 1,600 ft. This bold line of escarpment, in the form of a gigantic amphitheatre, in its regularity seemed like a colossal wall barring all further progress. These heights are capped by the Third or Middle Grits, and as the shales underneath weather away the superincumbent rock falls off at its jointings, and the escarpment continues to preserve its characteristic wall-like character. Here and there the mountain streams cut their way into the escarpments, forming dikes or cloughs, in which may be seen leaping silvery cascades.

Ramsden Clough is a fine section of the Third Grits series, about 550 ft. in thickness, overlying the Kinderscout Grit. The latter forms an inlier in the valley, and the lowest bed in the series is quite a conglomerate. Mr. Field then described the succession of the beds composing the Third Grits, and recounted the divisions of the same by the Geological Survey, who for these various sandstones employ the letters A, B, C, and D. The escarpment of Holme Moss alluded to is in the Division B. The party descended into Netherby Clough, fording the small stream on the way, and made the steep ascent of Netherby Brow to the quaint and isolated village of Holme, which certainly is 'far from the madding crowd,' and, for this reason, would be an admirable place for developing scientific studies. It stands in a fine position, about 1,000 ft. above sea-level, and is surrounded by majestic scenery. Although the tiny village was astir with Whitsuntide excitement, yet the Fleece was expansive enough to admit the party for sorely-needed refreshment. Near the friendly gable of Mr. Beardsall's house, for the wind pierced the town-bred natures, Mr. Field gave a short address upon the geology of the district before them, explaining the salient points and positions of the beds.

And now to recover lost heat, the way was taken briskly down Fieldhead Lane to Digley Wood, thence the geologists turned to the left up the valley, past Bilberry Mill, and were shortly on the bank of the famous reservoir of that name. It was a beautiful picture, the placid sheet of water, like burnished silver, right in front the

lofty hill of Good Bent, and on the left and right of this hill respectively were the romantic gorges of Hey Clough and Marsden Clough, down which flowed the streams supplying the reservoir. It seemed incredible that this quiet lake should once have been such a terrible engine of destruction, but it was said that the embankment was formerly eleven feet higher than it now is. The shales above the bank of the reservoir were examined, and a thin seam of coal was seen. At Good Bent is the Kinderscout Conglomerate. They passed next on Gibriding Lane, and gradually ascended to Green Gate, where they were at an elevation of 1,100 ft. On the way the evidences of the fault which extends nearly from Meltham to Holmebridge were pointed out; a little to the east of Austonley the top of the Kinderscout Grit is thrown against a sandstone of the Middle Grits. A little detour was made from the road to visit a quarry in which there is a thin seam of coal in the A sandstone of the Middle Grits. Some small fossils, probably Stigmarian rootlets, were here obtained by Mr. Spencer. It is known as the Upper Meltham or White Rock coal. In the sandstone was noticed a large concretion with concentric rings.

From the summit of this quarry Mr. Field detailed the scenery around, and at this point was the grandest and most expansive view of the day. To the south were the wall-like heights of Holme Moss, succeeded on the east by a splendid series of step-like escarpments. On Snailsden Moss, near Cook's Study, was one formed by the Second Grits or Flags, to which succeeded those formed by the Soft Bed Flags, the Forty Yards or Loxley Edge Rock, the Eighty Yards Rock, and the Elland Flag Rock or Green Moor Rock of the Huddersfield district. Then the Grenoside Rock, on which the erection known as Tinker's Folly is built, was pointed out; also the Rough Rock below Thurstonland. Turning round, the isolated height of Castle Hill was very prominent, and West Nab also was well seen. This lofty hill is capped by the Rough Rock, and, as Mr. Field stated, there are some remarkable weathered masses of rock strewn about, no doubt from landslips. The road to Holmfirth—having on the right the gorge of Hart Hole Clough, cut into the shales by the tiny beck—was a most agreeable incline, coming at the close of the day, dropping from 1,050 ft. at the Ford to 460 ft. at Holmfirth.

It was felt that a most successful excursion had been made, and if sections had been few, yet the configuration of the country and the succession of the beds had been ably described in the field, and some remarkable examples of denudation pointed out.

A vote of thanks to the chairman brought the proceedings to a close.—E.R.W.

Naturalist,

NOTES ON NORTH OF ENGLAND ROCKS.

I.

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

The study of rocks in thin sections under the polarising microscope is, comparatively speaking, a new branch of geology; but it has already opened out so large a field of research, and yielded results of such interest, that it must be regarded as one of the most valuable methods at our disposal for the solution of geological problems. The great advances made on this line in the last twenty years are mainly due to the labours of the German petrologists; but, since Dr. Sorby first led the way, there have not been wanting in England zealous workers in this field, and the study is now becoming decidedly more popular.

The chief obstacles have been the want of a standard work on the subject in our own language, and the absence of any guide for the beginner to the petrology of districts in the British Isles. These needs have been supplied to a great extent by recent literature, and especially by the publication of Mr. Teall's 'British Petrography'; but descriptions of typical rocks from definite and easily accessible localities may still be of service to students of micro-petrology. The Northern Counties of England furnish examples of a large variety of interesting types, a few of which will be described below. We shall require for most purposes only a microscope provided with a low-power objective, movable polariser and analyser, and rotating stage. It will be convenient to describe in most cases particular slides, but each rock will be so selected that specimens from the same locality will not be likely to show any important variation from that described.

(i) *Porphyritic Granite or Granite-porphyry of Shap Fells, Westmorland.*—This rock, with its large pink felspar crystals, is well known, both as an ornamental building-stone, and as the material of the famous boulders which have been traced over Stainmoor and across Yorkshire to the East coast. Since it has dark, but no white, mica, it may be styled a Biotite-granite.

Under the microscope a section shows a rock of the granitic type of structure, consisting of felspars, quartz, biotite, sphene, and magnetite. The felspars are of rather turbid appearance, and most of them belong to the orthoclase species, either in simple crystals or twins. These last are clearly shown in polarised light, between 'crossed Nicols,' by the two parts of the crystal giving different polarisation-tints and extinguishing the light at different times as the

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slide is rotated. Under the same circumstances the longer and narrower felspars exhibit the finely-banded or striated appearance characteristic of plagioclase. They belong to an 'acid' variety (oligoclase), as is proved by their low 'extinction angles'; i.e., if the bands be set parallel to one of the cross-wires, a small rotation suffices to bring one or other set of alternate bands to a position of extinction.

The clear quartz is dotted with minute inclusions, partly arranged in lines. The abundant flakes of brown mica (biotite) are conspicuous by their marked cleavage traces and deep brown colour: when rotated over the polariser, without the analyser, they show intense dichroism. The biotite is, however, much affected by decomposition, which often eats along the cleavage-planes, and leaves a green chloritic mineral giving very low polarisation-tints, almost dark, between crossed Nicols. The sphene occurs partly in rounded granular patches, and partly in small acute parallelogramic sections: it is light brown, with moderately bright polarisation-tints, and in ordinary light seems to stand out in relief by virtue of its high refractive index. The black, opaque magnetite is in irregular patches, only occasionally showing the outlines due to octahedral crystals.

The sphene and magnetite are the first-formed constituents, then the biotite, and lastly the quartz and felspars. The orthoclase is newer than the plagioclase, as is proved by its sometimes enclosing crystals of the latter. The orthoclase also encloses part of the quartz, which in that case shows more or less perfect crystal outlines. The iron-pyrites, often visible in hand-specimens of the rock, is a mineral of secondary origin.

(ii) *Dark patch in the Shap Fell Granite.*—These dark patches, the 'heathen' of the quarrymen, are very common in the Shap rock, as in some others. They are not sharply marked off from the granite, and often contain the same pink felspar crystals, showing that the patches are not included fragments, but parts of the rock separated out in concretionary fashion at an early stage of the consolidation. They are invariably of finer texture than the granite, and of more 'basic' constitution.

Under the microscope the slices show the same minerals as before, but in different proportions. The biotite-flakes are more abundant, though rather smaller: when cut nearly parallel to the basal cleavage they show the hexagonal outline. Granular sphene is very plentiful, besides magnetite, and numerous little colourless needles of apatite. This last mineral, which is rarer in the proper granite, is the first product of consolidation. Quartz is present as before, and felspar, but now the oligoclase seems to preponderate over the orthoclase.

(iii) *Greisen of Grainsgill, near Carrock Fell, Cumberland.*— This rock, probably of very local occurrence, is seen in hand-specimens to consist of silvery white mica and quartz. Owing to the tendency of the rock to break along the soft, well-cleaved mica-flakes, these seem to make up a much greater part of the rock than is actually the case.

In a thin section these two minerals are seen to constitute the main bulk of the rock, but little felspar being present, and only a few grains of opaque magnetite. The mica is in thick flakes or in confused sheaf-like bundles of smaller scales, and is recognised at once by its marked cleavage traces and bright red and green polarisation-tints. It is partly moulded by the quartz, and partly wedged in between the grains of that mineral. The quartz, with dust-like inclusions, forms irregularly-shaped grains, often enclosing or moulding round one another.

(iv) *Granophyre of Buckbarrow, Cumberland.* — This rock is the 'syenite' of some early writers and the 'chloritic granite' of Mr. Clifton Ward, but, although a red granite in general appearance, its true structure, as revealed by the microscope, is that known as the granophyric or micro-pegmatitic. The bulk of the slide is seen to consist of this micro-pegmatite, a minute intergrowth of felspar and quartz. Over considerable areas of the slide the little wedges of quartz have a common optical orientation, as is shown by their simultaneous extinction between crossed Nicols; the same is true of the felspar intergrown with the quartz. In this granophyric ground-mass are embedded crystals of felspar, grains of quartz, and scales of biotite. The felspars are partly orthoclase, but the longer and narrower crystals by their striation and low extinction-angles are proved to be an acid variety of plagioclase (albite or oligoclase). A very beautiful feature of the rock is the evident relation of the micropegmatite to the felspar crystals about which it has grown. The felspathic constituent of the micropegmatite is in crystalline continuity with the felspar crystal nearest to it, and extinguishes in the same position with it between crossed Nicols. Some of the felspar crystals (orthoclase) show twinning on the 'Carlsbad law,' and in these cases the surrounding micropegmatite divides into two parts, in crystalline and optical continuity, as regards its felspathic portion, with the two halves of the twin crystal respectively.

The rock contains some biotite flakes, but these are all more or less converted by secondary changes into a green mineral of the chlorite family. Another secondary mineral is epidote, which appears in nearly colourless, brilliantly polarising grains, patches,

and fan-like bundles, formed at the expense of the felspars and in part of the biotite.

Specimens from different parts of the large intrusive mass of Ennerdale and Buttermere show various grades of the granophyric structure, and form a very interesting study. This structure indicates a simultaneous crystallisation of quartz and felspar during the final stage of consolidation of the rock.

(v) *Minette from dyke in Knock Beck, near Appleby, Westmorland.*—The singular rocks known as mica-traps, belonging to the lamprophyre family, are peculiarly susceptible to decomposition, and in ordinary specimens contain a considerable proportion of carbonates of secondary origin, causing the rock to effervesce briskly when acid is dropped upon it. The present example shows a dull brown ground spangled with flakes of brown mica.

Under the microscope these flakes are seen as the most prominent constituent, cut in various directions by the plane of the section. The mica belongs to the biotite species, but the greater part of each flake is partially bleached by discharge of the iron-oxide, only a narrow border retaining the original vivid brown colour. The strong dichroism of the mineral is seen best in this marginal zone; using the polarising Nicol only, we get an intense brown colour when the length of the flake is parallel to the shorter diagonal of the Nicol, and a pale brown for the perpendicular position. The strong cleavage of the mica shows in a series of fine parallel lines, except when the flake happens to be cut parallel to the cleavage-planes. A tendency to parallelism is observable among different flakes in the same part of the slide, and must be attributed to a certain flowing motion of the mass after the formation of the mica. The smaller flakes belong, perhaps, to a rather later stage of consolidation than the large ones.

Magnetite is seen in the slice in opaque black sections, indicating a very imperfect crystalline grouping. The only other original mineral to be detected is represented by a few minute colourless prisms of apatite. The felspar which must have formed the greater part of the rock is entirely destroyed in the specimen examined, and there remains only a dusty-looking ground-mass, composed, no doubt, of minutely granular calcite, kaolin, etc., and interspersed with little grains of clear quartz, which must be also a secondary product.

(vi) *Quartz-Minette of Sale Fell, near Bassenthwaite, Cumberland.*—This rock is described as 'minette' by Mr. Clifton Ward, who investigated the distribution of its boulders. In some respects, however, it differs from the usual type of Lake District minette, which is a more normal example of the lamprophyre family. The Sale Fell rock has less mica than these normal mica-traps, and quartz is an

essential constituent in it, so that its composition is clearly more 'acid.' As usual the mica makes a greater show on hand-specimens than is warranted by its actual quantity.

The microscope shows the following original minerals in order of crystallisation: apatite, magnetite, biotite, plagioclase, quartz, and orthoclase. Apatite, as usual in rocks of this family, is fairly abundant: it forms longish colourless prisms, with characteristic cross-jointing, and also very fine needles. It gives 'straight extinction,' or in other words, is dark between crossed Nicols when the length of the crystal is parallel to either of the cross-wires of the microscope. The slides show some original magnetite in black opaque crystals, doubtless octahedra. The brown mica (biotite) is for the most part decomposing into a green chloritic substance, with a separation of finely granular secondary magnetite, easily distinguished from the original crystals of that mineral.

The felspars are much destroyed, but many crystals still show the fine twin-striation of plagioclase, with low extinction-angles denoting one of the more acid varieties. Other crystals appear to be orthoclase, and it is to be noticed that these latter sometimes mould round the quartz grains, showing them to be of posterior formation to that mineral. In some places, again, a micro-pegmatitic intergrowth of quartz and orthoclase indicates a simultaneous formation of these two minerals as the final stage of the consolidation of the rock.

Besides feebly polarising green chloritic matter, radiating bundles of brightly polarising epidote crystals occur among the alteration products; and also patches of calcite showing the characteristic strong cleavage-traces and moderately weak polarisation-tints, the double refraction of calcite being too great to cause bright colours in slices of ordinary thickness. Further, some part of the quartz seen in the rock is of secondary origin, and this may sometimes be seen to have been deposited upon original quartz grains in crystalline continuity with them.

NOTES AND NEWS.

Mr. William West, F.L.S., of the Bradford Technical College, has a paper on 'Desmids from Massachusetts' in a recent number of the Royal Microscopical Society's Journal—with two plates—in which some new species are described.

In the 'Pall Mall Gazette' for the last day of the old year appeared a thoroughly sympathetic and appreciative notice of the incalculable service which Mr. John Hancock has rendered to science in Newcastle-on-Tyne.

An appointment of interest to Leeds naturalists is that of Mr. Henry Crowther, who, while Assistant-Curator at the Leeds Museum, was one of the four conchologists who founded the 'Conchological Society' in 1876, to the curatorship of the Museum at Truro, in Cornwall.

NOTE—AMPHIBIA.

Palmate Newt near Huddersfield.—This species (*Molge palmata*) has been found commonly in a pond at Dalton by Mr. Sheard. Another specimen was taken from the pond in Beaumont Park by Master C. Mosley, on the 2nd May. The most striking point of distinction is that the tail ends abruptly, with a wiry filament protruding from the end.—S. L. Mosley, Huddersfield, June 1889.

NOTE—ORNITHOLOGY.

Nightingale near Alford, Lincolnshire.—The Nightingale (*Daulias luscinia*), which rarely visits the Alford district, has this spring been heard in unusual numbers. I have heard two, and from the reports brought to me do not doubt that not less than five have taken up their quarters within three miles of this town. Many persons have walked out to listen to their song 'in the stilly night.'—Jas. Eardley Mason, The Sycamores, Alford, 10th June, 1889.

NOTES—MOLLUSCA.

Orange-coloured Arion ater at Durham.—The Rev. H. E. Fox, M.A., of Durham city, has sent me a specimen, nearly adult, of this abundant species, which is of a very unusual colour, uniform bright orange-yellow with its foot-fringe orange-vermilion, and tentacles dark grey with black bulbs. The colour is very different from the orange-red of the form found so abundantly in the German Rhineland, which precludes me from referring the Durham example to the same variety (*rubra*).—W. Denison Roebuck, Leeds, June 17th, 1889.

Limax agrestis var. albida near Preston.—The pure albino variety of this abundant species is sufficiently uncommon to merit record. My friend, Mr. W. H. Heathcote of Preston, has sent me a nearly adult specimen, which he found on the 18th of June on the river-bank at Walton-le-Dale (South Lancs.), in company with great abundance of the type and of var. *sylvatica* Moq., and a single example of var. *tristis*; there were also an *Arion bourguignati* (very small) and a *Limax maximus* (very minute and black, markings obsolete).—W. Denison Roebuck, Leeds, 22nd June, 1889.

Helix fusca an Addition to the Manx Fauna.—On the 12th of September, 1887, Mr. J. Eardley Mason was kind enough to collect for me, at Athol Bridge, in the parish of Malew near Castleton, a number of shells. Of these the most noticeable is *Helix fusca*, a species which does not appear to have hitherto been placed on record for the island; one specimen was sent. There were also a few examples of *Helix hispida*, one of *Zonites cellarius*, and several of *Z. nitidulus*, etc.

Mr. Mason also collected *Ancylus fluviatilis* in the Colby stream, Colby Glen, Arbory parish, on the 15th September of the same year; and in the Colby Glen, same day, an adult *Helix aspersa*, a few young *H. rufescens*, two *H. hispida*, etc. Mr. Taylor has seen and verified all the shells.—W. Denison Roebuck, Leeds.

Shells at Kilton Castle, Cleveland.—Taking advantage of a visit from Mr. W. Denison Roebuck, I easily induced him to accompany me on Easter Monday, April 22nd, to Kilton Castle, Cleveland. Two or three smart showers promised well for success, but Kilton does not appear to be so redundant in species as might be supposed, and even allowing for the season for North-East Yorkshire collecting hardly being at its best as yet, I was in hopes of securing a better list. However, that appended is not without interest. The geological formation is chiefly Lower Oolite, and the castle stands at the summit of a wooded slope (Larch, of recent planting). Little was to be done away from the fallen masonry of the ruins, and though lower down the valley we encountered deciduous timber, yet little success rewarded us there. The following is our list:—*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*, *H. arbustorum*, *Zonites fulvus*, *Z. alliarius*, *Z. purus* and v. *margaritacea*, *Z. cellarius*, *Z. nitidulus*, *Z. crystallinus*, *Pupa umbilicata*, *Clausilia rugosa*, *C. laminata*, *Bulimus obscurus*, *Carychium minimum*, *Azeca tridens*, *Zua lubrica*, and *Vitrina pellucida*.—Baker Hudson, Redcar, May 1889.

Naturalist,

THE BIRDS OF NEWCASTLE-ON-TYNE TOWN MOOR.

R. DUNCAN.

THE following is a list of birds I have either shot or observed on the Town Moor of Newcastle during a period extending over the last thirty-five years. Those marked with an asterisk have been shot by myself.

The Town Moor is an open grassy space, comprising about 1,000 acres, bounding the town on the north and west. Formerly, before it was so extensively drained, there were numerous sedgy pools of water, which remained all the year round, and the outskirts consisted of fine hawthorn hedges and tall trees. These latter and the pools are nearly all gone, and in consequence many birds which used annually to resort here, now rarely come or have altogether disappeared.

The list is interesting as showing that, although close to a large town, many very rare specimens are recorded. Shooting was formerly permitted on the moor, but has been stopped for some years past.

*Missel Thrush (*Turdus viscivorus* L.). These birds, like the Starlings, were very plentiful previous to 1878. They then disappeared for some years, and now only an occasional one is to be seen.

*Song Thrush (*Turdus musicus* L.). Formerly common, and nested regularly, but is now only occasionally met with.

*Redwing (*Turdus iliacus* L.). Formerly a common winter visitant. A few may now be observed on their arrival in October, but they seldom stay long.

*Fieldfare (*Turdus pilaris* L.). A common winter visitant. Arrives in October and departs late in Spring. I shot one out of a flock as late as the 22nd of May in the year 1856.

*Blackbird (*Turdus merula* L.). Formerly a common resident and bred regularly; now only a pair or two are to be seen.

*Ring Ouzel (*Turdus torquatus* L.). Rare; I have only seen one specimen—a young bird shot in the autumn of 1866.

*Wheatear (*Saxicola œnanthe* L.). Formerly an abundant summer visitor; nested regularly; greatly diminished in numbers of late years.

*Whinchat (*Pratincola rubetra* L.). The same remark applies.

Stonechat (*Pratincola rubicola* L.). Formerly not uncommon, but has now entirely disappeared.

*Redstart (*Ruticilla phœnicurus* L.). Not uncommon; young birds are frequently seen.

Blue-throated Warbler (*Cyanecula suecica* L.). A rare casual visitant. One specimen is recorded by Mr. Hancock.

Redbreast (*Erithacus rubecula* L.). A common resident.

*Whitethroat (*Sylvia cinerea* Bechst.). A common summer visitor.

*Blackcap (*Sylvia atricapilla* L.). Not uncommon, and may be still occasionally met with.

*Garden Warbler (*Sylvia hortensis* Bechst.). A summer visitor, not uncommon.

*Golden-crested Wren (*Regulus cristatus* Koch). Not uncommon in winter.

*Chiffchaff (*Phylloscopus rufus* Bechst.). A few years ago quite common; greatly decreased of late.

*Willow Warbler (*Phylloscopus trochilus* L.). A common summer visitor.

*Wood-Wren (*Phylloscopus sibilatrix* Bechst.). Rare of late years.

*Sedge Warbler (*Acrocephalus phragmitis* Bechst.). A common summer visitor.

*Grasshopper Warbler (*Locustella nævia* Bodd.). Not uncommon, and though seldom seen, its note may still be heard.

*Hedge Accentor (*Accentor modularis* L.). Resident and common.

Long-tailed Titmouse (*Acredula rosea* Blyth). Not uncommon in winter.

*Great Titmouse (*Parus major* L.). Formerly a common resident; has greatly decreased of late years.

*Cole Titmouse (*Parus ater* L.). A resident, but not common.

*Marsh Titmouse (*Parus palustris* L.). A resident, but not common.

*Blue Titmouse (*Parus cæruleus* L.). A resident and common.

*Wren (*Troglodytes parvulus* Koch). A resident and common.

*Pied Wagtail (*Motacilla lugubris* Temm.). Resident and common.

*Grey Wagtail (*Motacilla melanope* Pallas). Not uncommon in summer; rarely seen in winter.

*Ray's Wagtail (*Motacilla raii* Bonap.). Not uncommon; a few pairs breed annually adjoining the moor.

*Meadow Pipit (*Anthus pratensis* L.). Resident and very common.

*Tree Pipit (*Anthus trivialis* L.). Common in summer.

Richard's Pipit (*Anthus richardi* Vieill.). A rare casual visitant; one specimen is recorded by Mr. Hancock.

*Rock Pipit (*Anthus obscurus* Lath.). Occasionally met with in winter.

Red-backed Shrike (*Lanius collurio* L.). A rare casual visitant. Two specimens are recorded by Mr. Hancock.

*Spotted Flycatcher (*Muscicapa grisola* L.). Not uncommon, although greatly diminished in numbers.

*Swallow (*Hirundo rustica* L.). Formerly common; has considerably decreased of late years.

*Martin (*Chelidon urbica* L.). The same remark applies.

*Sand Martin (*Cotile riparia* L.). Not uncommon in autumn.

Goldfinch (*Carduelis elegans* Stephens). About thirty-five years ago a few were seen annually in the nurseries adjoining the moor, but they have now, along with the nurseries, totally disappeared.

*Chaffinch (*Fringilla cœlebs* L.). Resident and common.

*Brambling (*Fringilla montifringilla* L.). A winter visitant, often in considerable numbers.

*Greenfinch (*Ligurinus chloris* L.). A resident and common.

*House Sparrow (*Passer domesticus* L.). The same remark applies.

*Tree Sparrow (*Passer montanus* L.). Not uncommon, may often be seen feeding on the roads which cross the moor.

*Linnet (*Linota cannabina* L.). Common in winter.

*Lesser Redpoll (*Linota linaria* L.). Not uncommon.

*Yellow Bunting (*Emberiza citrinella* L.). A resident and common.

*Common Bunting (*Emberiza miliaria* L.). The same remarks apply.

*Reed Bunting (*Emberiza schœniclus* L.). Formerly common, and bred regularly; has greatly decreased of late years.

*Snow Bunting (*Plectrophanes nivalis* L.). Common in winter, but in greatly diminished numbers; formerly I have seen immense flocks. The earliest arrival I have noted is Sep. 27th.

*Starling (*Sturnus vulgaris* L.). Very plentiful previous to the hard winter of 1878-9; greatly diminished for some time after. They are now increasing rapidly.

*Magpie (*Pica rustica* Scop.). Has totally disappeared, although formerly common. The last nest was on the border of the moor in 1853. The year previous five young birds got off.

*Jackdaw (*Corvus monedula* L.). Common.

*Carrion Crow (*Corvus corone* L.). Rapidly disappearing, although an occasional one may yet be seen.

*Hooded Crow (*Corvus cornix* L.). Common in winter; I think it has increased in numbers of late years.

*Rook (*Corvus frugilegus* L.). Very plentiful.

*Skylark (*Alauda arvensis* L.). Resident and common twenty-eight years ago. I have known seventy to be taken by a lark-net in two nights. There were also captured at the same time nine common buntings, two snowflakes, and a woodcock. The moor was a favourite roosting-place, but owing to the drainage, the birds have nearly all left.

*Swift (*Cypselus apus* L.). A common summer visitor.

Nightjar (*Caprimulgus europæus* L.). A summer visitor, not uncommon.

Kingfisher (*Alcedo ispida* L.). Not uncommon; I have seen several of late years.

Wryneck (*Iynx torquilla* L.). Has totally disappeared; the last I saw was shot in 1859.

*Cuckoo (*Cuculus canorus* L.). A regular summer visitor.

*Short-eared Owl (*Asio brachyotus* Forster). Not uncommon; generally seen in March and October.

Rough-legged Buzzard (*Archibuteo lagopus* Gm.). A rare casual visitant. I saw one on the 25th October, 1876, and another in November 1888.

*Sparrow-Hawk (*Accipiter nisus* L.). Not uncommon, but not so plentiful as formerly.

Hobby (*Falco subbuteo* L.). A rare casual visitant. I have had two specimens, both males—the first shot on the 25th July, 1853, and the second on the 15th August, 1859.

*Merlin (*Falco æsalon* Tunstall). Not uncommon. To be seen every year in autumn and winter. I have frequently seen this little falcon attack the Hooded Crow and Rook, and drive them from the vicinity.

*Kestrel (*Tinnunculus alaudarius* Gm.). Formerly common; decreased of late years.

*Heron (*Ardea cinerea* L.). Not uncommon; I have seen specimens most frequently in the month of July.

Little Bittern (*Ardetta minuta* L.). An extremely rare visitor. In April 1859 I saw one alight on a tree, on which it sat for a short time, and then skimmed off low across the moor and disappeared. A few days after a specimen was shot in the garden at Denton Hall, three miles off. This is recorded by Mr. Hancock.

***Bean Goose** (*Anser segetum* Gmel.). A winter visitant. I shot a fine specimen as it rose from a pond on the 26th October, 1878. It was a very misty morning.

[The Pink-footed species (*Anser brachyrhynchus*) is the Common Wild Goose of the district. The Bean Goose is of much more uncommon occurrence.—W. E. Clarke.]

Egyptian Goose (*Chenalopex ægyptiacus* Auct.). Two of these birds were shot out of a flock of four in 1860. They may have been escaped birds.

Sheldrake (*Tadorna cornuta* Gm.). Not uncommon. I know of several having been shot, and have seen two myself.

***Mallard** (*Anas boschas* L.). A common visitant.

***Teal** (*Querquedula crecca* L.). A common visitant; young birds appear regularly in August.

***Shoveller** (*Spatula clypeata* L.). A rare casual visitant. I saw a pair in 1859, and on the 1st August, 1873, I shot a mature female; it was in company with another.

***Wigeon** (*Mareca penelope* L.). An occasional winter visitant.

Pochard (*Fuligula ferina* L.). A rare visitant. I saw one which was shot in 1858.

***Ring Dove** (*Columba palumbus* L.). Common adjoining the moor. I have often seen immense flights crossing the moor in winter.

Stock Dove (*Columba œnas* L.). Several have been shot of late years, and I believe they breed in the vicinity.

***Turtle Dove** (*Turtur communis* Selby). A rare casual visitant. I shot one on the 11th November, 1853.

Pheasant (*Phasianus colchicus* L.). A frequent visitor.

Partridge (*Perdix cinerea* Lath.). Common. The moor is a favourite roosting-place.

Quail (*Coturnix communis* Bonnat.). Not uncommon; occasionally breeds adjoining the moor.

Red Grouse (*Tetrao scoticus* Lath.). An accidental visitor. One was shot in 1859, and several were seen in February 1886.

***Corn-Crake** (*Crex pratensis* Bechst.). A common visitant, and breeds adjoining the moor.

*Waterhen (*Gallinula chloropus* L.). Formerly common; only stragglers to be seen now, owing to the drainage of their feeding-grounds.

*Golden Plover (*Charadrius pluvialis* L.). Common in autumn and winter; young birds generally appear in the latter part of July.

*Grey Plover (*Squatarola helvetica* L.). Not uncommon; I have seen and shot several, all in first plumage.

*Ringed Plover (*Ægialitis hiaticula* L.). I have only once met with this bird, which I shot.

*Dotterel (*Eudromias morinellus* L.). A regular spring and autumn visitant, generally appearing in the first week in May. I have only three exceptions to note: two were shot on the 21st of April, 1862; six appeared on the 16th of April, 1884, and one was seen on the 8th of April, 1886. I have often seen both old and young birds, on their return, in the middle of August.

*Lapwing (*Vanellus vulgaris* Bechst.). A resident and common; I think they have greatly increased in numbers within the last few years.

*Woodcock (*Scolopax rusticola* L.). Not uncommon; frequently found in the boundary ditches; I have only once flushed one on the open moor.

*Common Snipe (*Gallinago cœlestis* Frenzel). Common; some years they are more numerous than in others; young birds generally appear in the latter part of July.

*Jack Snipe (*Gallinago gallinula* L.). A common autumn and winter visitant. The earliest arrival I have noted is Sep. 16th.

*Dunlin (*Tringa alpina* L.). A common visitor in May, and the young in July.

Temminck's Stint (*Tringa temmincki* Leisl.). An extremely rare visitor. One specimen is recorded by Mr. Hancock.

*Curlew Sandpiper (*Tringa subarquata* Güld.). An occasional visitor. I have only shot one specimen in first plumage, on September 22nd, 1880.

*Ruff (*Machetes pugnax* L.). A regular visitant in September. I have shot several, all in first plumage.

*Common Sandpiper (*Tringoides hypoleucos* L.). Formerly not uncommon in May, but owing to the ponds they frequented having been drained, they have disappeared.

*Green Sandpiper (*Helodromas ochropus* L.). A rare visitant. I have only obtained one specimen, which I shot on the 8th of

August, 1878; it was in first plumage. I have seen several others, all in August.

*Wood Sandpiper (*Totanus glareola* Gm.). A rare casual visitant. I have shot two specimens—one on the 1st September, 1873, and the other on the 9th September, 1880; both were in first plumage.

*Redshank (*Totanus calidris* L.). Only occasionally met with. I have seen specimens in July and September.

*Curlew (*Numenius arquata* L.). A common resident; they frequently breed in the fields adjoining the moor.

*Whimbrel (*Numenius phæopus* L.). Not uncommon. I have frequently seen old birds in May, and the young in August.

*Herring Gull (*Larus argentatus* Gmel.). Not uncommon; young birds have been frequently shot.

*Lesser Black-backed Gull (*Larus fuscus* L.). Commoner than the last; large flights are often seen.

*Common Gull (*Larus canus* L.). Quite as common as the last.

*Black-headed Gull (*Larus ridibundus* L.). Common; most frequently seen in July, August, and September.

Little Auk (*Mergulus alle* L.). Several have been found dead after severe weather.

NOTES AND NEWS.

Mr. George Roberts has recently published—in the 'Yorkshire Post'—his 'Miscellaneous Rural Notes for 1888,' being the twenty-seventh year during which he has carried on his observations on periodical natural phenomena at Lofthouse.

By an article in the Journal of the Marine Biological Association from the pen of Prof. McIntosh, we note that Mr. Edward E. Prince, B.A., of Leeds, has of late years devoted himself with energy and success to the study of the reproduction and development of the British food-fishes, on which he has published numerous valuable papers.

Similar subjects have also for some years occupied the attention of Mr. George Brook, F.L.S., formerly of Huddersfield, and now Lecturer in Comparative Embryology in the University of Edinburgh, by whom we have been favoured with copies of his papers on 'The Formation of the Germinal Layers in Teleostei,' 1886, 'Notes on the British species of *Zeugopteris*' (of which one, *Z. papillosus*, is described as new), 1887, 'On the Epiblastic Origin of the Segmental Duct in Teleostean Fishes and in Birds,' 1887, and 'Notes on the Reproduction of Lost Parts in the Lobster,' 1886, all illustrated by plates.

Our old and valued correspondent, Mr. T. D. A. Cockerell, has sent us a copy of a paper published by him in the 'Canadian Entomologist' for March 1889 on 'The Citation of Localities,' in which he calls attention to the loose and careless way in which localities are cited for specimens, instancing 'Colorado,' which may not only refer to any altitude from 4,000 ft. to 14,000 ft., and to anywhere within an area of no less than 103,948 square miles, but actually includes portions of two distinct zoo-geographical regions. Mr. Cockerell urges upon collectors—with ample reason—the importance of accurate detail in matters of this kind.

NOTES AND NEWS.

At the anniversary meeting of the Linnean Society this year two Yorkshire botanists of eminence—Mr. J. Gilbert Baker, F.R.S., and Robert Braithwaite, M.D., —were elected into the Council, and Mr. W. Percy Sladen, F.G.S., was re-elected Zoological Secretary.

Among the recent elections to the Fellowship of the Linnean Society we are pleased to observe the names of Mr. Matthew B. Slater, of Malton, whose work amongst the North Yorkshire mosses and hepatics is so well known, and Mr. H. Bendelack Hewetson, F.Z.S., of Leeds, an ex-president of the Leeds Naturalists' Club and Scientific Association.

At a recent meeting of the Sheffield Naturalists' Club, the president (Mr. E. Howarth, F.R.A.S.) in the chair, Dr. H. C. Sorby gave an account of some most interesting and valuable researches made on board his yacht 'Glimpse' on the Essex and Suffolk coasts into the habits of certain marine mollusca belonging to the genera *Mya*, *Scrobicularia*, *Tellina*, *Cardium*, and *Pholas*.

We have received from our old friend Dr. Robert F. Scharff, whose Leeds and Bradford friends are pleased to note his promotion last year to the important post of curator of the natural history department of the Dublin Museum of Science and Art—in which he succeeded to another gentleman of Leeds relationship (Mr. A. G. More)—a copy of his recent paper on the occurrence of Pallas' Sand-Grouse in Ireland, in which are collected together records of about a hundred specimens.

In a recent number of our spirited Liverpool contemporary 'Research,' we notice an excellent portrait and an appreciative sketch of the scientific career of Mr. J. W. Davis, F.S.A., etc., a gentleman well known for the amount of work he has accomplished for Yorkshire geology, not only as an original investigator, but also as secretary of the Yorkshire Geological and Polytechnic Society and as one of the authors of 'West Yorkshire.'

At recent meetings of the Entomological Society of London, the Rev. C. F. Thornewill, M.A., of Burton-on-Trent; Mr. N. F. Dobrée, of The New Walk, Beverley, President of the Entomological Section of the Yorkshire Naturalists' Union; Mr. J. Harrison, of Gawber Road, Barnsley; and Mr. S. L. Mosley, of Beaumont Park, Huddersfield, were elected Fellows, thereby strengthening a Society which, while ranking among the most useful of our learned bodies, has hitherto been very inadequately supported by students of the branch of science which it has done so much to promote.

Mr. John H. Metcalfe, Leyburn, Wensleydale, a member of the Yorkshire Naturalists' Union, has submitted to the respective Governments a plan for ridding Australia and New Zealand of the rabbit pest. This is by means of *ergot of rye*, a parasitical fungus peculiar to the rye grass and rye cereal, as well as to other grasses. The consumption of this, it is said, will cause the does to abort, and ultimately render them *barren* (?). It was originally intended to have spread the fungus amongst the native grasses, but as this would be similarly injurious to cattle and sheep partaking of it, the idea has been modified. The scheme now proposed is the manufacture of cakes of sweet herbs (such as the rabbits like) containing the ergot, and spreading them about the runs in corn-growing districts, in the large tracts of unoccupied Government lands, and in such places not occupied by cattle and sheep. The rabbit, it will be remembered, was first introduced into the colonies about twenty years ago, and was then so much of a novelty that it commanded fancy prices. Now it is swarming in countless millions, and eating up whole areas; in some districts there is scarcely a blade of grass, or herbage of any kind, to be seen. The Governments have sanctioned the introduction of stoats and weasels, which have already arrived in large quantities, but this it is obvious will prove a remedy worse than the disease. Mr. Metcalfe will be glad to have the opinion of naturalists respecting his plan.

BIBLIOGRAPHY:

Papers and records published with respect to the Natural History and Physical Features of the North of England.

REPTILES AND AMPHIBIANS,

1885, 1886, 1887, 1888.

This instalment of about four dozen titles represents for the most part the casual and incidental references made to animals of this group by general naturalists, and there is some amount of uncertainty as to species when the references are to 'newts.' The nomenclature, in default of a recent list of the British species, is not according to any particular standard.

Anon. [not signed]. **Linc. N.**

Louth Naturalists' Society [*Bufo calamita* noted as plentiful at Mablethorpe]. Nat. World, Aug. 1886, iii. 158.

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

Ayton School News [a Chameleon found near Stokesley, Oct. 22nd, creeping on the top of a hedge]. Nat. Hist. Journ., Nov. 15th, 1886, x. 170.

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

Ackworth Reports.—Natural History Society [*Pelias berus* and *Anguis fragilis* at Stapleton Park; and *Zootoca vivipara* at Went Cutting]. Nat. Hist. Journ., Sep. 15th, 1887, xi. 128.

Anon. [not signed]. **Northumberland S.**

List of . . . Donations to the Museum . . . of the Natural History Society [of Newcastle-on-Tyne], from June 1877 to August 1887 [1879, Blind Worm (*Anguis fragilis*) from near Bardon Mill (Jas. Armstrong)]. Nat. Hist. Trans. Northumb., Durh., and Newc., vol. 9, part 2 (1888), p. 276.

James Backhouse, junr. **York N.W.**

The Yorkshire Naturalists' Union at Hawes [28th Aug., 1884; *Zootoca vivipara* noted at Buttertubs Pass]. Nat., Aug. 1884, p. 18.

James Backhouse, jun. **York Mid W.**

The Yorkshire Naturalists' Union at Boroughbridge [25th May, 1885; Smooth Newt (*Molge punctata*) noted]. Nat., July 1885, p. 279.

James Backhouse, junr. **York S.E.**

The Yorkshire Naturalists' Union at Flamborough Head [14th June, 1886; Smooth Newt (*Molge punctata*) and Great Warty Newt (*Triton cristatus*) noted]. Nat., July 1886, p. 215.

W. D. Braithwaite, Secretary. **York S.W.**

Ackworth Natural History Society [Spawn of *Rana temporaria* noted 22nd March, 1887]. Nat. Hist. Journ., April 15th, 1887, xi. 58.

William D. Braithwaite, Secretary. **York S.W.**

Ackworth School Natural History Society [Grass Snakes (*Tropidonotus natrix*) reported on good authority to be common in Womersley and Stapleton Parks; while Vipers (*Pelias berus*) abound at Brockendale]. Nat. Hist. Journ., May 16th, 1887, xi. 80.

James Carter. **York Mid W.**

Dimensions of the Adder [(*Pelias berus*); two killed near Grantley some years ago, 27 and 25 inches in length]. Field, June 11th, 1887, p. 836.

J. E. Clark. **York N.E.**

[Spawn of Toad (*Bufo vulgaris*) seen at Kirkdale Cavern, April 24th, in ribbon-like pieces several yards long; also Slow-worms (*Anguis fragilis*) about 20 inches long]. Nat. Hist. Journ., May 16th, 1887, xi. 82.

J. E. Clark. **Cumberland.**

Toads [*Bufo vulgaris*] by the Thousand [in July 1887 on the Dub Moss, near Allonby-on-Solway]. Nat. Hist. Journ., April 14th, 1888, xii. 72.

York Mid W.

W. Eagle Clarke, W. Denison Roebuck, and William Storey.

Upper Nidderdale and its Fauna . . . Reptiles and Amphibians [an annotated list of three reptiles and three amphibians]. Nat., July 1886, p. 204.

John Cordeaux. **York S.E.**

The Yorkshire Naturalists' Union at Spurn Point [3rd Sep., 1884; *Zootoca vivipara* noted]. Nat., Nov. 1884, p. 92.

John Cordeaux. **Linc. N. and S.**

Lincolnshire [with a reference to the numerical decrease of frogs, or 'Lincolnshire nightingales' (*Rana temporaria*)]. Nat., Jan. 1886, p. 11.

D. Embleton. **Durham, Westmorland, York N.W.**

A Catalogue of the Place-names in Teesdale [including some derived from the Frog (*Rana temporaria*), Hagworm, Newt (*Molge punctata*, etc.), and Adder (*Pelias berus*); see pp. xiii., 33 ('Lartington frogs'), 62 (Newt), 76 (Adder), 77, 88, and 195 (Worm or Snake), 87 (Frog), 87, 95 (Hagworm = *Anguis fragilis*), 103 (Adder), 203 (Frog), 211 (Adder)]. Nat. Hist. Trans. of Northd., Durh., and Newc., vol. ix. part i (1887), pp. i-xviii and 1-223.

J. Fleming. **York S.W., Notts.**

The Microscopical Characteristics and Longevity of Frogs and Toads [discussing an alleged case of a living Toad (*Bufo vulgaris*) being found in a block of coal, 320 yards from the surface, West Retford Mine at Tinsley Park; and a similar case of a frog (*Rana temporaria*) at Bubbington Collieries near Nottingham]. Ann. Rep. Manch. Microsc. Soc. for 1886 (pub. 1887), pp. 54-58; rep. Nat. World, Sep. 1887, iv. 159-161.

James Fleming. **Cheshire.**

Rambles during the Year 1887.—Bramhall [2nd July; 'tadpole of newt' noted in pond]. Ann. Rep. Manch. Microsc. Soc. for 1887 (pub. 1888), p. 65.

Leonard Gaunt. **York S.E.**

The Yorkshire Naturalists' Union at Pocklington [24th June, 1885; *Zootoca* and *Pelias* noted]. Nat., Aug. 1885, p. 308.

Leonard Gaunt. **York S.W.**

The Yorkshire Naturalists' Union at Askern [20th May, 1886; *Rana temporaria* and *Bufo vulgaris* noted]. Nat., June 1886, p. 189.

Linnæus Greening. **Lanc. S., Cheshire.**

Reptiles of Warrington District [being records for *Pelias berus*, *Tropidonotus natrix*, *Lacerta agilis*, *Zootoca vivipara*, and *Anguis fragilis*]. Nat., March 1886, p. 81.

Linnæus Greening. **Lanc. W.**

Palmated Newt [*Molge palmata*] in Lancashire [at Garstang, April 1886]. Zool., June 1886, x. 250.

Linnæus Greening. **Lanc. S., Lanc. W., Chesh., York N.E.**

Newts near Warrington [all three species recorded with localities in Cheshire and Lancashire, and one in Yorkshire]. Nat., Aug. 1888, p. 243.

Linnæus Greening. **Chesh., Lanc. S. and W.**

British Frogs and Toads a paper read before the Warrington Field Club November 18th 1887 [The North of England information is printed in the 'Naturalist' for Dec. 1888; see next title]. . . . —Warrington: printed for private circulation.—1888 [8vo, sewn, 26 pages].

LINNÆUS GREENING. **Cheshire, Lanc. S., Lanc. W.**

The Natterjack Toad in Cheshire and Lancashire [at Wallasey sandhills abundant, also at Formby and at Garstang; details of habits and life-history]. Nat., Dec. 1888, pp. 357-359.

J. H. GURNEY, Jun. **'York.'**

Sparrowhawk and Viper [(*Pelias berus*) in York, killing each other]. Nat., Jan. 1886, p. 17; rep. Nat. Hist. Journ., Feb. 15th, 1886, x. 19.

JAMES HARDY. **Northumberland S.**

Report of Meetings of Berwickshire Naturalists' Club for the year 1885 . . . Rothbury [24th June; Adders (*Pelias berus*) plentiful on the lower spurs of Simonside, but none on the higher peaty ground near the summit of the ridge]. Proc. Berw. Nat. Club for 1885 [pub. 1886], xi. 41.

G. E. HASTINGS. **'York.'**

[Spawn of Frog (*Rana temporaria*) near York as early as Feb. 21st, 1888]. Nat. Hist. Journ., April 14th, 1888, xii. 68.

G. E. HASTINGS. **York S.W.**

A Lizard Hunt [at Went Cutting near Pontefract, April 11th, 1887; after *Zootoca vivipara*]. Nat. Hist. Journ., Nov. 1st, 1888, xii. 182.

G. E. HASTINGS. **York S.W.**

Feeding Toads and Lizards [(*Bufo vulgaris* and *Zootoca vivipara*); presumably at Ackworth]. Nat. Hist. Journ., Nov. 1st, 1888, xii. 182.

G. E. HASTINGS. **? York S.W.**

Newt-Tadpoles [as observed no doubt at Ackworth, although place is not stated; *Triton cristatus* and *Lissotriton punctatus*]. Nat. Hist. Journ., Nov. 1st, 1888, xii. 183.

G. E. HASTINGS. **? York S.W.**

Tadpoles [in Salt-and-Water; species not stated, possibly *Rana temporaria*; place not stated, no doubt Ackworth School]. Nat. Hist. Journ., Nov. 1st, 1888, xii. 184.

G. E. HASTINGS. **'York.'**

[Last Newt (species not stated), 20th Oct., presumably near York]. Nat. Hist. Journ., Nov. 15th, 1888, xii. 203.

JOHN F. HILLS, Secretary. **York N.E.**

York, Bootham. Natural History Club [Vipers (*Pelias berus*) from Strensall]. Nat. Hist. Journ., June 15th, 1888, xii. 111.

J. A. JACKSON. **Lanc. W.**

Notes on the Black-headed Gull near Garstang [on 'Gull Moss,' where also *Pelias berus* occurs]. Nat., May 1887, p. 130.

H. WALLIS KEW. **Linc. N.**

Field Notes [Frog Tadpoles (*Rana temporaria*) just emerged from the ova near Burwell on April 3rd, but many ovum-masses remained unhatched]. Nat. World, Jan. 1886, iii. 1.

H. WALLIS KEW. **Linc. N.**

Another Postglacial Ravine [Hubbard's Valley near Louth] and its inhabitants [mentioning *Zootoca vivipara*]. Nat. World, March 1886, iii. 42.

H. WALLIS KEW. **Linc. N.**

In the Woods in April [3rd, 1885; near Louth; tadpoles of *Rana temporaria* noted]. Sci. Goss., April 1886, p. 78.

H. WALLIS KEW. **Linc. N.**

Old Chalk-pits [near Louth; mention made of *Triton cristatus* and *Zootoca vivipara*]. Nat. World, May 1886, iii. 81-82.

E. P. KNUBLEY. **York Mid W.**

The Yorkshire Naturalists' Union in Upper Nidderdale [July 1886; *Anguis fragilis* noted]. Nat., Aug. 1886, p. 253.

S. L. MOSLEY. **York S.W.**

Annual Report, 1883. . . . Vertebrata [*Zootoca vivipara*, Dungeon Wood]. Trans. Huddersfield Nat. Soc., Part 1 (pub. 1884), p. 7).

S. L. MOSLEY. **York S.W.**

Annual Report, 1884. . . . Repitilia [record of re-appearance of *Anguis fragilis* in Beaumont Park, Huddersfield, where it was formerly common but not seen for many years]. Trans. Huddersfld. Nat. Soc., Part 2 (pub. 1885), p. 9.

S. L. MOSLEY. **York S.W.**

Catalogue of Reptiles Found in the Neighbourhood of Huddersfield [giving localities for *Tropidonotus natrix*, *Anguis fragilis*, *Lacerta vivipara*, *Triton cristatus*, *T. taeniatus*, *Bufo vulgaris*, and *Rana temporaria*; *Vipera berus* stated to be absent]. Trans. Huddfld. Nat. Soc., Part 2 (pub. 1885), pp. 31-32.

J. J. NIXON. **Derbyshire.**

Great Capture of Water Beetles [and anecdote of capture of a 'Sand-lizard' (possibly a newt) at Little Eaton]. Young Nat., Feb. 1885, vi. 37.

E. F. REYNOLDS. **York S.W.**

A Red Viper [(*Pelias berus*) **at Stapleton Park,** Went Vale, 6th May, 1887; much smaller than usual and very red]. Nat. Hist. Journ., Nov. 1st, 1888, xii. 182.

L. RICHARDSON. **Cumberland.**

The Ascent of Cross Fell, April 26th, 1886 [ova of *Rana temporaria* (frog-spawn) noted in a small pond, '2000 ft. up']. Nat. Hist. Journ., Feb. 15th, 1888, pp. 13-14.

L. RICHARDSON. **York N.E.**

The York School Excursion to Scarbro', June 10th, 1886 [*Anguis fragilis* caught near Bee Dale]. Nat. Hist. Journ., Feb. 15th, 1888, p. 14.

CHARLES ROBSON. **? Durham or Northumberland S.**

Viviparous Lizard (*Zootoca vivipara*) [being notes on a gravid female caught basking in the sun in a drystone dyke, July 21st, 1885; locality (not stated) probably near Newcastle-on-Tyne]. Sci. Goss., Dec. 1886, p. 281.

WM. DENISON ROEBUCK. **Lanc. S., York S.E.**

The true Sand Lizard [*Lacerta agilis*] **in the North of England** [at Southport, where it is abundant on the sandhills; the Natterjack (*Bufo calamita*) also occurs there; reference made to the Spurn *Zootoca*]. Nat., June 1885, p. 258.

W. CECIL SCOTT and WALTER BOOTH. **York N.E.**

The Yorkshire Naturalists' Union at Pickering [Aug. 1886; *Rana temporaria*, *Bufo vulgaris*, and *Molge* noted]. Nat., Sep. 1886, p. 273.

M. L. SYKES. **Lanc. S.**

Rambles during the Year 1887.—Worsley [Aug. 27th; tadpoles of Newt and Frog (*Rana temporaria*)]. Ann. Rep. Manch. Microsc. Soc. for 1887 (pub. 1888), p. 68.

W. H. WARNER. **Yorkshire, Durham.**

The Blindworm (*Anguis fragilis*) [occurs commonly from Isle of Wight to the Yorkshire moors; to which J. E. Robson adds a Durham locality; a brilliant copper-coloured example from Yorkshire also mentioned]. Young Nat., Feb. 1885, vi. 28.

W. H. WARNER. **Westmorland, Cumberland.**

The Common Frog [gives a quotation from the Rev. Thomas Robinson's 'Essay towards a Natural History of Westmoreland and Cumberland']. Young Nat., March 1886, vii. 38.

No. 169. AUGUST 1889.

THE NATURALIST:

A

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NATURAL HISTORY FOR THE NORTH OF ENGLAND.

CONDUCTED BY

WM. DENISON ROEBUCK, F.L.S.,

Sunny Bank, Leeds:

WITH THE ASSISTANCE IN SPECIAL DEPARTMENTS OF

J. GILBERT BAKER, F.R.S., F.L.S., Royal Herbarium, Kew;

CHAS. P. HOBKIRK, F.L.S., Dewsbury;

W. EAGLE CLARKE, F.L.S., M.B.O.U., Museum of Science & Art, Edinburgh;

GEORGE T. PORRITT, F.L.S., F.E.S., Greenfield House, Huddersfield;

ALFRED HARKER, M.A., F.G.S., St. John's College, Cambridge;

W. BARWELL TURNER, F.C.S., F.R.M.S., 38, Sholebroke Avenue, Leeds.

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BOOKS RECEIVED.

W. H. Hudleston.—Report of an Excursion of the Geologists' Association to the West Riding of Yorkshire, July 17th and five following days. 8vo. rep., 20 pp.
G. S. Brady and A. M. Norman.—Monograph of Marine and Freshwater Ostracoda of the North Atlantic and of North Western Europe. Section I, Podocopa. 4to, 208 pp. and 16 plates, 1889. [Royal Dublin Society.
A. C. Haddon.—A Revision of the British Actiniæ. Part I, 4to, 65 pp. and eight plates, 1889. [Royal Dublin Society.
A. A. Rambaut.—A New Determination of the Latitude of Dunsink Observatory. 4to, 10 pages, 1889. [Royal Dublin Society.
O. Boeddicker.—Observations of the Planet Jupiter. 4to, 1889, 18 pp. [Royal Dublin Society.
Royal Dublin Soc.—Scient. Proceedings, Vol. 6, Parts 3 to 6, 1888-89, 8vo. [Society.
Hertfordshire Nat. Hist. Soc.—Trans., Vol. 5, Part 5, June 1889. [The Society.
Journal of Microscopy, N.S., Vol. 2, Part 7, July 1889. [Baillière & Co. publishers.
Scottish Naturalist, N.S., No. 25, July 1889. [Prof. J. W. H. Trail, Editor.
Yorkshire Genealogist, Part 16, July 1889. [J. Horsfall Turner, editor.
Science Gossip, No. 295, for July 1889. [Messrs. Chatto & Windus, publishers.
The Midland Naturalist, No. 139, for July 1889. [Birmingham Nat. Hist. Soc.
Research, monthly illust. journ. of science, No. 13, July 1889. [A. N. Tate, ed.
The Wesley Naturalist, No. 29, for July 1889. [The Wesley Scientific Society.
The Young Naturalist, Part 115, for July 1889. [Mr. John E. Robson, editor.
The Zoologist, 3rd Series, Vol. 13, No. 151, July 1889. [J. E. Harting, Editor.
Alfred O. Walker.—Third Report on the Higher Crustacea of the L.M.B.C. District—8vo reprint, 19 pages, 1889. [The Author.
John Hopkinson.—Notes on Birds observed in Hertfordshire during the year 1888, 8vo. reprint, 8 pages, 1889. [Author.
W. H. Hudleston.—On the Geological History of Iron-Ores, 8vo reprint, 41 pages and plate, 1889. [The Author.
Botanical Exchange Club.—Report for 1888, 8vo, 46 pages, 1889. [The Club.

YORKSHIRE NATURALISTS' UNION.—ENTOMOLOGICAL SECTION.—The President and Secretaries of the Section will be pleased to receive the names and addresses of those members specially interesting themselves in this branch. The object in view is to circulate a fairly complete list amongst the members of this section, and thereby to facilitate the exchange of information, and also, if sufficient encouragement is given, to publish (in the Annual Report of the Section) at the close of the season a list of Yorkshire Occurrences of Insects.

Address the President:—Mr. N. F. Dobrée, The New Walk, Beverley;
Or the Hon. Secretaries:—Mr. J. H. Rowntree, Westwood, Scarborough;
Mr. W. E. Brady, 1, Queen Street, Barnsley.

The Editors of 'The Naturalist' would be pleased to receive offers of suitable papers for insertion during the next few months.

NOTE—ALGÆ.

Cylindrospermum macrospermum near Halifax.—This beautiful Algæ is now in fine condition in Mapledean Clough, Norland, near Halifax. The spore-cells are to be seen in all stages of development; also the cilia-like appendages on the heterocysts. Any member of the Yorkshire Naturalists' Union who desires may have some forwarded on communicating with the writer.—CHAS. CROSSLAND, 4, Coleridge Street, Halifax, July 23rd, 1889.

NOTE—LEPIDOPTERA.

Variation in Arctia mendica at Huddersfield.—At the meeting of the Entomological Society of London, held July 3rd, 1889, Mr. G. T. Porritt exhibited a remarkable series of *Arctia mendica* L., bred from a small batch of eggs found on the same ground at Grimescar, Huddersfield, as the batch from which the series he had previously exhibited before the Society was bred. This year he had bred forty-five specimens, none of which were of the ordinary form of the species: as in the former case, the eggs were found perfectly wild, and the result this year was even more surprising than before.—W. W. FOWLER, Hon. Sec.

OBSERVATIONS AT ANSTON STONES, May 1889.

S. L. MOSLEY, F.E.S.,
Hon. Sec. Huddersfield Naturalists' Society; Author of Various Natural History Works.

Myself and daughter spent a couple of days at this place a fortnight ago. We travelled by road (on tricycle), but by rail Kiveton Park is the nearest station. The following notes of species observed may be of use to future visitors:—

BIRDS.

Nightingale (*Daulias luscinia*). We heard one singing on the Sunday morning. We had heard one on a previous visit, and were told that it is a regular visitor. On both occasions the birds were on the little copse on the left before reaching the wood.

Chiffchaff (*Phylloscopus rufus*). Several heard. The Warblers were very numerous, including most of the ordinary species.

As we came out of the wood in the evening a bird flew up from a perpendicular hole in the top of the gate post, and I have no doubt it had a nest there. It was too dark to see what species it was, and I did not measure the depth of the hole for fear of breaking the eggs, but I could see no bottom by the aid of a lighted match. One would think the young would have some difficulty in making their first flight up a perpendicular hole not more than three inches in diameter.

LEPIDOPTERA.

Anthocharis cardamines. My daughter saw one specimen, which, with the exception of 'Whites' and one 'Blue,' was the only butterfly seen.

Tephrosia biundularia (or **crepuscularia**). We took extremely dark forms, and also very pale specimens, on the boles of fir trees in the fir-wood on the hill to the left of the main wood. This wood seems a very likely place for Fritillaries.

Abraxas ulmata. We only found two specimens; but last year when I was there, a little later on, it was flying in extreme abundance.

Asthena sylvata. On my visit last year this pretty little geometer was flying commonly.

COLEOPTERA.

Phyllobius alneti, P. oblongus, and **Barynotus obscurus** were extremely abundant; we could pick them from the foliage at every step. Of

Otiorhynchus ovatus and **O. sulcatus** we obtained one each.
Pyrochroa serraticornis I have taken on a former occasion.
Chrysomela polita. A few by sweeping.

PLANTS.

Ranunculus auricomus. It is usually difficult to get this plant with perfect flowers, but in the wood were many fine plants with the full number of petals.

Viola odorata. Abundant on the road-sides from Anston to Dinnington.

Saxifraga granulata. Fairly common in the meadows above the Vicarage between the footpath and the stream.

Saxifraga tridactylites. Common on the rough limestone blocks and on the wood wall.

Myosotis sylvatica. Very abundant by the stream-side in the wood.

Plantago media. One of the commonest meadow plants.

Primula veris. Common and very fine plants.

Paris quadrifolia. Common in the wood. Seemed fond of growing in clusters under the shade of a young tree. We found several of the variety with five leaves.

Scolopendrium vulgare. Common on the rough limestone blocks, but the plants only small.

Asplenium trichomanes. Common on the rocks, but very small plants; and one or two small

Asplenium ruta-muraria were also seen.

Melica nutans. This grass is not uncommon in the wood. This is interesting, as Hooker gives W. England only as the habitat.

FUNGI.

Æcidium ranunculacearum. On Lesser Celandine.

Æcidium dracontii. On *Arum maculatum.*

Æcidium allii. On *Allium ursinum.*

Æcidium violæ. On *Viola odorata.*

Polycystis violæ. On *Viola canina.*

We also found an orange rust, which we have not been able to determine, on *Myrrhis odorata*, and another on *Spiræa ulmaria.* We brought away a supply of several of these, and shall be glad to send specimens to collectors. At the same time we shall be glad of other species, especially such as attack cultivated crops.

June 9th, 1889.

Naturalist,

THE YORKSHIRE NATURALISTS' UNION AT ROBIN HOOD'S BAY.

On Friday, June 21st, the Yorkshire Naturalists' Union held their 79th meeting at Whitby, for the investigation of the Peak, or South Cheek of Robin Hood's Bay. A large number of members assembled from all parts of Yorkshire, attracted, no doubt, partly by the fine weather and beautiful scenery, but also by the fact that the excursion was under the leadership of a distinguished ex-President of the Union, Mr. Wilfrid H. Hudleston, M.A., F.R.S., etc.

Peak Station was reached soon after eleven a.m. Permission had been given by Mr. A. Marshall, of Raven Hall—a fine mansion built on the edge of one of the loftiest cliffs in England, 600 ft.—to see the view from the garden terraces, partly cut out of the cliff itself. Thither, then, the party first proceeded. The atmosphere being clear, with a north-east wind, the combination of marine and moorland scenery was charming in the extreme. According to the well-known formula (nine-fifths of height in feet equals distance squared in miles), the visible horizon at sea was over thirty miles distant, the intermediate space being dotted over with steamers and craft of all kinds. Opposite, across the Bay, at a distance of about three miles, the picturesque village of Bay Town, built tier above tier on the slopes of a preglacial ravine, gleamed red amidst the surrounding green. To the left stretched the wide expanse of moorlands, sooner this year than usual to look brilliant with purple heather.

After enjoying this beautiful view, the party divided. Small detachments of zoologists and botanists worked the moors above the Bay, Ramsdale Wood, and Mill Beck Valley, while the geologists were led by Mr. Hudleston across the railway to the Crag Hall Quarry, originally excavated for the purpose of extracting alum from the *A. communis* zone of the Upper Lias. This zone was shown to be here 400 ft. above its position at the foot of the Peak Cliff, in consequence of a fault to that extent, the downthrow being on the east side. The attenuation of the Dogger (here only 4 ft. thick) with underlying sandrock, as compared with its great development at Blea Wyke—viz., Grey Sandstone, 26 ft.; Yellow Sandstone, 25 ft.; Dogger, 33 ft.—was also pointed out. On the way to the shore, the South Cheek, which consists of beds of the *A. margaritatus* zone of the Middle Lias, was attacked by the hammer-men, and several fossils obtained. A recent fall of the Peak Cliff had here conveniently placed a number of blocks of the Dogger series, which were next attacked, with the result that several good casts of

Terebratula bilineata and other characteristic fossils were secured. The party now separated, the members of the Hull Geological Society and others who had to return to Scarborough accompanying Mr. Hudleston to Blea Wyke, and subsequently ascending the cliff to Peak Station; the rest, including the ladies, who formed a fair contingent, descending to the scars in Robin Hood's Bay, under the leadership of the Rev. E. Maule Cole, M.A., F.G.S., President of the Geological Section of the Union, and walking to Bay Town, where they took train for Whitby. En route, Mr. Cole pointed out the way in which the reefs of the two zones of the Lower Lias, *A. bucklandi* and *A. oxynotus*, repeated themselves on each side of the Bay, and took the opportunity of explaining the configuration of the moorlands of North-East Yorkshire, and showing how the beautiful dales on each side of the anticlinal, stretching from beyond Burton Head (1,420 ft.) to Peak, had been carved out by the rainfall, exposing on their sides various beds of the Lias, underneath a more or less superficial covering of Estuarine Sandstones of the Inferior Oolite. Some fine blocks of Shap Granite were noticed on the shore, brought, no doubt, by the Stainmoor Glacier, and it was pointed out by a gentleman familiar with the Shap quarries that one very large mass of granite, somewhat finely grained, came from the *outer* edge of the Shap granite, whereas the more familiar blocks, with large crystals of felspar, are derived from the interior of the granite.

It is not often that the meetings of the Union are held on the sea-coast, so in framing the programme it was felt that special opportunities should be given to the Marine Zoology Committee for pursuing their investigations. In this matter the secretaries were assisted by Major Woodall, who most kindly placed his steam yacht and trawl at their disposal. The Secretary of the Committee, accompanied by three other members, availed themselves of Major Woodall's kindness. They left Scarborough soon after 10.30 a.m., and landed at Whitby in time for the tea and meetings.

Owing to the last available train leaving Whitby at 6.5, tea was served at the early hour of 4 p.m., at the Station Hotel, and after the meetings of the various sections, the general meeting was held under the presidency of the Rev. E. Maule Cole, M.A., F.G.S., who, in the absence of Mr. W. H. Hudleston, kindly filled that office. The minutes of the last meeting having been taken as read and approved, the following gentlemen were elected members of the Union:—Joshua Fountain, Filey; Thomas Taylor, Whitby; John A. Tate, F.C.S., Whitby; and Rev. Egbert Fox-Thomas, Sneaton Castle, Whitby. The attendance included representatives of the following

fifteen societies:—Wakefield, Leeds (four societies), York, Malton, Hull (three societies), Halifax, Practical Naturalists' Society, Harrogate, Ackworth School, Craven, Scarborough. On the motion of the Secretaries, Mr. William Fletcher was elected Local Treasurer for Pickering. On the motion of Mr. J. C. I'Anson, F.S.A., of Saltburn, seconded by the Rev. B. Irvin, M.A., Vicar of Saltburn, the following resolution was unanimously adopted:—'That the best thanks of the Union be given to Sir Charles Strickland, Bart., and Mr. A. Marshall for permission to visit their estates, to Major Woodall for the use of his steam yacht, to Mr. W. H. Hudleston, and all who have contributed to the working of the excursion.'

The sectional reports were then taken.

The Rev. E. P. Knubley, who represented the Vertebrate Section, stated that he appeared to be the only member of that section present. He reported that he had not seen any objects which called for special remark. He had observed 27 species of birds, of which 23 were residents and 4 were summer visitants. The following is the complete list:—Missel Thrush, Song Thrush, Blackbird, Robin, Whitethroat, Willow Wren, Hedge Accentor, Wren, Pied Wagtail, Meadow Pipit, Rock Pipit, Swallow, House Martin, Sparrow, Chaffinch, Common Bunting, Yellowhammer, Skylark, Starling, Magpie, Jackdaw, Rook, Kestrel, Rock-dove, Common Gull, and Herring Gull. The mammals were represented by the Rabbit and the amphibians by the Frog.

For the Conchological Section, in the absence of all its officers and other collectors, Mr. W. Denison Roebuck, F.L.S., of Leeds, reported that from the unfavourable character of the geological formation at the Peak, and in part from the very fine and dry weather, only seven species of terrestrial mollusca had been noted, viz., *Arion ater*, *Limax lævis*, *L. agrestis*, *Zonites cellarius*, *Helix nemoralis*, *H. hortensis*, and *H. arbustorum*, none of these being of very special interest, while of fluviatile species none had been noted.

The Entomological Section was represented by one of its secretaries, Mr. J. H. Rowntree, and by Mr. J. Eardley Mason, who reported that although sallow and mountain ash, together with broom and heather, among the trees and shrubs, were well searched, and the lower vegetation diligently swept, and though the soil and mouldering cliffs were examined, not a single Heteropterous insect was seen; very few Coleoptera; rather more Diptera were noted, but not a single aculeate Hymenopteron was observed; not an individual of the fossorial Hymenoptera appeared, and but three of the phytophagous section. Of the Homoptera, the 'cuckoo-spits' were the only evidence; while Neuroptera wholly failed to present themselves.

A single Trichopteron (*Limnophilus centralis*, named by Mr. Porritt) was noted and taken. Insectivorous birds were almost absent, and Spiders, though in some numbers, were a feeble crew. *Vanessa cardui* of Lepidoptera was in some numbers; *Pieris brassicæ*, *Argynnis selene*, *Chortobius pamphilus*, *Thanaos tages*, *Strenia clathrata*, *Coremia propugnata*, *Lomaspilis marginata*, and *Emmelesia albulata*, *Rumia*, *Cabera pusaria*, *Melanippe montanata*, and *Botys fuscalis* were also seen.

For the Botanical Section its Secretary, Mr. M. B. Slater, F.L.S., of Malton, reported as follows:—When travelling along the coast-line by the train from Scarborough the botanists observed the fine display of flowers on the railway embankments. The glorious sunny weather during the month of June had brought out flowers in great abundance, some of the commonest British plants flowering in large masses amongst the grasses and other herbage. Amongst them were noticed, of Leguminose plants, bright yellow and orange Birds-foot Trefoil (*Lotus corniculatus*), pale lemon Ladies'-finger (*Anthyllis vulneraria*), the red and white Clover (*Trifolium perenne* and *T. repens*); of Compositæ, the bright yellow Hawkweed (*Crepis virens*) and the white Ox-eye Daisy (*Chrysanthemum leucanthemum*); these, with the addition of an occasional rose-bush, making quite a gay display and adorning the railway banks like a flower garden.

The botanical members left the train at Fylinghall Station for their ramble, and a portion of them took Howdale Beck for their searching ground. The stream springs from the north side of the Peak Cliff, winding its way down the sloping ground, and emptying itself into the sea about the middle of the bay. Others of the party went over some of the higher parts of the district, towards the edge of the moorland beyond.

When the several members mustered together at the meeting-place in Whitby and compared notes, it was found that the total number of plants observed was 156—a good number, considering the small area of country gone over, and the short time (about three hours) at disposal. Many of the plants seen were those of general distribution, of which two good lists are published in the August and September numbers of *The Naturalist* for 1888, which give a comprehensive idea of the flora of the district. The botanists were enabled to make the following additions to the previous lists, all having been noticed during the day or by some of the local observers in previous rambles:—

Corydalis claviculata.
Cochlearia officinalis.
Lychnis flos-cuculi.
Malva moschata.
Asperula odorata.
Drosera rotundifolia and D. longifolia.
Solidago virgaurea.
Antennaria dioica.
Erythrea centaurium.
Gentiana campestris.

Habenaria bifolia.
Epipactis palustris.
Luzula sylvatica.
Scirpus pauciflorus.
Eriophorum vaginatum.
Carex remota and C. glauca.
Bromus mollis.
Melica uniflora.
Anthoxanthum odoratum.
Alopecurus geniculatus.
Polystichum angulare.
Polypodium vulgare.

Some good specimens of the rare *Cornus suecica* were brought to the meeting, which had been gathered on the moors at Cross Cliff, where it is still abundant. This locality is about ten miles or more west of Robin Hood's Bay, and is the most southern station for this arctic plant in the British Isles.

With regard to the Cryptogamia, Mr. Slater remarked that in open situations, at a low elevation, the sunny dry weather scorches up the more delicate cryptogams at this season, and many of them can only be got in good condition during the spring and autumnal months. The searchers in this section confined themselves to the moist shady places in Howdale Beck, where the stream had cut its way in the softer parts into deepish gorges. The following were met with, which are not included in the list given in *The Naturalist*, August 1888.

Of Mosses were noted the following:—*Dicranella varia* Hedw. (in old fruit), *Ceratodon purpureus* L. (in old fruit), *Grimmia apocarpa* L., *Grimmia schultzii* Brid. = *G. decipiens* Lind. (this moss is recorded from Robin Hood's Bay, gathered by Mr. Massee, in Part 11 of Braithwaite's 'British Moss Flora'), *Funaria hygrometrica* L. (growing abundantly on damp banks, in fine fruit), *Fissidens taxifolius* L., *Plagiothecium undulatum* L., *P. denticulatum* L. (a large form of this moss was got in fine fruit much resembling *P. sylvaticum*; it proved, however, to be monœcious, the latter being dicœcious, and not fruiting until September), *P. borrerianum* Spruce (a fine form of this was gathered, having very distinct short two-nerved leaves; it had no fruit, but in the axils of the leaves some bundles of gemmiparous buds, by which the plant increases, as it is rarely found in fruit), *Rhynchostegium ruscifolium* Veck, *Hypnum palustre* L. (the normal form, also a large variety, having a strong single nerve reaching to the middle of the leaves, which are also very secund), *Bryum capillare* L. (in good fruit), *Atrichum undulatum* L. (with male flowers).

Of Hepaticæ were detected — *Cephalozia lammersiana* Hueb. (some dense-growing patches seen, having the segments of the leaves unusually broad), *Lophocolea cuspidata* Limp. (in good fruit), *Scapania purpurascens* Hook., *Diplophyllum albicans* L., *Nardia obovata* Nees (some fine tufts met with, having young perianths on them), *Jungermania inflata* Huds., and *Pellia calycina* Tayl.

Mr. S. Chadwick, F.G.S., Secretary of the Section, who reported for the Geological Section, has furnished the following list of specimens collected during the day:—

Rhynchonella obsoleta.
Rhynchonella jurensis.
Rhynchonella cynocephala.
Terebratula decipiens var. chadwicki.
Terebratula trilineata.
Terebratula spheroidalis.
Thecosmillia sp.
Montilvaltia sp.
Pentacrinus sp.
Natica aducta.
Natica punctura.
Vermetus compressus.
Chemnitzia vesta.
Alaria hamus.
Alaria unicarinata.
Cerithium beanii.
Cerithium vetustum.
Nerinæa cingenda.
Nerita minuta.
Pleurotomaria granulata.
Delphinula granata.
Monodonta lævigata.
Turritella quadrivittata.
Trochus sp.
Neritopsis lævigatus.
Isocardia cordata.
Cardium striatulum.
Astarte paupertina.
Trigonia spinulosa.
Trigonia literata.
Leda ovum.
Avicula munsteri.
Pinna folium.
Monotis substriatus.
Pleuromya costata.
Mya sp.
Cucullæa reticulata.
Ostrea solitaria.
Gervillia tortuosa.
Cardium acutangulum.
Gresslya adducta.
Gresslya rotundata.
Gresslya intermedia.
Astarte elegans.
Pecten sp.

For the Marine Zoology Committee, Mr. Percy Davis, its Secretary, stated that the report was necessarily very meagre on account of the time being too short to allow of the minute examination of the numerous specimens dredged. With the assistance of the boat's crew they were enabled to make four hauls with the ordinary fisherman's trawl-net, which for that purpose proved scarcely adequate to their requirements. The section hoped from that day's experience to improve their tackle before another season. He stated that the first haul resulted in the landing of a number of fish—haddock, plaice, dab, and others, together with a few Echinodermata, but, singularly, an entire absence of Polyzoa. The second haul produced fewer fish, more Crustaceans, together with Polyzoa and a number of Zoophytes. The third was somewhat similar in production as the second, the locality being almost the same. The fourth and last, off Claughton Wyke, resulted somewhat disastrously to the tackle. In the course of the dredge the trawl struck what afterwards proved by the numerous anemones brought to the surface to be a piece of wreckage. Notwithstanding the loss sustained by the tearing of the net, they succeeded in landing an additional number of species; these would in due course be named and catalogued. A vote of thanks to the chairman concluded the proceedings.—E.P.K.

THE 'RADIATED' VARIETIES IN THE GENUS ARCTIA, ETC.

GEO. T. PORRITT, F.L.S., F.E.S.,

Huddersfield; Author of the 'List of Yorkshire Lepidoptera.

At page 220 of 'The Naturalist' for 1888, Mr. John Cordeaux says of the variety *radiata* of *Arctia lubricipeda*, 'almost exclusively peculiar to Heligoland . . . met with, but very rarely, in Holland and on the East coast of England.' As the former part of this statement is copied into the current number of the 'Entomologist' (T. D. A. Cockerell, Entom., xxii, p. 148), it may be as well to correct it before it spreads further. The form is not at all uncommon about York, and all the collections of that city I have seen contain it. That of the late Mr. T. H. Allis, now in the York Museum, contains a long series of it; and another collector in York, less than a year ago, showed me in his boxes, I should say, quite two hundred specimens, all bred from larvæ collected when nearly full grown from the gardens, etc., in York. The variety occurs in other parts of the county as well, but York appears to be its head-quarters. The variety of *A. menthastri* (var. *walkeri*) also occurs in Yorkshire, but seems to be most plentiful in Scotland, where of late years it has been got rather freely. And at Huddersfield there is a corresponding variety of *A. mendica*. A batch of eggs found at large in 1887 produced forty-four moths, only about eight of which approached the ordinary form of the species (see E.M.M., xxv., p. 39); and from a similar batch of about fifty eggs, found wild on the same spot last June, I have this year bred forty-five moths, none of which are of the ordinary type, and the brood altogether is much more remarkable even than the brood I reared last year. Some of the females are much blacker, and more streaked or 'radiated' than any vars. *radiata* or *walkeri* of the other two species I ever saw.

A small extent of ground at Grimescar, on which both batches of eggs were found, is the only spot we know at Huddersfield where *mendica* is to be taken, and the race there is clearly a very distinct and extraordinary one.

Mr. Cockerell, too, by suggesting the name *obscura* for the black-bordered form of *Abraxas grossulariata* (Entom., xxii, p. 55) is evidently unaware that it has for years been known as variety *varleyata*.

June 8th, 1889.

MISS HOPLEY ON BRITISH REPTILES AND BATRACHIANS.

The Young Collector Series.] British Reptiles and Batrachians. By CATHERINE C. HOPLEY, ... London: Swan, Sonnenschein, Lowry & Co., Paternoster Square. 1888 [94 pages, small 8vo, cloth].

The number of British species of these two groups is so limited—especially when the turtles and the dubious species of newts included in our older manuals are ignored, as in the present case—that a volume of the 'Young Collector Series' gives ample room for much to be said, and a good deal of information is given by our authoress of a general nature, the structure and biology of these animals being entered into with a fair amount of detail, while numerous references to their habits in confinement betray her liking for pets of this kind. Beyond this, however, Miss Hopley does not go, and the book is by no means either a descriptive manual or a work upon natural history (in the Gilbert White sense) or upon the geographical range of the animals upon which it treats. The book is of considerable interest, and is fairly well illustrated by wood-engravings.

NOTES AND NEWS.

At the annual meeting of the Leeds Geological Association in June last, the secretary's report showed that the association continues to advance in a most gratifying manner. The roll, which stood in 1884 at 30, and at 109 in 1888, now registers 130 members. There have been eight evening meetings and ten field excursions, at which the attendance has been highly encouraging. The Fourth Part of the 'Transactions' has again from its contents received approbation, and has included a frontispiece in the shape of a portrait of the president. The association has since the last annual meeting been admitted as a corresponding society of the British Association. The following gentlemen—Messrs. J. E. Bedford, F.G.S., B. Holgate, F.G.S., and Wm. Cheetham—have been appointed, on behalf of the association, to serve on the local committee for making arrangements for the visit to Leeds in 1890 of the British Association. The Secretary represented the association upon the General Committee of the British Association at the Bath meeting. By the kindness of the directors of the Leeds Mechanics' Institution, a new and more suitable room in every respect has been allotted to the association for its meetings, which is admirably adapted to its requirements. The election of the executive for the session 1889-90 took place, with the following result:—President, J. E. Bedford, F.G.S. (re-elected); vice-presidents, T. W. Bell, W. Cheetham, C. D. Hardcastle, B. Holgate, F.G.S. (all re-elected); treasurer, W. H. Gill (re-elected); librarian, C. Brownridge, F.G.S. (re-elected); assistant secretary, A. E. Nichols; council, C. Brownridge, F.G.S., John Ingleby, E. Hawksworth, W. J. P. Harris, and W. L. Carter, M.A., F.G.S.; and secretary, S. A. Adamson, F.G.S. (sixth time of election).

NOTE—REPTILES.

The Common Ringed Snake at Huddersfield.—Last evening Mrs. Learoyd of Edgerton, Huddersfield, brought in for me to see a specimen of the Common Ringed Snake (*Tropidonotus natrix*), which her gardener had killed in the garden. The specimen measured 28 inches, and it was thought had probably come from a small wood opposite the house, though it had been seen in the garden some time before it was killed. It is probably considerably over twenty years since a specimen was seen wild in this district before.—Geo. T. PORRITT, Huddersfield, 24th July, 1889.

THE YORKSHIRE NATURALISTS' UNION AT HARROGATE.

The eightieth Meeting was held at Harrogate on July 13th for the investigation of the Crimple Valley, Rudding and Plumpton Parks, and the geological exploration of Hampsthwaite and Clint. The main party left Harrogate Station at 11.20, under the leadership of Messrs. John Naughton and Riley Fortune, in a south-easterly direction for Crimple, Rudding, and Plumpton, while a second party, chiefly geological, started from Nidd Bridge Station half-an-hour later in order to investigate the geology of the district north-west of Harrogate, passing through Ripley, Clint, and Hampsthwaite. The detailed accounts of these routes will be found in the report of the Vertebrate Section so far as regards the first party, and in that of the Geological Section in respect of the second.

Tea was served in the People's Hotel, Harrogate, where the sectional and general meetings were also held.

At 6.30 the general meeting was opened, Mr. Thos. Bunker, of Goole, President of the Vertebrate Section, occupying the chair. The minutes of the preceding meeting having been read and approved, the newly-formed Yeadon Geological Society was admitted into the Union, and the following eleven new members were elected :—L. E. Adams, B.A., M.C.S., Penistone; G. W. Chadwick, Saltburn-by-the-Sea; George Edson, Malton; Chas. H. Fletcher, Scarborough; J. H. Lofthouse, Harrogate; J. R. Mortimer, Driffield; Frank Perkins, Harrogate; Isaac Pickard, Harrogate; Rev. C. S. Smith, M.A., Driffield; W. M. Suddaby, Malton; and Richard Wood, M.D., Driffield.

Sixteen Societies were represented, viz.:—Wakefield, Elland-cum-Greetland, Bradford, Leeds, Goole, Conchological Society, Leeds Geological, Dewsbury, Malton, Doncaster, Practical N.S., Harrogate and District, Ackworth School, Leeds Y.M.C.A., Ellesmere School, Yeadon.

Mr. Lewis B. Ross, F.C.S., was elected to fill the post of Honorary Local Treasurer for Driffield.

On the motion of Messrs. John Gerrard (President of the Wakefield Naturalists' Society) and John Emmet, F.L.S., of Boston Spa, a hearty vote of thanks was accorded to Sir J. Percival Radcliffe, Bart., the Earl of Harewood, and Mr. Gooderick, for granting permission for members to visit their respective estates; to Messrs. Naughton and Fortune for acting as leaders of parties, and to the various gentlemen who had contributed to the excursion-programme.

At this stage of the proceedings Mr. Bunker, having to catch a train, vacated the chair in favour of the Rev. R. A. Summerfield, B.A., Vicar of North Stainley, near Ripon, who called upon the sectional officers to deliver their respective reports.

For the Vertebrate Section, which was represented on the ground by its president (Thos. Bunker) and one of its secretaries (Edgar R. Waite, Leeds), as well as by the Rev. E. P. Knubley, M.A., Mr. Riley Fortune, and others, Mr. Waite reported that the excursion, so far as this section was concerned, had not been productive of such good results as was anticipated, judging from the contributions to the excursion-programme. All the members attending the excursion, with the exception of the geologists, left Harrogate Station at 11.20, Mr. Riley Fortune leading the zoologists, while the botanists were under the guidance of Mr. Naughton. The united party proceeded across the Stray, down Paley's Lane to Hookstone Wood, where they divided. A Greenfinch's nest was found, composed for the most part of rabbit's fur. Mr. Fortune now led his party through 'Paradise' to the Crimple Beck; large numbers of Sand Martins were breeding in the bank, and their nests were inspected; some contained newly-laid eggs and others young birds ready for flight. Fullwith Mill and the Bleach Works were successively reached, and after a walk of about four miles the party entered Rudding Park. Here a Squirrel was seen, and chase was given to a young Sparrow-hawk, which was discovered sitting on a mass of brushwood; it led the naturalists by short flights from tree to tree, and finally escaped into the wood. This little incident caused a delay of about ten minutes, and Sir Percy Radcliffe's butler was seen making for the party. A halt was called, and the members were informed that although not at home, Sir Percy wished that they should be entertained to lunch. Watches were consulted, and it was found that time was too short to enable the party to reach Plumpton as was originally intended, so it was decided to accept Sir Percy's kind invitation. Afterwards, a vote of thanks was passed to him for his hospitality and opportunity given for inspecting the birds and other objects of natural history in his collection. The mammals seen during the day were the Mole, Squirrel, Water and Field Voles, Hare, and Rabbit. Forty-three birds were either seen or heard, 15 being migrants, while 28 were residents. The following is the complete list:—Missel and Song Thrushes, Blackbird, Whinchat, Redstart, Redbreast, Whitethroat and Chiffchaff, Willow and Sedge Warblers, Hedge Accentor, Dipper, Great, Coal, and Blue Tits, Wren, Pied and Grey Wagtails, Meadow Pipit, Spotted Flycatcher, Swallow, House and Sand Martins, Greenfinch, Sparrow, Chaffinch, Linnet,

Bullfinch, Corn and Yellow Buntings, Starling, Magpie, Jackdaw, Rook, Skylark, Swift, Sparrowhawk, Mallard, Ring Dove, Corncrake, Waterhen, Common Snipe, and Sandpiper. Reptiles were unrepresented, and the only amphibians recorded were the common Frog and Toad. The following fish were seen in Crimple Beck :— Perch, Stickleback, Minnow, and Trout.

The report of the Conchological Section was given by one of its secretaries, Mr. John Emmet, F.L.S., of Boston Spa, who stated that Mr. Roebuck and himself were the only members of the section present, that no attention had been given to the land shells, but that the mill-race at Fullwith Mill, and the noble pond in Rudding Park had been searched; in the former, which is the locality in which Mr. Fitzgerald had been so fortunate as to find some of the largest specimens of *Planorbis albus* on record, that species was abundant, though no very large specimens turned up; and with it were numerous *Limnæa peregra* and *Sphærium corneum*; and at Rudding Park the two first-named were also abundant, in company with *Limnæa auricularia* of moderate dimensions. The only slug seen was *Limax agrestis*. Mr. Emmet remarked that the *L. auricularia* was an addition to Mr. Fitzgerald's list as given in the excursion-circular, although he had himself obtained it in Plumpton Lake many years ago; he also remarked on his having in former years obtained large *Anodonta cygnea* in the Plumpton Lake.

The Entomological Section was not officially represented, but Mr. Walter Copley, of Sowerby Bridge, has supplied the following list of insects :—*Satyrus janira*, *Camptogramma bilineata*, *Cidaria fulvata*, *Eubolia mensuraria*, *Tanagra chærophyllata*, *Hydræcia nictitans*, *Xylophasia sublustris*, *Triphæna pronuba*, *Hydrocampa nymphæalis*, and *Scopula lutealis*, remarking that more would have no doubt been obtained, but that the day was not a favourable one for lepidopterists.

The report for the Botanical Section was given by Mr. P. Fox Lee, of Dewsbury, one of the secretaries of the section, who stated that very few of the Union's rambles had been more successful in point of number of observations than this one, the total reaching 290 species of flowering plants and the higher cryptogams of the list usually included with the phanerogamia. Although there was nothing of great rarity, several new locality records would have to be registered for the Nidd drainage district of Mid-West Yorkshire as a result of this meeting. On the previous evening he (Mr. Lee) and a small party of local botanists had worked along the line of upheaval of the Harrogate anticlinal, about Birk Crag and the Oak Beck, where they noted *Corydalis claviculata* DC. and *Rubus sprengelii* Weihe in a profusion of pink bloom, with other sub-species of the Fruticose section of the

Rubi, trailing over the huge blocks of gritstone forming Birk Crag. In a bushy swamp over the beck, a favourite place of the adder, *Iris pseudacorus* L. grew breast-high amid a perfect jungle of *Carex paludosa* Good., while in opener spots occurred *C. hirta* L. and *Equisetum palustre* L. Nearer Harrogate the Frog Orchis, *Habenaria viridis* Br., was searched out in a field, and the Bristle-stalked Mud-rush, *Scirpus setaceus* L., was found fringing a dry 'fish (!) pond' in the vale of the Oak Beck. The latter is a new record for the Nidd drainage district. At Hookstone Wood, Rudding Park, and in the Crimple Valley, the best observations were *Malva moschata* L., *Echium vulgare* L., *Typha latifolia* L. (very large typical plants, with fruiting spikes nearly one foot in length), *Brachypodium sylvaticum* R. & S., and *Equisetum maximum* Lamk. A discussion was raised at the sectional meeting on the reputed discovery in the Crimple Valley of *Myosotis palustris* var. *strigulosa* Reich., but as the specimens were not forthcoming it was corrected to *M. cæspitosa* Schultz. Mr. Lee said that he had examined several plants of both *M. palustris* and *M. cæspitosa* during the day, and none of them possessed the characters of var. *strigulosa*, separating it from *palustris*, namely, more copious appressed hairs of the stem (sometimes they are appressed in true *palustris*), all the leaves sessile, and the flowers relatively smaller, yet having a much larger corolla than calyx (in *cæspitosa* they are nearly equal), style about equalling the calyx, and, most delicate test of all, the nutlets keeled in front. In all the examined specimens put down as *cæspitosa* the style was much shorter than the calyx, and the nutlets were not keeled. The last two tests will always separate *M. palustris*, with its var. *strigulosa* and sub-species *repens*, from the distinct species *M. cæspitosa*. In bright green shining foliage they all very much resemble each other. It is stated in F. Arnold Lees' 'Flora of West Yorkshire,' p. 367, that the var. *strigulosa* 'is frequent; away from the lowland marshes it is the commoner form, and ascends to 900 ft.' Here is a problem worth working out by those on the spot, if the low altitude does not already decide the point. As *M. cæspitosa* does not appear in the 'Flora of West Yorkshire' to be recorded for Nidd drainage district, this will stand as an addition to vice-county 64, Mid-West York. At Plumpton Rocks, its only known habitat, an unsuccessful search was made for *Carex pilulifera* var. *saxumbra* Lees. *C. muricata* L. was found in a meadow near the Lodge. Hereabouts also occurred *Lactuca muralis* Fresen., *Silaus pratensis* Besser (addition to Nidd district; not mentioned in 'The Flora of West Yorkshire'), *Carduus nutans* L., *Campanula latifolia* L. (fine and abundant), and *Scabiosa columbaria* L. (near Grimbald's Crag.

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On and about the cliffs on the north bank of the Nidd, between 'Eugene Aram's Cave' and Knaresborough, *Viola hirta* L., *Parietaria officinalis* L., *Asplenium ruta-muraria* L., and *A. trichomanes* L., all known to occur here, were gathered. As a fitting conclusion to the work, and as a happy reminder of this very successful field-day, the rarest plant met with, *Sagina apetala* L., was obtained on the masonry-coping of a wall at Knaresborough Station as we waited for the Harrogate train, being still another record for the Nidd drainage district.

Mr. Matthew B. Slater, F.L.S., of Malton, Cryptogamic Secretary of the Section, reported as follows:—Of Mosses the only *Sphagnum* seen was *S. subsecundum* Nees, wet place, Hookstone Wood; *Dicranella heteromalla* Hedw., Hookstone Wood, tufts coming into young fruit; *Dicranum scoparium* L., Hookstone Wood; *Eucladium verticillatum* L., a dwarf form growing abundantly under the arches of the bridge at Plumpton Rocks; it was without fruit, but had female flowers; *Encalypta streptocarpa* Hedw., growing in abundance in the joints of a wall by road-side near to Plumpton; sterile, however, and is very rarely found with fruit; *Webera nutans* Schreb., in old fruit on heathery banks in Hookstone Wood; *Polytrichum formosum* Hedw., in similar ground with the *Webera*; *Bryum pallens* Swartz, by stream-side near Bleach Mills, Crimple Valley; *Homalothecium sericeum* Schpr., growing abundantly on walls, sterile at this season; *Brachythecium rutabulum* L., on rocks by stream in Crimple Valley; *Plagiothecium denticulatum* L. var. *aptychus* Spruce, in old fruit; *P. undulatum* L., without fruit; *P. borrerianum* Spruce, without fruit; *Hypnum cupressiforme* L., without fruit; *H. schreberi* Ehrh.—all five gathered in shady places in Hookstone Wood; and *Amblystegium fluviatile* Swartz, gathered from rocks by stream near Bleach Mills. Of Hepaticæ were noted: *Marchantia polymorpha* L., *Fegatella conica* L., *Pellia epiphylla* L., *Scapania purpurascens* Hook., male plants—all four from stones by the stream in Crimple Valley; *Lepidozia reptans* L. with perianths, on wet stones; *Cephalozia bicuspidata* L., with perianths, on wet stones, growing amongst *Lepidozia*; *Lophocolea heterophylla* Schrad., and *Diplophyllum albicans* L., with perianths, on heathery ground—all in Hookstone Wood; and *Jungermania attenuata* Lindenberg, growing abundantly on Plumpton rocks. At this season, after such prolonged dry weather, the cellular cryptogams were much dried up; some tufts were gathered in going along in their dry state, and have been since moistened and examined. All the species obtained are plants of fairly general distribution, but sufficient of the district was seen to conclude that if the ground gone over was searched by

some local student of mosses and hepatics, many additional forms would be found, and those named in this list would probably be gathered in fruit at the proper season.

The Geological Section was represented by both its secretaries, Mr. S. A. Adamson, F.G.S., Leeds, and Mr. S. Chadwick, F.G.S., Malton, the former of whom reported that the geologists had examined the locality to the north and north-west, by which means three important geological formations were seen to advantage, viz., the Lower Magnesian Limestone of the Permian system, and the Millstone Grits and the Yoredale rocks of Carboniferous age. Accordingly, they proceeded to Nidd Bridge to commence their work. They had, however, an experience altogether novel in being without a leader, the gentleman who had promised to undertake this duty having failed to appear, and so the geologists had at Nidd Bridge to walk over a district entirely new to them, and by study of maps and frequent inquiries of passers-by, to do the best they could. This took time, and at one part of the journey the members lost their way, and had to retrace their steps, causing about two miles of additional walking. The programme was ambitious, but faithfully carried out, yet the delays alluded to made it very late before the whole party reached Harrogate in the evening.

From Nidd Bridge Station they took the road to Ripley, on the way examining that remarkable boss of Lower Magnesian Limestone known as Nidd Rock. It is not only remarkable as being an outlier of the Permian Rocks, the nearest position of these being some miles away, but more so as it is almost surrounded by one of these terraces of river gravel, which were formed of course when the Nidd flowed at a higher level. This is a very fine example of a river terrace. Strangwayes, in speaking of these terraces, says that 'it is a curious fact connected with them that they all occur just above the 100 contour, which is the maximum elevation of the warp clay; and it would appear from this that they were deposited about the same time, and when the lower portion of the Nidd was under tidal influence as far as Walshford Bridge.' The Limestone here was soft, thickly bedded, and yellowish in colour. The rock, apart from its geology, forms a very pleasing picture.

They now passed through the quiet and pleasant little town of Ripley, not having time to bestow more than a passing glance at the exterior of its ancient castle and church, but taking the road to Holly Bank Wood on their way to Clint. The scenery along this road was of a charming character. The visit to Clint was to inspect a section of the Cayton Gill beds, so inseparably connected with the name of the Rev. J. S. Tute, Vicar of Markington, who had kindly

written informing us of this section, which certainly is a fine one. It receives its name from the good exposures to be seen in Cayton Gill, a few miles north of Ripley. Geologically it belongs to the Third Grits of the Millstone Grits series, and its position is between the Plompton and the Follifoot Grits. It is a hard calcareous sandstone, and is highly fossiliferous, the bed being literally one mass of fossils. There were quantities of *Productus semireticulatus*, *Spiriferæ*, *Orthis*, stems of *Encrinites*, *Bellerophon*, *Aviculopecten*, etc., and one member found what seemed to be a remnant of *Fenestella*. It was a rich harvest for the fossil collectors, and bags began to acquire weight. There are several other good sections in the neighbourhood, particularly in a quarry at Hampsthwaite and in the railway cutting near the station. And now the contretemps occurred which lost the party some time. Still, after all, there was the consolation of walking through leafy lanes and inhaling the perfume of the honeysuckle and the new-mown hay. After a time, when the spires of Harrogate were receding from view, and the geologists knew they must be wrong, 'right about' was called, they retraced their steps, the fields, the railway, and the river were crossed in turn, and presently they were in the pleasantly-situated village of Hampsthwaite.

It was now felt that, after so many miles of walking, some rest and refreshment were imperative. This was soon found at Miss Haw's cosy and comfortable hostelry. After partaking of the impromptu fare so well provided, it was felt that, although there was no appointed leader, and none of the party had traversed the ground before, yet something should be said by someone as to the geology passed over and also of the remainder of the route. Accordingly Mr. Adamson gave an address in the room of the village inn bearing upon these matters, giving first the stratigraphy of the whole district, then describing each bed in detail, with localities for sections. He also spoke upon the unique geology of Harrogate, and described the great anticlinal to which is due the prosperity of that town. The opinion was expressed that these remarks were most timely, and had done much to lessen the difficulty in which they were placed by being leaderless. In answer to a question it was stated that the rocks now being travelled over were the Third Grits, the highest in this district of the Millstone Grits series. Where then were those rocks which it is known occur between the Permians and the Third Grits, viz., the Coal Measures, the Rough Rock, &c.? These have been removed by denudation before the Permians were laid down, and although we had had conclusive proof of extensive denudation at Nidd Rock, this was a more remarkable and immeasurably grander example of this familiar geological agency. After other questions had been asked and

replied to, the party invigorated again proceeded on their way, passing through charming country lanes to Saltergate Hill, and then to Four Lane Ends. The former hill is capped by the Cayton Gill beds, and at both places there are quarries of the same; but as the one at Clint had been so well examined and time was so limited, it was deemed advisable not to stay.

At Four Lane Ends some of the party thought it best to hurry direct to Harrogate, but the remainder resolved to carry out the whole walk at first determined upon, passing over the Saltergate Beck, which has carved its way through the intermediate shales. An ascent was then made to the ridge north of Oak Beck, where there is a section of the Follifoot Grit, the lowest of the Third Grits in this district, and so named because it is so well exposed on the edge of Follifoot Moor, south of the Crimple Valley. These grits also crop out near Harrogate Gasworks, and it will be remembered that on a former excursion they were noted at Bilton, where the thin seams of coal occur. It may be stated here that the Plompton Grits, the uppermost of the Third Grits, had already been noted by the members during the day, but as these had been previously examined in many other places, it was thought best to pass over them upon this occasion.

They now descended into the beautiful valley of the Oak Beck, where, at the bridge, another halt was called to recline a little on the fresh greensward and admire the fine wooded scenery of Birk Crag, the joy of many an artist. Here, too, was some geology done, as an opportunity was presented of viewing a section of the Kinderscout Grit, the lowest of the Millstone Grits. These rocks dip sharply at this place about 43° N.W. The Kinderscout Grit is now pretty well known to the members from its characteristic pebbles of quartz included, and generally coarse, massive appearance. They soon passed over the great fault which forms the boundary of the Yoredales, and throws the Harrogate roadstone against the Kinderscout Grit. They were shortly, too, on the axis of that famous anticlinal which has attracted all geologists since the days of William Smith, 'the father of English geology.' This is the extreme end of the anticlinal which stretches across from Clitheroe and Skipton more or less in an easterly direction. As the Government geologists well say—'The Kinderscouts are like a wall on each side of the anticlinal, and afford a key to the whole structure of the neighbourhood.' As stated above, these rocks dip at Birk Crag about 43° N.W., but on the south side they dip to the Crimple Valley, that is, in an opposite direction, or S.E., from 43° to 20°. These rocks bend round to the fault, and at Starbeck dip to the east only about

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four degrees. 'From this it appears that the anticlinal of Harrogate dies out to the east, and that there is no great anticlinal ridge of Carboniferous rocks below the Permian and Trias.'

Time rapidly fled, and the party had no leisure to examine the Boggs Field with its varied medicinal springs, so often described, and of such vast importance and value; therefore they briefly examined the section of the Harrogate roadstone in the Cold Bath Road. The dip is here in a south-easterly direction, about 20°, but the anticlinal causes it to dip on the opposite side of the little valley, at a steep angle nearly 60° due north. This illustrates the magnitude of the disturbance. This roadstone is extremely well known, and Prof. Phillips considered it to be the equivalent of the main or twelve-fathom limestone of the Yoredales, but, as the Government geologists truly say, 'as it occurs at a considerable distance from the nearest undoubted Yoredale Rocks, and is only an inlier here at Harrogate along the line of the anticlinal, it is difficult rather to fix its *exact* horizon.' However, that it is one of the Yoredale Limestones there is no doubt, from its formation and its fossil remains. This limestone has been described as an exceedingly hard silicious rock or a calciferous grit, containing encrinites in great numbers. All geologists know it from its constant presence on the stone heaps by the road side.

The remnant of the party were now thoroughly tired, and, moreover, had missed the 'five o'clock tea,' arriving only just in time to enable Mr. Adamson to put in a brief report at the general meeting about seven o'clock. Still it was acknowledged that a valuable and a charming excursion had been made, the instruction gained quite neutralising the late arrival, and arousing a desire to see more of this grand geological field.

For the section of Micro-Zoology and Micro-Botany, its secretary, Mr. J. M. Kirk, of Doncaster, reported that the water in most of the ponds examined was too stagnant for the higher forms of life, and Crimple stream too rapid to yield anything notable in the microscopic line. The following is his list:—

Infusoria.

Chilodon cucullulus.
Dileptus folium.
Loxodes bursaria.
Euplotes monostylus.
Vorticella nebulifera.
Stentor mülleri (abundant).
Uvella virescens.
Paramecium aurelia.
Uroleptus piscis.

Rotatoria.

Hydatina senta.
Diglena lacustris.
Pterodina patina.

Arachnida.

Atax histrionicus (Hydrachna histrionica).
Tardigrada.

Entomostraca.

Cypris tristriata.
Cyclops quadricornis (in young stages only).

Hydrozoa.

Hydra vulgaris.

Confervoideæ.

Volvox globator (very few).

Diatomaceæ.

Diatoma vulgare.
Pinnularia oblonga.
A Navicula closely resembling the marine form N. didyma.

Desmidiaceæ.

Cosmarium crenatum.
Tetmemorus granulatus.
Micrasterias rotata.
Closterium moniliferum.
Closterium lunula.

A vote of thanks to Messrs. Bunker and Summerfield, proposed by Mr. Naughton and seconded by Mr. Fortune, for acting as chairmen, brought the proceedings to a close.—E.R.W.

NOTE—MOLLUSCA.

Clausilia rugosa var. dubia with Double Mouth in Wensleydale.—I herewith send for inspection a rather curious specimen of *Clausilia rugosa* var. *dubia* found by my brother on a wall at Aysgarth on the 29th of June this year. It has two mouths, one each way, and was alive when found. We also obtained the following shells the same day:—*Succinea putris*, *Vitrina pellucida*, *Zonites nitidulus*, *Z. alliarius*, *Helix arbustorum*, *H. sericea*, *H. caperata*, *H. lapicida*, *H. rufescens*, *H. rotundata*, *H. rupestris*, *Pupa umbilicata*, *Clausilia rugosa* var. *dubia*, *C. laminata*, *Zua lubrica*, *Pisidium fontinale*, *Neritina fluviatilis*, *Limnæa peregra*, and *Ancylus fluviatilis*, all the water-shells being found in the river Yore at Aysgarth. In more favourable weather this list might be greatly augmented, as the district seems a perfect one for shells.—T. A. Lofthouse, Middlesbrough, July 9th, 1889.

[The specimen sent is a very fine example of the double-mouthed monstrosity, the two mouths being well-formed. The district is—as Mr. Lofthouse says—a good one for shells. The *Neritina* and the *Pisidium* he records are new records for Upper Wensleydale.—W.D.R.].

NOTES—ORNITHOLOGY.

Is the Starling Double-Brooded?—It is hoped that all readers who can throw light on this subject will favour the Editors with notes for our next (September) issue. As it will materially add to the interest to publish simultaneously the records of numerous observers, we hold over three notes already sent in, and we trust that any who can record *facts* will respond to this suggestion.—Eds. Nat.

Hooded Crows attacking and devouring Salmon.—The following interesting particulars have been forwarded to me by my friend Mr. J. Farrah:—Two pairs of Hooded Crows (*Corvus cornix*) were disturbed in the act of eating the body of a Salmon, weighing about 8 lbs., in the shallow waters of the river Ure at Mickley. This was on December 26th, 1888. Three days later three pairs of these birds were disturbed in the same act; this time they had two Salmon a little smaller than the first-mentioned, and upon examination it was found they were partly eaten. The method adopted by these birds seemed to be to attack the fish about the eyes, as in every case mentioned the eyes were missing; after the eyes the fleshy part of the back was eaten. All the fish were perfectly fresh, and there is not the slightest doubt but that they were killed by the Crows. Anyone knowing the power and rapacity of the birds will hardly be surprised at the incident, especially as the fish were very much exhausted over their passage up stream to spawn. Several other Salmon were captured by hand, and, of course, put back again; one weighed 14 lbs. The exact place where this incident occurred is near the right bank of the stream, where it runs through the pasture called the Ings.—Riley Fortune, Harrogate, June 1889.

Naturalist,

THE BRITISH UREDINEÆ AND USTILAGINEÆ.

A Monograph of the British Uredineæ and Ustilagineæ. By C. B. Plowright, F.L.S. 8 plates. Kegan Paul, Trench & Co. 1889.

Students of British Mycology have cause to be grateful to the author of this valuable work for the service he has rendered by bringing up to date the state of knowledge concerning these two groups of parasitic fungi. A much-needed want has been supplied, and no one in this country was more qualified for such an undertaking than Mr. Plowright, who for the past seven years has specially devoted himself to studying the morphology and physiology of these plants. During that period of time we are told in the preface that he has made between nine hundred and a thousand experimental cultures, with the object of confirming or otherwise the statements made by various botanists, as well as to work out the life-history of those species of which little was known. As a result of his investigations, many new and important facts have been brought to light, and a wide field has been opened for further research by the botanist and microscopist. Of all fungi the Uredineæ are perhaps the most popular, every one possessing a microscope being more or less familiar with some of these pretty objects known as 'cluster-cups,' or the 'rusts' or 'brands' which are commonly to be met with during the spring and summer months on the leaves and stalks of various plants. At one time each spore-form was regarded as a separate species, but through the researches of Tulasne, De Bary, and other continental botanists within the past thirty years, it has been proved that many species so called are but stages in the life-history of other species. Mr. Plowright has followed in the lines of these botanists, and has confirmed many of their observations, having also added no small share to the general stock of knowledge. This monograph is the outcome of his labour, and he is to be congratulated on producing a work that the student cannot really do without. It has been found necessary to re-classify the Uredineæ, and we believe that the system adopted, which is that of the late Dr. Winter, will meet with the approval of all working mycologists. The classification and description of species occupies 153 pages, and it is not difficult to see what an amount of work there remains to be done, especially with those species affecting the Compositæ and Umbelliferæ. Preceding the classification are seven chapters dealing respectively with the 'Biology of the Uredineæ,' 'Mycelium of the Uredineæ,' 'Spermogonia and the so-called Spermatia,' 'Æcidiospores,' 'Uredospores,' 'Teleutospores,' and 'Hetercœcism.' Each of these is creditably done, and may be read with profit by the general reader

as well as the student. The chapter on 'Heterœcism' is particularly interesting, and gives the history of this remarkable phenomenon, also a list of forty-seven heterœcious species, showing the year in which the life-history of each was first worked out. *Puccinia graminis* heads the list, and was first demonstrated by De Bary in 1864 to be connected with *Æcidium berberidis*, and it concludes with *Puccinia trailii*, which in 1888 was proved to be genetically connected with *Æcidium acetosæ* by the author. Many valuable hints are given to the young student in the chapters dealing with 'spore culture,' and 'the artificial infection of plants,' and a list of imperfectly-known species indicates where one has an opportunity of distinguishing himself.

Thirty pages are devoted to descriptions of the British species of Ustilagineæ, and two excellent chapters on germination of teleutospores and infection of host-plants by Ustilagineæ.

The volume also contains a glossary of terms, and three separate indices, which doubtless will be found useful.

The eight lithographic plates are admirably done, in addition to which there are several good woodcuts. The quality of the paper and the printing leave nothing to be desired, but the colour of the binding is a strange choice. It certainly suggests uredospores, but is altogether inappropriate for a book of this character, and one that no doubt will be much handled. However, the work is a valuable addition to mycological literature, and we have pleasure in recommending it.—H.T.S.

NOTES—BOTANY.

Algæ in Upper Swaledale.—Last year my friend Mr. W. D. Roebuck kindly culled some material for me from Birkdale Tarn Moss (in Upper Swaledale), at an altitude of 1,620 ft. This gathering has yielded the following species, some of which are not by any means frequent:—*Polyedrium gigas* Wittr., *Ophiocytium cochleare* Braun, *Penium brebissonii* Ralfs, *Cylindrocystis diplospora* Lund., *C. crassa* D.By., *Tetmemorus granulatus* Ralfs, *Micrasterias papillifera* Bréb., *Cosmarium obliquum* Nord., *Calocylindrus cucurbita* D.By., *Staurastrum avicula* Bréb., *S. polymorphum* Bréb., *S. margaritaceum* Meneg., *Spirogyra longata* Vauch., *Microspora fugacissima* (Ag.), *M. floccosa* Thur., *Chroococcus turgidus* Näg., *Navicula rhomboides* Ehrenb., *N. affinis* Ehrenb., *Pinnularia viridis* Rabenh., and *P. acrosphæria* Rabenh.—W. West, Bradford, 8th July, 1889.

Twin-flowering of Chrysanthemum leucanthemum.—Mr. A. E. Hall, of Sheffield, sends an abnormal flowering specimen of the above wild plant of our meadows and waste places, the Ox-eye Daisy or 'Margarets,' from a field near Wharncliffe Wood. He says in his note:—'I enclose a flower of the common "Moonpenny" with two flowers on one stalk. I daresay you have had many sent you, but if not I thought it might be interesting.' The two composite heads of florets are exactly at right angles to the slender peduncle, with their involucres placed back to back. It is interesting to have another English name, the 'Moonpenny,' to the series by which *Chrysanthemum leucanthemum* is commonly known in various districts. I have seen a similar abnormal growth of the common May-weed, *Matricaria inodora*, but not before of the *Chrysanthemum*. —P. Fox Lee, Dewsbury, 18th July, 1889.

SHERWOOD FOREST AND THE 'DUKERIES.'

Sissons's 'Beauties of Sherwood Forest': a Guide to the 'Dukeries' and Worksop: with map and copious illustrations. Compiled by F. Sissons. Worksop: Sissons and Son, 8, Potter Street. London: Hamilton, Adams and Co. * * 1888 [Small 8vo. 146 pages—price 1s.].

The guide now before us is a well-written and most interesting book, free from superfluous verbiage and replete with the kind of information that visitors most wish to possess.

Due attention is paid to the natural beauties which more than human edifices form the peculiar charm of the district, and the magnificent and famed Oaks—the 'Major,' the 'Parliament,' the 'Greendalè,' and others—are successively treated of, while additional value is given to the guide by chapters of special interest to readers of this journal in which the Rev. Hilderic Friend discourses of the botany of the district and another (unnamed) contributor possessing intimate knowledge of the subject describes the cave-explorations which have been carried on at Cresswell Crags under the Superintendance of the Rev. J. Magen Mello.

We wish every success to the Guide, and trust that in future editions its compiler may be able to include chapters dealing with the far-famed Entomology of Sherwood, its interesting avifauna, and the mollusca which inhabit the great lakes at Thoresby and Clumber.

NOTES—ORNITHOLOGY.

Redshanks breeding near York.—Some ten years ago Mr. E. Warrington began to 'flood' his ings on the banks of the Wharfe, in the parish of Ryther, opposite Nun Appleton. A few years after, Redshanks (*Totanus calidris*) began to breed there, probably disturbed in their haunts at Strensall by the recent military occupation. I saw three pair of these birds last week, in walking from Ulleskelf Station to Ryther to celebrate my father and mother's 58th wedding day. The old birds, whose young ones I saw also, flew round my head with vociferous cries, their legs, stretched back under the tail, gleamed a reddish colour, and the expanded wings showed on the upper surface a well-defined white line. This was not visible when the wings were folded. The birds settled repeatedly on sawn stumps of willow trees, and also on tender twigs of small trees in the hedgerow. The birds were in company with a few Green Plovers (*Vanellus vulgaris*). As the above is a new habitat for breeding, I send information to *The Naturalist*.—E. MAULE COLE, Wetwang Vicarage, York.

Curious Nests of Missel Thrush.—On May 14th I found a most curious nest of the Missel Thrush (*Turdus viscivorus*) at Birk Crag near Harrogate. It was composed externally almost entirely of large white feathers, which stuck out all round, giving it a most conspicuous appearance.

Last year I found a nest of the same species in Barber's Coppice, built externally of bookbinders' cuttings, which blew about with the wind, of course making the nest easily discernable. A curious fact is that in this same coppice for five years I have found nests composed for the greater part of these paper shavings.

For the last three years a Missel Thrush, and I presume the same bird, has built a nest of this material and in exactly the same place every year.—RILEY FORTUNE, Harrogate, June 1889.

YORKSHIRE SCENES, LORE, AND LEGENDS.

Yorkshire: its Scenes, Lore, and Legends; elaborated from a Prize Essay written for the Bradford Geographical Exhibition, 1887. By M. Tait. Leeds: E. J. Arnold, 1888.

A well got up and very readable pocket volume, which deals with a large subject as fully as can be expected in a hundred duodecimo pages. Its scope is physical, historical, and archæological. The book is illustrated by a geological map, a map of Roman Yorkshire, a coloured contour-map of the county, and seven others of the different river-basins. These maps, compiled by Mr. F. D. King, are clearly drawn, and seem to be accurate, but the scales should have been given.

The division into river-valleys adopted in the text is a useful one, but it would have been more convenient to treat the coast separately, or to divide it into Hull, Derwent, and Esk, rather than to place it under the heading of the Ouse. It is strange, too, to find Cleveland and the Wolds under the title 'The South-West.'

There is a loose statement on p. 3, which might mislead a novice: 'The weakest parts [of the earth's crust] are forced up highest, and when the whole area is raised above sea-level, these highest parts are mountains and hills.' There is, probably, no example of an anticlinal hill in Yorkshire, the elevations being all carved out by denudation, as is implied on the next page, although a few features, such as Giggleswick Scar and Scarborough Castle Hill, are partly determined by dislocations. Again, the author is unfortunate (p. 17) in ascribing any part of the relief of the surface to marine action; even if such valleys as Nidderdale were ever 'fiords,' they did not owe their form to the sea, which is a universal leveller.

The general physical features of the county and its legendary associations are well handled, and illustrated by engravings; a list is also given of the chief residential seats of Yorkshire. After some notes on vegetation and its dependence on the nature of the soil, we have a sketch of Yorkshire history from pre-Roman times to the Board School era, with some notes on the rise of the textile industries.

The concluding section on 'Races and their Traces' is interesting. The author, however, should not confuse natural stones like Austin's Stone at Drewton with Christian monuments such as the Rudstone (rood-stone) near Bridlington. In saying that the Saxon and Danish irruptions have left few traces of defensive works, it would have been well to mention Danes' Dyke at Flamborough, though this may possibly be of British age.

The book will serve as a useful guide to the lore of the county, and is more portable than the classical 'Rivers, Mountains, and Sea-Coast' of the great Yorkshire geologist.—A. H.

BIBLIOGRAPHY:

Papers and records published with respect to the Natural History and Physical Features of the North of England.

BIRDS, 1887.

THE remarks prefixed to the bibliography for 1886 at p. 145 of the present volume apply equally to the instalment now published.

ANON. [no signature]. **York N.E.**

[Kittiwake (white) and Gannet in Yorkshire ; the former (*Rissa*) at Flamborough ; and the latter (*Sula*) shot at Crayke]. Nat. World, Jan. 1887, iv. 2.

ANON. [signed 'Auceps']. **York S.E.**

Habits of the Pink-footed Goose [*Anser brachyrhynchus*] in East Yorkshire [based on twenty years' experience ; a full and detailed paper, with comparative references made to Bean Goose (*A. segetum*)]. Field, Jan. 1st, 1887, p. 15, Jan. 15th, p. 82, and Jan. 22nd, p. 147.

Isle of Man.

ANON. [two notes, signed 'The Man with the Straight I' and 'W.W.'].

Snipe Shooting in the Isle of Man [noting the comparative frequency of *Scolopax rusticola*, *Gallinago cœlestis*, and *Perdix cinerea*]. Field, Jan. 8th, 1887, p. 42.

ANON. [signed 'J.F.']. **York N.E.**

Great Northern Diver [*Colymbus glacialis*] near Thirsk [shot near Birdforth]. Field, Jan. 8th, 1887, p. 54 ; and (not signed) Sci. Goss., May 1887, p. 119.

ANON. [signed 'E. McC. (Guernsey)']. **York S.E.**

Birds [*Corvus frugilegus*?] **alighting upon ships at sea** [five or six miles off Flamborough Head]. Field, March 26th, 1887, p. 436.

ANON. [Editorial]. **Linc. N.**

[Newspaper Science ; exquisitely curious account of a rara avis ; which eventually turned out to be *Sula bassana*]. Nat., April 1887, p. 115 ; and May, p. 154.

ANON. [signed 'High Legh']. **Cheshire.**

Thrush's Nest upon a hat-peg [at High Legh, Cheshire, in a cricket-pavilion ; species of thrush not stated]. Field, May 7th, 1887, p. 622.

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

Peregrine Falcon [*Falco peregrinus*—killed near Retford ; 38 inches across the wings]. Sci. Goss., June 1887, p. 142.

ANON. [signed 'J.L.D. (Crathorne, Yarm)']. **York N.E.**

Young Woodcock [*Scolopax rusticola*] **in the North Riding** [at Crathorne, Yarm, flushed 24th July, 1887]. Field, July 30th, 1887, p. 199.

Lanc. S., Notts.,

ANON. [Editor of N.H.J.]. **York S.W., Mid W., N.E., Cumbld.**

Migrant Table, No. 11, 1887 [giving dates of arrival of twenty-six species of migrants at Mansfield (E. Pickard), Barnsley (T. Lister), Ackworth (Association Report), York (numerous observers named), Thirsk (A. B. Hall), Penketh (Scholars, per J. T. Gumersall), and Upper Solway (F. Carr of Silloth, and Wigton Association Report)]. Nat. Hist. Journ., Sep. 15th, 1887, xi. 138.

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

Ackworth Reports.—Natural History Society [*Fringilla montifringilla*, *Coccothraustes vulgaris*, and *Daulias* at Stapleton ; 'Terns,' *Alcedo*, *Certhia*, *Regulus cristatus* at Ackworth ; and at Brierley Common two eggs of *Cuculus* in nests of *Anthus pratensis*]. Nat. Hist. Journ., Sep. 15, 1887, xi. 128.

ANON. [Editor of Zoologist]. **Yorksh., Linc., Northbld.**

[Review of] Report on the Migration of Birds in the Spring and Autumn of 1886 [with notes culled from the reports as to the best points of migration on the coast, and as to the migration of *Rallus aquaticus*, etc.]. Zool., Oct. 1887, xi. 397-400.

ANON. [signed D.F.C.]. **Isle of Man.**

The Manx Puffin [*Puffinus anglorum*; description; from a book on 'The Ancient and Present State of the County Down,' 1744]. Manx Note Book, No. 12, Oct. 1887, iii. 190.

ANON. [Editor of Field]. **Derbyshire, Lanc. S., York N.E.**

Belated Swallows [a general discussion of the subject, with a table, in which Swallows (species not stated) are recorded for Repton, Oct. 17th (A. E. Malaher); Southport, one, Oct. 19th (T. C. Barrett); Cliftonfield, York, Oct. 22nd (A. S. Carnegy), and Willington, Derby (W. A. Biddle)]. Field, Dec. 10th, 1887, p. 907.

OLIVER V. APLIN. **Linc. N.**

Scarcity of Fieldfares [(*Turdus pilaris*), and absence of Redwings (*T. iliacus*) at Freiston Shore, Lincolnshire, in Nov. 1886]. Zool., Feb. 1887, xi. 71.

OLIVER V. APLIN. **Linc. N.**

Ornithological Notes from Lincolnshire [Freiston] and Norfolk [Nov. 16th and 17th, 1886; during two days at Freiston Shore were noted *Tringa alpina*, *T. canutus*, *Ægialitis hiaticula*, *Numenius arquata*, *Totanus calidris*, *Ardea cinerea*, *Gallinago cœlestis*, *Charadrius pluvialis*, *Vanellus*, *Corvus cornix*, *C. corone*, *Anas boschas*, *Bernicla brenta*, *Plectrophanes nivalis*, *Falco æsalon*, *Linota flavirostris*, *L. cannabina*, *Carduelis*, *Anthus obscurus*, *A. pratensis*, and *Alauda arvensis*]. Nat., March 1887, p. 79.

OLIVER V. APLIN. **Notts.**

Partridges [*Perdix cinerea*] **with White 'Horse-shoes'** [are often met with in Notts., teste J. Whitaker]. Zool., March 1887, xi. 108.

OLIVER V. APLIN. **York S.E., Notts.**

A Visit to Rainworth Lodge [in Aug. 1883 and April 1886; *Cygnus olor*, *Anas boschas*, *Sturnus*, *Accentor modularis*, *Erithacus*, *Parus*, *Muscicapa*, *Gallinago cœlestis*, *Caprimulgus*, *Fulica*, *Phylloscopus rufus*, *Gallinula*, *Fuligula cristata*, *Vanellus*, *Spatula*, *Hirundo*, *Querquedula crecca*, *Hydrochelidon nigra*, *Buteo vulgaris*, *Tringa canutus*, *Sula*, *Perdix rufa*, *Saxicola œnanthe*, *Pratincola rubetra*, *P. rubicola*, *Turdus torquatus*, *Tetrao tetrix*, *Tachybaptes*, *Accipiter nisus*, *Cuculus*, *Caprimulgus*, *Cotile*, *Turdus pilaris*, *Alcedo*, *Ardea cinerea*, *Columba palumbus*, *Clangula glaucion*, *Fuligula ferina*, *F. marila*, *Œdemia*, *Pandion*, *Botaurus stellaris*, *Phalaropus fulicarius*, *Platalea*, *Mareca*, *Caprimulgus ægyptiacus*, *Phasianus*, *Tetrao urogallus*, *Corvus cornix*, and *Phalacrocorax carbo* noted in the grounds; and in the house specimens of *Tinnunculus vespertinus* (Bridlington 1865), *Scops asio* (Renwick 1875), *Cinclus melanogaster* (Southwell), *Ardea comata* (Notts. 1871), *Clangula albeola* (Bridlington 1864-5), *Cosmonetta histrionica* (Filey 1862), *Xema sabinii* (Bridlington 1875), *Puffinus griseus* (Flamborough 1881), and a number of Varieties]. Nat., July 1887, pp. 193-201.

H. T. ARCHER. **Northumberland.**

Grey Plover [*Squatarola helvetica*] **and Greenshank** [*Totanus canescens*] in Northumberland [on the coast, Sep. 7th and Aug. 16th, 1887]. Nat., Nov. 1887, p. 348.

JAMES BACKHOUSE, jun. **York N.E.**

The Yorkshire Naturalists' Union at Saltburn [30th May, 1887; birds noted—*Turdus merula*, *T. musicus*, *T. viscivorus*, *Cinclus*, *Fringilla cœlebs*, *Ligurinus*, *Emberiza citrinella*, *Accentor modularis*, *Passer domesticus*, *Alauda arvensis*, *Motacilla lugubris*, *M. melanope*, *Acredula caudata*, *Parus major*, *P. cæruleus*, *P. britannicus*, *Certhia*, *Troglodytes*, *Corvus frugilegus*,

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C. monedula, *Sturnus*, *Phasianus*, *Columba palumbus*, *C. œnas*, *Larus canus*, *L. argentatus*, *Rissa*, *Phalacrocorax carbo*, *Saxicola œnanthe*, *Pratincola rubetra*, *Acrocephalus phragmitis*, *Sylvia atricapilla*, *S. cinerea*, *Phylloscopus rufus*, *P. trochilus*, *P. sibilatrix*, *Locustella*, *Anthus trivialis*, *Hirundo*, *Chelidon*, *Cotile*, *Cypselus*, *Muscicapa grisola*, *Cuculus*, and *Tringoïdes*]. Nat., July 1887, p. 218.

JAMES BACKHOUSE, jun. **York N.E.**

Yorkshire Naturalists at Gormire Lake and Thirkleby Park [birds noted were—*Ardea cinerea*, *Tringoïdes*, *Turdus torquatus*, and *Cypselus* at Gormire; account of the Decoy at Thirkleby; account of the nesting there of *Mareca*, *Chaulelasmus*, *Fuligula cristata*, *F. ferina*, *Tadorna cornuta*, *Querquedula crecca*, *Dafila*, and *Anas boschas*]. Nat., Aug. 1887, pp. 235-244.

JAMES BACKHOUSE, jun. **York N.W.**

Yorkshire and Westmorland Naturalists at Sedbergh [Aug. 1st, 1887: *Corvus corax*, *Linota flavirostris*, *Turdus torquatus*, *Saxicola œnanthe*, three *Motacillæ*, *Cinclus*, and both *Pratincolæ* noted]. Nat., Sep. 1887, p. 278.

JAMES BACKHOUSE, Jun. **York S.E.**

The Sooty Shearwater [*Puffinus griseus*] **at Flamborough** [23rd Aug., 1887; a pair, adult male and female; discussion of Yorkshire occurrences; and record of occurrences of *Puffinus anglorum* at Bridlington and at Dunnington near York]. Nat., Oct. 1887, p. 291.

J. BACKHOUSE, Jun. **York S.E., York N.E., Northumberland S.**

The Sooty Shearwater [(*Puffinus griseus*) occurring at Filey, four shot 26th Aug., 1887; and at Newbiggen-by-Sea, Aug.; Editorial note that the species occurs almost annually on the Yorkshire coast, at Flamborough especially]. Nat., Dec. 1887, p. 354.

MATTHEW BAILEY. **York S.E.**

Flamborough Bird Notes [three notes with same heading; dates of arrival of *Motacilla lugubris*, *M. raii*, *Hirundo*, *Sylvia curruca*, *Saxicola œnanthe*, *Ruticilla phœnicurus*, *Turdus merula*, *T. musicus*, *Linota cannabina*, *Muscicapa atricapilla*, *Turdus torquatus*, *Pratincola rubicola*, *P. rubetra*, *Turtur*, *Corvus cornix*, *Plectrophanes nivalis* (28th May), *Cypselus*, *Anser canadensis*, and *Eudromias morinellus*]. Nat., Aug. 1887, p. 226.

MRS. BARKWORTH. **York S.E.**

Swallows [*Hirundo rustica*] **Nesting Indoors upon a Curtain Pole** [at Raywell, Cottingham, near Hull; detailed account given]. Field, Oct. 8th, 1887, p. 549.

J. BEANLAND. **York Mid W.**

Canada Goose [*Anser canadensis*] **breeding at Bingley** ['in a wild state']. Nat. World, Oct. 1887, iv. 175.

EDWARD F. BECHER. **Linc.**

Visitors to my Bungalow [with an incidental remark that the late Rev. R. Sutton, formerly rector of Bilsthorpe, Notts., had in his collection eggs of the Kite (*Milvus ictinus*), taken in Lincolnshire]. Trans. and 34th Rep. of Nottingham Nat. Soc. for 1886 [pub. 1887], p. 60.

W. BECHER. **Notts., Chesh., Linc.**

Montagu's Harrier [*Circus cineraceus*] **in Notts.** [killed June 1886 at Boughton, Notts., immature male; Editor appends note that *C. cyaneus* was shot early in November 1886, at Wild Boar Clough, near Macclesfield; and refers to an article in the 'Field' (Dec. 4th, 1886, for account of its breeding in Lincolnshire sixty years ago]. Zool., Jan. 1887, xi. 26.

F. JEFFREY BELL. **Yorkshire.**

The 'Grouse Disease' [two Yorkshire specimens of *Lagopus scoticus* found dead on a moor showed no sign of disease, and had no other parasite than the 'common tapeworm']. Zool., July 1887, xi. 265.

F. Jeffrey Bell. **York Mid W.**

Grouse Disease [extracts from letter from Lord Walsingham that his moors in Washburndale have been quite free from the true epidemic caused by *Strongylus pergracilis*]. Zool., Aug. 1887, xi. 302.

F. Boyes. **York S.E.**

Habits of the Pink-footed Goose [*Anser brachyrhynchus*] **in East Yorkshire** [corroborating the remarks of 'Auceps,' and claiming priority in pointing out that the Yorkshire Wolds geese were of this species and not the Bean Goose]. Field, Jan. 8th, 1887, p. 54; and Jan. 22nd, p. 110.

F. Boyes. **York S.E.**

Great Tit [*Parus major*] **killed by Bees** [who attacked it when trapped by the leg; at Beverley it is very destructive to bees]. Field, Jan. 8th, 1887, p 54.

F. Boyes. **York S.E.**

Food of Tits [*Parus major* and *P. cæruleus*, as observed at Beverley]. Field, Jan. 15th, 1887, p. 82.

F. Boyes. **York S.E.**

Habits of the Bernicle Goose [(*Bernicla leucopsis*); and its occasional occurrence in Holderness]. Field, Jan. 22nd, 1887, p. 110.

F. Boyes. **York S.E.**

The Geese of the Humber District [their habits and distribution, written in criticism of Mr. Cordeaux's article; *Anser brachyrhynchus* and *A. segetum* dealt with]. Field, Feb. 5th, 1887, pp. 180-181; Feb. 19th, p. 252.

F. Boyes. **York S.E.**

The Green Sandpiper (*Helodromas ochropus*); habits and probable wintering near Beverley; reference also made to Redshank (*Totanus calidris*) and Greenshank (*T. canescens*)]. Field, March 12th, 1887, p. 371.

F. Boyes. **York S.E. or York S.W.**

Breeding of Wild Geese in East Yorks. [somewhere near Goole; five goslings reared; species uncertain]. Field, Sep. 17th, 1887, p. 478.

F. Boyes. **York S.E.**

Solitary Snipe [*Gallinago major*] **and Greenshank** [*Totanus canescens*] **in East Yorks.** [near Beverley; details of capture given]. Field, Sep. 17th, 1887, p. 478.

F. Boyes. **York S.E.**

Early Appearance of Wild Geese [(*Anser brachyrhynchus*?); last week in Aug. 1887, in Holderness]. Field, Sep. 17th, 1887, p. 478.

F. Boyes. **York S.E., Linc. N.**

A Big Shot [with a quotation and criticism of Howard Saunders' statement (Brit. Birds, ed. 4) as to the Dotterell (*Eudromias morinellus*) frequenting marshes on the Yorkshire and Lincolnshire coast during the spring migration]. Field, Oct. 1st, 1887, p. 534.

F. Boyes. **York S.E.**

Sabine's Gull [*Xema sabinii*] **on the Yorkshire Coast** [a young one shot at Flamborough Head on the '6th ult.']. Field, Oct. 1st, 1887, p. 537.

F. Boyes. **York S.E.**

The Departure of Swallows [begins much earlier than is implied by P. Inchbald's note; fully half have left East Yorkshire by the end of August]. Field, Oct. 1st, 1887, p. 537.

F. Boyes. **York S.E.**

Off Flamborough Head [detailed account of a day's shooting from a boat, 8th Oct., 1887; *Turdus iliacus*, *Larus argentatus*, *Sula*, *Œdemia nigra*, *Alca torda*, *Stercorarius pomatorhinus*, *S. crepidatus*, *Rissa*, *Larus ridibundus*, *Œdemia fusca*, *Harelda*, *Regulus cristatus*, *Fringilla cœlebs*, *Linota cannabina*, *L. flavirostris*, *Fringilla montifringilla*, *Turdus merula*, *Sturnus*, *Phylloscopus rufus*, and *Hæmatopus* noted]. Field, Oct. 29th, 1887, p. 654.

Naturalist,

F. Boyes. **York S.E.**

Arrival of Woodcocks [(*Scolopax rusticola*) **at Flamborough.**, Oct. 1st, 1887, and later; details as to average times of arrival; *Asio accipitrinus* also noted as sometimes arriving at Spurn as early as the end of September]. Field, Oct. 29th, 1887, p. 679.

F. Boyes. **York S.E.**

Sooty Shearwaters [*Puffinus griseus*] **at Flamborough** [in autumn 1887; several shot; extremely rare on this coast]. Field, Oct. 29th, 1887, p. 679.

F. Boyes. **York S.E.**

Solitary Snipes [*Gallinago major*] **from East Yorkshire** [one, adult, near Burton Agnes, and one, immature, near Pocklington]. Field, Oct. 29th, 1887, p. 679.

F. Boyes. **York S.E., Linc. N., Lanc. W., Cumberland.**

The Dotterel [*Eudromias morinellus*] **in Marshes** [in Yorkshire, Lincolnshire, Lancashire, and Cumberland; rejoinder to Howard Saunders]. Field, Nov. 12th, 1887, p. 754.

F. Boyes. **York S.E.**

Fulmar Petrel [*Fulmarus glacialis*] **at Flamborough** [Sep. 27th, 1887, a fine old bird shot]. Field, Nov. 26th, 1887, p. 829.

F. Boyes. **York S.E.**

Little Gull [*Larus minutus*] **and pure white Kittiwake** [*Rissa tridactyla*] at Flamborough [about a dozen of the Little Gull, including two adults]. Field, Nov. 26th, 1887, p. 829.

F. Boyes. **York S.E.**

Woodcocks [(*Scolopax rusticola*) **and their habits**; criticism of a note by E. T. Booth]. Field, Nov. 26th, 1887, p. 829.

F. Boyes. **York S.E.**

Long-tailed Ducks [*Harelda glacialis*] **at Flamborough** [several shot, young males and females]. Field, Nov. 26th, 1887, p. 829.

F. Boyes. **York S.E., Linc. N.**

The Dotterel [*Eudromias morinellus*] **in Marshes** [in North Lincolnshire, East Yorkshire; note in reply to criticism]. Field, Nov. 26th, 1887, p. 829.

W. D. Braithwaite. **York S.W.**

Ackworth School Natural History Society [Shrikes (*Lanius*) near Ackworth, nesting twelve years ago at Hessle; combat between *Tinnunculus alaudarius* and *Corvus frugilegus* near Hemsworth Dam; *Hirundo rustica* hawking, Oct. 26th, over quarter-inch ice on the mill-dam]. Nat. Hist. Journ., Nov. 15th, 1887, xi. 186.

Arthur B. Browne. **York S.W.**

The Cuckoo [*Cuculus canorus*]**'s Note in July** [heard July 25th, in a wood between Greno Wood and Wharncliffe Chase; a late date]. Field, July 30th, 1887, p. 199.

Alfred F. Buxton. **Derbyshire.**

Note on the Ring Ouzel [(*Turdus torquatus*), at Castleton, Derbyshire, robbing a nest for the sake of eating the eggs]. Zool., Aug. 1887, xi. 305.

M. Carr. **? Cumberland.**

Great Northern Diver [*Colymbus glacialis*] **on the Solway** [seen April 5th, 1887]. Nat. Hist. Journ., May 16th, 1887, xi. 85.

Basil Carter. **York N.W.**

Late Stay of Swallows [*Hirundo* and *Chelidon*] **and Swifts** [(*Cypselus*) at Masham; dates stated]. Field, Oct. 15th, 1887, p. 600.

James Carter. **York N.W.**

Arrival of Sand Martins [(*Cotile*) **at Masham**; three seen, 23rd March, 1887; arrival in 1886 was 21st March]. Field, March 26th, 1887, p. 436.

JAMES CARTER. **York N.W.**

Notes from [Masham] North Yorkshire [*Saxicola œnanthe* arrived April 10th; *Totanus calidris* arrived; Sea-gulls passed over; *Scolopax rusticola* noted April 10th and 11th]. Field, April 16th, 1887, p. 534.

JAMES CARTER. **York N.W.**

Reported Arrival of the Cuckoo [*Cuculus canorus*] **and Flycatcher** [*Muscicapa grisola*; points out necessity of *see*ing as well as hearing the Cuckoo]. Field, April 23rd, 1887, p. 580.

J. CARTER. **York N.W.**

Arrival of Summer Birds [at Masham; *Phylloscopus rufus*, April 18th, *P. trochilus*, April 19th, *Locustella nævia*, April 20th, *Acrocephalus phragmitis*, May 3rd, *Crex*, May 4th]. Field, April 23rd, 1887, p. 581, May 7th, p. 622.

JAMES CARTER. **York N.W.**

The Spotted Flycatcher [(*Muscicapa grisola*) **and the Pied Flycatcher** (*M. atricapilla*) as observed at Masham, where the former nests; the 25th April is the earliest date on which it has been noted]. Field, May 28th, 1887, p. 726.

JAMES CARTER. **York N.W.**

Nesting Habits of the Pied Flycatcher [(*Muscicapa atricapilla*) in Yorkshire]. Field, June 4th, 1887, p. 765.

JAMES CARTER. **York N.W.**

Cirl Bunting [*Emberiza cirlus*] **nesting in Yorkshire** [at Masham]. Field, Oct. 1st, 1887, p. 537.

TOM CARTER. **York N.W.**

Gannet [*Sula bassana*] **occurring inland near Masham** [on the Swinton estate, 2nd Oct., 1886; *Corvus cornix* arrived at Masham 4th Oct., *Turdus iliacus* 9th Oct., 1886]. Nat., Feb. 1887, p. 45.

ABEL CHAPMAN. **Durham.**

Little Gull [*Larus minutus*] **in co. Durham** [maintaining that the specimen recorded in Zool. 1886, p. 457, is certainly this species in first plumage and *not Xema sabinii*, as suggested in Editorial note to first record]. Zool., Jan. 1887, xi. 26.

ABEL CHAPMAN. **Northumberland, Durham.**

Wildfowl: their haunts and habits [on the English North-East Coast; *Numenius arquata*, *Limosæ*, *Squatarola*, *Tadorna cornuta*, *Fuligula marila*, *Clangula glaucion*, *Mergus*, *Phalacrocorax*, *Podiceps*, *Colymbus*, *Anas boschas*, *Cygnus bewicki*, *Bernicla brenta*, and *Mareca* noted]. Field, Jan. 22nd, 1887, p. 112.

ABEL CHAPMAN. **Northumberland, Durham.**

Wildfowl: their haunts and habits [on the English North-East Coast]. Game-Ducks [*Mareca*, *Anas boschas*, *Fuligula marila*, *Clangula glaucion*, *Querquedula crecca*, *Dafila*, *Chaulelasmus*, *Querquedula circia*, *Spatula*, and *Tadorna cornuta*]. Field, March 12th, 1887, p. 371, and March 26th, p. 435.

ALFRED CRAWHALL CHAPMAN. **Lincs., Northumberland, Durham.**

On the Habits and Migrations of Wildfowl [voluminous notes of experience on the coasts of Northumberland and Durham; the species mentioned are *Anas boschas*, *Fuligula marila*, *F. cristata*, *F. ferina*, *Clangula glaucion*, *Querquedula crecca*, *Mareca*, *Mergus serrator*, *M. merganser*, *Œdemia nigra*, *Œ. fusca*, *Harelda*, *Somateria mollissima*, *Tadorna cornuta*, *Procellaria pelagica*, *Fulmarus glacialis*, *Bernicla brenta*, *Dafila*, *Spatula*, *Fulica*, *Gallinula*, *Tachybaptes*, *Anser albifrons*, *A. cinereus*, *A. segetum*, *A. brachyrhynchus*, *Bernicla leucopsis*, *Turdus pilaris*, *T. iliacus*, *Plectrophanes nivalis*, *Alauda arvensis*, *Dendrocopus major*, *Cygnus musicus*, *Vanellus*, *Charadrius pluvialis*, *Totanus calidris*, *Hæmatopus*, *Larus fuscus*, *L. marinus*, *Numenius arquata*, *Colymbus glacialis*, *C. arcticus*, *C. septentrionalis*, *Podiceps auritus*, *P. nigricollis*, *P. cristatus*, and *P. griseigena*, and a Lincolnshire example of *Colymbus arcticus* is noted]. Zool., Jan. 1887, xi. 3-21.

ROBERT W. CHASE. **Northumberland.**

Harlequin Duck [*Cosmonetta histrionica*] **on the Northumbrian Coast** [stating that the specimen exhibited by H. Saunders to the Zool. Soc. was not the one recorded by Mr. Tuck, but the companion bird shot at same time]. Zool., May 1887, xi. 196.

MILLER CHRISTY. **York N.E.**

The Birds of our Premises: An Account of the Avifauna of the School Premises [6¼ acres in extent] at 20, Bootham, York [nearly sixty species enumerated, with details, a remarkably comprehensive list for an *urban* area; some of the observations are by E. J. Gibbins]. N.H.J., March 15th, 1887, xi. 22-27; April 15th, 46-50.

WM. EAGLE CLARKE. **York S.E.**

The Geese of the Humber District [criticizing F. Boyes' notes, and upholding the claim of Arthur Strickland to priority in respect of the specific identity of the species frequenting the Yorkshire Wolds]. Field, Feb. 12th, 1887, p. 215, and Feb. 26th, p. 297.

W. EAGLE CLARKE. **York S.W.**

An Old Yorkshire Decoy [on Potterick Carr, Doncaster, the earliest formed in England; full details and history]. Field, Nov. 26th, 1887, p. 828.

W. C. CLARKSON. **York Mid W.**

Great Grey Shrike [*Lanius excubitor*] **in Nidderdale** [at New York, Jan. 14th, 1887]. Nat., March 1887, p. 83.

ARTHUR COLLINSON. **York S.W.**

Brief Notes from the Prize Diaries, 1886 [*Hirundo* and *Cypselus* killed at Walton Hall by the severe weather of May; nest of *Chelidon* at Wentbridge, 29th Sep., 1886; curious nesting-site of *Muscicapa grisola* at Ackworth; nest of *Parus britannicus* at Badsworth with 15 eggs; and Rooks (*Corvus frugilegus*) 'tumbling,' at Ackworth]. Nat. Hist. Journ., May 16th, 1887, xi. 78.

E. COMBER. **Cheshire.**

Arrival of Summer Birds [at Leighton, Parkgate, Cheshire; *Cypselus* and *Crex*, May 4th]. Field, May 7th, 1887, p. 622.

JOHN CORDEAUX. **Cheshire, Lancashire, Cumberland, Yorkshire, Lincs., Northmbld., Isle of Man.**

Report . . . . on the Migration of Birds at Lighthouses and Light-vessels, ... [an abstract of the much fuller report; including notes on the more important movements and occurrences]. Brit. Assoc. Rep., Birmingham, 1886 [pub. 1887], pp. 264-267.

JOHN CORDEAUX. **Linc. N. and S., York S.E.**

Bird-Notes from the Humber District [*Milvus ictinus* near Somercotes, Oct. 1886; very light-coloured *Buteo vulgaris* at Blankney, Oct. 2nd, 1886; *Phalaropus fulicarius* at Bassingham near Lincoln, Oct. 14th, 1886; young *Sula* near Kirton-in-Lindsey, Oct. 1886; *Tachybaptes* at Spurn, Oct. 1886; and *Turdus torquatus* on the Lincolnshire coast, Oct. 1886]. Nat., Jan. 1887, p. 23.

JOHN CORDEAUX. **York S.E., Linc. N.**

The Geese of the Humber District [detailed observations on their habits, distribution, etc.; *Anser segetum*, *A. brachyrhynchus*, *A. ferus*, and *A. albifrons* referred to]. Field, Jan. 29th, 1887, p. 146; and Feb. 12th, p. 215.

JOHN CORDEAUX. **Linc. N.**

Some Footprints in the Snow [as observed at Great Cotes near **Grimsby,** of *Gallinula chloropus*, *Querquedula crecca*, *Anas boschas*, *Ardea cinerea*, *Scolopax rusticola*, *Perdix cinerea*, *Gallinago cœlestis*, *Turdus pilaris*, *Sturnus*, *Motacilla melanope*, *Corvus frugilegus*, and *Columba palumbus*]. Nat., March 1887, pp. 72-74.

JOHN CORDEAUX. **Linc. N.**

Distribution of the White-bellied Brent Goose [(*Bernicla brenta*); being notes of three shot near Tetney Haven in Jan. 1887, all of the white-bellied or Atlantic type]. Zool., April 1887, xi. 152.

JOHN CORDEAUX. **Linc. N.**

The Dotterel [*Eudromias morinellus*] **in Marshes** [in North Lincolnshire; elucidatory note in reply to F. Boyes]. Field, Nov. 26th, 1887, p. 829.

A. N. CURZON. **Derbyshire.**

Goosander [*Mergus merganser*] **in Derbyshire** [fine male shot Dec. 30th, 1886, at Kedleston, near Derby]. Field, Jan. 22nd, 1887, p. 146.

HAROLD DAVY. **York S.W.**

Gull at Sheffield [in Jan. 1887; stated to be *Larus marinus*]. Nat. Hist. Journ., Feb. 15th, 1887, xi. 16. [The next number has a note headed 'Gull (?) (or Cormorant?) at Sheffield,' and stating F. O. Morris's opinion that the bird was a Cormorant]. Nat. Hist. Journ., March 15th, 1887, xi. 38.

T. E. D[ENHAM]. **York S.E.**

Robbing the Skouts [i.e. Guillemots (*Lomvia troile*); at Flamborough Cliffs; a long description of cliff-climbing for eggs of Guillemots (*L. troile*), Razorbills (*Alca torda*), Puffins (*Fratercula arctica*), and Kittiwakes (*Rissa tridactyla*); other birds are also mentioned, particularly Jackdaws (*Corvus monedula*), Herring Gulls (*Larus argentatus*), Peregrine (*Falco peregrinus*), and Carrion Crows (*Corvus corone*)]. Nat. World, April 1887, iv. 65-68; and May 1887, iv. 89-91.

F. W. DICKINSON. **York S.W.**

Late Stay of Swift [*Cypselus apus*] **near Rotherham** [16th Sep., 1887]. Nat., Nov. 1887, p. 348.

C. WOLLEY DOD. **Cheshire.**

Rooks [*Corvus frugilegus*] **expelled by Carrion Crows** [(*C. corone*) at Edge Hall, Malpas]. Field, April 16th, 1887, p. 534, and April 23rd, p. 580.

J. C. D[ONALD]. **Cumberland.**

Curious Site for Blackbird [*Turdus merula*]**'s Nest** [at Stanwix near Carlisle, on a tubular water-spout beneath the eaves of a house]. Field, May 14th, 1887, p. 653.

TOM DUCKWORTH. **Cumberland.**

Our Summer Visitants. Part III. [*Turdus torquatus*, *Saxicola œnanthe*, *Caprimulgus*, *Crex*, and *Tringoïdes*, treated of in detail as to localities, habitats, habits, local names, etc.]. Trans. Cumb. and Westm. Assoc., No. xii (1886-87, pub. 1887), pp. 87-109.

W. DUCKWORTH. **Cumberland.**

Fearlessness of the Pied Flycatcher [(*Muscicapa atricapilla*); quotation from Macpherson and Duckworth's 'Birds of Cumberland']. Field, June 25th, 1887, p. 922.

D. EMBLETON. **Northmbld. S., Durham, York N.W., Westmld.**

A Catalogue of the Place-names in Teesdale [including some derived from the Eagle, Hawk, Buzzard, Raven, Crow, Gander, Heron, Plover, Grouse, Drake, Pigeon, and Lark; see pp. xiii, 8, 30, 96 (Raven), 39 (Falcon Clints), 46 and 47 (Pigeon), 76, 87 (Eagle), 77 (Dow or Cushat), 87 (Lark), 88 (Plover or Peewit), 95 (Buzzard), 95, 115 (Dove), 95 (Heron), 103 (Hawk), 25, 120, and 121 (Grouse), 124 (Hawk), 153 (Crow), 154 and 163 (Raven), 163 (Lark), 167 (Grouse), 167 (Hawk), 168 (Dove), 169 (Raven), 186 (Grouse), 188 (Dove), 205 (Hawk), 210 (Grouse). 210, 218 (Dove)]. Nat. Hist. Trans. of Northumb., Durham, and Newc., vol. ix. part i (1887), pp. i-xviii. and 1-223.

A. T. H. EVANS. **Derbyshire.**

Reported Capture of Golden Eagle [really Sea Eagle (*Haliaëtus albicilla*)] **in Derbyshire** [see the original record by G. T. Groves, Field, Dec. 3rd, 1887, p. 852]. Field, Dec. 10th, 1887, p. 907.

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WM. DENISON ROEBUCK, F.L.S.,

Sunny Bank, Leeds;

WITH THE ASSISTANCE IN SPECIAL DEPARTMENTS OF

J. GILBERT BAKER, F.R.S., F.L.S., Royal Herbarium, Kew;

CHAS. P. HOBKIRK, F.L.S., Dewsbury;

W. EAGLE CLARKE, F.L.S., M.B.O.U., Museum of Science & Art, Edinburgh;

GEORGE T. PORRITT, F.L.S., F.E.S., Greenfield House, Huddersfield;

ALFRED HARKER, M.A., F.G.S., St. John's College, Cambridge;

W. BARWELL TURNER, F.C.S., F.R.M.S., 38, Sholebroke Avenue, Leeds.

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YORKSHIRE NATURALISTS' UNION.—ENTOMOLOGICAL SECTION.—The President and Secretaries of the Section will be pleased to receive the names and addresses of those members specially interesting themselves in this branch. The object in view is to circulate a fairly complete list amongst the members of this section, and thereby to facilitate the exchange of information, and also, if sufficient encouragement is given, to publish (in the Annual Report of the Section) at the close of the season a list of Yorkshire Occurrences of Insects.

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The Editors of 'The Naturalist' would be pleased to receive offers of suitable papers for insertion during the next few months.

F. R. Fitzgerald. **York Mid W.**

Late Nesting of the Swallow [(*Hirundo*) at Starbeck; latter end of October, 1884; also of House Martin (*Chelidon*) at Pateley, Oct. 8th, 1886]. Nat. World, Jan. 1887, iv. 19.

F. R. Fitzgerald. **York Mid W., S.W., and S.E.**

Great Spotted Woodpecker [(*Dendrocopus major*) at Brighouse, at Easington (an extraordinary migration), Harlow Moor, Goldsborough, Ripley, Plumpton, and Harewood]. Nat. World, Feb. 1887, iv. 38.

F. R. Fitzgerald. **York Mid W.**

Blackbird [*Turdus merula*] **laying in Thrush**[*T. musicus*]**'s Nest** [at Harrogate and in Nidderdale]. Nat., March 1887, p. 78; Zool., May 1887, xi. 194.

F. R. Fitzgerald. **York Mid W.**

Albino Birds observed near Harrogate [*Turdus merula* (pied) at Harlow Moor for three years; *Passer domesticus* (pied) in Harrogate; *Alauda arvensis* (white), shot at Birk Crag, 1884; *Sturnus* (smoky-white), shot at Harrogate, 1884; and *Erithacus* (pied) at Oatlands]. Nat., March 1887, p. 78; and Zool., March 1887, xi. 110.

F. R. Fitzgerald. **York Mid W.**

The Hawfinch [*Coccothraustes vulgaris*] **at Harrogate** [several instances given]. Zool., April 1887, xi. 153.

F. R. Fitzgerald. **York Mid W.**

House Martins [*Chelidon urbica*] **nesting in October** [1886, at Starbeck and at Pateley Bridge]. Zool., May 1887, xi. 194.

F. R. Fitzgerald. **York Mid W.**

Great Spotted Woodpecker [*Dendrocopus major*] **and Hawfinch** [*Coccothraustes vulgaris*] **near Harrogate** [several occurrences for former, which breeds at Ripley; latter noted as breeding at Conyngham Hall; *Muscicapa atricapilla* also noted, at Harrogate]. Nat., Aug. 1887, p. 226.

Thomas Ford. **Linc. N.**

Herons [*Ardea cinerea*] **poaching by moonlight** [at Caistor]. Field, March 26th, 1887, p. 436.

Thomas Ford. **Linc. N., York Mid W., Notts.**

Late Arrival of Swallows [*Hirundo rustica*] **in North Lincolnshire** [at Caistor, only one seen to 5th May, 1887; at Newark-on-Trent a fair number 'last week,' and with *Cotile* in Wharfedale a 'fortnight ago']. Field, May 21st, 1887, p. 702.

Thomas Ford. **Linc. N.**

Stock Dove [*Columba œnas*] **nesting in Rabbit's Hole** [at Caistor]. Field, May 28th, 1887, p. 726.

Riley Fortune. **York Mid W.**

Gannet [*Sula bassana*] **inland near Harrogate** [at Crimple Viaduct, Oct. 1886]. Nat., Feb. 1887, p. 45.

Riley Fortune. **York Mid W., Durham, Northmbld., Lancs.**

Great Spotted Woodpecker [*Dendrocopus major*] **at Harrogate** [Three species of Woodpecker (*D. major*, *D. minor*, and *Gecinus viridis*) mentioned as nesting near Harrogate, and *Dryocopus martius* as having occurred at Ripley]. Nat. World, March 1887, iv. 57.

Riley Fortune. **York Mid W.**

Rare Birds at Harrogate [*Coccothraustes vulgaris*, *Anser brachyrhynchus*, *Mergus merganser*, and *Sula bassana*]. Nat. World, March 1887, iv. 58.

Riley Fortune. **York Mid W.**

Hawfinch [*Coccothraustes vulgaris*] **and Pink-footed Geese** [*Anser brachyrhynchus*] **at Harrogate** [localities and dates given]. Nat., March 1887, p. 83.

R. FORTUNE. **York Mid W.**

Arrival of Summer Birds [at Harrogate; *Saxicola œnanthe*, March 20th; *Cotile*, April 17th; *Phylloscopus trochilus*, April 2nd; *P. rufus*, March 19th; *Anthus trivialis*, April 10th; *Sylvia cinerea*, April 17th; *Pratincola rubetra*, April 17th; *Turdus torquatus*, April 8th; at Ripley near Harrogate, *Hirundo*, April 17th; *Phylloscopus sibilatrix*, April 17th; *Ruticilla phœnicurus*, April 17th; *Muscicapa grisola*, April 20th; *Crex*, April 23rd]. Field, April 30th and May 7th, 1887, pp. 612, 622.

RILEY FORTUNE. **York Mid W.**

Barn Owl [*Strix flammea*] **feigning Death** [at Harrogate; detailed anecdote]. Nat., May 1887, p. 132.

RILEY FORTUNE. **Northmbld. S., Durham.**

Ornithological Notes from Northumberland and Durham during 1885 [anent *Muscicapa atricapilla*, *Acrocephalus streperus*, *Totanus calidris*, *Cygnus olor*, *C. musicus*, *Fuligula ferina*, *Scolopax rusticola*, *Coccothraustes vulgaris*, *Pernis*, *Locustella nævia*, and *Pica caudata*]. Nat., May 1887, pp. 132-133.

RILEY FORTUNE. **Northmbld. S. and Cheviotland.**

Redshank [*Totanus calidris*] **in Northumberland** [at North Sunderland, May 1885, and at Hallington Reservoirs]. Nat., May 1887, p. 138.

RILEY FORTUNE. **York Mid W.**

Great Grey Shrike [*Lanius excubitor*] **near Harrogate** [seen on Harlow Heath, Jan. 12th, 1887]. Nat., May 1887, p. 140.

RILEY FORTUNE. **York Mid W.**

Bees occupying Birds' Nests [near Harrogate; those of *Anthus pratensis*, *Accentor*, *Erithacus*, and *Troglodytes*]. Zool., July 1887, xi. 273.

RILEY FORTUNE. **Cheviotland.**

Long-eared Owl [*Asio otus*] **laying in Rook** [*Corvus frugilegus*] **'s Nest** [in March 1886, near Barn(? Bam)borough, Northumberland; the nest contained three rooks' eggs and one owl's]. Zool., Aug. 1887, xi. 304.

RILEY FORTUNE. **York Mid W.**

Hawfinch [*Coccothraustes vulgaris*] **in Yorkshire** [nesting in Nidderdale and near Harrogate, and yearly becoming more common]. Zool., Aug. 1887, xi. 299.

RILEY FORTUNE. **York Mid W.**

The Sparrow [*Passer domesticus*] **Question** [arguing against the sparrow; he is charged with causing great diminution in the numbers of House Martins (*Chelidon*) near Harrogate, the Swallow (*Hirundo*), Sand Martin (*Cotile*), and Swift (*Cypselus*) being on the increase]. Nat. World, Sep. 1887, iv. 156-157.

RILEY FORTUNE. **York Mid W.**

Brent Goose [*Bernicla brenta*] **at Harrogate** [seen March 31st, 1887]. Nat., Oct. 1887, p. 304.

H. T. FRERE. **Cumberland.**

Supposed Occurrence formerly of Ptarmigan [*Lagopus mutus*] **in Cumberland** [stating that in 1841 the Museum at Keswick had a Ptarmigan stated to have been killed on Skiddaw; editor adds that those on Skiddaw were introduced from Scotland]. Zool., April 1887, xi. 153.

J. H. GAY. **Linc. N.**

Young House Martins [*Chelidon urbica*] **in the Nest in October** [1887, at Spilsby, Lincs.; two nests]. Field, Oct. 8th, 1887, p. 540.

F. JAS. GEORGE. **Lanc. S.**

Cuckoo [whose note contained three syllables, cuck-koo-koo; at Chorley]. Sci. Goss., July 1887, p. 166.

WILLIAM GREGORY. **Notts.**

The Song of Spring [of the Yellow Hammer (*Emberiza citrinella*); and note of curious nesting-site of the Robin (*Erithacus rubecula*) at West Bridgford, Notts.]. Nat. World, June 1887, iv. 102-103.

G. T. GROVES. **Derbyshire.**

Capture of a Golden Eagle [*Haliaëtus albicilla* in fact] **in Derbyshire** [at Barrow-on-Trent near Matlock, shot Nov. 26th, 1887; measurements given, and particulars of four Derbyshire occurrences of *Aquila chrysaetos*]. Field, Dec. 3rd, 1887, p. 852. [This bird proved to be a Sea Eagle (*Haliaëtus albicilla*); see note by A. H. T. Evans, Field, Dec. 10th, 1887, p. 907; also next title].

G. T. G[ROVES]. **Derbyshire.**

Reported Capture of Golden Eagle [really Sea Eagle (*Haliaëtus albicilla*)] in Derbyshire [additional particulars given]. Field, Dec. 17th, 1887, p. 944.

J. H. GURNEY, Junr. **York S.E.**

Little Gulls [*Larus minutus*] **at Flamborough Head** [note of one obtained Aug. 5th, 1886, and discussion of their occurrence so often in this locality]. Nat., Jan. 1887, p. 22.

J. H. GURNEY, Jun. **Furness.**

The Green-backed Porphyrio (*Porphyrio chloronotus*) [an inquiry as to the present whereabouts of one shot at Grange in Furness, 25th Sep., 1876]. Zool., May 1887, xi. 195.

J. H. GURNEY, Jun. **Cheviotland, Linc. S., York N.E.**

On the occurrence in England of the Caspian Tern [(*Sterna caspia*); the eighteen recorded British occurrences recited; the Northern ones are:—One, Caythorpe, Lincolnshire, May 17th, 1853, twenty miles from sea (Zool. 1853, 3946); one, Filey, Yorks., Sep. 1874, preserved by Baker of Cambridge, and identified by Prof. Newton (R. A. Willis, Field, Nov. 15th, 1879); and one, Farne Islands, June 6th, 1880, seen by E. Bidwell, but not obtained]. Zool., Dec. 1887, xi. 457-458.

J. H. GURNEY, junr. **York S.W.**

[Pale] Variety of the Grouse [(*Lagopus scoticus*) at Bolsterstone near Sheffield, 9th Sep., 1887; variation described]. Nat., Dec. 1887, p. 374.

G. H. CATON HAIGH. **Linc. N.**

[Pied] Variety of the Wild Duck [(*Anas boschas*) shot Dec. 10th, 1886, at Grainsby Hall near Great Grimsby; description given]. Zool., Feb. 1887, xi. 69.

G. H. CATON HAIGH. **Linc. N.**

Habits of the Green Sandpiper [(*Helodromas ochropus*), as observed near Grimsby]. Zool., March 1887, xi. 110.

ALLAN B. HALL. **York N.E.**

Notes from Thirsk [concerning *Gallinula chloropus* (frozen into the ice), and *Alcedo*]. Nat. Hist. Journ., Feb. 15th, 1887, xi. 16.

ALLAN B. HALL. **York N.E.**

Thirsk Ornithological Notes [*Colymbus glacialis* caught; *Mareca*, *Querquedula crecca*, and *Fringilla montifringilla* (Brambling) shot]. Nat. Hist. Journ., April 15th, 1887, xi. 64.

ALLAN B. HALL. **York N.E.**

Notes from Thirsk [*Bernicla canadensis* shot; nests of *Gallinago cœlestis*, *Alcedo*, and *Motacilla melanope* with eggs]. Nat. Hist. Journ., May 16th, 1887, xi. 85.

ALLAN B. HALL. **York N.E.**

Birds near Thirsk [nests and eggs of *Regulus cristatus*, *Fulica atra*, *Cecinus*, *Garrulus*, *Turdus torquatus*, *Dendrocopus major*, *Gallinago cœlestis*, *Accipiter nisus*, and *Tinnunculus alaudarius*; Sea-gulls seen, also *Anas boschas* on Gormire Lake]. Nat. Hist. Journ., June 15th, 1887, xi. 112.

ALLAN B. HALL. **York N.E.**

Birds near Thirsk [*Falco æsalon* nesting near Kepwick; *Carduelis elegans* nesting near Thirkleby; *Gallinula chloropus* remaining under water near Rievaulx]. Nat. Hist. Journ., Sep. 15th, 1887, xi. 139.

ISAAC HARDING. **York S.W.**

The Oyster-Catcher (*Hæmatopus ostralegus*) [**taken on Clewes Moors**, near Huddersfield, Aug. 1st, 1883, during thick fog]. Wesl. Nat., April 1887, i. 58.

ISAAC HARDING. **York Mid W. and S.W.**

[Dates of arrival of] Migratory Birds [*Phylloscopus rufus*, Saltaire, 2nd April; *Saxicola œnanthe*, Saltaire, 6th April; *Pratincola rubicola*, Ilkley, 7th April; *Sylvia curruca* and *S. cinerea*, Addingham, 8th April; *Pratincola rubetra*, Ilkley, 10th April; *Sylvia hortensis*, Addingham, 11th April; *S. atricapilla*, Addingham, 13th April; *Phylloscopus sibilatrix*, Saltaire, 14th April; *Acrocephalus streperus*, Bradford, 15th April; *Cuculus*, Skipton, 22nd April; *Hirundo*, Bradford, 29th April, and *Chelidon*, Bradford, 30th April]. Wesl. Nat., June 1887, i. 113-114.

ISAAC HARDING. **York Mid W., S.W., and S.E., Derbyshire.**

[Dates of arrival of] Migratory Birds [*Turtur communis*, Selby, 10th May; *Caprimulgus europæus*, Studley Royal, 11th May; *Locustella nævia*, Matlock, 13th May; *Cypselus*, Ilkley, 16th May; *Phylloscopus sibilatrix*, Poole, 21st May; *Coccothraustes vulgaris*, Meltham, 25th May, and *Crex pratensis*, Low Moor, 30th May]. Wesl. Nat., July 1887, i. 145.

JAMES HARDY. **Northumberland S.**

Report of Meetings of the Berwickshire Naturalists' Club, for the year 1886 [*Alauda arvensis*, *Acrocephalus phragmitis*, *Phylloscopus trochilus*, *Hirundo rustica*, *Corvus frugilegus*, noted at Woodhorn near Morpeth, 26th May (pp. 336-337); *Muscicapa luctuosa* nesting near Harbottle (p. 347)]. Proc. Berw. Nat. Club for 1886 (pub. 1887), xi. 336, 337, and 347.

R. P. HARPER. **York N.E.**

Sooty Shearwater [*Puffinus griseus*] **at Flamborough** [Aug. 27th, 1887; and another referred to as shot near Filey in autumn, 1879, by Sir Wm. Feilden, Bart., and now in his collection]. Zool., Nov. 1887, xi. 430.

R. P. HARPER. **York N.E. and S.E.**

Uncommon Birds near Scarborough [*Puffinus anglorum* near Filey; *Larus glaucus* on Scalby Ness, etc.; *Tringa minuta*, Scalby Ness; *Œdemia fusca*, Bridlington Bay; and *Tringa maritima* noted as very tame]. Zool., Dec. 1887, xi. 467.

J. E. HARTING. **Durham, 'Lake District.'**

Swallows in Winter [referring first to destruction of *Hirundo* and *Cotile* near Bishop's Auckland and in the Lake District in the severe May of 1886; then to old records of *H. rustica* near Wakefield, on Jan. 13th, 1837, and near Halifax on Feb. 4th, 1862]. Field, Jan. 22nd, 1887, p. 109.

J. E. HARTING. **York S.E., Cheviotland.**

Troglodytes parvulus a migrant [as noted by the Migration Committee at Flamborough, Spurn, and Farne; an instance of its occurrence on Riddlehamhope Moor, Northumberland, far away from all shelter or cover but heather]. Zool., Nov. 1887, xi. 431.

J. E. HARTING. **York S.E. or Linc. N.**

Dotterel [*Æudromias morinellus*] **in Marshes** [of Humber District, etc.; in reply to F. Boyes]. Field, Nov. 19th, 1887, p. 778.

J. E. H[ARTING]. **Cheviotland, Northmbld., York S.E., Linc. N.**

Woodcocks [(*Scolopax rusticola*) **and their habits, migration, etc.**; reference made to Northumberland, Yorkshire, and Lincolnshire experience]. Field, Dec. 31st, 1887, p. 993.

J. A. Harvie-Brown and T. E. Buckley. **York S.E.**

A Vertebrate Fauna of Sutherland, Caithness, and West Cromarty, 8vo, 1887 [with a foot-note at p. 213 stating that 'our observations of migration tend to show that in spring Grey Plovers' (*Squatarola helvetica*) 'shoot off our coasts at Spurn Point in Yorkshire'].

J. F. Hills, Secretary. **York N.E. and S.E.**

York, Bootham. Natural History Club [notes on *Numenius arquata* and *Gallinago cœlestis* at Tilmire, *Acredula caudata* in Nova Scotia Woods; *Anas boschas*, *Mareca*, and *Querquedula crecca* on Strensall; *Dendrocopus major* at Buttercrambe; *Circus æruginosus* and *Accipiter nisus* at Skipwith; eggs of *Alauda arvensis*, *Corvus corone*, *Turdus musicus* with spots at wrong end, and *Corvus cornix* (?)]. Nat. Hist. Journ., May 16th, 1887, xi. 81-82.

J. F. Hills [, Secretary]. **Derbysh., York Mid W. and N.E.**

York, Bootham. Natural History Club [*Corvus monedula*, *Lagopus scoticus*, *Ruticilla phœnicurus*, and *Regulus cristatus* seen at Chatsworth Park, 2nd May (E. D. Doncaster); young *Turdus viscivorus* observed at York as early as 5th May; *Pratincola rubetra* seen at York; *Sylvia cinerea* behaving like a Tree Creeper at York; young *Columba palumbus* left nest, 23rd May, York; two curious nests of *Turdus musicus* at Grimston; nesting of *Pica caudata* at Roulston Scar, and of *Linota linaria* at Low Kilburn]. Nat. Hist. Journ., June 15th, 1887, xi. 107-108.

J. F. Hills. **York N.E.**

An Addition to our Bootham [York] Birds [the Reed Bunting (*Emberiza schœniclus*) seen May 17th, by G. Hughes]. Nat. Hist. Journ., June 15th, 1887, xi. 111.

J. F. Hills. **York N.E.**

York, Bootham. Natural History Club [*Dendrocopus major* near Grosmont (E. D. Doncaster); eggs of *Pratincola rubicola* and *Phylloscopus rufus* near Goathland (N. Neave); of *Acrocephalus phragmitis* and *Muscicapa grisola*?) (B. S. Rowntree); of *Phylloscopus trochilus*, *Sylvia hortensis*, *Emberiza schœniclus*, *Linota* (*rufescens*?), and *Cypselus apus* (J. F. Hills)]. Nat. Hist. Journ., Sep. 15th, 1887, xi. 132.

J. F. Hills [, Secretary]. **York S.E. and N.E.**

York, Bootham. Natural History Club [eggs of *Lomvia troile*, Flamborough Head; eggs of *Caprimulgus europæus*, Kirkby Moorside (A. S. Rowntree); *Ruticilla phœnicurus* and *Carduelis elegans* seen near Bootham, York]. Nat. Hist. Journ., Oct. 15th, 1887, xi. 161.

J. F. Hills, Secretary. **York N.E.**

York, Bootham. Natural History Club [Removal of the Swans from Hob Moor ponds; *Hirundo rustica* last observed 17th Oct. 1887, at York, by E. D. Doncaster]. Nat. Hist. Journ., Dec. 15th, 1887, xi. 207.

J. F. Hills. **York N.E.**

Birds of Bootham [York; *Perdix cinerea* added to the list]. Nat. Hist. Journ., Dec. 15th, 1887, xi. 212.

R. J. Howard. **Lanc. S.**

[Hybrid between Fuligula cristata and F. ferina, bred in captivity at Woodfold Park, also on the Blackburn Corporation Park Reservoir: detailed particulars; also as to the breeding of *F. cristata* and *F. ferina* at the two parks; hybrid now in the British Museum]. Proc. Zool. Soc., Dec. 21st, 1886, pp. 550-551; Zool., Feb. 1887, xi. 79.

John Hutton. **York N.E.**

Pheasant [*Phasianus colchicus*] **swallowing a Mouse** [at Solberge near Northallerton]. Field, July 30th, 1887, p. 199.

Peter Inchbald. **York Mid W.**

Reported Arrival of Summer Birds [at East Newton, Yorkshire, *Hirundo*, April 7th; at Harrogate, *Phylloscopus rufus*, April 11th; *Hirundo*, April 18th;

Ruticilla phœnicurus, April 18th; *Sylvia atricapilla*, April 21st; *Anthus trivialis*, April 21st: *Tringoïdes hypoleucos*, April 21st]. Field, April 16th, 1887, p. 534; April 23rd, p. 581; April 30th, p. 612.

PETER INCHBALD. **? York Mid W.**

Pellets disgorged by the Kestrel [(*Tinnunculus alaudarius*) contained remains of field voles and beetles, no feathers; locality not given, but probably Harrogate]. Field, May 7th, 1887, p. 622.

PETER INCHBALD. **York Mid W.**

Nightingales [*Daulias luscinia*] **in Yorkshire** [two pairs nesting at Scriven Park, Knaresborough; reference made also to nesting at Harrogate in 1883, 1884, and 1885]. Field, May 14th, 1887, p. 653.

PETER INCHBALD. **York S.E. and Mid W.**

Partial Albinoism in the Willow Warbler [(*Phylloscopus trochilus*), as observed in 1882 at Sewerby near Bridlington, and in 1887 at Fulwith Grange, Harrogate; latter case described]. Field, Aug. 6th, 1887, p. 213.

PETER INCHBALD. **York S.E.**

The Swallow Tribe [Swifts (*Cypselus*) **last noted** at Hornsea, 19th Sep., 1887; nearly a hundred *Hirundo*, *Chelidon*, and *Cotile* noted assembling on the 17th, subsequently diminishing in numbers]. Field, Sep. 24th, 1887, 486.

PETER INCHBALD. **York S.E.**

Wheatears [*Saxicola œnanthe*] **on the Yorkshire Coast** [last seen at Hornsea on the 21st Sep., 1887]. Field, Oct. 1st, 1887, p. 537.

PETER INCHBALD. **York S.E.**

Fight between Canada Geese [domesticated] **and Heron** [(*Ardea cinerea*) at Hornsea Mere; details given]. Field, Oct. 8th, 1887, p. 549.

PETER INCHBALD. **York S.E.**

Arrival of the Redwing Thrushes [(*Turdus iliacus*) at Hornsea, 27th Sep., 1887]. Field, Oct. 15th, 1887, p. 600.

PETER INCHBALD. **York S.E.**

The Sanderling [*Calidris arenaria*] **and its Departure** [from Hornsea, Sep. 20th, 1887]. Field, Oct. 22nd, 1887, p. 635.

PETER INCHBALD. **York S.E.**

Arrival of the Hooded Crow [(*Corvus cornix*), at Hornsea, 12th Sep., 1887]. Field, Oct. 29th, 1887, p. 679.

PETER INCHBALD. **York S.E.**

Nesting of the House Martin [(*Chelidon urbica*) in October 1887, near Hornsea, East Yorkshire]. Field, Nov. 5th, 1887, p. 711.

PETER INCHBALD. **York S.E.**

Birds at Hornsea Mere [notes on *Fulica*, *Gallinula*, *Podiceps*, *Mareca*, *Fuligula rufina*, *Mergus merganser*, *Buteo vulgaris*, *Pernis*, *Pandion*, and *Acrocephalus streperus*, some of which nest]. Field, Nov. 12th, 1887, p. 754.

PETER INCHBALD. **York S.E.**

Arrival of Fieldfares [(*Turdus pilaris*) at Hornsea, 9th Nov., 1887; large flocks on the 12th]. Field, Nov. 26th, 1887, p. 829.

J. A. JACKSON. **Lanc. W., Furness.**

Notes on the Black-headed Gull [*Larus ridibundus*] **near Garstang** [where it breeds on 'Gull Moss,' where also occur *Lagopus scoticus* and *Pratincola rubicola*; reference also made to Walney Island as another breeding-station]. Nat., May 1887, pp. 129-132.

P. Q. K[EEGAN]. **Isle of Man, York Mid W.**

Tameness of [Herring] Gulls [(*Larus argentatus*) at Port Erin and Ramsey, Isle of Man; and familiarity of Chaffinches (*Fringilla cœlebs*) in Bolton Woods]. Sci. Goss., Oct. 1887, p. 236.

R. N. Kerr. **York N.W., Durham, Northmbld. S., Cheviotld., Cumbld.**

Notes on the Dipper, Water Ouzel, or Water Crow. (*Cinclus aquaticus.*) [writer notes finding nests on Tees and tributaries, on Wear and its rivulets, on Tyne (Blythe, Wansbeck, Coquet, Till), Tweed, among the Cumberland mountains, etc., and adduces John Hancock's Northumbrian experience against the idea that these birds fed on fish-spawn]. Scott. Nat., Oct. 1887, pp. 159-162.

H. Wallis Kew. **Linc. N.**

Bittern [*Botaurus stellaris*] **in Lincolnshire** [shot at West Saltfleetby, 7th Jan., 1887]. Nat., Feb. 1887, p. 45.

H. Wallis Kew. **Linc. N.**

Water-rail [*Rallus aquaticus*] **near Louth,** Lincolnshire [on the river Bain, shot Dec. 21st, 1887]. Nat., March 1887, p. 78.

Joe Kirkby. **York Mid W.**

Kingfisher [*Alcedo ispida*] **and Sparrowhawk** [(*Accipiter nisus*) at Fell Beck near Pateley Bridge; anecdote of pursuit of one by the other]. Nat., Nov. 1887, p. 348.

E. Klein. **Cumberland.**

Report on the Grouse Disease [based mostly on Ayrshire, but to a small extent on Cumberland specimens; fungoid origin assigned to the disease]. Field, July 20th, 1887, pp. 133-134 (also see Editorial on p. 131); rep. Zool., Sep. 1887, xi. 327-337.

B. B. L[e].T[all]., Secretary. **York N.E. and Mid W., Westmorland.**

York, Bootham. Natural History Club [*Tinnunculus alaudarius* carrying off a weasel; unusual song of *Sturnus vulgaris*; occurrence of *Tinnunculus cenchris* near Wilstrop; dates of nesting of *Corvus frugilegus* at the Asylum Rookery; *Alcedo* at Kendal]. Nat. Hist. Journ., April 15th, 1887, xi. 60-61.

T. Lister. **York S.W.**

Vertebrate Zoology [of South Yorkshire; voluminous chronological series of notes for 1885 and 1886; numerous species mentioned]. Trans. Barnsley Nat. Soc. for 1885-86 [pub. 1887], vol. 5, pp. 7-10.

G. E. Lodge. **'Lincolnshire.'**

Swifts [*Cypselus apus*] **laying in Martins** [*Chelidon urbica*]**' Nests** [outside a barn in Lincolnshire, about ten years ago; locality not further indicated]. Zool., Nov. 1887, xi. 428.

R. Lofthouse. **York N.E., Durham.**

The River Tees: its Marshes and their Fauna [with references to the Coatham Duck Decoy and Wild-fowling on the Tees; to *Tinnunculus alaudarius*, *Anas boschas*, *Tadorna cornuta*, *Mareca*, *Dafila*, *Spatula*, *Fuligula ferina*, *F. marila*, *Nyroca ferruginea*, *Querquedula crecca*, *Q. circia*, *Clangula glaucion*, *Fuligula cristata*, *Harelda*, *Œdemia nigra*, *Somateria mollissima*, *Mergus merganser*, *Tachybaptes*, *Podiceps auritus*, *P. nigricollis*, *Hæmatopus*, *Ægialitis hiaticula*, *Gallinago cœlestis*, *Gallinula*, *Totanus calidris*, *T. canescens*, *T. fuscus*, *Tringa alpina*, *T. canutus*, *T. striata*, *Machetes*, *Phalacrocorax carbo*, *Numenius phæopus*, *N. arquata*, *Eudromias*, *Tringa subarquata*, *T. minuta*, *Sterna fluviatilis*, *S. cantiaca*, *S. macrura*, *S. dougalli*, *Hydrochelidon leucoptera*, *Larus leucopterus*, *L. glaucus*, *L. minutus*, *Pagophila*, *Ardea cinerea*, *Squatarola*, *Strepsilas*, *Limosa lapponica*, *Charadrius pluvialis*, *Scolopax rusticola*, *Regulus cristatus*, *Turdus iliacus*, *T. pilaris*, *T. viscivorus*, *T. musicus*, *T. merula*, *Asio brachyotus*, *Corvus cornix*, *Anser*, *Cygnus musicus*, *C. bewicki*, *C. olor*, *Plectrophanes nivalis*, *Alauda arvensis*, *Linota cannabina*, *L. rufescens*, *Sturnus*, *Vanellus*, *Calumba palumbus*, *Emberiza schœniclus*, *Anthus pratensis*, *Alcedo*, *Saxicola œnanthe*, *Porzana maruetta*, *P. bailloni*, *P. parva*, *Procellaria pelagica*, *Mergulus alle*, *Gallinago major*, *Limnocryptes*, *Recurvirostra*, *Platalea*, *Syrrhaptes*, *Accipiter nisus*, *Falco œsalon*, *F. islandus*, *F. subbuteo*, *Archibuteo*, *Milvus*, *Aquila chrysaëtos*, *Merops apiaster*, and *M. philippinus* noted, with localities and other details]. Nat., Jan. 1887, pp. 1-16.

H. A. Macpherson. **Linc. N.**

Distribution of the White-bellied Brent Goose [(*Bernicla brenta*); refers to its being recorded for the Lincolnshire sea-board only in the Fourth edition of 'Yarrell']. Zool., Jan. 1887, xi. 29.

H. A. Macpherson. **Cumberland.**

Cumberland Heronries [are eight in number]. Field, Jan. 22nd, 1887, p. 146.

H. A. Macpherson. **Cumberland.**

Habits of the Barnacle [Goose (*Bernicla leucopsis*); in Cumberland]. Field, Jan. 22nd, 1887, p. 146.

H. A. Macpherson. **Cumberland, Westmorland.**

Remarks on Mr. John Watson's Notes on the Eagles of the Lake District [discussing observations on *Pandion*, *Aquila chrysaëtos*, and *Haliaëtus albicilla*]. Nat., Feb. 1887, p. 46.

H. A. Macpherson. **Cumberland, Westmorland.**

The Alleged Existence of Ptarmigan [*Lagopus mutus*] in Cumberland [absolutely disbelieved; a note also that a few Capercailzie (*Tetrao urogallus*) once existed in the Skiddaw district]. Zool., April 1887, xi. 153.

H. A. Macpherson. **Cumberland.**

The Song of the Chaffinch [(*Fringilla cœlebs*); one heard singing lustily near Carlisle, Sep. 10th, 1882]. Zool., Aug. 1887, xi. 299.

H. A. M[acpherson]. **Cheviotland.**

[Review of] Report on the Migration of Birds in the Spring and Autumn of 1886 [repetition of records for great migration of *Fringilla cœlebs*, and occurrence of *Cosmonetta histrionica* at the Farnes, *Ardea purpurea*, and the Mediterranean Black-headed Gull on the East Coast]. Nat., Oct. 1887, pp. 302-303.

H. A. Macpherson. **Cumberland.**

The Tufted Duck [*Fuligula cristata*] **on the Solway** [account of its distribution on the Cumberland side of the Solway, with other details]. Zool., Oct. 1887, xi. 385.

H. A. Macpherson. **Cumberland.**

Long-tailed Duck [*Harelda glacialis*] **in Cumberland** [in 1834, in 1884, and again in Oct. 1887, at Silloth]. Zool., Nov. 1887, xi. 432.

H. A. Macpherson. **Cumberland.**

Dotterel [*Eudromias morinellus*] **in Marshes** [of Cumberland; in reply to F. Boyes]. Field, Nov. 19th, 1887, p. 778.

H. A. Macpherson. **Cumberland.**

Long-tailed Duck [*Harelda glacialis*] **on the Solway** [six shot on the Cumberland coast, Oct. 10th to 22nd, 1887]. Field, Nov. 19th, 1887, p. 778.

H. A. Macpherson. **Notts.**

Breeding of the Tufted Duck [(*Fuligula cristata*); in Notts. and elsewhere]. Zool., Dec. 1887, xi. 465.

H. A. Macpherson. **Cumberland.**

The Autumn Migration of Shore Birds [*Squatarola helvetica*, *Limosa lapponica*, *Tringa minuta*, *T. subarquata*, unusually abundant on the Solway]. Field, Dec. 3rd, 1887, p. 852.

H. A. Macpherson. **Cumberland, Northumberland, Yorkshire.**

The Distribution of the Goldfinch [*Carduelis elegans*] in the British Islands [with notes for Cumberland, Yorkshire, and Northumberland]. Field, Dec. 17th, 1887, p. 944.

H. A. Macpherson and W. Duckworth. **Cumberland.**

Zoological Record for Cumberland, 1886 [detailed notes on the breeding of *Cinclus aquaticus*, *Dendrocopus major*, *Spatula*, *Columba livia*, *Coturnix*,

and *Scolopax rusticola*; a summary of the nesting season as affecting the commoner birds; detailed notes on the migration of 72 species; and summary of the migration data]. Trans. Cumb. and Westm. Assoc., No. xii. (1886-87, pub. 1887), pp. 29-48.

C. F. MALLIN. **Lanc. S.**

Sea Gulls at Southport [Meissenbach reproduction of Mr. C. F. Mallin's photograph] Nat. World, April 1887, iv. 61 and 63.

W. P. MARSHALL. **York S.E., Cheviotland.**

An Excursion to Tenby [with incidental reference to breeding of *Lomvia troile* at Flamborough, Bempton, and Farne Islands]. Midl. Nat., Jan. 1887, p. 9.

WALTER MAYHEW. **Lanc. S.**

Late Woodcocks [(*Scolopax rusticola*) at Euxton Hall, Chorley, Lancs., April 9th and 12th, 1887]. Field, April 23rd, 1887, p. 566.

Sir F. A. MILBANK. **Durham, York N.W.**

Yorkshire [and Durham] Grouse Moors [and the existence of disease thereon; the Arkengarthdale, Wemmergill, Swinton, and South Durham moors referred to]. Field, July 20th, 1887, p. 134.

JOHN D. MOFFAT. **Lanc. S.**

Late Stay of . . . Swifts [(*Cypselus apus*) at Sefton near Liverpool, one seen 5th Oct., 1887]. Field, Oct. 15th, 1887, p. 600.

T. H. NELSON. **York N.E.**

Ringed Guillemots [*Lomvia troile*, var.] **near Redcar** [also *L. troile* and *Alca torda*, Jan. 1887]. Nat., March 1887, p. 78.

T. H. NELSON. **York N.E.**

Ornithological Notes from Redcar in 1886 [noting *Botaurus stellaris*, *Tadorna cornuta*, *Sterna cantiaca*, *Larus minutus*, *Cygnus olor*, *Sterna minuta*, *Recurvirostra*, *Turtur communis*, *Stercorarius pomatorhinus* (near Northallerton), *Falco peregrinus*; arrivals of *Alauda arvensis*, *Regulus cristatus*, *Turdus merula*, *T. pilaris*, *Scolopax rusticola*, *Asio brachyotus*, and *Corvus cornix*; *Sula*, *Lomvia troile*, *Alca torda*, *Rissa*, *Stercorarius parasiticus*, *S. catarractes*, *S. pomatorhinus*, *Vanellus*, *Colymbus septentrionalis*, *Sterna fluviatilis*, *Œdemia fusca*, *Fuligula marila*, *Harelda*, *Colymbus glacialis*, *Mergus merganser*, *Falco æsalon*, and *Otocorys*]. Nat., March 1887, pp. 81-83.

T. H. NELSON. **Cheviotland.**

A Naturalist's Ramble on the Farne Islands [a fully-detailed account of the birds breeding in June; *Lomvia troile*, *Fratercula*, *Sterna macrura*, *S. cantiaca*, *Larus fuscus*, *L. argentatus*, *Somateria mollissima*, *S. spectabilis*, *Puffinus anglorum*, *Hæmatopus*, *Alca torda*, *Rissa*, *Columba livia*, *Tadorna cornuta*, *Ardea cinerea*, *Sterna minuta*, *Asio otus*, *Sterna dougalli*, *Stercorarius crepidatus*, *Ægialitis hiaticula*, *Phalacrocorax carbo*, *P. graculus*, *Strepsilas*, and *Anthus obscurus*, fourteen of which were breeding]. Nat., April 1887, pp. 116-128.

T. H. NELSON. **Durham, York N.E.**

Autumnal Migration of Birds at Teesmouth [giving the movements of *Alauda arvensis*, *Regulus cristatus*, *Turdus merula*, *T. pilaris*, *Scolopax rusticola*, *Asio brachyotus*, *Corvus cornix*, *Sula*, *Lomvia troile*, *Alca torda*, *Rissa*, *Stercorarius crepidatus*, *S. catarrhactes*, *S. pomatorhinus*, *Vanellus*, *Colymbus septentrionalis*, *Œdemia fusca*, *Fuligula marila*, *Harelda*, *Colymbus glacialis*, *Mergus merganser*, and *Otocorys*, from Oct. to Dec., 1886]. Zool., July 1887, xi. 270-271.

T. H. NELSON. **Cheviotland.**

A Visit to Chillingham Park [with way-side notes as to *Lagopus scoticus*, *Charadrius pluvialis*, and *Numenius arquata* on Chatton Moor; a heronry, *Phasianus*, *Perdix*, and *Tetrao tetrix* in Chillingham Park]. Nat., Aug. 1887, pp. 229-234.

T. H. Nelson. **York N.E.**

Arrival of Woodcock [(*Scolopax rusticola*) at Redcar, Oct. 9th, 1887; *Asio brachyotus* seen same day]. Field, Oct. 22nd, 1887, p. 613.

T. H. Nelson. **York N.E.**

[Domestic] Pigeon [and Redwing (*Turdus iliacus*)] **alighting on the water** [both cases at Redcar]. Field, Nov. 19th, 1887, p. 778.

T. H. Nelson. **York N.E., York S.W., Northumberland.**

Curlew Sandpiper [*Tringa subarquata*] **and Little Stint** [*T. minuta*] **near Redcar** [and in Northumberland and South Yorkshire; both species in unusual abundance]. Field, Nov. 26th, 1887, p. 829.

T. H. Nelson. **York N.E.**

Long-tailed Ducks [*Harelda glacialis*] **and Scoters** [*Œdemia nigra* and *Œ. fusca*] **near Redcar** [17 'long-tails' and 93 common and two Velvet Scoters killed, the latter two species from immense flocks]. Field, Nov. 26th, 1887, p. 829.

T. H. Nelson. **York N.E.**

Scoters [*Œdemia nigra*] **as Food** [commended and receipt given for successful cooking; also additional details of the Redcar occurrences]. Field, Dec. 3rd, 1887, p. 852.

[Alfred] Newton. **York N.W. or Mid W.**

[Bulweria columbina; details of the recovery by W. Eagle Clarke and J. Carter of the lost-sight-of Yorkshire specimen which was found dead on the Ure banks near Tanfield in 1837]. Proc. Zool. Soc., Nov. 15th, 1887, p. 562; Field, Nov. 19th, p. 778; Zool., Dec. 1887, xi. 470; and Nat., May 1888, p. 156.

Francis Nicholson. **Lanc. S.**

Fork-tailed Petrel [*Procellaria leucorrhoa*] **at Formby** [near Liverpool, Oct. 5th, 1885]. Nat., Feb. 1887, p. 46.

T. T. Ormerod. **York S.W.**

Great Spotted Woodpecker [(*Dendrocopus major*), shot at Elland, Nov. 20th, 1886]. Nat. World, Jan. 1887, iv. 12.

Geo. Parkin. **York S.W. and 'North.'**

Greenshank [*Totanus canescens*] **and Storm Petrel** [*Procellaria pelagica*] **near Wakefield** [in Aug. and in Oct. 1886; also female *Phasianus colchicus* in male plumage, from North Yorkshire]. Nat., Feb. 1887, p. 45.

H. J. Robinson Pease. **York S.E.**

Puffins [*Fratercula arctica*] **in the Humber in February** [1887, near Hessle]. Nat., May 1887, p. 138.

J. Pickin. **Cheshire.**

Purple Heron [*Ardea purpurea*] **in Lancashire** [i.e., Cheshire; killed near Alderley Edge, 7th April, 1887; measurements given]. Zool., Nov. 1887, xi. 432.

Herbert Prodham. **York N.E.**

An unrecorded occurrence of the Golden Eagle [*Aquila chrysaëtos*] **in Yorkshire** [at Helwath, in Harwood Dale, near Scarborough, winter of 1850-51; now in the collection of Mr. Hill, of Thornton]. Nat., March 1887, p. 84.

Walter H. S. Pyman. **York N.E.**

Occurrence of Common Buzzards [*Buteo vulgaris*] **near Whitby** [a pair trapped in Mulgrave Woods this winter]. Nat., May 1887, p. 138.

R. Ramsay. **Cumberland.**

Hooking a Heron [(*Ardea cinerea*) in the Derwent near Cockermouth, with trout tackle]. Field, July 2nd, 1887, p. 22.

Cumberland, Cheviotland, Northumberland, Durham,
J. T. T. Reed. York N.E., York N.W.

Local Specimens of Rare Birds in the Museum at Newcastle-on-Tyne [recording Northumbrian specimens of *Haliaëtus albicilla*, *Pandion*, *Pernis*, *Milvus migrans*, *Circus cinereaceus*, *Falco peregrinus*, *Astur palumbarius*, *Coccystes glandarius*, *Caprimulgus ruficollis*, *Phylloscopus superciliosus*, *Tringa subarquata*, *Machetes*, *Helodromas*, *Totanus canescens*, *Ardetta minuta*, *Botaurus stellaris*, *Platalea*, *Procellaria leucorrhoa*, *Hydrochelidon nigra*, *Cygnus bewicki*, *Anser albifrons*, and *Œdemia fusca*; Durham examples of *Pernis*, *Archibuteo*, *Circus cinereaceus*, *Tinnunculus vespertinus*, *Porzana bailloni*, *Grus communis*. *Hydrochelidon nigra*, and *Alca impennis* (fossil); Yorkshire examples of *Pandion*, *Pernis*, *Archibuteo*, *Syrrhaptes*, *Helodromas*, *Totanus canescens*, and *Hydrochelidon leucoptera*; Cumberland examples of *Archibuteo*, *Loxia leucoptera*, *Otis tarda*, and *Ardetta minuta*]. Nat., March 1887, pp. 75-78.

Geo. Roberts. York S.W.

Corn Bunting [*Emberiza miliaria*] **with Crossed Bill** [shot near Lofthouse, Wakefield, Dec. 1885]. Sci. Goss., March 1887, p. 66.

Geo. Roberts. York S.W.

Sea-birds Inland [*Fratercula arctica* at Ardsley, Sep. 17th, 1886, and *Procellaria pelagica* near Wakefield, Oct. 1886]. Sci. Goss., May 1887, p. 118.

Geo. Roberts. York S.W.

Singular Capture of a Kestrel [(*Tinnunculus alaudarius*), which had dashed on a bird-cage and entangled its feet in the wires, in Kirkgate, Wakefield, April 18th, 1887]. Sci. Goss., July 1887, p. 166.

Charles Robson. Northumberland S.

The Red-backed Shrike (*Lanius collurio*) **in Northumberland** [at Harnham, near Belsay, 10th June, 1885; Mr. Hancock's previous records also cited]. Sci. Goss., Jan. 1887, p. 19.

Charles Robson. Northumberland S.

The Cuckoo [(*Cuculus canorus*) **'s habits, etc.,** as observed at Elswick near Newcastle-on-Tyne; mention made of its laying in the nests of the Meadow Pipit (*Anthus pratensis*)]. Nat. World, March 1887, iv. 47-48.

John E. Robson. Durham.

The Honey Buzzard [*Pernis apivorus*] **at Hartlepool** [captured on a fishing-boat a few miles out at sea; references to previous captures]. Young Nat., July 1887, vii. 148.

William Rose. Lanc. S.

Rooks [*Corvus frugilegus*] **killing young Pheasants** [(*Phasianus colchicus*) at Shaw Hill, near Chorley, Lancs.]. Field, July 9th, 1887, p. 50.

B. S. Rowntree. York S.E.

[Ardea cinerea near Pocklington, Sep. 19th, 1887]. Nat. Hist. Journ., Oct. 15th, 1887, xi. 163.

J. H. Salter. York N.E.

Birds near Scarbro' [Forge Valley, Hayburn Wyke, Filey Bay, Harwood Dale Moors; from April 15th to 22nd; *Scolopax rusticola*, *Corvus cornix*, *Gecinus*, a 'Diver,' *Lagopus scoticus*, *Numenius arquata*, *Charadrius pluvialis*, *Turdus torquatus*, *Cinclus*, and *Motacilla melanope* noted]. Nat. Hist. Journ., June 15th, 1887, xi. 111-112.

J. H. Salter. York N.E.

Birds near Scarborough [also at Cayton and Robin Hood's Bay, July 1887; *Numenius phæopus*, *N. arquata*, *Ægialitis hiaticula*, *Tringa alpina*, *Strepsilas*, *Anthus trivialis*, *Cuculus*, *Hæmatopus*, *Sterna fluviatilis*, and *Cypselus* noted]. Nat. Hist. Journ., Oct. 15th, 1887, xi. 167.

HOWARD SAUNDERS. **Cheviotland, York N.E.**

[Harlequin Duck (*Cosmonetta histrionica*), young male, shot 2nd Dec., 1886, near the Farne Islands, in company with two others (one afterwards obtained); now in coll. R. W. Chase; the only other genuine British example is the one obtained at Filey in 1862, and now in coll. J. Whitaker]. Proc. Zool. Soc., March 15th, 1887, p. 319; Field, March 19th, p. 406; Zool., April, xi. 159.

HOWARD SAUNDERS. **York S.E., Linc. N., Lanc. W., Lanc. S., Cumbld.**

The Dotterel [*Eudromias morinellus*] **on Marshes** [in Yorkshire, Lincolnshire, Lancashire, and Cumberland; quotations from various writers in rebuttal of F. Boyes' criticisms]. Field, Oct. 22nd, 1887, p. 635.

HOWARD SAUNDERS. **Linc. N.**

The Dotterel [*Eudromias morinellus*] **in Marshes** [note in reply to F. Boyes]. Field, Nov. 26th, 1887, p. 829.

HOWARD SAUNDERS. **York S.E.**

On a Little-known State of Plumage of the Arctic Tern (*Sterna macrura* Naum.) [remarks based on a specimen obtained by W. Eagle Clarke at Spurn Head, July 1884]. Nat., Dec. 1887, p. 353.

HOWARD SAUNDERS. **Cumberland.**

[Saxicola isabellina shot Nov. 11th, 1887, near Allonby; first record for Great Britain or Western Europe; exhibited on behalf of Rev. H. A. Macpherson]. Proc. Zool. Soc., Dec. 6th, 1887, p. 579; Field, Dec. 10th, p. 907; Zool.,

HENRY SEEBOHM. **Derbysh., Northbld., 'Lake District,' Cheshire.**

The Geographical Distribution of the Family Charadriidæ, or the Plovers, Sandpipers, Snipes, and their Allies [the only North of England references in this elaborate monograph are the two following:—(p. 98) *Charadrius pluvialis* is abundant in summer from the grouse-moors of Derbyshire northwards; and (p. 426) *Tringa alpina*, a few pairs are said still to breed on the Northumberland moors, the mountains of the Lake district, the Cheshire marshes . . .]. . . . London: Henry Sotheran & Co. . . . [4to, 524 pages, not dated].

H. SEEBOHM. **Cheviotland.**

[The Lesser White-fronted Goose (*Anser albifrons minutus*) shot on Holy Island, Sep. 1886; first example recorded for Britain of this small form]. Zool., Jan. 1887, xi. 32.

ROBERT SERVICE. **Cumberland, Westmorland.**

On the Former Existence of Ptarmigan [*Lagopus mutus*] **in South-West Scotland** [also in Cumberland and Westmorland]. Zool., March 1887, xi. 81-89.

ROBERT SERVICE. **Cumberland.**

On the Nesting of the Tufted Duck [*Fuligula cristata*] in Kirkcudbrightshire [and its occurrence in Cumberland casually alluded to]. Zool., Sep. 1887, xi. 342-344.

W. W. SHAW. **Lanc. W.**

Four-legged Rook [(*Corvus frugilegus*) killed, May 17th, 1887, at Kirkham, Lancs.]. Field, May 21st, 1887, p. 702.

C. C. SMITH, Hon. Sec. **York Mid W.**

Craven Naturalists' Association [with notes of dates of arrival of Swallow (*Hirundo rustica*), Martin (*Chelidon urbica*), Redstart (*Phœnicura ruticilla*), 'Willow Warbler (*Salicaria phragmitis*)' [sic] and Swift (*Cypselus apus*) at Skipton]. Nat. World, June 1887, iv. 113.

THOMAS STEPHENSON. **York N.E.**

Whitby Bird-notes [anent occurrences in Sept. 1886 of *Calidris arenaria*, *Totanus calidris*, *Eudromias*, *Procellaria pelagica*, and *Dendrocopus major*]. Nat., Feb. 1887, p. 46.

WM. STOREY. **York Mid W.**

The Hawfinch [*Coccothraustes vulgaris*] **in Nidderdale** [at Ribston Park, 1887, Ripley Park, and Bewerley Hall, Pateley Bridge, in all of which places it nested]. Field, Sep. 3rd, 1887, p. 391.

W. STOREY. **York Mid W.**

Extraordinary behaviour of a Kestrel [(*Tinnunculus alaudarius*) alighting on a horse's back to look for a Pipit (*Anthus* species) it was pursuing; Pateley Bridge, April 10th, 1887]. Nat., Nov. 1887, p. 348.

W. E. TESCHEMAKER. **Isle of Man.**

Swallows and Swifts in Captivity [including account of a successful attempt made with young *Hirundo rustica* taken from a cave at the Banner Rock, on the Manx Coast]. The Bazaar, Exchange & Mart, 13th April, 1887; reprinted in Zool., Oct. 1887, xi. 372-375.

JULIAN G. TUCK. **Cheviotland.**

Harlequin Duck [*Cosmonetta histrionica*] **on the Northumbrian coast** [three shot near the Farne Islands on Dec. 2nd, 1886]. Zool., Feb. 1887, xi. 70.

JULIAN G. TUCK. **Cheviotland.**

Harlequin Duck [*Cosmonetta histrionica*] **on the Northumbrian Coast** [pointing out that two individuals occurred]. Zool., May 1887, xi. 196.

E. W. WADE. **Linc. N.**

Land-rail [*Crex pratensis*] **at Barton-on-Humber** [on the 6th Dec., 1886, in very poor condition]. Nat., March 1887, p. 80.

C. WALKER. **Notts.**

Long-tailed Duck [*Harelda glacialis*] **near Newark** [two, immature, shot on the Trent, Oct. 29th, 1887]. Field, Nov. 19th, 1887, p. 778.

G. G. WALKER. **Derbyshire.**

Partridge [*Perdix cinerea*] **laying in March** [1887, at Whitwell, Derbyshire]. Field, March 12th, 1887, p. 371.

JOHN WATSON. **Westmorland, Lanc. S., Cumberland.**

Westmorland Heronries [three in number, at Dallam Tower, at Killington Reservoir, and at Rydal, all described at length; an enumeration is also given of two Lancashire and six Cumberland heronries; at Killington a pair of *Accipiter nisus* nested in close proximity to the Herons (*Ardea cinerea*)]. Field, Jan. 22nd, 1887, pp. 109-110.

H. WELCH. **Lanc.**

Large Carrion Crow [(*Corvus corone*), killed lately at Leck Hall, Lancashire; dimensions given, expanse of wing 3 ft. 10 in., etc.]. Field, April 9th, 1887, p. 507.

J. WHITAKER. **Notts.**

Woodcock [*Scolopax rusticola*] **Shooting in Nottinghamshire** [statistics of good bags at Thieves' Wood near Mansfield, and Newstead Abbey]. Field, Jan. 1st, 1887, p. 14.

J. WHITAKER. **Notts.**

Varieties of Common Wild Duck [*Anas boschas*] **and Peregrine** [*Falco peregrinus*] in Notts. [described and localities stated]. Nat., March 1887, 74.

J. WHITAKER. **Notts.**

Varieties of Common Wild Ducks [(*Anas boschas*) caught Dec. 1886, in the decoy at Park Hall]. Zool., March 1887, xi. 111.

J. WHITAKER. **Notts.**

Reported arrival of Summer Birds [at Mansfield, Notts.; *Phylloscopus rufus*, April 11th; *Anthus trivialis*, April 17th; *Motacilla raii*, April 17th; *Saxicola œnanthe*, April 17th; *Acrocephalus phragmitis*, May 1st; *Turtur communis*, May 4th]. Field, April 16th, 23rd, and May 7th, 1887, pp. 534, 581, and 622.

J. Whitaker. **Notts.**

Plumage of the Tufted Duck [(*Fuligula cristata*), at Rainworth]. Zool., June 1887, xi. 235.

J. Whitaker. **? Notts.**

Plover[? *Vanellus vulgaris*]**'s Nests with five Eggs** [two instances given, no doubt Rainworth examples]. Zool., July 1887, xi. 267.

J. Whitaker. **Notts.**

Thrush [*Turdus musicus*] **'s Nest without the usual lining** [at Rainworth near Mansfield, Notts.]. Zool., July 1887, xi. 268.

J. Whitaker. **Notts.**

Norfolk Plover [*Œdicnemus scolopax*] **nesting in Nottinghamshire** [near Rainworth Lodge, Mansfield]. Zool., July 1887, xi. 269.

J. W. Whitaker. **Notts.**

Curious Capture of a Snipe [(*Gallinago cœlestis*) at Rainworth, Notts. ; boy caught two young snipe and putting them in a canary-cage, attracted the mother in after them]. Zool., Sep. 1887, xi. 346.

J. Whitaker. **Notts.**

Male Tufted Duck [*Fuligula cristata*] **retaining the Breeding-plumage** [in Notts.]. Zool., Nov. 1887, xi. 431.

F. B. Whitlock. **Linc. N.**

Leach's Petrel [*Procellaria leucorrhoa*] **in Lincolnshire** [captured near Skegness, Jan. 6th, 1887]. Nat., May 1887, p. 132.

F. B. Whitlock. **? Notts.**

Pied Wagtail [*Motacilla lugubris*] **on Wren** [*Troglodytes parvulus*]**s' Eggs** [descriptions given ; localities not stated]. Nat., Dec. 1887, p. 374.

Thomas Winder. **York S.W.**

Great Black-backed Gull [(*Larus marinus*) **on the spire of a** Sheffield Church, Jan. 4th, 1887]. Sci. Goss., Feb. 1887, p. 43.

NOTE—GEOLOGY.

Fossil Foot-prints in the Carboniferous of Northumberland.—Most geologists are aware of the abundant occurrence and fine state of preservation of foot-prints and other mechanical impressions in some of the Lower Carboniferous sandstones of the Northumberland moors. They were first discovered by Mr. R. B. Sanderson, of Deanhead, near Otterburn, on whose property the finest specimens have been obtained. Several examples were named, described, and figured in 1873 by Mr. T. P. Barkas, F.G.S. ('Illustrated Guide to the Fish, Amphibian, Reptilian, and supposed Mammalian Remains of the Northumberland Carboniferous Strata'). This geologist has since made large collections of the foot-prints and tracks, some of which may be seen in the British Museum (Natural History) and the museums of Newcastle-on-Tyne and of the Geological Society of London. To him we are indebted for the substance of the present note, intended to guide the would-be collector to the best locality.

The small quarry which has furnished the bulk of the specimens is situated about three and a half miles north of Otterburn and as far from any public highway. It can be visited only by the permission of the owner, Mr. Sanderson. Otterburn is nine miles from Woodburn railway station: a conveyance can be obtained from the 'Murray Arms,' Otterburn. It is advisable also to drive from the last-named place to the exposure, for quarrying tools must be taken. Richard Thompson, of Otterburn, is recommended as guide and assistant. The quarry is reached by a good private road leading to Deanhead, an ordinary field road to Davyshields farm-house, and then rather more than a mile of rough moorland. The sandstones bearing the impressions lie near the base of the Carboniferous Limestone series, between the Long Syke and Potts Durtrees Limestones, and the quarry is 900 feet above sea-level.—A.H.

PLANTS OF LANGSTROTHDALE, MID-WEST YORKSHIRE.

TREVOR BASIL WOODD,
Oughtershaw Hall; and Trinity College, Cambridge.

THE following is not a complete list, and some orders (Cyperaceæ, for instance) have been scarcely investigated. However, as the district is so remote, and so rarely visited, it may be interesting, especially as many plants are found growing at 1,200 ft. to which the limit of 900 ft. is assigned in the 'Flora of West Yorkshire.' The elevations have been added in the cases in which they differ from the 'Flora.' Where the locality and range are not stated, the plants are found at or near Oughtershaw (about 1,200 ft.), or ascend to the elevations given in the 'Flora.' I am told that *Vaccinium oxycoccus* has been found at Oughtershaw, but I have never been able to find it myself, and it cannot be abundant. I have not observed any difference between the flora of the Greenfield branch-dale and the Oughtershaw or main valley of Langstrothdale. Occasional bands of gritstone appear in both valleys, but there is no slate in either. The draining and planting which has been carried out during the last thirty years in the Oughtershaw valley may have raised some of the mid-agrarian plants to a higher range.

Thalictrum minus var. **montanum.** Scar-house, Hubberholme.
Thalictrum majus. Buckden Woods.
Anemone nemorosa. Oughtershaw Wood.
Ranunculus aquatilis. Source of river Wharfe.
Ranunculus flammula.
Ranunculus bulbosus.
Ranunculus ficaria. Oughtershaw, 1,200 ft.
Trollius europæus. Oughtershaw, abundant.
Caltha palustris.
Actæa spicata. Raisghyll.
[**Aconitum napellus.** Garden escape; Oughtershaw.]
Nasturtium officinale.
Arabis hirsuta.
Cochlearia officinalis.
Cardamine palustris.
Capsella bursa-pastoris.
Helianthemum vulgare. The Helks, Beckermonds.

Polygala vulgaris var. depressa.
Viola lutea. The Helks.
Viola palustris.
Viola sylvatica.
Drosera rotundifolia. Oughtershaw Moss.
Lychnis flos-cuculi.
Lychnis diurna.
Arenaria verna.
Stellaria holostea.
Stellaria graminea.
Stellaria media. To 1,800 ft.
Hypericum pulchrum.
Hypericum perforatum.
Hypericum quadrangulum.
Linum catharticum.
Geranium sanguineum. Near Kettlewell.
Geranium sylvaticum. 1,250 ft.
Geranium pratense.
Geranium molle.
Geranium dissectum. 1,200 ft.
Geranium lucidum. 1,200 ft.
Geranium robertianum.
Oxalis acetosella.
Ilex aquifolium. Hill-side, 1,000 ft.
Acer pseudo-platanus. 1,800 ft., self-sown, in a pot-hole near Oughtershaw Tarn.
Ononis arvensis. Kettlewell.
Trifolium repens.
Trifolium medium.
Lathyrus pratensis.
Lotus corniculatus.
Vicia sepium.
Vicia cracca.
Orobus tuberosus.
Prunus padus.
Spiræa ulmaria.
Agrimonia eupatoria. Buckden Woods.
Sanguisorba officinalis.

Poterium sanguisorba. The Helks.
Alchemilla vulgaris.
Potentilla fragariastrum.
Potentilla tormentilla.
Comarum palustre. Source of river Wharfe.
Fragaria vesca.
Rubus idæus.
Rubus fruticosus. Oughtershaw, 1,200 ft.; varieties undetermined.
Rubus saxatilis. The Helks.
Rubus chamæmorus. Abundant near Oughtershaw Tarn.
Geum rivale.
Rosa spinosissima. Kettlewell.
Rosa canina. Varieties undetermined.
Pyrus malus. 1,100 ft. Oughtershaw Wood.
Pyrus aucuparia.
Potentilla anserina. 1,200 ft.
Cratægus oxyacantha.
Epilobium angustifolium. The Helks, profusely; also found in pot-holes near Oughtershaw Tarn.
Epilobium palustre.
Epilobium parviflorum.
Circæa lutetiana.
Ribes alpinum. Oughtershaw village.
Sedum villosum. Oughtershaw and Beckermonds.
Sedum acre.
Saxifraga umbrosa. Garden escape; 1,200 ft.
Saxifraga tridactylites.
Saxifraga hypnoides.
Chrysosplenium alternifolium.
Parnassia palustris. Very plentiful.
Ægopodium podagraria. 1,200 ft. Oughtershaw.
Pimpinella saxifraga.
Angelica sylvestris. 1,800 ft. Pot-hole, Oughtershaw Tarn.
Heracleum sphondylium.
Myrrhis odorata.
Æthusa cynapium.
Hedera helix. Beckermonds Scar.
Sambucus nigra. The Helks.

Lonicera periclymenum. Craywood, Hubberholme.
Galium boreale.
Galium cruciatum. 1,200 ft.
Galium verum.
Galium saxatile.
Galium pusillum.
Galium uliginosum.
Galium aparine.
Asperula odorata. 1,150 ft.
Valeriana dioica.
Valeriana officinalis. 1,150 ft.
Scabiosa succisa.
Scabiosa columbaria.
Carduus heterophyllus.
Carduus nutans.
Carduus arvensis.
Centaurea scabiosa. Kettlewell.
Chrysanthemum leucanthemum.
Achillea millefolium.
Achillea ptarmica.
Senecio vulgaris.
Senecio jacobæa.
Bellis perennis.
Solidago virga-aurea.
Tussilago farfara.
Petasites officinalis.
Taraxacum officinale.
Lactuca muralis.
Hieracium aurantiacum. Found in Buckden Woods. [Not indigenous; imported like the *Vinca*.—F. A. Lees.]
Hieracium sylvaticum.
Centaurea nigra.
Arctium minus.
Matricaria parthenium. 1,200 ft. Oughtershaw.
Lapsana communis.
Campanula latifolia. To 1,200 ft.
Campanula rotundifolia.
Vaccinium vitis-idæa.

Vaccinium myrtillus.

NOTE.—Though *Vaccinium oxycoccus* is mentioned in the 'Flora of West Yorkshire' as occurring from Oughtershaw downwards, I have never observed it in this neighbourhood.

Erica tetralix.

Calluna vulgaris.

Pyrola rotundifolia.

Vinca minor. 950 ft. Growing in Buckden Woods; imported?

Gentiana amarella.

Gentiana campestris.

Menyanthes trifoliata. Small tarn, Beckermonds, and source of river Wharfe.

Scrophularia nodosa. Buckden Woods.

Digitalis purpurea. To 1,400 ft. in a gill, and also at 1,800 ft. in a pot-hole near Oughtershaw Tarn.

Veronica arvensis.

Veronica agrestis.

Veronica beccabunga.

Veronica chamædrys.

Veronica montana.

Veronica officinalis.

Euphrasia officinalis.

Rhinanthus crista-galli.

Pedicularis sylvatica.

Bartsia odontites.

Mentha hirsuta. Buckden.

Thymus serpyllum.

Origanum vulgare. To 1,200 ft.

Calamintha clinopodium.

Prunella vulgaris.

Stachys betonica.

Stachys sylvatica. To 1,200 ft.

Lamium album. Buckden (?).

Ajuga reptans.

Teucrium scorodonia.

Myosotis repens.

Myosotis sylvatica.

Myosotis cæspitosa.

Pinguicula vulgaris.
Primula vulgaris.
Primula farinosa. Abundant.
Primula officinalis. To 1,300 ft.
Lysimachia nemorum. Oughtershaw Wood.
Plantago major.
Plantago lanceolata.
Plantago maritima.
Rumex sanguineus.
Rumex obtusifolius.
Rumex acetosella.
Rumex acetosa.
Polygonum bistorta. To 1,200 ft.
Polygonum convolvulus. To 1,200 ft.
Polygonum aviculare. At 1,200 ft.
Euphorbia peplus.
Mercurialis perennis. At 1,150 ft., in Oughtershaw Wood.
Urtica dioica.
Ulmus montana. To 1,150 ft., Oughtershaw Wood.
Corylus avellana.
Alnus glutinosa. 1,150 ft., Oughtershaw Wood.
Betula alba.
Salix, species?
Potamogeton polygonifolius.
Orchis maculata.
Orchis latifolia.
Habenaria chlorantha. Raisghyll.
Listera ovata. Found at 1,450 ft., in open pasture.
Epipactis palustris. 1,150 ft. Bank near Wharfe, Oughtershaw.
Epipactis latifolia sub-sp. **rubiginosa.** 1,200 ft. The Helks.
[If not *E. media*, this may prove to be *E. ovalis*.—F. A. Lees.]

NOTE.—The *Cypripedium calceolus* still grows in the garden of the late General Stansfield at Buckden. I think this plant was brought from Arncliffe.

Paris quadrifolia. At 1,150 ft., Oughtershaw Wood.
Allium ursinum. At 1,100 ft., Oughtershaw Wood.
Hyacinthus non-scriptus. At 1,250 ft., in open meadow.
Narthecium ossifragum.

Pteris aquilina. In Langstrothdale not above 1,100 ft.
Cryptogramme crispa. One specimen on a grit rock on the Fleet Moss, at 1,800 ft.
Blechnum boreale.
Asplenium ruta-muraria.
Asplenium trichomanes.
Asplenium viride. Pot-holes, 1,800 ft., and elsewhere.
Athyrium filix-fœmina. To 1,800 ft., in pot-hole.
Scolopendrium vulgare.
Cystopteris fragilis.
Aspidium aculeatum.
Nephrodium filix-mas.
Nephrodium dilatatum.
Nephrodium oreopteris.
Polypodium vulgare.
Polypodium phegopteris. Buckden Woods.
Polypodium dryopteris. In a gill above Netherghyll Farm, 1,400 ft.
Polypodium robertianum.
Ophioglossum vulgatum. Oughtershaw, 1,170 ft.
Botrychium lunaria. Hill-side above Oughtershaw.

NOTES—BOTANY.

Senecio saracenicus in Littondale, Mid-West Yorkshire.—Last year I was able to report a station for the *Senecio saracenicus* between Hawkswick and Arncliffe. It was the first notice of this plant in Littondale. Since that time I have found another station at Halton Gill, 1,000 ft. above the sea-level, and also a third station, and this time in an old garden half-mile above Halton Gill. This latter may be the source of the two lower stations, to which seeds may have been carried down by the wind or stream.—W. A. SHUFFREY, Arncliffe, Skipton, 20th August, 1889.

Polypogon monspeliensis near Horbury, South-West Yorkshire.—A few days ago, whilst botanising on the Dirtcar side of that portion of the river Calder designated 'Lupset Pond,' between Horbury and Thornes, my attention was attracted by the luxuriance of the vegetation growing on some sunken boats, placed to preserve the river-banks. On examining one of these I was fortunate enough to find a fine tuft of that beautiful and rare grass *Polypogon monspeliensis* Desf., a specimen of which I enclose.—WM. RUSHFORTH, Hon. Sec. Wakefield Naturalists' Society, Horbury, 15th August, 1889.

[This Casual, although not new to 'Calder with Colne' area, having turned up at various times and places near Huddersfield, is yet, we believe, new to this portion of the area. The species has long been known in Britain, being recorded as *Alopecurus maxima anglica* in Ray's 'Synopsis,' 396, and in Hudson's 'Fl. Anglica,' 1762, p. 48, as *Cynosurus paniceus*, as occurring at Drayton and Portsmouth in 'Comitatus Southamptoniæ,' and at Purfleet in Essex. It is also recorded from Kent, Norfolk, Gloucester, Durham, Fife, and Guernsey, and has been introduced into the littoral region of United States of America from Europe. (Asa Gray, Manual, p. 612).—C.P.H.]

NOTE—COLEOPTERA.

Bembidium nigricorne Gyll. **in Yorkshire.**—Yesterday (Aug. 16th) I had the pleasure of taking an example of this elegant little 'Bembid' at Shipley Glen, at the roots of grass, but did not at the time distinguish it from its common ally *B. lampros* Herbst. It is an addition to the Yorkshire beetle fauna.—J. W. CARTER, Manningham, Bradford, August 17th, 1889.

NOTES—LEPIDOPTERA.

Deilephila galii at Sowerby Bridge.—On the 12th inst. a fine male specimen of this insect was brought me; it was taken at rest on a cauliflower in a garden in this neighbourhood.—WALTER COPLEY, Clough Terrace, Sowerby Bridge, August 24th, 1889.

Acherontia atropos Larvæ at Alford, Lincs.—Several larvæ of the Death's Head Moth (*Acherontia atropos*) have been found here this month. One, full-fed, was brought to me to-day.—JAS. EARDLEY MASON, The Sycamores, Alford, Lincs., 17th August, 1889.

NOTE—CRYPTOGAMIC BOTANY.

Upper Teesdale Mosses.—In connection with the visit of Yorkshire naturalists to Upper Teesdale, it will be of considerable interest to give a list of mosses which have been gathered by Mr. R. Barnes during previous rambles in Teesdale, and which are new records for the district:—*Sphagnum acutifolium* Ehrh. and vars. *deflexum* Schmp., *tenue* Braith., *luridum* Hüeb.; *S. squarrosum* var. *teres* Schp., *S. subsecundum* var. *obesum* Wils., *Didymodon luridus* Hornsch., *D. cylindricus* Bruch and var. *holtii* Braith., *D. sinuosus* Wils., *Trichostomum mutabile* Bruch, *T. crispulum* Bruch, *T. littorale* Mitt., *Barbula recurvifolia* Schp., *Rhacomitrium ellipticum* B. & S.—MATTHEW B. SLATER, Malton, Aug. 26th, 1889.

NOTES AND NEWS.

A probable derivation of the word 'Mushroom' is tentatively suggested to us by Mr. Walter W. Strickland, who remarks that it is, however, more probable than the one the dictionaries give, viz.:—from the French 'Mousse'=Moss—which has nothing to recommend it. If the one he suggests be the true one, it will give a hint as to how mushrooms came to be an article of diet amongst Europeans. He believes the word to be compounded of the cant or 'kennick' 'mush,' an umbrella, and the gypsey word Rom. Gypsies, who are the relics of a low-caste Indian tribe of great antiquity, give evidence of their Asiatic origin by traces of Phallic worship. Thus they show great respect for the 'burroder koú' or 'Phallus major.' Now the word 'Rom,' pronounced 'room,' which now means a husband, had originally much the same meaning as 'koú,' which literally means a thorn, and is connected with the Indian word 'ram.' The word 'mush-room' would consequently mean 'umbrella-phallus,' an admirably descriptive name of the fungus in question. If it be objected that the word 'mush' or 'mash,' as written in Borrow's Lavo-Lil is 'kennick' or cant, it may be remarked that Leland has shown many cant words to be really originally Romany or Gypsey. He further observes that the Hainault gypsies do not pronounce the word 'Mash' but 'Můsh.' 'What is Můsh?' said one of them to him. 'Mush! that's a man.' No; moosh (Czech můz=man) is a man,' was the reply, 'Můsh is an umbrella.' And, lastly, gypsies are just the very people most likely to introduce the practice of eating mushrooms. Leland remarks upon their wonderful faculty for supporting themselves upon the wild products of nature all the world over; their acute open-air-bred instincts teaching them what is wholesome and what is not. It may further be added that the first eaters of mushrooms must have been strong-minded and not over nice. Who more likely than a carrion-loving people to have been these primitive mushroom-eaters? And if, lastly, it be objected that the Romans were great fungus-eaters, he still sees no difficulty in supposing that it was the Romany who taught them to be so.

THE YORKSHIRE NATURALISTS' UNION IN UPPER TEESDALE.

The Union had reason to congratulate itself upon the ground chosen for the Bank Holiday excursion, the upper reaches of the Tees valley having long been recognised as classic ground for the Geologist and Botanist. The exact portion of the valley which was selected for investigation was the Yorkshire or Southern bank of the Tees, from Middleton to its junction with the Maize Beck. No more beautiful spot could have been chosen than the upper portion of the Tees valley, which Yorkshire shares with the adjacent counties of Durham and Westmorland. The district is well known and deservedly attractive, not only to botanists and geologists, but also to all lovers of wild and picturesque scenery. The Tees fault, running east and west, and having an upthrow of about eighty fathoms opposite Middleton, forms the chief geological feature of Upper Teesdale, and contributes largely to its characteristic scenery. This fault throws up the basalt, locally known as Whin Sill, both causing the formation of the waterfalls of Cauldron Snout and High Force, and forming the bold escarpments of Falcon Clints on the one side of the river and Cronkley and Holwick Scars on the other, where vast masses of whin form a bold frontispiece at the base of Mickle Fell, the highest of the Yorkshire summits, the top of the western patch of gritstone, which caps it, being 2,596 ft. above the sea-level. At the head of the valley stands Cross Fell in Cumberland, a mountain which towers upwards near the edge of the great Pennine escarpment to the height of 2,900 ft. In departure from the usual custom this excursion was planned to extend over three days, that is to say from Saturday, August 3rd, to Monday, August 5th.

The excursion commenced on Saturday, the 3rd of August, on the arrival of the 11-28 a.m. train at Middleton. The party drove in wagonettes to Langdon Beck, a distance of about seven miles. From thence, under the guidance of Mr. J. Backhouse, jun., and Mr. Joseph Wearmouth, of Newbiggin, they struck the river at the nearest point, and following the bank on the Durham side, passed under the magnificent basalt escarpment called Falcon Clints, formerly the home of the buzzard, the peregrine, and the raven, but in these days tenanted but by the feeble kestrel, to Caldron Snout. At this point they crossed the Tees by a light wooden bridge, which looked perilously frail above the roaring waters of the fall, and found themselves in Westmorland. In ten minutes, by crossing Maize Beck, they arrived in Yorkshire. Here the party was joined by

Mr. Raine and Mr. J. Pease, who led them alongside Tees and under Cronkley Scars to the site of the old pencil works. The determination of the formation here is a bone of contention among geologists, but whether the beds be shales vitrified by the action of the basalt or Silurian shales is left for them to decide. The way then led over Cronkley Bridge to the High Force, where the members separated to seek their lodgings at Langdon Beck, the High Force, or at Middleton. Unfortunately rain fell heavily during the day, and made observation exceedingly difficult. Only seven species of birds were noted, but few lepidoptera were on the wing, and the botanists alone of the party were to be congratulated upon their success.

After tea, Mr. James Backhouse, jun., very kindly conducted a party of members to a bone-cave a mile or two distant from High Force, and on the Monday forenoon conducted another party.

For the Sunday no official arrangements had been made, and members occupied themselves at their own discretion. Fortunately the weather of Sunday was all that could be desired for personal comfort, in striking contrast to the downfalls of rain on Saturday night and Monday morning.

A forenoon of heavy rain on the Monday made the Cauldron Snout and the High Force appear to the greatest advantage, while the Tees and all its feeders were running so high as to be nearly, if not quite unpassable. Maize Beck, which on Saturday was crossed on the stones, was more than knee-deep on the Monday. The rain cleared off before noon, and was succeeded by brilliant weather, which lasted through the day, and the excursion route was carried out as arranged. The members staying at Middleton were reinforced by others from High Force, and others who came over for the day from various parts of Yorkshire, arriving by the 11.28 a.m. train. The naturalists were fortunate in securing the assistance of Major Bainbridge, whose intimate acquaintance with the topography and geology of the surrounding country, and his rich fund of general information relating to the locality, combined to make him an invaluable guide to the party. As on the Saturday, the Union had permission from the Earl of Strathmore to visit his estates. The first place visited was Messrs. Ord and Maddison's whinstone quarries, which are in close proximity to the Middleton station, and upon which the Leeds Corporation make large demands. These afforded a fine illustration of the columnar formation of basalt, though later in the day still better examples were seen in following the course of the great Tees fault, of which we have already spoken. The route taken was up the Yorkshire bank of the Tees to the High

Force, and on the way Major Bainbridge showed at several points traces of iron on the face of the fault. On reaching Park End Wood some of the party left the road to explore this relic of the old Teesdale forest, and the remainder continued on the bank of the river. They then visited Fairy Dell, ascending to the moor at that point, and walking along the top of the basalt formation until they arrived opposite Winch Bridge, where they again made for the river. The original structure of the Winch Bridge is said to have been the first suspension bridge erected in Europe. The river was crossed at Holwick Head Bridge, and the High Force Inn was reached shortly afterwards. The entire party sat down to an excellently-provided tea at the inn at four o'clock, which they thoroughly enjoyed after their long walk.

Time being but short, the meeting was begun at the tea-table, the usual sectional meetings being perforce dispensed with. The chair was occupied by the president of the Union, Mr. Henry Eeles Dresser, F.L.S., F.Z.S., this being his first introduction to the Union and its members. The minutes were taken as read, after which the following gentlemen were duly elected members:—Andrew Thos. Ashwell, Malton; Hubert Dacre, York; Richard Davison, Driffield; Geo. Hodsman, York; John Holtby, Driffield; Abraham Lambert, Harrogate; Charles T. Lucy, Pickering; James A. Place, Pickering; Eleazer Sherwood, M.D., F.Bot.Soc.Ed., Whitby; and John Stevenson, Whitby. The roll being now called, it was found that the following fourteen societies were represented:—Leeds (three societies), York, Malton, Cleveland, Harrogate (two), Ackworth, Leyburn, Hull (two), Huddersfield, and the Practical Naturalists' Society. On the proposition of Rev. E. P. Knubley, M.A., seconded by Mr. Charles Brownridge, F.G.S., Mr. Richard Barnes was appointed Local Treasurer for Saltburn-by-the-Sea, and Mr. Hugh Richardson for Sedbergh. On the motion of Mr. R. E. Leach, M.A., F.G.S., of Hartlepool, and late of Beccles, Suffolk, seconded by Mr. Hugh Richardson, B.A., of Sedbergh School, the best thanks of the Union were unanimously voted to Lord Strathmore for permission to visit his estates, to Major Bainbridge and Messrs. Raine and Wearmouth for acting as guides, to Mr. James Backhouse, jun., for conducting some of the members through his bone-cave, and to all who had in any way contributed to the success of the meeting. Major Bainbridge, who acknowledged the vote, spoke of the pleasure it had afforded him to be of any assistance to the Union, and concluded by giving an interesting account of the geology of the district. It was proposed by Mr. T. W. Woodhead, of Huddersfield, and seconded by Mr. J. H. Rowntree, of Scarborough, 'that Mr. Dresser receive the best thanks

of the meeting for his conduct in the chair.' Brief sectional reports were then called for, and given by Mr. James Backhouse, jun., F.Z.S., M.B.O.U., for the Vertebrate Section, by Mr. W. Denison Roebuck, F.L.S., for the Conchological, by Mr. J. H. Rowntree, of Scarborough, for the Entomological, by Messrs. T. W. Woodhead, of Huddersfield, and M. B. Slater, F.L.S., of Malton, for the Botanical, and by Mr. S. A. Adamson, F.G.S., of Leeds, for the Geological Section. Detailed reports were subsequently supplied by these gentlemen to the Secretaries of the Union as follows:—

For the Vertebrate Section its senior Secretary, Mr. James Backhouse, jun., F.Z.S., M.B.O.U., reported as follows:—It might be supposed that in three days a large number of vertebrates would have been noted on such exceptionally rich ground as Upper Teesdale presents, but owing partly perhaps to the time of year and partly to the inclemency of the weather, only 38 species of birds were seen (25 residents and 13 migrants) and 2 mammals.

There was a marked absence of the birds of prey, not one being seen, in what was once probably as favourite a haunt for the accipitres as any in Yorkshire. One Raven was sighted, and this species is reported by Major Bainbridge to breed still below Middleton-in-Teesdale. Black Grouse, a small flock of Dunlin, Heron, and Twite were among the scarcest birds met with, and of the latter, young in first plumage were seen on the Durham side of the Tees.

Mr. Raine, of Howgill, reported that two pairs of the Teal have nested on the Yorkshire side this season; one was observed during the excursion. The Grey Wagtail, of which examples were met with, is reported by Mr. J. Wearmouth to be a summer visitant only to Upper Teesdale, arriving in March.

A number of frogs were seen and their great variety of colouring carefully noted by Rev. E. P. Knubley, who reports that some, particularly those on the higher ground near to Cauldron Snout, were very light-coloured, with orange blotches on the under side of the breast and thighs, whilst others showed every variety of black marking upon their backs, from two or three small spots, irregularly dispersed over a light yellow surface, to large patches which covered the greater part of the exposed portion of the body.

For the Conchological Section, none of whose officers were able to be present, Mr. W. Denison Roebuck, F.L.S., stated that although very few species had been observed actually upon the Yorkshire side of the Tees, yet one was of especial interest, *Helix fusca*, of which Mr. J. E. Mason had found a few in a hazel copse under Holwick Scars. It had been previously found—years ago—on the Durham side, near High Force, by Mr. James Backhouse. *Limnæa peregra*

was found in a stream at the Pencil Mill, under Cronkley Scar, at about 1,200 ft. altitude. The other Yorkshire captures were not numerous. The Durham captures included all the four British species of *Arion*, *Helix rupestris*, etc.

For the Entomological Section, which was represented by one of its secretaries, Mr. James H. Rowntree, of Scarborough, Mr. J. Eardley Mason, of Alford (Lincs.), Mr. A. Pickard, of Wolsingham (co. Durham) and others, Mr. Rowntree reports the following list of captures:—LEPIDOPTERA: *Pieris napi*, *Vanessa urticæ*, *Larentia didymata*, excessively abundant in some of the streamlet beds, rising in clouds along with *L. cæsiata*, less commonly, *Thera variata*, *Cidaria russata* and *C. immanata* (one or both species, including some well-marked varieties), on the Durham side; on the ragwort bloom, *Cidaria populata* and *C. pyraliata*, the latter frequent on the Westmorland Fells approaching High Cup Nick, *Eubolia mensuraria*, *Charæas graminis*, *Scopula lutealis*. An evening's sugaring on the Durham side near to High Force only produced the ubiquitous *Xylophasia polyodon*. All the above were in the imago state. Of larvæ were noted *Notodonta ziczac*, *Acronycta menyanthidis* (on *willow*), and *Hadena pisi*. COLEOPTERA: *Carabus nitens* (?). Mr. Pickard reported the capture of the following, all upon the South or Yorkshire side of the river: *Smerinthus populi*, *Dicranura vinula*, *Notodonta dictæa*, *N. ziczac*, *Hadena pisi*, *Acronycta menthanyidis*.

Mr. James Eardley Mason, of Alford, who had spent a few days in the district, and who had paid special attention to the Hemiptera-Heteroptera, reported that he had found the following species on the Yorkshire bank of the Tees.

Miris holsatus.
Lygus pabulinus.
Lygus contaminatus.
Ætorhinus angulatus.
Orthotylus nassatus.
Psallus ambiguus.
Plagiognathus viridulus.
Anthocoris nemorum.
Anthocoris nemoralis.
Salda scotica.
Salda c-album.
Velia currens.

Orthoptera.

Forficula auricularia.

None are really rare, but the two *Saldæ* are by no means common and are curiously distributed, favouring such localities as the Isle of Wight and Cumberland stream-banks impartially. Fine dry weather is so essential to anything like good work in the Hemipterous line, that so brief a list is not to be wondered at under the pluvial circumstances of the excursion.

For the Botanical Section, in the absence of its Phanerogamic Secretary, Mr. T. W. Woodhead, of Huddersfield, reported that no section had more right to be grateful than this, at the selection of

Upper Teesdale for the three days' excursion, and to those who availed themselves of the opportunity a rich treat was in store. As to records, some little difficulty was experienced owing to the routes embracing portions of three counties, but by a careful sifting of notes they had been able to make a reliable list of the plants on the Yorkshire side of the river. As a result of close work and careful observation, 311 species and 6 varieties were recorded. Unfortunately, the grasses and sedges were almost entirely neglected, or the number might have been considerably augmented. Beginning at the lower end of the valley, the first plants of note were met with in Park End Wood, viz.:—*Melampyrum sylvaticum*, *Paris quadrifolia* (mostly with five or six leaves), and *Geranium sylvaticum*. The rocks about Fairy Dell and Holwick Scars gave the typical ferns and club-mosses, the chief being *Cryptogramme crispa*, *Asplenium ruta-muraria*, *trichomanes*, and *viride* (the latter being the more common form), *Cystopteris fragilis*, *Polypodium phegopteris* and *dryopteris*, *Lycopodium selago* and *clavatum* and *Selaginella selaginoides*. It was on touching the river at Winch Bridge that some of the best plants made their appearance; here everyone was delighted with the pretty golden flowers of *Potentilla fruticosa*, now seen at its best and forming one of the most striking botanical features of the valley; good things were met with on every hand, and on following up the stream to High Force were seen *Pyrus aria*, *Galium boreale* and *sylvestre*, *Solidago virga-aurea* var. *cambrica*, *Gnaphalium supinum*, *Carduus heterophyllus*, *Serratula tinctoria* var. *monticola*, *Primula farinosa*, *Polygonum viviparum*, *Equisetum pratense* and *variegatum*. Several good *Hieracia* were found and of those determined were *iricum*, *pallidum*, and *tridentatum*. Still further up the valley towards White Force, Cronkley Scars, and Maize Beck were *Viola lutea* var. *amœna* (which seemed to replace the yellow form), *Saxifraga aizoides*, *stellaris* and leaves of *hypnoides*, *Sedum villosum*, *Listera cordata* and *Habenaria albida*. One party, unaware of the promise to confine themselves to the valley, journeyed by way of Mickle Fell, Cronkley Fell, and White Force. They were thus brought into contact with the noted sugar limestone, and their innocence was rewarded by many good finds, including *Draba incana*, *Helianthemum canum*, *Alsine verna*, *Rubus chamœmorus*, *Dryas octopetala*, *Saxifraga hirculus*, *Epilobium alsinifolium*, *Pyrola secunda*, *Tofieldia palustris*, and *Lycopodium alpinum*.

Mr. J. A. Wheldon, of York, has since supplemented this report by furnishing the following list of *Hieracia* which he collected and have been determined for him by Mr. Hanbury :—*H. angustum* Lind. (= *H. crocatum* var. *angustifolium* Fr.); *H. auratum* Fr. (= *H.*

rigidum with yellow styles); *H. rigidum* Backh., with dark styles; *H. vulgatum* Fr.; *H. vulgatum* Fr. resembling *diaphanoides* Lind.; *H. commutatum* Backh. (= *H. boreale*); *H. anglicum* Fr.; *H. iricum* Fr.; *H. gothicum* Fr.; *H. murorum* L.

In Cryptogamic Botany, Mr. M. B. Slater, F.L.S., reported that Mr. R. Barnes, of Saltburn, who had worked at the Mosses during the three days, had detected the following species:—

Sphagnum acutifolium Ehrh. var. luridum Hüeb.
Sphagnum tenellum Ehrh.
Andreæa alpina Turn.
Andreæa crassinervis Bruch.
Gymnostomum rupestre Schwg.
Anæctangium compactum Schl.
Rhabdoweissia denticulata Brid.
Dicranella rufescens Turn.
Dicranum fuscescens Turn.
Campylopus atro-virens DeNot.
Archidium phascoides Brid.
Blindia acuta Hedw.
Didymodon sinuosus Wils.
Distichium capillaceum L.
Encalypta ciliata Hedw.
Grimmia funalis Schwgr.
Rhacomitrium protensum Braun.
Amphoridium mougeotii B. & S.
Ulota drummondii Grev.
Orthotrichum stramineum Hornsch.
Orthotrichum leiocarpum B. & S.
Tetraplodon mnioides Hedw.
Bartramia ithyphylla Brid.
Bartramia pomiformis L.
Webera cruda Schreb.
Webera albicans Wahl.
Bryum alpinum L.
Zieria julacea Schpr.
Diphyscium foliosum L.
Fissidens fontanus Wils.
Fissidens decipiens DeNot.
Antitrichia curtipendula L.
Heterocladium heteropterum Bruch.
Eurhynchium teesdalii Sm.
Plagiothecium pulchellum Hedw.
Hypnum uncinatum Hedw.
Ptychomitrium polyphyllum B. & S.
Ulota crispula Bruch.
Amblyodon dealbatus Dicks.
Webera elongata Dicks.
Cinclidium stygium Swartz.

This list includes some rare species, although none which have not been previously recorded.

For the Geological Section, of which both Secretaries, S. A. Adamson, F.G.S., Leeds, and S. Chadwick, F.G.S., Malton, were present, the following report is furnished by Mr. Adamson:—

The chief interest to the geologists lay in the inspection of the famous Whin Sill, so well known from the references to it by geological writers during the last sixty-five years. The Whin Sill was described by Sedgwick to have been produced by a lateral injection of volcanic matter in a state of igneous fusion, or in other words, to be a tabular mass of basalt or ancient lava injected horizontally between Carboniferous strata after their deposition and consolidation. This opinion is shared in by many subsequent writers, including Topley, Lebour, and others. Whin is the local name for basalt, but this term is applied in other localities to various rocks of a hard character. Sill is an expressive term, generally used in speaking of the flat piece of stone at the foot of a window. It also gives a fair idea of these tabular beds of basalt, sill-like in their

appearance, and more or less parallel with the sedimentary rocks above and below, between which they have been injected. The Whin Sill can be studied in many parts of Northumberland, Durham, and Yorkshire, but in no place to greater advantage than between Middleton-in-Teesdale and Caldron Snout, either in the rugged scars on each side of the river, or in the sections made by the denuding process of the mighty waterfalls of High Force and Caldron Snout. At the latter place the basalt attains its greatest thickness, that is, between 200 ft. and 300 ft., and in the lofty precipices in the vicinity may be seen assuming the columnar structure so characteristic of basalt.

At the Middleton station conveyances were obtained, as the party had to proceed some eight miles further up the dale before fairly setting to work, passing through the busy little town of Middleton and the hamlets of Newbiggin and Bow Leys; a short halt was made at the High Force Inn, and at Langdon Beck, a few miles further, they dismounted and crossed over by Widdy Bank to the margin of the river. The scenery had greatly altered as they proceeded—from the broad valley, with its sides dotted with white-washed farmhouses, and here and there fine woods and charming glens, to a bleak and sterile district, with the river slowly gliding along under the shadow of dark and gloomy precipices. The path, too, was excessively rough, reminding one forcibly of the boulder-strewn walk under the cliffs some years ago at Kettleness. On the Yorkshire side were the high basaltic terraces of Cronkley Scars, with masses of débris at their base, and finely displaying the columnar structure alluded to. On the Durham side the tremendous basalt cliffs of Falcon Clints were skirted, and the point was noticed where the heated basalt had come in contact with the underlying limestone (the Melmerby Scar limestone) and had metamorphosed it into a loose granular rock, known generally as 'sugar limestone.' The grains of this are highly crystalline, and have hardly any cohesion with each other, so that it is difficult to obtain a good specimen. On the summit of Cronkley Scars the limestone immediately overlying the basalt, known as the 'Tyne-bottom' limestone, has this granular character from the same cause. Another stretch of arduous walk brought the party to the limit of their journey, the waterfall of Caldron Snout, where the waters of the Tees thunder down jagged terraces of basalt, the foaming cataract being in grand contrast with the black igneous rock. The party ascended the broken sides of the ravine, and crossed the frail-looking plank bridge (nearly 1,500 ft. above the sea-level) into the county of Westmorland, thence immediately crossing over the Maize Beck,

this time without the friendly aid of a bridge, into Yorkshire. Here, where the Maize Beck enters the Tees, is the junction of the three counties, although the exact spot in the bed of the stream would be somewhat difficult to fix upon. The way was now taken along the Yorkshire bank of the river, under the frowning heights of Cronkley, picking their path slowly over the talus at its base, and ever and anon pausing to admire the weird grandeur of the scenery around.

Shortly they were upon some beds which have occasioned some discussion among geologists, the soft shales known as the Pencil Mill Beds, which were formerly used for the manufacture of slate pencils. These beds are claimed by Messrs. Gunn & Clough, of the Geological Survey, to be Silurian, and they argue that the important fault known as the Great Burtreeford Dyke (which crosses the river near this point, and also crosses the great Teesdale fault) is the cause of these lowest beds being brought up. The total displacement caused by this fault, which crosses over through Weardale to Allenheads, in Northumberland, is thought to be, near the Pencil Mill, about 350 feet. To judge from a specimen of this shale obtained in situ, without knowing the position it was obtained from, we should certainly pronounce it to be of Silurian age. In some places veins of quartz run through, and a dyke of igneous rock crossing the river and passing through this bed was also noted. This dyke seems different in character from the basalt seen during the day, and partakes more of the nature of a mica-trap. This point was the most interesting noticed, and it occasioned some discussion. From thence Cronkley Bridge was passed, and the return made to the High Force Inn for rest and refreshment, both grateful to the party, wet and weary as they were.

On Sunday there was no programme, and members could if they chose rest after the fatigue of the previous day, or betake themselves to study some matter in detail still further, or again, by brisk walking in the bracing air, add to their stock of health. Some of the party spent a few quiet hours in the charming and well-wooded grounds connected with the High Force, and thus were enabled to examine more closely the majestic waterfall and the surrounding rocks. At High Force the Tees leaps over the basalt in a direct fall of 72ft. into a deep pool below. The river was much fuller from the rains of the previous night, and the scene was impressive beyond description. The peat-stained waters of the swollen river were hurled with a deafening roar over the ledge, and from the pool rose spray and foam almost to the top of the fall. On the sides of the pool the rushing waters had formed miniature caves in the limestone at the base, and wherever a chink or crevice occurred in the sides of the ravine there

some rare and lovely flower was sure to bloom. On the opposite side of the glen rose to a great height moors covered with the purple heather, and here and there a patch of the yellow Potentilla or some other flower equally dear to botanists. The ravine, too, leading to the fall had been planted on its sides with spruce and silver firs, and pleasant and well-designed walks intersected the woods, making the approach easy. As stated, the top bed at the High Force is basalt; this overlies a bed of shale, which from contact is highly indurated, and when struck has quite a metallic ring; under this again is a thick bed of limestone, locally known as the 'Jew Limestone.' This is very fossiliferous, being full of corals and crinoids, and is very little altered, if any, by the agency of the basalt.

Monday opened early with heavy rain, which boded ill for the day's programme, as a stiff round lay before the members; happily this cleared off, and on the arrival of a fresh contingent of members by the morning train, all were ready to begin. For the day's work the geologists had the invaluable leadership of Major Bainbridge, chief of the many mines belonging to the London Lead Company. They would have had the benefit of that gentleman's guidance on Saturday, but that that day happened to be the monthly pay-day of the miners, who flocked into Middleton from many and distant parts of Teesdale and Weardale on that important errand. The full title of the Lead Company is 'The Governor and Company for Smelting Lead with Pit Coal and Sea Coal,' for which purpose they were incorporated by Royal Charter in the reign of Queen Anne. Previous to this charcoal had been used for lead-smelting The programme commenced with a visit to the 'blue granite' (i.e., basalt) quarries of Messrs. Ord and Maddison, near Middleton Railway Station. The Whin Sill is here rapidly thinning out, and disappears in the bed of the Lune near Longton. The basalt is extensively quarried for those black 'setts' so familiar in the thoroughfares of Leeds, and of which immense stacks were ready for removal. Blake's Stone-breaker was hard at work reducing the stone to chips for walks and roads, and close by were wagons with the oft-seen words 'Leeds Corporation' painted thereon, and waiting for a freight. Mr. Chadwick, whose physique eminently fits him for rapidly striding over hill and dale, from here made a detour to the Lunedale Whinstone Company's Quarries, about a mile S.E. of the Middleton Quarries. He reported that the Whin Sill there is about 15 ft. thick, and is capped by about 5 ft. of blue ferruginous shale, above this another band of shale about 12 ft. thick, and this again by about 15 ft. of limestone full of characteristic fossils, as *Productus giganteus*, and others. He also visited the Greengates Quarry, about

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CONDUCTED BY

WM. DENISON ROEBUCK, F.L.S.,

Sunny Bank, Leeds;

WITH THE ASSISTANCE IN SPECIAL DEPARTMENTS OF

J. GILBERT BAKER, F.R.S., F.L.S., Royal Herbarium, Kew;

CHAS. P. HOBKIRK, F.L.S., Dewsbury;

W. EAGLE CLARKE, F.L.S., M.B.O.U., Museum of Science & Art, Edinburgh;

GEORGE T. PORRITT, F.L.S., F.E.S., Greenfield House, Huddersfield;

ALFRED HARKER, M.A., F.G.S., St. John's College, Cambridge;

W. BARWELL TURNER, F.C.S., F.R.M.S., 38, Sholebroke Avenue, Leeds.

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YORKSHIRE NATURALISTS' UNION.—ENTOMOLOGICAL SECTION.—The President and Secretaries of the Section will be pleased to receive the names and addresses of those members specially interesting themselves in this branch. The object in view is to circulate a fairly complete list amongst the members of this section, and thereby to facilitate the exchange of information, and also, if sufficient encouragement is given, to publish (in the Annual Report of the Section) at the close of the season a list of Yorkshire Occurrences of Insects.

Address the President:—Mr. N. F. DOBRÉE, The New Walk, Beverley;
Or the Hon. Secretaries:—Mr. J. H. ROWNTREE, Westwood, Scarborough;
Mr. W. E. BRADY, 1, Queen Street, Barnsley.

The Editors of 'The Naturalist' would be pleased to receive offers of suitable papers for insertion during the next few months.

a mile further south. This is about 1,300 ft. above sea-level, at the top of Kirk Arran, and he reported that the basalt was distinctly nodular in character, and appeared to be a dyke about 60 ft. wide, cutting its way through the limestone from west to east; the stone is darker and denser than that of Middleton, and is said to be very durable.

The remainder of the party proceeded along the road at the base of the great basaltic scars, which form such a striking feature in the landscape on the south side of the Tees, backed again as they are by still loftier heights of limestone. The cause which thus materially alters the scenery of this part of the dale is the great Teesdale fault which throws up the Whin Sill on the Yorkshire side of the river, whilst on the Durham side it is below the surface. Thus, as the leader said, the strata on the north side are in their regular order, but on the south side they are upheaved by the fault some 500 ft. Some very complicated problems and phenomena arise from the manner in which this district has been rent and dislocated by igneous dykes and immense faults. In an old working near the road-side we were shown where iron-ore had been worked, but not in profitable quantities; here was strong evidence of the fault, as the face of the limestone could be seen. At Park End Wood—a relic of the old Teesdale Forest—the party divided, and most of the members visited Fairy Dell, and thence climbed to the top of the scars for the view to be there obtained. Holwick Scars were next passed, where the basalt rises in tremendous precipices, whose vertical sides show remarkably well the columnar structure. From thence the fields were crossed to view the Winch Bridge—a seemingly frail structure composed of a few planks of wood hung across the river, whose waters were turbulent enough just below to make the position to feel at least novel. Here the Whin Sill appears in the bed of the river, causing many miniature cascades. The appearance of the basalt there on the north side of the fault shows that the dislocation between this point and Holwick Scars is not so great as was noted earlier on in the day. The party now proceeded further to Holwick Head Bridge (near which the great fault crosses the river), over which they crossed and pursued the road to the High Force Inn, where a hurried tea was despatched, and a still more hurried meeting held. This was absolutely necessary to enable the bulk of the party to reach their distant homes the same evening.

Thus terminated a most pleasurable and profitable excursion in one of the grandest and wildest parts of Yorkshire. Many old friends had once more met again to interchange views and opinions, and much too had been seen to think over after returning; the

problems presented and the grand geology of the district afford ample room for further study and examination than they could possibly give at the time, but still the experience gained will be an admirable ground-work for another visit. The kindness and cordiality of the good-hearted dalesmen were conspicuous throughout the excursion. Messrs. Wearmouth, Raine, and others, in addition to the leader already alluded to, vied assiduously with each other in giving ample information and rendering valuable services—services of a character to be gratefully appreciated by the members. As the party was scattered throughout the dale, it is impossible to speak of the whole of the accommodation; but those geologists who stayed at 'Ye Cleveland Arms' in Middleton will not easily forget the capital cuisine, the careful attention, and the excellent sleeping quarters—all matters of supreme importance to hungry and weary hammer-men. There was much discussion as to the composition of basalt. The following is an analysis of the Teesdale Whin Sill, made in the laboratory of Dr. Percy. The specimen was taken from Widdy Bank Fell, on the way to Caldron Snout:—Silica, 51·47; alumina, 16·48; protoxide of iron, 8·49; peroxide of iron, 3·61; protoxide of manganese, 0·46; lime, 8·22; magnesia, 5·10; potash, 3·28; soda, 1·18; iron, 0·08; sulphur, 0·09; water, 1·70.

The great Dr. Adam Sedgwick, whom Yorkshire recognises as one of the most illustrious of her sons, drew attention to the geology of High Teesdale more than sixty years ago, and published an elaborate and learned treatise upon the same. This is now extremely difficult to consult, and therefore a summary of his exhaustive observations may be acceptable. He says, in regard 'to the embedded masses of trap (commonly called the Great Whin Sill), it appears that immediately below Caldron Snout they are not parallel to the strata between which they are interposed; that between Force Garth Hill and Holwick, where the inferior surface of the trap appears to be nearly parallel to the lower strata, the country is intersected by numerous fractures which have greatly changed the level of the corresponding parts of the different formations; that a fracture passes down the valley and produces a great throw which conceals the trap on the north side of the river; that the trap on the south side of the valley descends among the strata in the form of a great wedge which diminishes in thickness from between 200 ft. and 300 ft. to about 12 ft.; that near the apparent termination of the Whin Sill a mass of trap breaks out on the opposite bank of the Tees, and is probably prolonged in the form of a dyke, or system of dykes, through the eastern moorlands.'

The following is the full list of Vertebrata observed during the excursion :—

Resident Birds.

Turdus musicus.
Turdus merula.
Erithacus rubecula.
Accentor modularis.
Cinclus aquaticus.
Parus cæruleus.
Motacilla lugubris.
Motacilla melanope.
Anthus pratensis.
Fringilla cœlebs.
Passer domesticus.
Linota cannabina.
Linota flavirostris.
Sturnus vulgaris.
Corvus corone.
Corvus frugilegus.
Corvus corax.
Alauda arvensis.
Alcedo ispida.
Ardea cinerea.
Anas crecca.
Columba palumbus.
Lagopus scoticus.
Tetrao tetrix.
Charadrius pluvialis.
Vanellus cristatus.

Migrant Birds.

Turdus torquatus.
Saxicola œnanthe.
Pratincola rubetra.
Ruticilla phœnicurus.
Phylloscopus trochilus.
Hirundo rustica.
Chelidon urbica.
Cotile riparia.
Cypselus apus.
Numenius arquata.
Tringa alpina.
Totanus hypoleucos.

Mammals.

Shrew.
Mole.

NOTES—ORNITHOLOGY.

Flamborough Bird-notes.—Several Crossbills (*Loxia curvirostra*) have been seen at Flamborough during the month of August; I know of two males having been shot, a very rare occurrence here. August 6th, Little Gull (*Larus minutus*) seen some three or four miles N.E. off the Headland; also several Skuas and Manx Shearwater (*Puffinus anglorum*), Guillemots (*Lomvia troile*), Razorbills (*Alca torda*), and Puffins (*Fratercula arctica*) plentiful up to Aug. 20th; after that they took their departure in a southerly direction. In September the cliffs were deserted, excepting by the Rockdoves (*Columbia livia*). The other day I observed several Wheatears (*Saxicola œnanthe*), Redstarts (*Ruticilla phœnicurus*), and Swallows (*Hirundo rustica*) gathering about the Headland, making ready for their long journey.—Matthew Bailey, Flamborough, September 17th, 1889.

Oystercatcher within the Humber.—On August 29th and 30th, a pair of Oystercatchers (*Hæmatopus ostralegus*), young birds, were shot on the 'fitties' in this parish. Although common on the Lincolnshire coast, they are rarely seen within the Humber, these being the first which have come under my notice for some length of time.—J. W. Harrison, Goxhill, Lincolnshire, Sept. 4th, 1889.

NOTES—LEPIDOPTERA.

Colias edusa at Malton.—On the 30th August I took a specimen of this butterfly settled on a gooseberry bush in my firm's nursery gardens here.—G. W. Slater, Malton, 4th September, 1889.

Colias edusa near Harrogate.—On the 5th instant I took two specimens of *Colias edusa* (both males) within a mile of this place, and on the 9th my son took a female of the same species—all good specimens. I believe it is about twelve years since this insect has been taken here. Mr. Porritt informs me he has not heard of a capture of it in Yorkshire this year.—Ben. Blaydes Thompson, Harrogate, 16th September, 1889.

MICRO-FAUNA AND MICRO-FLORA OF UPPER TEESDALE, SEPTEMBER 1889.

J. M. KIRK,
Doncaster; Secretary to the Section for Micro-Zoology and Micro-Botany, Yorkshire Naturalists' Union.

The gatherings made on the August excursion were unfertile, but the following occur in samples of water kindly forwarded to me by Rev. E. P. Knubley, M.A., from Upper Teesdale, on Sept. 24th, 1889.

Yorkshire side: River Tees, 900 ft. above sea-level, temp. 48°.

Diatomaceæ.

Diatoma vulgare.
Gomphonema acuminatum.
Achnanthes longipes.

Desmidiaceæ—none.

Rotifera.

Pterodina patina.

Yorkshire: Stream near Holwick Head Bridge, 900 ft., temp. 50°.

Diatomaceæ.

Pinnularia oblonga.
Pleurosigma attenuatum.
Diatoma vulgare.
Fragilaria capucina.
Epithemia turgida.
Cymbosira agardii.
Cocconema lanceolatum.
Gomphonema acuminatum.
Amphipleura pellucida.
Nitzschia lanceolata.
Nitzschia reversa.
Frustulia saxonica.

Desmidiaceæ.

Closterium moniliferum.
Closterium lunula.
Cosmarium margaritiferum.
Cosmarium tetraophthalmum.
Cosmarium pyramidatum.
Cosmarium crenatum.

Infusoria.

Opalina bursaria.
Euroleptus piscis.
Uvella virescens.

Rotatoria.

Diglena lacustris.
Scaridium longicaudum.

Entomostraca.

Cyclops quadricornis (young).

Yorkshire side: Stream flowing into Tees, 870 ft., temp. 51°.

Diatomaceæ.

Diatoma vulgare.
Gomphonema acuminatum.
Cocconema lanceolatum.
Pinnularia oblonga.
Pinnularia viridis.

Desmidiaceæ.

Cosmarium margaritiferum.
Cosmarium tetraophthalmum.
Tetmemorus granulatus.
Closterium acerosum.
Closterium lunula.

Infusoria.

Trachelius lamella.
Kondylostoma patens.
Nassula elegans.

Entomostraca.

Eurycercus lamellatus.

Rotifera.

Pterodina patina.

Yorkshire side: Stream flowing into Tees, 870 ft., temp. 46°.

Rotifera.

Rotifer vulgare.
Euchlanis triquetra.
Notommata hyptopus.
Kerona mytilus.
Chilodon cucullulus.

Infusoria.

Ichtydium podura.
Spathidium hyalinum.

Diatomaceæ.

Diatoma vulgare.

Desmidiaceæ.

Cosmarium crenatum.
Closterium moniliferum.

THE YORKSHIRE BOULDER COMMITTEE AND ITS THIRD YEAR'S WORK.

S. A. ADAMSON, F.G.S.,

Hon. Secretary to the Committee.

The Committee again report with pleasure that an active and profitable year's work has been done to further and report observations upon the Erratic Blocks of Yorkshire. The reports received, after careful examination by the Committee, have been duly forwarded to the British Association Boulder Committee, by whom they have been accepted, and presented at the recent meeting of the British Association at Newcastle. The bulk of the observations are the result of personal visits by various members of the Committee, and it will also be noticed that in two cases accounts are given of visits to well-known blocks, reported as erratics, but which, after careful scrutiny, are proved not to possess that claim. The Committee think it better to include the reports just named, so that these blocks may not be again reported. It will be again noted that the North and East Ridings of our county have received more attention from observers than the West Riding; it is hoped that during next year (seeing that the meeting of the British Association is to be held in Leeds) our West Riding friends will bestir themselves, and furnish some good reports for presentation. The Boulder Map of Yorkshire, upon which the position and classification of the various erratics reported are denoted, now displays the practical character of the work of the Committee at a glance. The Committee warmly thank all those valued contributors to their work, and trust that the valuable nature of the work already accomplished, and the recognition it has obtained, will prove an incentive to further efforts to complete, as far as possible, the glacial geology of Yorkshire.

It may be mentioned that the practical results we have obtained have incited the geologists of Lancashire and Cheshire to form a Boulder Committee; in this matter the members of the Yorkshire Boulder Committee wish their brethren and co-workers every success, and promise every assistance.

The Secretary (Mr. Adamson, F.G.S., 52, Wellclose Terrace, Leeds) will be most happy to furnish information as to the work and objects of the Committee, and also to supply schedules upon which observations upon erratics may be duly recorded. It is hoped that

all the societies affiliated with the Yorkshire Naturalists' Union will recognise the importance of the Committee's work, and furnish all particulars respecting erratics in their own districts. This is special work of a valuable character, and, to be thoroughly and successfully done, requires the active co-operation of scientists in all parts of the county.

The reports received and forwarded are now presented.

REPORTS UPON ERRATIC BLOCKS IN THE NORTH AND EAST RIDINGS OF YORKSHIRE.

SAMUEL CHADWICK, F.G.S.,

Hon. Curator of the Malton Museum; Joint Secretary to the Geological Section of the Yorkshire Naturalists' Union.

Nos. 1 & 2.	Strensall, near York	North Riding.
,, 3 to 5.	Flaxton, ,, ,, ...	,, ,,
,, 6.	Burniston, ,, Scarborough ...	,, ,,
,, 7.	Seamer, ,, ,, ...	,, ,,
,, 8 to 15.	Muston, near Filey	,, ,,
,, 16.	York	,, ,,
,, 17.	Whitby	,, ,,
,, 18 to 23.	Foston-le-Clay	,, ,,
,, 24 to 29.	Thornton-le-Clay...	,, ,,
,, 30 & 31.	Staxton, near Scarborough ...	East Riding.
,, 32 & 33.	Flixton, ,, Filey	,, ,,
,, 34 & 35.	Hunmanby, near Filey	,, ,,
,, 36.	Bridlington	,, ,,
,, 37.	East Lutton	,, ,,
,, 38 & 39.	Driffield	,, ,,
,, 40.	Reighton	,, ,,

Strensall, near York.

1. In the village of Strensall, on the East side of the main road, and forming the corner-stone of a road leading into the farm of Mr. Hodgson, is a boulder. It is 3 ft. 3 in. × 2 ft. 1 in. × 1 ft. 8 in.; rounded and oblong; has been moved; no striæ or groovings; coarse gritty Carboniferous sandstone; about 100 ft. above sea-level; rests upon sand and clay.

2. In the village of Strensall are about twenty scattered boulders, varying from 1 ft. 8 in. × 1 ft. × 11 in. to 1 ft. × 9 in. × 8 in.; sub-angular to rounded; they are generally isolated; they are chiefly sandstones and whinstones, and upon some of the latter are

distinct grooves, 5 in. to 6 in. long, in the direction of their longest axis; about 100 ft. above sea-level.

Note.—Below the surface soil in this district there is a great depth of Boulder Clay which for the last hundred years or more has been worked for the purpose of marling the land, and during the excavation the boulders met with were carefully preserved—some for road metal, the larger and harder ones for corner-stones, mounting-blocks, cheese-presses, etc. The clay deposit varies considerably, although that of a dark-blue nature predominates; yet there are beds of sand and light-red clay in other places.

Flaxton.

3. Near the sign-post in the centre of the village of Flaxton is a boulder. It is 3 ft. × 2 ft. 6 in. × 1 ft. 9 in.; sub-angular; has been moved; no striæ or groovings; Mountain Limestone; about 120 ft. above sea-level.

Note.—This stone formerly marked the boundary between the parishes of Foston and Bossall, and was called the 'Rambleations Stone,' this being a local word signifying an assemblage of people. A dole of bread was, at stated periods, distributed; but it is said, to avoid jealousy or favouritism, it was thrown from this stone amongst the crowd, leading often to free fights. This custom is now discontinued, money being now distributed, and the stone removed.

4. In the village of Flaxton, about a mile S.E. of the railway station, on Mr. G. Lobley's estate, is a boulder 4 ft. 8 in. × 2 ft. 4 in. × 1 ft. 6 in.; sub-angular; no striæ or groovings; Mountain Limestone; has been moved from adjoining land; about 120 ft. above sea-level; rests on sand and clay.

Note.—This stone has also been used as a boundary stone between the parishes of Foston and Bossall.

5. At the north end of the village of Flaxton, in a small grass field, not far from a pond, and about half-mile S.E. of the railway station, is a boulder of Mountain Limestone. It is 4 ft. × 3 ft., but is being covered up as it hinders vegetation; sub-angular; has not been moved; longest axis E. and W., but could not discern any striæ; about 150 ft. above sea-level; rests on sand and clay.

Note.—There are several smaller boulders about the village, but they are being broken up for road metal.

Burniston, near Scarborough.

6. In the parish of Burniston, near Scarborough, on the estate of Lord Londesborough, and on the N.E. side of the Burniston and Scalby Road, about halfway betwixt the two villages, is a Shap Fell

boulder; 3 ft. 6 in. × 2 ft. 10 in. × 2 ft. above ground; rounded; was brought from the field adjoining (tenant, Mr. D. Cockerill) to its present position; no groovings or striæ; rests upon Boulder Clay.

Note.—The district of Burniston and Scalby is undulating in character, and is overlaid by Boulder Clay and gravel.

Seamer, near Scarborough.

7. On East Field Farm, occupied by Mr. Taylor (parish of Seamer, estate of Lord Londesborough), a little E. of Seamer Station, there are six boulders in a field close to the house. They vary in size from 2 ft. 7 in. × 1 ft. 8 in. × 1 ft. 2 in. to 1 ft. 6 in. × 10 in. × 8 in.; three of them are hard blue Whinstone, one a fine hard Sandstone, and the two remaining ones a rough-grained soft Sandstone; are about 120 ft. above sea-level; they have recently been brought from adjoining fields, and show no striæ or groovings.

Muston, near Filey.

8. On Mount Pleasant Farm (estate of Darley's Trustees), in the parish of Muston and about one and half miles W. of Filey, are twelve boulders, varying in diameter from 2 ft. to 9 in.; rounded to sub-angular; they have been collected from the adjacent land and brought as foundations for building, etc.; three of these are hard Sandstone, the remainder Granite and Whinstone.

9. In Mr. Atkinson's garden at the north end of the village of Muston is a boulder 1 ft. 5 in. × 1 ft. 7 in. × 1 ft. 5 in. out of ground; sub-angular; no striæ or groovings; Whinstone; 150 ft. above sea-level; rests on gravel.

10. At the north end of the village of Muston, upon an open space of grass at the junction of the roads leading to Malton, Filey, and Bridlington, are about twenty boulders, varying in size from 2 ft. 4 in. × 1 ft. to 1 ft. × 1 ft.; generally sub-angular; Whinstone and Sandstones; no striæ or groovings observed; have been collected from adjacent land.

11. At the south end of the village of Muston, at the corner of the house occupied by Mr. Nellist, is a boulder 1 ft. 10 in. × 1 ft. 10 in. × 1 ft. 5 in.; sub-angular; Whinstone; about 150 ft. above sea-level; no striæ or groovings observed.

12. Near the cross roads in Muston village is a footpath, the boundary stones of which are boulders, varying from 2 ft. × 1 ft. 6 in. to 1 ft. 2 in. × 1 ft.; rounded and sub-angular; Whinstone, Granite, and Sandstone; no striæ or groovings exposed; they have been thus placed beyond the memory of the 'oldest inhabitant,' but have been brought without doubt, like the others, from the adjacent land.

13. On Mr. Nellist's farm, at the south end of Muston village, is a boulder 4 ft. 4 in. × 1 ft. 9 in. × 2 ft. 2 in. out of ground; sub-angular; is long-shaped, and the direction of its longest axis was (until recently moved) N. and S.; striæ can be seen; about 150 ft. above sea level; Whinstone.

14. At the north end of Muston village, at the corner of Mr. Chapman's house, is a boulder 1 ft. 8 in. × 1 ft. 8 in. × 1 ft. 3 in. above ground; rounded; has been moved; no striæ; Granite.

15. In the centre of Muston village is a plot of ground which has been levelled and planted with trees, and upon it are from twenty to thirty boulders, varying from 4 ft. 6 in. × 2 ft. × 1 ft. 6 in.; no striæ or groovings observed; Sandstone, Whinstone, Limestone, and Granite.

Note.—The district around Muston is composed of long ridges of gravel, sand, and clay, running north and south.

York.

16. In making a siding for the York Gas Company, Foss Islands, York (Parish of St. Cuthbert), a boulder was taken out at a depth of 15 ft. below the surface, 2 ft. 5 in. × 2 ft. 4 in. × 1 ft. 11 in.; sub-angular; no striæ can be seen; Mountain Limestone with Producti; the excavation would be about the level of the river. It is now at the east end of the Malton Goods Station.

Whitby.

17. On the shore in front of the West Cliff Saloon, Whitby, is a boulder, 4 ft. 4 in. × 3 ft. 4 in. × 2 ft. 2 in.; sub-angular; no striæ or groovings; Mountain Limestone with fine sections of coral; this boulder has doubtless fallen from the adjacent Boulder Clay which overlies the Estuarine deposits, the latter forming here the base of the cliff. It is covered over at high water.

Foston-le-Clay.

Note.—Foston is situated about half-way between York and Malton, and is about a mile west of the Barton Hill Station of the North Eastern Railway.

18. On the road side at the east end of Foston-le-Clay Churchyard (estate of Sir E. Lechmere), is a boulder. It is 3 ft. 9 in. × 3 ft. 4 in. × 1 ft. 9 in. out of the ground. Angular, and almost square at its longest axis; no striæ or groovings, the block having been partially destroyed; Limestone; about 200 ft. above sea-level; is nearly at the top of a long ridge of Boulder Clay running nearly N. and S.

19. At the east end of a house occupied by Mrs. Ettie, in the village of Foston, is a boulder. It is 2 ft. 10 in. × 1 ft. 3 in. × 2 ft. out of the ground; angular; has been moved; no striæ or groovings; Grey Granite; about 150 ft. above sea-level; on the same ridge as No. 18.

20. On Mr. Barker's farm in the village of Foston is a boulder. It is 2 ft. 6 in. × 2 ft. 6 in. × 2 ft. out of the ground; rounded; no striæ or groovings; Shap Fell Granite; about 150 ft. above sea-level; on the same ridge as No. 18.

21. On the same farm has been constructed a raised footpath round the fold yard and entirely composed of boulders, probably 100 of these (flanking the path) are 1 ft. × 8 in., and 1,000 from 6 in. to 8 in. in diameter. They are rounded to sub-angular, and a few show their striæ in the direction of their longest axis. They are Sandstones, Limestones, Granites, and Whinstones. This farm is on the Boulder Clay ridge of Foston.

22. A footpath runs through the village of Foston, constructed also of boulders collected from the adjacent lands. There are at least 3,000, ranging from 1 ft. 6 in. to 6 in. in diameter. They are principally rounded, although a few are angular and sub-angular. Three-fourths of them are various kinds of sandstone, the remainder being Mountain and Liassic Limestones, a few Whinstones, and Red, Grey, and Shap Fell Granites.

NOTE.—An aged woman, some eighty years old, remembers in her girlhood this footpath being constructed by the Rev. Sydney Smith, who induced the farmers to gather them from the land for this purpose for 5/- or 6/- per load. She assisted personally to gather them, and states that at that time (some seventy years ago) the land was thickly strewed with them. She also stated that at the commencement of the Rev. Sydney Smith's charge, the cottage houses in Foston were mainly built of boulders and clay; many of these hovels were pulled down by the great man's orders, and replaced by superior dwellings.

23. On the same farm, and placed in various positions about the farm buildings, are twenty boulders, varying from 1 ft. 10 in. × 1 ft. 5 in. × 1 ft. 4 in. to 1 ft. 3 in. × 1 ft. × 1 ft.; they are rounded and sub-angular, and show little traces of any striæ; they are chiefly Sandstone and Limestone, and have all been collected from adjacent land.

THORNTON-LE-CLAY.

24. Near a house occupied by Mr. Spaven (estate of Mr. Weatherell) in the village of Thornton-le-Clay is a boulder. It is 2 ft. 10 in. × 2 ft. × 10 in. out of the ground; appears to have been

originally rounded, but has weathered away; no striæ or groovings; Mountain Limestone with casts of Producti and Encrinites; it rests on Boulder Clay about 150 ft. above sea-level.

NOTE.—This stone was used for mounting purposes in the days of the grandparents of the present occupants.

25. In front of this house, forming a broad footpath, are about 200 boulders, averaging 8 in. in diameter; they are composed of Limestone, Whinstone, and Sandstone, the latter predominating; they are rounded to sub-angular, but of course, from wear and tear, no striæ or groovings are now visible.

26. In the parish of Thornton-le-Clay is a footpath over a mile in length; it is paved with boulders varying from 1 ft. 6 in. × 7 in. × 6 in. to 6 in. in diameter. The footpath is about 4 ft. wide, and is flanked by the larger boulders; they are composed principally of Carboniferous Sandstone, a few Whinstones, Granites, and Mountain and Liassic Limestone; percentage about the following—Granite 1, Whinstone 3, Mountain and Liassic Limestones 18, Carboniferous Sandstones 78. Generally speaking, they are rounded from usage, but a few of the larger are sub-angular.

NOTE.—This footpath has a certain degree of celebrity, as it was constructed by the orders of the famous Sydney Smith from stones collected from adjacent fields. It will be remembered that Sydney Smith filled the benefice of Foston-le-Clay (the adjoining village) from 1809 to 1831, and his memory is still green in the neighbourhood.

THORNTON-LE-CLAY.

27. About the centre of the village of Thornton-le-Clay (nearest Railway Station is Flaxton, N.E. of York) is a boulder forming a corner-stone in Mr. Danby's timber yard; 2 ft. 5 in. × 1 ft. 7 in. × 1 ft. 8 in. out of ground; sub-angular; has been moved to its present position; no striæ or groovings; Mountain Limestone; now rests upon Boulder Clay and Gravel, 150 ft. above sea-level.

28. GROUP.—In the parish of Thornton-le-Clay, upon farms in the occupation of Messrs. John Buckton and W. Spaven, and also upon premises occupied by Mr. Danby, are upwards of 1,100 boulders. The largest measures 2 ft. × 1 ft. 11 in. × 10 in., the smallest being 10 in. × 9 in. × 6 in. They are principally sub-angular to rounded. The whole of these have been taken from the adjoining fields, and are now in heaps for the mending of roads, etc. No striæ were observed. They are chiefly composed of Mountain Limestone, Carboniferous Sandstone, Lias, Basalt, and Granite. They were derived from Boulder Clay and Gravel, 150 ft. above sea-level.

29. At the east end of the village of Thornton-le-Clay is a boulder on the road-side. 1 ft. 8 in. × 1 ft. 4 in. × 2 ft. out of ground; sub-angular; long-shaped; no striæ now visible (it having been used for years as a mounting-block); Mountain Limestone; about 250 ft. above sea-level; is the boundary-stone between Thornton-le-Clay and Foston, and has been, according to tradition, the scene of many disputes between the inhabitants of the two villages.

Note.—The country around is slightly undulating. Thornton-le-Clay is built upon a flat broad ridge of Boulder Clay.

Staxton, near Scarborough.

30. In the centre of the village of Staxton (parish of Willerby), is a boulder close to the horse-trough. It is 1 ft. 10 in. × 1 ft. 2 in. × 1 ft. 5 in.; sub-angular; has been moved; no striæ or groovings; Carboniferous Sandstone; it is said to be one of the many blocks which were carted from the adjoining fields a generation or two ago for road repairs, corner-posts, cheese-presses, etc.; it rests upon mixed gravels, 150 ft. above sea-level.

31. At the junction of two roads in the village of Staxton is a boulder on the estate of Mr. Rivis. It is 2 ft. × 2 ft. × 1 ft. out of the ground; rounded; has been moved; no striæ or groovings; dark blue whinstone; about 120 ft. above sea-level; was originally brought from one of the numerous hillocks in the Carrs below, which are composed of Boulder Clay, sand and gravel.

Note.—Staxton village is about three miles south of Seamer Railway Station, near Scarborough, and is built upon the Chalk rubble or talus, from the Wolds, which form a commanding range above the village.

Flixton, near Filey.

32. In the village of Flixton (Parish of Folkton) about six miles N.W. of Filey, is a boulder forming a corner-stone in the garden of Mr. Coxworth, on the estate of Mr. Wilson, of Malton. It is 2 ft. 9 in. × 1 ft. 10 in. × 11 in.; in shape a rounded oblong; has been moved; no striæ or groovings; Carboniferous Sandstone; about 150 ft. above sea-level; the sub-soil is sand mixed with chert.

33. Group.—In the village of Flixton the following boulders form a protection around the spring head. This spring is one of the numerous ones flowing from the Lower Chalk in this vicinity.

1 ft. 11 in. × 1 ft. 4 in. × 1 ft. 1 in. Coarse dark brown Sandstone.
2 ft. 3 in. × 1 ft. 10 in. × 11 in. Fine-grained, light red Sandstone.
1 ft. 9 in. × 1 ft. 6 in. × 1 ft. Mountain Limestone.
1 ft. 6 in. × 1 ft. 1 in. × 6 in. Hard Sandstone.

3 ft. 7 in. × 1 ft. 11 in. ×	9 in.	Close-grained hard Sandstone.
2 ft. 7 in. × 1 ft. 4 in. ×	6 in.	Light red Sandstone.
1 ft. 2 in. × 10 in. ×	8 in.	Whinstone.

They vary from angular to rounded; the Mountain Limestone block shows striæ in the direction of its longest axis, the others are smoothed without striæ; tradition states they have been brought from the Carrs about a mile below (the Carrs are principally composed of peat bog, with here and there hillocks of Boulder Clay and Gravel from which boulders are obtained at the present day); the district is about 120 ft. above sea-level.

Hunmanby.

34. The corner-stone at the junction of Bridlington Street and Garton Lane in Hunmanby village is a boulder, 3 ft. 3 in. × 2 ft. 10 in. × 1 ft. 9 in.; sub-angular; no striæ or groovings observed; a fine-grained light-brown Sandstone; about 100 ft. above sea-level.

35. In the village of Hunmanby are various boulders; near the Hall are

1 ft. 8 in. × 1 ft. 7 in. × 11 in.	Dark Red Sandstone.
1 ft. 4 in. × 1 ft. 2 in. × 1 ft.	Coarse gritty Red Sandstone.
1 ft. 5 in. × 1 ft. × 1 ft.	Whinstone.
1 ft. 6 in. × 8 in. × 6 in.	,,
1 ft. 2 in. × 10 in. × 4 in.	,,
1 ft. 8 in. × 1 ft. × 8 in.	,,
1 ft. 9 in. × 11 in. × 10 in.	,,
2 ft. 4 in. × 2 ft. 3 in. × 1 ft. 3 in.	,,
1 ft. 10 in. × 1 ft. 8 in. × 11 in.	,,

Corner of Scarborough and Driffield roads are four boulders, varying from 3 ft. 4 in. × 1 ft. 8 in. × 1 ft. to 1 ft. 9 in. × 1 ft. 2 in. × 7 in.; these are Sandstones and Whinstones. South of village is a boulder of Red Sandstone, 1 ft. 11 in. × 1 ft. 10 in. × 1 ft. 9 in.; close by, one of dark-brown Sandstone, 1 ft. 6 in. × 1 ft. 7 in. × 8 in.; they are principally rounded and sub-angular; could not observe any striæ or groovings; about 100 ft. above sea-level.

Note.—Hunmanby is on the east slope of the Yorkshire Wolds and on the line of fault running nearly N. and S., one half of the village thus being upon the Speeton or Neocomian clays, the other part more or less upon the Lower Chalk.

Bridlington.

36. In the parish of Bridlington, on the estate lately purchased by the Churchwardens, and occupied by Mr. Taylor, and situated in Applegarth Lane, about 100 yards S.E. of the Priory Church, occur a number of boulders, viz.:—

5 ft. × 1 ft. 10 in. × 1 ft. 4 in. Elliptical. Sandstone.
3 ft. × 1 ft. 10 in. × 1 ft. 1 in. Angular. Sandstone (fine grained).
3 ft. 3 in. × 2 ft. 10 in. × 1 ft. 11 in. Rounded. Whinstone.
2 ft. 6 in. × 2 ft. 4 in. × 1 ft. 4 in. ,, ,,
1 ft. 10 in. × 1 ft. 9 in. × 1 ft. 4 in. ,, Sandstone.
2 ft. × 1 ft. 8 in. × 1 ft. Sub-angular. Whinstone.
3 ft. 4 in. × 1 ft. 8 in. × 1 ft. 2 in. Sub-angular. Light red Sandstone.
2 ft. 8 in. × 2 ft. 3 in. × 1 ft. 5 in. ,, Shap Fell Granite.
3 ft. 11 in. × 2 ft. 2 in. × 1 ft. 7 in. Angular. Sandstone.
2 ft. 10 in. × 2 ft. 3 in. × 1 ft. 7 in. ,, ,,
2 ft. 9 in. × 1 ft. 8 in. × 1 ft. 3 in. ,, Whinstone.
2 ft. 11 in. × 2 ft. 1 in. × 1 ft. 2 in. ,, Fine-grained, light brown Sandstone.
2 ft. 11 in. × 2 ft. 2 in. × 10 in. A flat slab of Dolerite.
2 ft. 9 in. × 1 ft. 9 in. × 1 ft. Rounded. Sandstone.
1 ft. 3 in. × 1 ft. × 7 in. Rounded. Shap Fell Granite.
2 ft. 8 in. × 2 ft. 2 in. × 1 ft. 6 in. Rounded. Sandstone.
2 ft. 6 in. × 1 ft. 9 in. × 1 ft. 5 in. ,, Mountain Limestone.
2 ft. × 1 ft. 4 in. × 1 ft. ,, Sandstone.
1 ft. 3 in. × 1 ft. × 8 in. Sub-angular. Sandstone.

They are all exposed on the surface, and have been collected from adjacent fields; no striæ or groovings are now visible; about 100 ft. above sea-level; the underlying deposits are principally Gravel, but further details as to the geology of this district will be found in Mr. Lamplugh's memoirs.

East Lutton.

37. In the village of East Lutton, on the Yorkshire Wolds, there is a boulder in the stackyard of Mr. Pexton (estate of Mr. T. J. Bell). It is 2 ft. × 2 ft. × 1 ft. 1 in.; subangular; has been moved; there are traces of striæ and four or five groovings (about $\frac{1}{8}$ in. deep) across its shortest axis; hard blue Whinstone; it was formerly on the side of Park Lane in this village, but has been the object of litigation between successive road surveyors, until removed to its present harmless position.

Note.—East Lutton is at the bottom of a wide deep valley, the Chalk hills rising to a height of nearly 600 ft. on each side.

Driffield.

38. In the Roman Catholic Church-yard in the town of Driffield, is a boulder. It is 2 ft. 10 in. × 2 ft. 6 in. × 1 ft. 4 in. out of the ground; sub-angular; has been moved; no striæ or groovings; hard blue Whinstone.

Note.—It is said that a gentleman who lived formerly in the house next to the church, had it placed there as a stepping-stone, and obtained it from the clay excavated in the construction of the Driffield Canal.

39. On Mr. Holby's estate, about 150 yds. E. of Driffield Parish Church are a number of boulders. Twelve of these average 1 ft. × 10 in. × 8 in.; sub-angular to rounded; their composition being Mountain and Liassic Limestones, Red Granite, Whinstone, and Carboniferous Sandstone, the latter having the largest percentage; no striæ or groovings were observed; they have been derived from the Boulder Clay, which overlies the Upper Chalk in this district.

Note.—This Boulder Clay has a wide difference in composition and texture, and occurs in patches; some is of a hard, tough blue nature, whilst others are light-red to cream-coloured, with a large percentage of sand, and a sprinkling throughout of rounded chalk pebbles and angular flints. The latter species of clay are covered with about 5 ft. of gravel.

Reighton, near Filey.

40. On the farm occupied by Mr. Beauvais, about half a mile from the coast, is a boulder. It is 2 ft. 6 in. × 1 ft. 6 in. × 1 ft. 6 in. out of ground; sub-angular; no striæ; dark blue Whinstone; about 50 ft. above sea-level; was taken out of a bed of Boulder Clay overlying gravel in the neighbourhood.

REPORTS UPON BOULDERS NEAR TANFIELD.

Rev. R. A. SUMMERFIELD, B.A.,
Vicar of North Stainley.

In parish of West Tanfield, on left bank of River Ure, longitude 1° 33′ 55″, latitude 54° 11′ 47″, is a large boulder, 12 ft. 6 in. × 7 ft. × 1 ft. 9 in. above ground; triangular; it has never been moved by man, its longest axis is N.N.E.—S.S.W., it is highly polished, with a few slight striæ on the sides in the direction of longest axis; Mountain Limestone containing numerous specimens of Producti and Turbinolia; it is embedded in gravel, which I removed to the depth of 18 in. without finding the base of the boulder.

On a little green outside the village of Thornborough is a boulder, longitude 1° 33′ 10″, latitude 54° 12′ 41″, 3 ft. 9 in. × 2 ft. 5 in. × 1 ft. 10 in.; subangular; with rounded ends; was removed to its present position about 50 years ago, from a field in the vicinity; top and sides smooth but not striated; fine Gritstone.

Oct. 1889.

THE 'GREYSTONE,' MANFIELD (N. RIDING).

W. F. K. STOCK, F.C.S., F.I.C.,

Public Analyst for the County of Durham.

This boulder is in the parish of Manfield, Stanwick Estate, and on the Greystone Farm (so called after the boulder), the nearest town being Darlington. 12 ft. 1 in. × 5 ft. 6 in. × 3 ft. 4 in.; sub-angular; longest axis N.N.W.—S.S.E.; its surface weathered to such an extent as to render character of markings very doubtful; Felspathic Trap; specific gravity, 2·66. Its analysis gives:—

Silica	59·87
Alumina	16·17
Protoxide of Iron	3·60
Peroxide of Iron	1·83
Protoxide of Manganese	0·43
Lime	4·57
Magnesia	3·35
Potash	1·48
Soda	2·73
Carbonic Acid and Water	6·50
	100·53

Although well known as the 'Greystone,' no legend is known to be connected with it. It is isolated and entirely exposed on the bank of a small rivulet. It rests upon Boulder Clay.

NESWICK, NEAR DRIFFIELD.

Rev. E. M. COLE, M.A., F.G.S.,

Wetwang; President of the Geological Section of the Yorkshire Naturalists' Union.

The following boulders are at Neswick, in the parish of Bainton, East Riding:—

No. 1 was found in a field 250 yds. E. of Bracken Road and distant from Neswick Farm about one-third of a mile. It interfered with ploughing, hence dug out; attempts have been made to break it up, and three barrow-loads of the block were removed by hammers; the present size is 4 ft. × 3 ft. × 1 ft. 6 in. It is very compact; one side has a joint face; edges sharp; rest rounded.

No. 2 is 2 ft. 9 in. × 2 ft. 4 in. × 1 ft. 4 in. Rectangular; surfaces fairly flat.

No. 3 is 1 ft. 6 in. × 1 ft. 6 in. × 1 ft.

No. 4 is 2 ft. × 2 ft. × 1 ft.; the two latter were excavated in the railway-cutting passing through the same field.

All the above are Basalt.

There is also a block of siliceous Limestone 1 ft. 6 in. × 1 ft. × 1 ft.

REPORTS UPON ERRATICS ON THE WEST OF THE YORKSHIRE PENNINES (SOUTH-WEST RIDING OF YORKSHIRE).

WM. WATTS, F.G.S.,

Piethorn, Rochdale; *Engineer to the Oldham Corporation Waterworks.*

The Strinesdale Valley.

GROUPS OF BOULDERS.

There is a large variety of boulders intermixed with Boulder Clay and the upper gravels. Silurian grits predominate, then the Syenites from the Lake District; also Mountain Limestone, quartzites and trap. Along with these are local grits, mostly ganister, all of which are much rounded, especially the smaller ones, and many are striated. The Erratics are not large, 2 ft. × 2 ft. × 1 ft. 6 in. being a fair average. They are well rounded, a few are sub-angular, but I have not found any quite angular. Some are striated on one side. The pebbles are numerous, almost legion, foreign and local, making a splendid gravel but for some black shale intermixed.

Note.—As you ascend this valley, the right hand is in the South-West Riding of Yorkshire. The hills rise to an altitude of nearly 1,200 ft. above sea-level. The area examined lies between the 740 ft. and 830 ft. Ordnance datum. Character of strata—Lower Coal Measure Shales. Physical features.—Gently sloping valleys and rounded hills.

The Denshaw Valley.

I found a number of boulders at New Year's Bridge, 940 ft. above sea-level. They averaged 2 ft. 6 in. × 1 ft. 9 in. × 1 ft. 6 in., and consisted of Syenites and Diorites. I have found no traces of striæ on any of the boulders, which are all rounded, except one or two. I found no isolated boulders.

Notes.—This valley is carved in the Third Grits of the Millstone Grit series. The hills rise to an elevation of 1,500 to 1,600 ft. above sea-level. The valley in the main is deep and tortuous, and the hills mostly saddle-backed.

Vegetation dwarfish and scanty; very few trees exist; the winds are too strong and the climatic conditions generally are too severe for tree growth; besides, the soil is scanty and wet.

Boulder Clay is absent above the 850 ft. Ordnance datum. Gravel is also absent, and no sand worth the name is met with. Pebbles are few. Valley alluvium coarse and scanty.

The Yoredale shales crop out at Rag Stones and Reddycon Dean; at the latter place the shales are very carbonaceous and much faulted.

Area examined between the 850 ft. and 1,268 ft. Ordnance datum.

The Castleshaw Valley.

GROUPS OF BOULDERS.

Few boulders have as yet turned up. Those which have been gathered are small Syenites about 12 in. square, and Silurian Grits; the Syenites are round, but the Silurian Grits are angular, one specimen (1 ft. 8 in. × 1 ft. 3 in. × 8 in.) having very sharp angles; small Eskdale Granites turn up occasionally, much worn as usual. One specimen of Silurian Grit in my possession is nicely striated and smoothed.

Isolated Boulder.

Near Water's Mill an Erratic lies in the middle of a small field. 4 ft. 6 in. × 2 ft. 6 in.; hornblendic trap; elongated and sub-angular; longer axis trends S.W.; upper face only exposed.

Notes.—This valley is carved in the Yoredale Shales. The surrounding hills are capped with Kinderscout Grit. Grey Shales, fully 250 ft. thick, lie between the Kinderscout and the hard and somewhat massive 'Bakestone' shale which is unchanged in character for more than 50 ft. without coming to its base. The hills at the top of the valley rise to 1,300 ft. above the sea. The hills at the bottom end of the valley are mamillated. The slopes are gentle.

This valley is recent, and conclusive evidence of a former lake exists, which had a large area. Boulder Clay none; local clay and loam, an ample supply; coarse gravel in the centre of the valley, at one place 14 ft. thick. Sand about 3 ft. thick, both fresh-water and partially lacustrine. A few pebbles.

Area examined between 700 ft. and 1,200 ft. Ordnance datum.

The following were exhibited before the Geological Section of the Yorkshire Naturalists' Union, on their examination of the Castleshaw Valley:—

Naturalist,

SPECIMENS OF ERRATIC BOULDERS FOUND ON THE DRAINAGE AREAS OF THE OLDHAM CORPORATION WATER-WORKS (BORDERS OF YORKSHIRE AND LANCASHIRE).

No.	SPECIES OF BOULDERS.
1.	Micaceous Granite—two Micas. (Criffel, South of Scotland.)
2.	Coarse-grained Granite. (Eskdale, Cumberland.)
3.	Gryphæa incurva—Lias (found at Piethorn).
4.	Syenite.
5.	Quartz rock.
6.	Medium-grained Syenite—Mica Syenite.
7.	Schist filled with segregated Quartz.
8.	Hornblendic rock. Diorite.
9.	Purple, iron-stained, siliceous breccia. (Borrowdale.)
10.	Syenitic quartz—felsite. (Lake district.)
11.	Porphyritic augite—andesite—Dacite.
12.	Altered, fine-grained, micaceous Granite—Mica or hornblende, altered.
13.	Fine-grained Granite. (Probably Lake).
14.	Augitic basic igneous rock—altered. (Borrowdale.)
15.	Porphyritic andesite.
16.	Quartz—felsite. (Lake district.)
17.	Permian nodule (containing Schizodus).
18.	Fine-grained Syenite. (Buttermere.)
19.	Siliceous rock—ferruginous. (Borrowdale.)
20.	Siliceous Hornstone—Rhyolitic Series. (Coniston.)
21.	Fine-grained porphyritic Andesite. (Borrowdale.)
22.	Fine-grained greywacké.
23.	Altered carboniferous shale—Ferruginous.
24.	Quartz—felsite. Hornblendic.
25.	Crushed igneous rock. Serpentinous.
26.	Compact felstone. Slightly porphyritic.
27.	Volcanic conglomerate.
28.	Syenite from Ennerdale.
29.	Ennerdale Granite, passing into Greenstone.
30.	Upper Silurian Grit.
31.	Lower Silurian Grit.
32.	Felstone.
33.	Passage rock between Syenite and Greenstone.
34.	Greenstone of the Lake district.
35.	Fine sedimentary Limestone.
36.	Porous Trap.
37.	Bunter Sandstone. Pebble beds.
38.	Ganister nodule. Polished.
39.	Iron ore.

NOTE.—With the exception of 3, 5, and 17, the first 25 specimens are those named by Prof. Lapworth. The others have been named by D. Mackintosh, F.G.S., W. Shone, F.G.S., and myself.

Oct. 1889.

THE BOULDERS OF ROBIN HOOD'S BAY.

REPORT No. 1—INLAND BOULDERS.

S. CHADWICK, F.G.S., AND C. BROWNRIDGE, F.G.S.

Group No. 1.—On each side of the principal street running through the village of Baytown are the following boulders, which have been removed from the adjacent Boulder Clay resting on the Lower Lias. Twenty-four of Whinstone varying from 2 ft. 7 in. × 1 ft. 9 in. × 1 ft. 2 in. to 1 ft. 1½ in. × 11½ in. × 7 in.; sub-angular. Two of Sandstone (possibly Moor Grit), 1 ft. 1 in. × 1 ft. × 10 in. and 2 ft. 1 in. × 1 ft. × 1 ft. 5 in.; sub-angular. One of Gritstone, 1 ft. 9 in. × 1 ft. 5 in. × 9 in.; rounded. Three of Mountain Limestone, 1 ft. 7 in. × 1 ft. 4 in. × 1 ft. 3 in., 1 ft. 6 in. × 1 ft. 3 in. × 10 in., 2 ft. 2 in. × 1 ft. 8 in. × 10 in.; all sub-angular; one of Dolerite, 2 ft. 2 in. × 11 in. × 1 ft. 10 in.; rounded.

Group No. 2.—Lying in the bed of the stream that passes through the village are three boulders, 2 ft. 8 in. × 2 ft. 1 in. × 1 ft. 6 in.; Sandstone (possibly Moor Grit); sub-angular. 4 ft. 1 in. × 2 ft. 6 in. × 1 ft. 2 in.; Felstone; rounded to sub-angular. 1 ft. 10 in. × 1 ft. 6 in. × 8 in.; Sandstone or Quartzite; rounded.

Group No. 3.—Lying in the valley of Mill Beck, about half a mile south of the village are four boulders, 1 ft. 3 in. × 1 ft. × 11 in.; Sandstone (possibly Moor Grit) sub-angular. 3 ft. 4 in. × 2 ft. × 1 ft.; Sandstone (possibly Moor Grit); rounded. 1 ft. 7 in. × 1 ft. 2 in. × 9 in.; Gneiss or Gneissose Granite; sub-angular. 3 ft. 6 in. × 2 ft. 8 in. × 2 ft. 2 in.; Whinstone; sub-angular.

The boulders of the second and third group have been exposed by the washing away of the Boulder Clay, and in some cases have evidently rolled down from slightly higher elevations to their present positions. Specimens of the above boulders have been submitted to and determined by Prof. Green, F.R.S., Oxford.

REPORT UPON SHAP GRANITE BOULDERS AT MARTON-CUM-GRAFTON.

REV. E. P. KNUBLEY, M.A.,

Rector of Staveley; Joint Hon. Secretary to Yorkshire Naturalists' Union.

At Marton-cum-Grafton, three miles S.E. by S. from Boroughbridge are two Shap Granite Boulders.

No. 1 measures 3 ft. 3 in. × 3 ft. 1 in. × 2 ft. 6 in. Greatest girth, 9 ft. 9 in.

No. 2 measures 2 ft. 5½ in. × 2 ft. 6 in. × 1 ft. 8 in. Greatest girth, 8 ft.

Both are rounded. No grooves or striations. They have been moved from a narrow lane leading to Scruddle Dyke Pond, at the bottom of the village, to the Vicarage gardens. Their former position is about 100 ft. above sea-level. There are long ridges of gravel in the parish.

NOTE.—Shap Fells are sixty-four miles N.W. of Marton.

REPORTS UPON BOULDERS AT STAVELEY, ARKENDALE, AND CLARO HILL.

REV. E. P. KNUBLEY, M.A.,

Rector of Staveley; Joint Hon. Secretary to the Yorkshire Naturalists' Union.

At Staveley, which is three miles S.W. of Boroughbridge, and 100 ft. above sea-level, there are on either side of the church ridges of gravel, which run parallel to the Ure on the one hand and the Nidd on the other. The gravel, which covers about ten acres, consists for the most part of rounded Sandstone, interspersed with a small proportion of Carboniferous Limestone, ranging from the size of a small pebble to a block 2 ft. 5 in. × 2 ft. × 2 ft. The smaller of these are rounded and polished, the larger sub-angular. The latter show numerous fine striations, which run parallel with the longer axis. The lower Wensleydale series to which the larger rocks belong is about 25 miles to the N.W. I have found one piece of Shap Granite which was round, and about a foot long.

At Arkendale, which lies four miles due south of Boroughbridge, and about 180 ft. above sea-level, there are several erratic blocks of Carboniferous Limestone. The largest of these, which lies by the road-side, within 20 ft. of the east end of the church, is 3 ft. 8 in. × 3 ft. 2 in. × 2 ft. 6 in., and is sub-angular.

Claro Hill, the mound from which the wapentake is named, is composed entirely of glacial drift of the same character as that found at Staveley, except that the pebbles of Mountain Limestone are more numerous and more polished. This mound, which is rather more than four miles south of Boroughbridge, is situated at the angle formed by the junction of the road from Clareton with that which runs from Wetherby to Boroughbridge. The summit is about 230 ft. above sea-level. The largest boulder at Claro Hill is of Mountain Limestone, sub-angular, and is about 4 ft. square.

Oct. 1889.

REPORTS UPON YORKSHIRE COAST BOULDERS.

WM. GREGSON,
Baldersby, Thirsk; *Local Secretary, Yorkshire Geological and Polytechnic Society.*

On the West Cliff Sands, Whitby, is a boulder of Shap Fell Granite. No striæ; sub-angular; 4 ft. × 2 ft. × 2 ft. 3 in. Is on the shore.

In Runswick Bay, north of Whitby, are four boulders, three of which are composed of Shap Fell Granite, the fourth being of Grey Granite. They are on the shore, are rounded, without any striæ, are about 4 ft. across each way, and rest upon Middle Lias.

THE SOUTHBURN BOULDER.

ROBERT MORTIMER,
Fimber.

At Southburn, near Driffield, is a boulder; lat. 53° 57′ 45″, long. 0° 29′ 47″; Whinstone; 4 ft. 3 in. × 3 ft. 5 in. × 1 ft. 3 in. Longest axis E. and W. About 100 ft. above sea-level. Is near a chalk-pit a short distance from the new railway between Driffield and Market Weighton; has not been moved; is on Boulder Clay resting upon Upper Chalk.

HARTON (NEAR SOUTH SHIELDS), CO. DURHAM.

Rev. ARTHUR WATTS, F.G.S., Etc.,
Vice-Principal of Bede College, Durham.

In the village of Harton, near South Shields, are the following boulders:—

No. 1. At the Ship Inn, nearly opposite the church, 3 ft. 8 in. × 2 ft. 9 in. × 2 ft. 8 in.; greatest circumference (just above ground), 10 ft. 3 in.; sub-angular, but rounded on top by attrition; has not been moved; no striæ or groovings.

No. 2. The 'Preaching Stone,' opposite the Hall, 3 ft. 1 in. × 2 ft. 10 in. × 2 ft. 2 in.; greatest circumference, 9 ft. 9 in.; sub-angular, but rounded on top; no striæ or groovings; has not been moved.

No. 3. In the Back Lane, near the 'Duck Pond,' 1 ft. 10 in. × 1 ft. 6 in. × 1 ft.; no striæ or groovings; has not been moved.

No. 4. In the field on W. side of 'White Horse Farm'; dimensions cannot now be given, as it has been sunk by the farmer to escape the plough. It was too heavy to remove, and too hard to break.

There are many smaller ones in walls or on road-sides, scattered over the parish, varying from the size of No. 3 downwards. They are all of Basalt or Whinstone, locally called 'blue stone'; the nearest dyke is about three miles north, near Tynemouth and Cullercoats; the size of the largest suggests they may have travelled from the 'Great Whin Sill.' Harton is from 50 ft. to 60 ft. above sea-level. They are seen only when on the surface, but the plough frequently reveals them, and draining still more frequently, so that they occupy the whole of the clay deposit which covers this area to a thickness which varies greatly in different localities.

The Haddockstones, near Ripon.

The attention of the Committee has been called by the Rev. J. Stanley Tute, B.A., Vicar of Markington, to a group of remarkable blocks, which gave the name to the farm of Haddockstones, four miles S.W. of Ripon. The word 'Haddock' is a local name for a shock of corn. The Chairman and other members of the Committee, accompanied by Mr. Tute, visited the farm on June 1st. The blocks are of sufficient size to be visible at a distance of several fields, and lie along a low escarpment of the same rock as that from which they are derived, viz., a Sandstone in the Third Grit Series. Few of the blocks are undisturbed, and their planes of stratification rarely coincide with the bedding of the rock beneath. Some exhibit apparently modern surfaces, as if pieces had been removed by wedges. From the position of these blocks along an outcrop of precisely similar sandstones, the Committee consider it likely that they are merely weathered fragments, nearly in situ, and concur with Mr. Tute that they cannot be claimed as erratics.

The 'Fourstones,' near Bentham.

The 'Fourstones' was reported by Mr. Balderston, of Ingleton, to the Yorkshire Boulder Committee, in 1887, as an erratic block, but there were several points of similarity between this block and the 'Hitchingstone,' as the latter had been erroneously reported to the British Association, in 1874, by a private individual, as an erratic, whereas it was demonstrated in 1887 that it is not one, it was deemed desirable that the 'Fourstones' should be closely examined before a report was forwarded.

Mr. C. D. Hardcastle, Vice-Chairman of the Yorkshire Boulder Committee, has visited it and thus reports:—

The so-called 'Fourstones' boulder forms a prominent feature in the landscape for some distance in every direction. It stands on the open moor, about two miles south of High Bentham, and within a few hundred yards of Fourstones farmhouse, a shooting box belonging to the Fosters, of Hornby Castle.

The stone is of irregular form, about 10 yds. × 6 yds. in extreme length and width, 29 yds. to 30 yds. in circuit, and nearly 4 yds. high. It is a moderately fine sandstone grit, similar to the stone quarried in several places about Bentham. It appears to be in or near its original position, and at first sight gives the impression of having been tilted, weathered grooves, apparently along bedding lines crossing the top at the southern end with an inclination towards the south or south-west, but this perhaps may be from false bedding.

In composition it is the same as the stone beneath it, as evidenced by an exposed portion in a hollow about 18 yds. distant, generally filled with water.

The 'Fourstones' is evidently a relic of denudation and there is no probability of its having travelled.

THE YORKSHIRE BOULDER COMMITTEE

(As appointed at the last Annual Meeting of the Union, Sheffield, November 1888) consists of the following Members:—

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.
S. Chadwick, F.G.S., Malton.
Rev. E. Maule Cole, M.A., F.G.S., Wetwang.
J. W. Davis, F.S.A., F.G.S., Halifax.
Prof. Green, M.A., F.R.S., Oxford.
Wm. Gregson, Baldersby.
B. Holgate, F.G.S., Leeds.
Wm. Horne, F.G.S., Leyburn.
Jas. Spencer, Halifax.
T. Tate, F.G.S., Leeds.
J. W. Woodall, F.G.S., Scarborough.
Rev. H. W. Crosskey, LL.D., F.G.S., Birmingham (Hon. Member).
S. A. Adamson, F.G.S., 52, Wellclose Terrace, Leeds, *Hon. Sec.*

The Reports of the Committee's work have been given in the following articles in *The Naturalist*:—

'The Yorkshire Boulder Committee and its First Year's Work.'—
S. A. Adamson, F.G.S. (Nat., Jan. 1888, pp. 17-24).
'The Yorkshire Boulder Committee and its Second Year's Work.'—
S. A. Adamson, F.G.S. (Nat., Nov. 1888, pp. 332-348).

The following is a copy of a circular issued by the Committee last June :—

YORKSHIRE NATURALISTS' UNION.

THE YORKSHIRE BOULDER COMMITTEE.

DEAR SIR,

The above Committee was appointed by the Yorkshire Naturalists' Union in 1886, 'to receive reports and conduct observations relative to the Erratic Blocks of Yorkshire, including particulars as to their position, height above the sea, lithological character, size and origin, and to work upon the same lines generally as the Boulder Committee of the British Association, to whom annual reports will be presented.'

The endeavours of the Committee have been successful beyond anticipation, great numbers of hitherto unrecorded erratics having been reported upon from all parts of Yorkshire, and the reports duly presented to the British Association, and printed in *The Naturalist*.

The duties of the Committee would, however, be lightened if, in their determination of specimens of rocks sent in, they had a small collection of typical rocks to aid them in their decision. These specimens should be collected from centres of glacial dispersion, or from districts which have been subjected to glacier action. They should not be weathered, and should measure roughly 4 in. × 3 in. × 2 in. They should be collected specially, to obtain characteristic types, as cabinet specimens would not secure complete authenticity.

If you can assist the Committee by forwarding to the Secretary any specimens you may have the opportunity of obtaining, your kindness will be warmly appreciated, and a good service will also have been rendered to boulder investigation in general.

I am, dear Sir,

Yours faithfully,

52, WELLCLOSE TERRACE,
LEEDS, *June* 1889.

SAML. A. ADAMSON,
Hon. Sec.

NOTES AND NEWS.

Our attention has been called by Mr. S. A. Stewart to a slip of the pen in our review of his 'Flora of North-East Ireland,' in which 'Prushus' was quoted as a local name of that district for *Sonchus* (instead of *Sinapis*) *arvensis*.

In the August number of the Geological Magazine is a paper by Mr. A. Smith Woodward on 'Palæontology in the Malton Museum.' The author speaks highly of the value of the collections, chiefly due to the energy of Mr. S. Chadwick, making special mention of the fossil fish-remains.

Ichthyological science has suffered a serious loss by the decease of Surgeon-General Francis Day, C.I.E., F.L.S., etc., the well-known author of that admirable work on British Fishes which is now the recognised monograph for British students. He died at Cheltenham on the 10th July, after a long and painful illness. He was a voluminous writer in our natural history periodicals, and the readers of our own journal will remember several most interesting articles in it from his pen.

THE TWO-BARRED CROSSBILL: AN ADDITION TO THE YORKSHIRE AVIFAUNA.

Rev. HENRY H. SLATER, M.A., F.Z.S.,
Member of the British Ornithologists' Union; Vicar of Irchester, Northamptonshire.

I believe I have the pleasure, for the second time, of adding a new bird to the Yorkshire list. A Crossbill was shot near Easington in Holderness on August 12th of the present year, and was brought to Mr. Philip Loten. Being much injured by shot, it was not preserved; but a wing was put on one side, and shown to me later in the month. I naturally recognised it as belonging to one of the white-winged Crossbills, and Mr. Loten recollected that the mandible left on the specimen (the other was shot away) was longer and slenderer than that of a Common Crossbill, and was laterally flattened. I have carefully compared it with the wings of my own specimens, and come to the conclusion that the bird was a young example of the Two-barred Crossbill (*Loxia bifasciata* C. L. Brehm). The wing measures 3·5 in., and is exactly similar in size and colours to that of a specimen in my possession, obtained at Archangel by F. Carl Craemers. My American examples (*L. leucoptera* Gm.) are uniformly shorter in wing measurements, and the nearest in point of age is 3·3, the largest (an adult male) 3·35; in *L. bifasciata*, 3·5 to 3·72 (old male).

[I am informed that this species has occurred in some numbers at Heligoland during the autumn, but I regret I have no further information on this interesting fact.—W.E.C.]

NOTE—BOTANY.

Arenaria gothica Fries, **a Plant New to West Yorkshire.**—On the 12th June last, whilst botanising at Ribblehead, in West Yorkshire, this plant was discovered by me, growing there very luxuriantly and in some profusion, and it has since (September 11th) been again found by Mr. F. Arnold Lees, who has greatly interested himself in determining its identification, this having been made by Mr. Arthur Bennett, F.L.S., of Croydon, who has carefully compared it with specimens sent to him from Gothland by Prof. Nilsson. I hope to send for *The Naturalist* a further fuller account shortly.—Lister Rotheray, Skipton, 23rd September, 1889.

NOTE—MAMMALIA.

Cat Secreting Food.—Yesterday my cat, barely two years old, brought from a neighbour's garden five small roach, which had been thrown away as unfit for food. For these she scraped a hole under a bay-tree, and having deposited them in it, covered them with earth and dead leaves. In this she was assisted by her kitten of three months old. I have never before seen, neither heard nor read of, the domestic cat thus following the provident habit of the dog. I may remark that I do not keep a dog.—Jas. Eardley Mason, The Sycamores, Alford, Lincs., 17th August, 1889.

BIRD-LIFE OF THE BORDERS.

Bird-Life of the Borders. By Abel Chapman. Gurney and Jackson.

In 'Bird-Life of the Borders' we have another of those charming volumes which relate the experiences and observations of the sportsman and naturalist. Many years of wandering on the hills, moors, and mosses of the Borderland, and wild-fowl shooting on the bleak and exposed north-east coast of Northumberland, have given Mr. Chapman ample opportunity of noting the wild creatures resident and migratory still to be found in one of the best faunal areas in Great Britain, and he has—unlike so many who go through the world with their eyes shut—evidently made use of his chances, the result being these pleasant and original chapters, written in the best style, and the perusal of which must be delightful to every true lover of nature.

The late Bishop Wilberforce in one of his admirable essays has said that 'a good practical naturalist must be a good observer, and how many qualities are required to make up a good observer! Attention, patience, quickness to seize separate facts, discrimination to keep them unconfused, readiness to combine them, and rapidity and yet slowness of deduction; above all, perfect fidelity, which can be seduced neither by the enticements of a favourite theory, nor by the temptation to see a little more than actually happens in some passing drama.' These qualities our author seems to combine in a high degree. Mr. Chapman defines the district of which he writes as 'the mountain-region which remains unaltered by the hand of man—the land "in God's own holding"—bounded by the line where the shepherd's crook supplants the plough; and heather and bracken, whinstone, and black-faced sheep replace corn, cattle, and cultivation; where the Pheasant gives way to the Grouse, and the Ring-ousel dispossesses the Blackbird; the region of peat distinguished from soil, of flower, moss and crag, of tumbling burn and lonely moorland, clad in all the pristine beauty of creation.'

In many pleasant chapters the author conducts us through the natural sequences of bird-life in the hills, from the arrival of Golden Plovers early in the year, to the dull dark days of December, when the great tide of autumnal migration has run itself down, and the actors in it have settled into permanent winter quarters.

In February, the Golden Plover and the Curlew return, there is the vernal influx of Skylarks, varying in date according to the character of the season, and a few Pied Wagtails also put in an appearance. Early in March, the Mallard and Teal return, and Ravens have commenced nesting. Titlarks appear on the moors and there is a visible accession to the numbers of the Grey Wagtail;

Stock Doves also arrive, and the close of the month brings the Wheatear, Ring-Ousel, Redshank, and Brown-headed Gull. Also then, or early in April, the 'Plover's-mate'—the familiar little Dunlin of the sea-shore.

In April the Blackcock commences that strange love-song, 'crooning,' 'bubbling,' and 'sneezing,' his wings trailing, neck swollen, and tail expanded, surrounded by his harem of some half-dozen Greyhens, careless and inattentive to their lord's extraordinary demonstrations. April 20th is the date when the graceful little Sandpiper is due on the hill-streams; and from the middle of April to the middle of May, the Chats and Willow Wrens, Landrail and Nightjars, have reached their summer quarters, and the last of the spring migrants has come in.

In the pleasant months of Summer, during the heat of the day, birds in the hill country appear to haunt the vicinity of water, and the ornithologist cannot do better than, fly-rod in hand, wander up one of those many streams which make Cheviot literally a land of running waters. We have in this way noted seventeen species in a walk of a few miles, more or less characteristic birds of the hills. Perhaps the most constant attendant on the angler is the Dipper. Unquiet as the stream he haunts, now crouched on some half submerged block of whinstone, then darting ahead as quickly to alight, his white apron flashing like a patch of creamy foam, but he is never to be driven far beyond his range, and soon we see him shooting back to his own particular territory. Nowhere too, have we found the Common Sandpiper more abundant than on Cheviot streams, and the plaintive *wheet, wheet*, of the lively little bird is certainly the most familiar of the sounds which greet the ear above the tumble and rush of foam-specked waters. Should we leave the main stream to wander up any of the tributary burns we are tolerably certain to disturb a squatting brood of Wild Duck, or raise the startled black game from the brake.

Yet not altogether intent on the bird-life of the hills, we ought, if lucky, to be filling the basket with some of the bonniest, most sport-giving trout in all England. If tired of fishing we, for a time, lay aside gad and creel to climb the nearest fell, first waist-deep in acres of bracken, and then over stone-strewed slopes where wild thyme and mountain-pansy push through the short sweet grass, we shall come out on the higher level into a world of great hill-tops—lonely as a dead planet, and swept by the shadows of fleeting cloud. Indications of bird-life are few in this upland wilderness. The *chack, chack* of a flitting Wheatear, or the feeble trill of the 'moss-cheeper'—far-off wheeple of the Whaups, the plaint of Golden

Naturalist,

Plover, a note high-pitched, clear, but withal inexpressibly melancholy, yet altogether in harmony with the natural surroundings of bleak moor and grey shingle.

At page 44 Mr. Chapman refers to the Grasshopper Warbler as occurring at Silksworth (in Durham) in 1882, but fails to mention it as a visitor to the Northumberland fells. We have heard its peculiar trilling notes from the last patch of cultivation far up in the hills. Mr. Howard Saunders also, in his 'Manual of British Birds' says 'the moist shoulders or dips near the summits of some of our highest hills, such as the Cheviots, are situations to which it seems to be partial; Northumberland and Durham being two of the counties in which it is especially abundant in summer.'

A great movement has taken place amongst the Curlew and Golden Plover between the middle of July and August 12th, the former, except a few lingerers in the moorland district, having almost entirely disappeared, and the great majority of the local-bred Golden Plover have departed for the south. Mr. Chapman has never observed a Redshank or Common Sandpiper remaining inland so late as the 12th. The Gulls are also gone, except a few stragglers.

The arrival of the autumnal migrants, although not nearly so pronounced as on the coast, takes place so early as to overlap the departure of the summer birds, but in the Fell district at first it is marked by only such stray occurrences as in the case of the Whimbrel and Arctic Skua. Of the strictly sea-crossing birds the earliest arrival is usually the Jack-snipe, in October, and occasionally in the latter part of September. By the middle of October, the winter visitors begin to pour in, Woodcock, Grey Crow, Fieldfare, and Redwing. In 1880, on October 23rd, Mr. Chapman witnessed an extraordinary immigration of Fieldfares.

'While lying waiting for a "drive" of some ducks on the edge of a lough, suddenly several thousands of Fieldfares appeared, flying south-west, and quite low, over the heather, many passing within a foot of my head as I lay concealed. They uttered, continually, a peculiar low single pipe, quite different to any note I ever heard Fieldfares make before or since. For some days after this the Fells were "grey" with them, sitting about on bare (burnt) places, especially on stones.'

The Ring-Ousel departs with the fall of the leaf, and Mr. Chapman has seen a single straggler so late as November 13th.

The method of 'carting to moor game' late in the season, that is, stalking them on the open moor with the help of a cart and horse, often, under favourable conditions, affords excellent sport, but requires much patience and careful management. The whole

process is graphically described in chapter XIV, and will be quite new to most of our readers.

Space will not permit us to say more, much as we should like to have done, of the Borderlands—for it is fair and of pleasant memory—rich in historic interest beyond any part of Great Britain. It has been our good fortune to see it under many phases—in sunshine and storm, under the mystery of midnight, when the restful hills sleep outlined in darkest shadow, and the breadth of heaven glows with the pure soft light of a myriad stars. But Cheviot—and when we say Cheviot we mean the whole range of hill country of which Cheviot Peak and Carter Fell reign twin monarchs—has other moods than those which woo the fancy of a summer tourist, when in the latter autumn the grey curtains of the storm-cloud lower to sweep each giant slope in drowning sheets of ice-cold rain, changing the burns into roaring impassable torrents, or buried deep in polar snows, choking the hollows and gaps between the hills to an immense depth, or piled in hopeless drift against the low walls of the shepherd's cot.

In the second part of the book we are taken from the hill districts and transported to the 'slakes,' 'tidal sand-flats,' and 'sand-bars' of the north-east coast, haunts of innumerable wild-fowl. Thousands of acres of these 'slakes' or mud-flats are covered with a luxuriant growth of sea-grass (*Zostera marina*); here thousands of geese feed by day and ducks by night. The bird population of the sands, which are of immense extent, are chiefly Waders, either residents for the season or such as are in transit; Godwits, Curlew, Whimbrel, Knot, Grey Plover, Turnstone, Sanderlings, Sea-pyots, Redshanks, in innumerable numbers; with a sprinkling of scarcer visitors, as the Ruff, Greenshank, and Curlew Sandpiper. The great chattering flights of Godwit are always wild, and cannot be approached on foot; these, and the Knot, mostly frequent the mud-flats. Regarding the former, Mr. Chapman remarks:—'The Godwit is one of the most abundant of our winter wild-fowl, and may always be found, thousands strong, in the roughest and hardest winters, and most protracted frosts.' This is remarkable when we consider that in districts further south it is recognised only as a bird of double passage—spring and autumn. The thousands of young birds, which, in August and September, for a few weeks, frequent the flat shores of the Humber and Lincolnshire coast, in due course pass south; and although in severe winters a few are sometimes found scattered along our coast, these are probably wanderers from some other locality arriving long after their fellows have passed southward.

The migration of Birds, and their geographical distribution, is a subject to which Mr. Chapman returns again and again, illustrating his remarks by a diagram showing, what he terms, the 'overlapping zone' of those species which are seen in the district throughout the year, and whose summer and winter range may thus be said to overlap. We are in accord with him in his remark that the Golden Plovers, which nest on the Northumberland moors, leave the district at the end of the season, and that their place is taken by others of the species coming from some distant locality. We are aware, however, that this view is not shared by some ornithologists. Mr. Seebohm, for instance, writes:* 'It not unfrequently happens that the breeding-range of a species overlaps its winter range. Under these circumstances it is probably a rule, with scarcely an exception, that the birds breeding in the overlapping part are residents, who never migrate at all.'

In condemning the various theories of speculative naturalists attempting to account for the periodical phenomena in connection with migration, Mr. Chapman ventures to propound a theory of his own. Assuming, in the first place, that the original centre of dispersal of all life throughout the world was the North Polar region, he would attribute the great migratory tendency to the north to an innate perennial instinct which still continues to draw vast numbers of the feathered tribes towards the fount which was originally the universal home of all. Without attempting in this place to enter into the subject, we can only say that migration, using the word in the widest sense, cannot possibly be explained by any one theory or set of facts; it is a complex, many-sided and deeply-involved movement, arising from a great diversity of causes and effects, acting and re-acting on each other, but all working to the same end. One author dwells too much on the passage of birds from north to south and the reverse, as if these lines were absolutely the only ones followed. Recent observations show that land birds, which come to winter in these islands, arrive normally by an east to west route, and often from points south of east, and more rarely from those north of east. In the Spring also many of our summer visitors, notably the Wheatear, follow these same lines. In fact, the fly-lines followed by various species are infinite, and frequently inexplicable, crossing each other at all angles, and leading in directions which, with our limited knowledge, appear to contradict all preconceived opinion.

The illustrations are a pleasant feature of this book. Fifty-four pen-and-ink drawings, reproduced by photo-zincography, intended,

* The Geographical Distribution of the Family Charadriidæ, p. 37.

as the author says in the preface, 'as character-sketches rather than as portraits, and having no pretensions to scientific accuracy or artistic merit.' We must take exception to this depreciatory remark by saying that not only do they show special merit, but the subjects delineated, we can testify, are absolutely accurate in detail, such as could only be executed by one who was intimately acquainted with the birds in their haunts. When all are good alike it is invidious to make a distinction, but we would particularly draw attention to the black-breasted Golden Plover on the fell-side, at page 40; the group of startled Black Game on the moor-dyke; punting amongst the ice-floes on the coast, at page 168; the long line of Brent Geese on the feed, at page 200—note the life-like attitude of the birds when feeding, with the reflection of their darker parts in the sloppy ooze. The sketch of Grey Geese on the sand-bar ('full sea') also is admirable—in long-extended rank within the wash of the tide, suggestive of a regiment on parade standing at ease.

In concluding these remarks on Mr. Chapman's pleasant volume we trust we have said enough to induce our readers to become acquainted with it and judge for themselves, and we feel quite certain the perusal will afford them much satisfaction.—J.C.

NOTES—MOLLUSCA.

Variation in Helix nemoralis and H. hortensis at Rothwell, Mid-West Yorks.—On July 21st I collected a number of *Helix nemoralis* and *H. hortensis* from a bank on the Leeds and Pontefract road near Rothwell, the reds and yellows being about equal. The species were intermixed. The *H. nemoralis* included fine polished specimens of var. *rubella* 00000 and 02345, var. *petiveria* 00000 and 00300, and var. *libellula* 00000, one of which has a pale-pink inner and outer lip. The *hortensis* include var. *lutea* 00000, and var. *coalita* Moq.—a common variety here, but uncommon in *nemoralis*—and the type. All have the spire raised.—Geo. Roberts, Lofthouse, August 12th, 1889.

Some North of England Mollusca.—Looking over an old note-book I find a few unpublished records which are possibly worth saving from oblivion; they all refer to specimens examined by myself. *Physa hypnorum* var. *intermedia* Locard, Cumberland (Smith): this is an abbreviated form of the species; I never heard exactly where the specimens were found, they were sent to my brother. *Syndosmya prismatica*, Seaton Carew, one example (Rev. J. W. Pattison). *Helix nemoralis* v. *rubella* $0_2 3_{4455}$, *rubella* $0_{::}4_{:}$, and *rubella* 00305, Kiveton Park, Yorks. (Rev. H. Friend). *H. nemoralis* var. *libellula* $00_{34}0$, Beeston, Cheshire (Rev. H. Friend). *Paludina fasciata* (=*vivipara* Auctt.) var. *producta* Pascal, 31½ mill. long, near Wakefield (G. Roberts). *Limax agrestis* v. *obscura* Moq., Wakefield (Wilcock). *Helix caperata* var. *alternata* Ckll., Stanley (G. Roberts). *H. nemoralis* v. *libellula* $0_2(34)_5$, Lofthouse (G. Roberts). *H. nemoralis* v. *libellulo-rubella* 00000, apex of shell yellow, body whorl pink; and var. *libellulo-rubella* 00300 with variation in the colour of the animal, the exposed portion of mantle being yellow instead of grey, Lofthouse (G. Roberts). *H. hortensis* v. *lilacina* 00000, with five erosion-bands: from G. Roberts, locality not stated. T. D. A. Cockerell, West Cliff, Custer Co., Colorado, July 16th, 1889.

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THE NATURALIST:

A

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NATURAL HISTORY FOR THE NORTH OF ENGLAND.

CONDUCTED BY

WM. DENISON ROEBUCK, F.L.S.,

Sunny Bank, Leeds;

WITH THE ASSISTANCE IN SPECIAL DEPARTMENTS OF

J. GILBERT BAKER, F.R.S., F.L.S., Royal Herbarium, Kew;

CHAS. P. HOBKIRK, F.L.S., Dewsbury;

W. EAGLE CLARKE, F.L.S., M.B.O.U., Museum of Science & Art, Edinburgh;

GEORGE T. PORRITT, F.L.S., F.E.S., Greenfield House, Huddersfield;

ALFRED HARKER, M.A., F.G.S., St. John's College, Cambridge;

W. BARWELL TURNER, F.C.S., F.R.M.S., 38, Sholebroke Avenue, Leeds.

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E. A. Ormerod.—Notes and Descriptions of a few Injurious Farm and Fruit Insects of South Africa, 8vo, cloth, 1889. [Mr. S. D. Bairstow.
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Flora of Teesdale, from Crossfell downwards to the Greta, 8vo, sewn, 1883. [Rev. E. P. Knubley.
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Philadelphia Acad. of Nat. Sci.—Proc., 1889, part 1, Jan.-April. [The Academy.

Addresses wanted.—The Editors of the *Naturalist* would be glad to learn the present addresses of the following gentlemen:—

Mr. John Aitchison (formerly of Belford, Northumberland).
Mr. T. E. Denham (formerly of Rotherham and afterwards of Huddersfield).
Rev. Isaac Harding (Wesleyan minister, last at Mere Beck, Long Preston).
Rev. Adrian Peacock (formerly of Barkingside, Ilford, Essex).

PLANTS OF THE INFER-ARCTIC ZONE ON INGLEBOROUGH AND PENYGHENT.

J. G. BAKER, F.R.S., F.L.S.,
Royal Herbarium, Kew; Ex-President of the Yorkshire Naturalists' Union.

DURING a visit to Settle in September, I made a list of plants noted on Ingleborough and Penyghent within the bounds of the Infer-arctic zone, at 2,000 ft. and upwards, which it may be worth while to place on record.

Ingleborough, on the gritstone ridge, at 2,300 to nearly 2,400 ft.

Ranunculus repens.
Draba verna.
Cerastium triviale.
Sagina procumbens.
Stellaria media.
Oxalis Acetosella.
Saxifraga hypnoides.
Galium saxatile.
Senecio vulgaris.
Vaccinium Myrtillus.
Euphrasia officinalis.
Rumex Acetosella.
Juncus squarrosus.
Luzula campestris.
Carex flava? (not in flower).
Aira cæspitosa.
Agrostis vulgaris.
Poa annua.
Festuca ovina.
Nardus stricta.
Lycopodium Selago.

Ingleborough, on the Main Limestone cliffs, 2,200 to 2,300 ft.

Cardamine pratensis.
Viola sylvatica.
Arenaria verna.
Trifolium repens.
Alchemilla vulgaris.
Potentilla Tormentilla.
Saxifraga oppositifolia.
Sedum Rhodiola.
Scabiosa Columbaria.
Galium sylvestre.
Taraxacum officinale.
Campanula rotundifolia.
Thymus Serpyllum.
Rumex Acetosa.
Carex stellulata.
Sesleria cærulea.
Poa pratensis.
Cystopteris fragilis, both type and var. dentata.
Asplenium viride.
Lastrea Filix-mas.
Lastrea dilatata var. collina.

Ingleborough; springs below the Main Limestone scars, 2,200 ft.

Montia fontana.
Achillea Millefolium.
Juncus effusus.
Scirpus cæspitosus.
Cynosurus cristatus.

Penyghent, on the Gritstone ridge, at from 2,100 to nearly 2,300 ft.

Potentilla Tormentilla.
Galium saxatile.
Calluna vulgaris.
Vaccinium Myrtillus.
Empetrum nigrum.
Juncus squarrosus.
Eriophorum angustifolium.
Carex sp. ?
Scirpus cæspitosus.
Aira cæspitosa.
Aira flexuosa.
Festuca ovina.
Nardus stricta.

Penyghent, on the Main Limestone scars of the western side, at 2,100 to 2,200 ft.

Ranunculus repens.
Draba incana.
Arabis hirsuta.
Arenaria verna.
Cerastium triviale.
Geranium lucidum.
Geranium Robertianum.
Oxalis Acetosella.
Trifolium repens.
Lotus corniculatus.
Alchemilla vulgaris.
Saxifraga hypnoides.
Saxifraga oppositifolia.
Pimpinella Saxifraga.
Scabiosa Columbaria.
Galium sylvestre.
Hieracium cæsium.
Carduus arvensis.
Bellis perennis.
Achillea Millefolium.
Campanula rotundifolia.
Euphrasia officinalis.
Veronica officinalis.
Veronica Chamædrys.
Thymus Serpyllum.
Rumex Acetosa.
Rumex Acetosella.
Urtica dioica.
Sesleria cærulea.
Poa annua.
Cystopteris fragilis.
Asplenium Trichomanes.
Asplenium Ruta-muraria.

Penyghent; springs below the Main Limestone, at 2,100 ft.

Stellaria uliginosa.
Chrysosplenium oppositifolium.
Epilobium palustre.
Apargia autumnalis.
Juncus effusus.
Carex ovalis.
Anthoxanthum odoratum.

NOTES—BOTANY.

Spiræa Filipendula in Upper Airedale.—About the beginning of September my attention was drawn by Miss Tranter, of Gargrave, to some plants which she had gathered near Eshton. Among them I found *Spiræa Filipendula* and *Eupatorium cannabinum*; the former grows rather plentifully in pastures on Scarnber, a hill near Eshton, and is a new record for the Aire drainage district; the latter occurs in a wood near Winterburn, in which *Carduus heterophyllus* and *Polypodium Phegopteris* are also to be found. In a field near St. Helen's Well at Eshton, *Parnassia palustris* and *Gentiana Amarella* were found growing in profusion.

In Wharfedale in 1885, I gathered *Spiræa Filipendula* at the bottom of Dibb Scar near Grassington, and *Polemonium cæruleum*, *Draba incana*, and *Thalictrum minus* var. *montanum* on the sides of the Scar.

The above are all new localities for the plants mentioned.—T. W. Edmondson, Pembroke College, Cambridge, October 14th, 1889.

Mosses at Robin Hood's Bay.—I have two additions to make to the list given in *Naturalist*, August 1888.

Grimmia decipiens Lindb. (Braithwaite's Moss Flora) (= *Grimmia schultzii* (Wils. Bry. Brit.)) is recorded from Robin Hood's Bay, where it was gathered by Mr. George Massee.

Bryum alpinum L. var. *meridionale* Schmp. was gathered at the base of the Peak Cliff in September 1888, and is the first record for this variety in North Yorkshire. The only other locality recorded for it in Britain, so far as I am aware, is from maritime rocks at Penzance, West Cornwall, where it was collected by the late Mr. Curnow.—M. B. Slater, Malton, July 1889.

NOTE—MAMMALIA.

Seal at Flamborough.—On the 4th October we gave chase to a Seal; it was a very exciting chase indeed; I got one shot at him, but he, being a very large and lively example, escaped.—Matthew Bailey, Flamborough, October 7th, 1889.

FOWLER'S BRITISH COLEOPTERA.

The Coleoptera of the British Islands. A Descriptive Account of the Families, Genera, and Species Indigenous to Great Britain and Ireland, with notes as to Localities, Habitats, etc. By the Rev. Canon Fowler, M.A., F.L.S., . . . London: L. Reeve and Co., 5, Henrietta Street, Covent Garden. 1888. Vol. II (Staphylinidæ), and Vol. III (Clavicornia).

Students of British Coleoptera who had made good use of the first volume of Canon Fowler's work on this subject, will have hailed with immense satisfaction the publication of the next two volumes. It was indeed high time that the study of so attractive a group of insects should be presented in a correspondingly attractive form, and I think there can be no question that British Coleopterists will rapidly increase in numbers now that they can obtain such an excellent work on British Beetles at such a reasonable price. It is a lamentable fact that hitherto works of this character have seldom had a sufficient sale to save their authors from pecuniary loss, but surely the growth of science, and our increasing love of nature, will, before long, create a larger demand for books, which, instead of giving a few hours' amusement, become, by intelligent use, life-long friends and companions.

The second volume of Fowler's British Coleoptera has now been published for some little time. It embraces a group of insects which had been very much neglected by early Coleopterists, the *Staphylinidæ*, of which the 'Devil's Coachman' may be selected as a familiar example. As the book has been seldom out of my hands for many days together during the past year, I feel I have some right to give an opinion upon its merits, and I unhesitatingly pronounce it most admirable in every respect. In arrangement and description it is singularly lucid, and while keeping to a style decidedly concise and strictly scientific, the author has, nevertheless, succeeded in giving his book a life and colour which save it from the skeleton-like character, so general in similar works. A beginner could hardly do better than take up a genus like Philonthus, Quedius, or Stenus, (insects that occur in every haystack or pile of garden rubbish), and work them out by the admirable table and descriptions given in this volume. The *Staphylinidæ* contain some very difficult groups,—groups which no book ever will make easy. The amount of patient study, however, which our author has bestowed on the most troublesome genera, is amazing, (especially in the case of one who is so much engaged in other duties), and in struggling with an undeterminable Homalota or Oxypoda, I am sure the student in his most despairing moments will sooner direct his abuse against the hand of

Dame Nature, than against her most conscientious and painstaking interpreter.

The third volume of the British Coleoptera deals with the Clavicornia—a somewhat artificial and unsatisfactory division, as at present understood and constituted. The most familiar insects described in this volume are the Ladybirds and the Carrion-beetles, but many of the groups are obscure and difficult, from the minute size of the insects. The *Trichopterygidæ* can only be worked with the microscope. This volume appears, nevertheless, to be characterised by the same painstaking work as its predecessors, and there can be no doubt that the completion of the whole book will inaugurate a new era in the study of the British Coleoptera.—W. C. Hey.

NOTES—FISHES.

Anchovies at Whitby.—On the 9th instant, two fishes, caught off Whitby in the herring nets, were shown to me for identification, which I have no hesitation in stating were Anchovies (*Engraulis encrasicholus*). Unfortunately, they had not been taken proper care of, and the scales and skin were much abraded; nevertheless, I am quite satisfied from the head, lower jaw, etc., that they are what I have pronounced them to be. The fisherman (Freeman) who caught them, said he had taken above a dozen this season.—Thos. Stephenson, Whitby, October 11th, 1889.

Destruction of young Trout in the river Costa.—On the 29th of April Mr. Chadwick, of Malton, sent through Mr. Roebuck a large bottle labelled 'Brown dust from the River Costa; it kills the young Trout wholesale by clogging the gills—J. W. Wheldon.' In his letter he wrote that Mr. Wheldon, who is a pisciculturist at Pickering, said that at that time of year and later it kills all the young trout, but that afterwards the larger fish feed upon it. It is also fed upon by *Limnæa* and other mollusks.

On examining the sample of water from the river Costa, with the muddy 'deposit,' I found nothing but what one would expect, viz., crustacean and infusorial debris, fragments of the pseudo-mucoroids (*Leptothrix*, *Hyphæothrix*, etc.), and of *Confervæ* and *Monostroma*. I met with nothing in Mr. Wheldon's sample like a *Saprolegnia*, or other vegetable, which I could imagine as 'killing the young trout wholesale by clogging the gills,' as described by Mr. Wheldon. Absence led me to neglect the sample for some days, but it was protected from dust, and preserved in a shallow glass dish exposed to the direct sunlight. On my return I found it covered on the surface with a *thick* pellicle of what turned out to be simply ferric oxide (Fe_2O_3), with flakes of the same in large quantity lying upon the muddy sediment. I much regret not having estimated the *quantity* of the oxide in the given bulk; but it is very large, and proves the water to be highly charged with iron. Of animal physiology I know little, but I know that lung- (and gill-) action in animals exerts a 'reducing action,' chemically speaking. This being so, and iron in soluble condition existent in the water, I would ask—Is it not possible that the gill-action in the little trout *might* reduce the iron from the soluble form to that of insoluble oxide, and thus clog the delicate membranes of the gills? Might not the gill-cilia, or blades, well developed in an old fish, be so weak in the juvenile trout as to be unable to throw off the accumulation? The first stage of the action would probably be the reduction of soluble ferric carbonate to simple oxide; the second change would convert the FeO into Fe_2O_3 by the oxidising action of the gills. Mr. Wheldon speaks of 'brown dust,' surely this may be the ferric oxide alluded to. It is quite possible that one of the little known semi-mucoroid Algæ (Fungi?) *may* have been the cause, but I am inclined to think my theory as to the iron is correct.—W. Barwell Turner, Leeds.

NOTES ON THE BIRDS OF CENTRAL RYEDALE, NORTH-EAST YORKSHIRE.

CHRISTOPHER W. SMITH,
Harome, near Helmsley.

Ryedale extends from the north-west to the south-east, a distance of 24 or 26 miles; and from the north-east to the south-west, about 18 or 20 miles. As a whole it is a highly picturesque district of moorland hills and deep vales, watered by the river Rye and its tributaries, the Dove, Riccal, Hodge, and several smaller streams. That portion of it to which I have applied the name of 'Central Ryedale' is the district immediately surrounding the village of Harome, which is situated in a position nearly equi-distant from the north-western and the south-eastern extremities of the vale. Central Ryedale is a purely agricultural district, the fields and hedge-rows of which are well studded with trees, and interspersed with beautiful woods and plantations. It is bounded on the north, west, and south by heather-covered hills; while through its centre flows the river Rye, which is a favourite haunt of several species of water-loving birds. In the following paper I have endeavoured, as briefly and plainly as possible, to give an account of those species of birds which have been observed in the so-called 'Central Ryedale.' As a rule I have confined my notes to the birds which have come under *my own observation*. Those of which I have received information from others are indicated by the prefix of an asterisk.

Turdus viscivorus L. **Missel Thrush.** (Local name, Golden Thrush). This species is resident; fairly numerous; and breeds regularly in the district.

Turdus musicus L. **Song Thrush.** (Local name, Throstle). Resident; fairly numerous; breeds regularly; increasing in numbers.

Turdus iliacus L. **Redwing.** A regular winter visitor, sometimes in considerable numbers.

Turdus pilaris L. **Fieldfare.** (Local name, Felfer). A regular winter visitant, generally in large numbers.

Turdus merula L. **Blackbird.** Resident; numerous; and breeds regularly.

Turdus torquatus L. **Ring Ouzel.** A regular summer visitor to the moorlands from six to twelve miles distant from here.

Saxicola œnanthe (L.). **Wheatear.** An occasional visitor, generally in March and April, when migrating to the higher ground where it breeds.

Pratincola rubetra (L.). **Whinchat.** (Local name, Hay Bird). A regular summer visitant; fairly numerous; breeds regularly.

Pratincola rubicola (L.). **Stonechat.** Rarely observed here, but is fairly numerous in a certain valley seven or eight miles westward, where it breeds.

Ruticilla phœnicurus (L.). **Redstart.** (Local name, Jenny Red Tail). A regular summer visitant; fairly numerous; breeds.

Erithacus rubecula (L.). **Redbreast.** (Local name, Robin). Resident; fairly abundant; breeds.

Sylvia cinerea (Bechst.). **Whitethroat.** (Local name, Peggy Whitethroat). A common summer visitor; numerous; breeds.

Sylvia curruca (L.). **Lesser Whitethroat.** (Local name, Mealy-mouth). A regular summer visitor; not numerous; breeds.

Sylvia atricapilla (L.). **Blackcap.** A regular summer visitor, but not numerous. Has been seen in winter.

Sylvia hortensis (Bechst.). **Garden Warbler.** A regular summer visitor; fairly numerous; breeds regularly.

Regulus cristatus Koch. **Goldcrest.** Probably resident in small numbers; but is most frequently seen in the winter season.

Phylloscopus rufus (Bechst.). **Chiffchaff.** A regular summer visitor; not numerous; breeds.

Phylloscopus trochilus (L.). **Willow Warbler.** A regular summer visitor; numerous; breeds regularly.

Phylloscopus sibilatrix (Bechst.). **Wood Warbler.** A regular summer visitor; not numerous; breeds regularly.

Acrocephalus phragmitis (Bechst.). **Sedge Warbler.** One of the most numerous of our summer visitors; breeds regularly.

Locustella nævia (Bodd.). **Grasshopper Warbler.** A very irregular summer visitor; never numerous; and some years not observed.

Accentor modularis (L.). **Hedge Sparrow.** (Local name, Cuddy). Resident; numerous; and breeds regularly.

Cinclus aquaticus Bechst. **Dipper.** Resident; not numerous; breeds.

Acredula rosea (Blyth). **British Longtailed Titmouse.** (Local name, Tom Piper). Resident; sparingly distributed; breeds regularly.

Parus major L. **Great Titmouse.** (Local name, Blackcap). Resident; not numerous; breeds.

Parus britannicus Sharpe & Dresser. **British Cole Titmouse.** Probably resident, but not known to breed; generally seen in winter.

Parus palustris L. **Marsh Titmouse.** An occasional winter visitor; very rare.

Parus cæruleus L. **Blue Titmouse.** (Local name, Billy Biter). Resident; fairly numerous; breeds regularly.

Troglodytes parvulus Koch. **Wren.** (Local name, Tom Tit). Resident; moderately numerous; breeds.

Motacilla lugubris Temm. **Pied Wagtail.** Resident; fairly numerous; breeds.

Motacilla melanope Pallas. **Grey Wagtail.** Probably resident, but very thinly distributed.

Motacilla raii (Bp.). **Yellow Wagtail.** A regular summer visitor; not numerous; breeds.

Anthus pratensis (L.). **Meadow Pipit.** (Local name, Titlark). Resident; fairly abundant; breeds regularly.

Anthus trivialis (L.). **Tree Pipit.** (Local name, Titlark). A common summer visitant; numerous; breeds.

***Oriolus galbula** L. **Golden Oriole.** One *said* to have been observed in the spring of 1887, but, unfortunately, was not positively identified.

***Lanius collurio** L. **Red-backed Shrike.** A bird seen here in 1882 by Thomas Haigh, gamekeeper to Earl Feversham, was probably, from the description he gave of it, this species, but was not further identified.

Muscicapa grisola L. **Spotted Flycatcher.** (Local name, Bee Bird). A regular summer visitant; numerous; breeds.

Muscicapa atricapilla L. **Pied Flycatcher.** A summer visitant; not numerous; breeds in the woods around Duncombe Park.

Hirundo rustica L. **Swallow.** A regular summer visitor; much less numerous than formerly; breeds.

Chelidon urbica (L.). **Martin.** A regular summer visitor; less numerous than formerly; breeds.

Cotyle riparia (L.). **Sand Martin.** (Local name, Bank Swallow). A regular summer visitant; very numerous; breeds in the banks of the Rye, etc.

Certhia familiaris L. **Tree Creeper.** Resident; not numerous; most frequently seen in winter; breeds.

Carduelis elegans Steph. **Goldfinch.** (Local name, Redcap). Resident; less numerous than formerly; breeds.

Chrysomitris spinus (L.). **Siskin.** Fairly numerous in winter. It is reported to have nested here in 1880, but I have since found that the statement is incorrect.

Ligurinus chloris (L.). **Greenfinch.** (Local name, Green Linnet). Resident; very numerous; breeds.

Coccothraustes vulgaris Pall. **Hawfinch.** Has been met with occasionally, but is not common. It is said to breed near Duncombe Park.

Passer domesticus L. **House Sparrow.** Resident; very numerous; breeds.

Passer montanus L. **Tree Sparrow.** Is occasionally observed, but less frequently than formerly; breeds here.

Fringilla cœlebs L. **Chaffinch.** (Local name, Bullspink). Resident; very numerous; nests throughout the district.

Linota cannabina (L.). **Linnet.** (Local name, Grey Linnet). Resident; fairly numerous, especially in winter; breeds.

Linota rufescens (Vieill.). **Lesser Redpoll.** (Local name, Rose Linnet). Resident and breeding, but not numerous; most so in winter.

Linota flavirostris (L.). **Twite.** Has been observed on the moors eight or ten miles distant, northward.

Pyrrhula europæa Vieill. **Bullfinch.** Resident; fairly numerous; breeds in the district.

***Pinicola enucleator** (L.). **Pine Grosbeak.** Reported to have been observed at Helmsley in 1860 or 1861.

***Loxia curvirostra** L. **Crossbill.** Large numbers of this species were observed at Helmsley in 1860 or 1861.

Emberiza miliaria L. **Corn Bunting.** Resident; less numerous than formerly; breeds.

Emberiza citrinella L. **Yellow Hammer.** (Local name, Goldspink). Resident; very numerous.

Emberiza schœniclus L. **Reed Bunting.** (Local names, Reed Sparrow and Blackcap). Resident; fairly numerous; nests near the Rye, Riccal, etc.

Plectrophanes nivalis (L.). **Snow Bunting.** An occasional winter visitant.

Sturnus vulgaris L. **Starling.** (Local name, Jippy). Resident; very numerous; breeds regularly in the district. One observed this summer (1888) having a white breast.

Garrulus glandarius (L.). **Jay.** Resident and fairly numerous; breeds in the surrounding woods, etc.

Pica rustica (Scop.). **Magpie.** Resident; less numerous than formerly; breeds in the district.

Corvus monedula L. **Jackdaw.** Resident; very numerous; nests in the ruins of Helmsley Castle, Rievaulx and Byland Abbeys, and in some quarries in the district.

Corvus corone L. **Carrion Crow.** (Local name, Dowp). Resident; less numerous than formerly; nests in the surrounding woods.

Corvus cornix L. **Hooded Crow.** (Local name, Grey Crow). A regular winter visitor; not numerous.

Corvus frugilegus L. **Rook.** (Local name, Crow). Resident; exceedingly numerous; breeds in the district.

Alauda arvensis L. **Sky Lark.** Resident; fairly numerous; breeds regularly.

Alauda arborea L. **Wood Lark.** Resident, but not numerous.

Cypselus apus (L.). **Swift.** (Local name, Collier). A regular summer visitant; less numerous than formerly.

Caprimulgus europæus L. **Nightjar.** A regular summer visitant; not numerous; breeds in the district.

Dendrocopus major (L.). **Great Spotted Woodpecker.** Resident; fairly numerous; breeds regularly.

***Dendrocopus minor** (L.). **Lesser Spotted Woodpecker.** Resident, but very sparingly distributed.

Gecinus viridis (L.). **Green Woodpecker.** Resident; numerous in some localities; breeds regularly.

***Iynx torquilla** L. **Wryneck.** Has been observed here, but is scarce now.

Alcedo ispida L. **Kingfisher.** Resident; generally but sparingly distributed; breeds.

Cuculus canorus L. **Cuckoo.** A regular summer visitor; not very numerous.

Strix flammea L. **Barn Owl.** (Local name, White Owl). Resident; but, as with all the other Owls, etc., is far less numerous than formerly; breeds.

Asio otus (L.). **Long-eared Owl.** (Local name, Horned Owl). Resident; not so numerous as formerly; breeds.

Asio accipitrinus Pall. **Short-eared Owl.** (Local name, Horned Owl). Occasionally to be met with in winter, but is now very rare.

Syrnium aluco (L.). **Tawny Owl.** Resident; not so numerous as formerly; breeds.

*__Circus cyaneus__ (L.). **Hen Harrier.** (Local name, Blue Hawk). Formerly known in the district; not observed now.

*__Buteo vulgaris__ Leach. **Buzzard.** Is said to inhabit the moorlands near Hawnby, seven or eight miles westward; but is probably only a casual visitor.

Accipiter nisus (L.). **Sparrow Hawk.** Resident; fairly numerous; breeds regularly.

Milvus ictinus Savign. **Kite.** (Local name, Glead). Formerly met with here; but has not been seen of late years.

*__Elanoides furcatus__ (L.). **Swallow-tailed Kite.** Said to have been killed near Helmsley, in 1859; a statement which I should hesitate to accept without some further proof.

[I have proof that this specimen was not procured in the district, nor in Britain.—W.E.C.]

Falco peregrinus Tunst. **Peregrine Falcon.** (Local name, Perry Hawk). Very rarely observed now, though formerly fairly numerous. An immature female was picked up, dead, in a field here, in March 1888. Certain marks on its legs led me to think it had escaped from captivity.

Falco æsalon Tunst. **Merlin.** Is still to be met with in the district; especially on the moorlands.

Tinnunculus alaudarius (Gmel.). **Kestrel.** Resident; fairly numerous; breeds in the neighbouring woods, etc.

Ardea cinerea L. **Heron.** (Local name, Heronsue). Resident; fairly numerous; breeds in the district.

Anser segetum (Gmel.). **Bean Goose.**

Anser brachyrhynchus Baill. **Pink-footed Goose.**

Flocks of Geese passing northwards are often observed about October. From the difference in their size, I should judge that both the above species are seen; but as I have had no opportunity of examining them, I cannot be certain. Have been known to remain in the neighbourhood several days together. A large flock, going northward, passed here April 26th, 1888.

Cygnus musicus Bechst. **Whooper Swan.** Several were observed near the Rye about Christmas, 1876, and some others in 1880. A Swan, described as being of a brown colour, and therefore a young bird, passed over here, going towards the Rye, August 28th, 1888.

Tadorna cornuta (S. G. Gmel.). **Common Sheldrake.** An occasional winter visitant to the Rye. Last observed in the winter of 1886-7, when they were more numerous than usual.

Mareca penelope (L.). **Wigeon.** A very rare visitant; the only instance known to me being that of two young birds, in July and August 1861. They remained in the Rye four or five weeks. Both came into my possession.

Anas boschas L. **Mallard.** (Local name, Wild Duck). Resident; fairly numerous; breeds regularly in the district.

Querquedula circia (L.). **Garganey.** A rare visitant. A pair shot in 1885, about three miles from here, are now in the possession of Mr. Peacock, of Muscoates.

Querquedula crecca (L.). **Common Teal.** Resident; much less numerous than formerly.

Fuligula ferina (L.). **Pochard.** An occasional visitor. A flock of eight or ten was observed in the Rye in 1860, the river being flooded at the time. They remained some days. One, probably a wounded bird which had strayed from the rest, was captured alive near this village.

Columba palumbus L. **Ringdove.** (Local names, Wood Pigeon and Cow Scot). Resident; exceedingly numerous, especially in winter, when they may be counted by thousands; breeds.

Columba œnas L. **Stockdove.** (Local name, same as those of the Ringdove, with which it is often confounded). Resident, and breeding regularly; but is most numerously observed in winter.

Columba livia Bonnat. **Rockdove.** (Local name, Rock Pigeon). Resident; not numerous; a few nesting regularly.

[I have always to much doubt the breeding of the true *C. livia* inland, and have never been able to obtain a specimen from such localities.—W.E.C.]

Phasianus colchicus L. **Pheasant.** Resident; very numerous, and breeding regularly.

Perdix cinerea Lath. **Partridge.** Resident; numerous, and breeding regularly.

Coturnix communis Bonnat. **Quail.** Is met with occasionally; single birds being sometimes seen in company with Partridges. A few have been shot.

Lagopus scoticus (Lath.). **Red Grouse.** Resident; numerous, and breeding regularly on the surrounding moors.

Rallus aquaticus L. **Water Rail.** Frequently observed in winter; possibly a few remain to nest.

Crex pratensis Bechst. **Corn Crake.** (Local name, Corndrake). A regular summer visitant; fairly numerous; breeds.

Gallinula chloropus (L.). **Moor Hen.** (Local name, Water Hen). Resident; fairly numerous; nests regularly.

Fulica atra (L.). **Coot.** Has been observed here years ago; is seldom seen now.

Œdicnemus scolopax (S. G. Gmel.). **Stone Curlew.** A casual visitor. Last seen here in April and May, 1883, when three birds remained on Harome Common two or three weeks.

Charadrius pluvialis L. **Golden Plover.** A regular winter visitor; sometimes numerous.

Squatarola helvetica (L.). **Grey Plover.** An occasional visitor in winter, and on migration.

Vanellus vulgaris Bechst. **Lapwing.** (Local name, Tewitt). Resident; very numerous; nests regularly.

Scolopax rusticola L. **Woodcock.** A regular visitor in autumn and winter; but not numerous.

Gallinago cœlestis (Frenz.). **Common Snipe.** Common in autumn and winter, and has been observed in summer.

Limnocryptes gallinula (L.). **Jack Snipe.** A winter visitant; less numerous than formerly.

Tringoides hypoleucos (L.). **Common Sandpiper.** A summer visitant; fairly numerous; nests regularly.

Helodromas ochropus (L.). **Green Sandpiper.** A regular visitant in spring and autumn, but not numerous. I obtained two specimens in August 1888, which are now in the possession of Mr. James Backhouse, jun.

Numenius arquata (L.). **Curlew.** A casual visitant. One killed at Shaw Moor Farm, Harome, in 1883.

Sterna fluviatilis Naum. **Common Tern.** An occasional visitor to the Rye. Less numerous than formerly.

Rissa tridactyla (L.). **Kittiwake.** Formerly a frequent visitor; seldom seen now; four passed over here August 15th, 1888.

Larus argentatus Gmel. **Herring Gull.**

Larus canus L. **Common Gull.**

Both these species regularly visit this locality in the early spring; sometimes in considerable numbers. About ten or eleven years ago some hundreds frequented the fields near the Rye and the Riccal, remaining in the neighbourhood for two or three weeks.

Larus ridibundus L. **Black-headed Gull.** A regular spring visitant, but not numerous.

Colymbus glacialis L. **Great Northern Diver.** A specimen in an exhausted condition was captured near here in 1852. The only live one I have seen.

Podiceps griseigena (Bodd.). **Red-necked Grebe.** A specimen was captured in a farm-yard at Owldray, four miles from here, in 1880, and is now, I believe, in the possession of Mr. Strickland, of that place.

Tachybaptes fluviatilis (Tunst.). **Little Grebe.** (Local name, Dipper Duck). A regular winter visitant to the rivers and ponds in the district, but not numerous.

NOTES—ORNITHOLOGY.

Late Breeding of the Nightjar.—On September 2nd, when grouse-driving in the Thornthwaite district, I found the young of the Nightjar (*Caprimulgus europæus*), apparently from twelve to fourteen days old. Upon the same tract of moorland, several of the breeding-places of this bird have been noted during the late season, and as they were left undisturbed there is reason for believing above to be a second brood.—H. Knight Horsfield, Headingley, Leeds, Oct. 1889.

Richardson's Skua at Settle.—One of these birds (*Stercorarius crepidatus*) was shot by Mr. T. B. Charlesworth at Settle on the 26th September, and forwarded to me for identification. It was in its second year's plumage, and on dissection I found it to be a male. The bird had, no doubt, been driven into West Yorkshire by the strong winds which prevailed at the time.—Edgar R. Waite, The Museum, Leeds, 11th October, 1889.

Spotted Crake at Harrogate.—A fine Spotted Crake (*Porzana maruetta*) was shot in a Snipe-bog near here, on the 26th September. The Redshanks (*Totanus calidris*), which I have previously noted as breeding here, have again nested successfully this year.—Riley Fortune, Harrogate, October 2nd, 1889.

Flamborough Bird-notes.—The Spotted Woodpecker (*Dendrocopus major*), arrived here September 22nd, one seen near the Coastguard Station; a second seen on the same date in what is known as the South Sea Plantation; I have also been informed of another being captured by Mrs. Creyke's gardener, Marton Hall, near Flamborough. October 1st, first arrival of Woodcock (*Scolopax rusticola*). October 2nd, observed Stormy Petrel (*Procellaria pelagica*), near to the Smithic Buoy; also Fulmar Petrel (*Fulmarus glacialis*). October 3rd, shot immature Little Gull (*Larus minutus*). The other day I shot a splendid specimen of the Velvet Scoter (*Œdemia fusca*). I had a very fine specimen of Sabine's Gull (*Xema sabinii*), brought in to preserve, immature, shot by George Emmerson, fisherman.—Matthew Bailey, Flamborough, October 7th, 1889.

Wasp-Nest Destroyed by Great Tits.—The following interesting account of the demolition of a wasps' nest by Great Tits (*Parus major*) is communicated by Mr. Charles Elmhirst, of Farnham Lodge near Knaresborough:—'The wasps' nest was built between a black-currant bush and a wall. It was found on the 8th of July, when the bush was cut back, and at that time there were a great many wasps about. The nest was about six inches through, about three feet high (above the ground), and was nearly round. As soon as it was exposed in front the Great Tits found it. They at once commenced to catch the wasps, and on the 16th there was not one left. They then attacked the nest by means of two holes which they made on the shoulder, and whenever anyone went near they found one, two, or three of them feeding on the grubs, or perched upon the trees in the neighbourhood of the nest. On the 19th the nest was empty.'—E. P. Knubley, Staveley Rectory, Leeds, August 23rd, 1889.

THE DATE OF THE OCCURRENCE OF EMBERIZA CIOIDES AT FLAMBOROUGH.

W. EAGLE CLARKE, F.L.S.,
Natural History Department, Museum of Science and Art, Edinburgh; etc.

In the Appendix to his 'Manual of British Birds,' just issued, we note, under the head of Brandt's Siberian Bunting (p. 733), that Mr. Saunders follows Canon Tristram (P.Z.S., 1889, p. 6; 'Ibis,' 1889, p. 293) as his authority for the date of the occurrence of this bird at Flamborough. We, too, following the same authority, quoted October 1887 in our preliminary notice of this species in *The Naturalist* (1889, p. 79); but Mr. Chase, on seeing our note, made an important communication, in which he not only furnished our readers with the most complete account of the occurrence that has yet appeared, but, on the authority of Mr. Matthew Bailey, who received the bird in the flesh, (and from whom Mr. Chase obtained it) fixed the date as November 1886 (*Naturalist*, 1889, p. 113). Recognising the source and nature of this communication, we think it is not too much to claim for it due consideration, even if it is denied the official status we attach to it. Under these circumstances we read, with some surprise, Mr. Saunders' concluding sentence: 'As a mere detail, it may be mentioned that in *The Naturalist* for 1889 (p. 113) the date of capture is given as November 1886.'

This note is published in the hope that Mr. Bailey, who alone can afford the information, will remove the doubt which appears to rest upon the date of occurrence of the latest addition to the British and, it is believed, European avifauna.

NOTES AND NEWS.

A new work on European Birds, which from its plan is calculated to be of great service to ornithologists, is announced for publication by subscription during the autumn or early spring. It is to be from the pen of Mr. James Backhouse, jun., F.Z.S., etc., and will be entitled 'A Handbook of European Birds for the use of Field Naturalists and Collectors.' Intended mainly for a handy reference-volume, it is to consist of a series of short general descriptions and brief notes as to distribution and habitat. It is to be 7/6 (plain cloth) or 10/6 (limp calf with flaps for pocket use) to subscribers, the prices being raised immediately on publication.

Local palæontologists will be specially interested in the forthcoming 'Catalogue of British Fossil Vertebrata' by Messrs. A. Smith Woodward and C. D. Sherborn (London: Dulau & Co.). References are given to the original specimen and description of each British species, as well as its geological horizon and localities. The authors, whose names are a guarantee of thoroughness, have not only consulted the publications of all provincial societies, but visited most of the public and private museums, and such valuable collections as those at York and Newcastle-on-Tyne figure largely in the records of type-specimens. The work, consisting of about 350 pages, will be published at 12s. 6d.; subscription price (before 1st December), 10s. 6d.

THE DISCOVERY OF ARENARIA GOTHICA IN WEST YORKSHIRE.

LISTER ROTHERAY,
Skipton.

As stated in the October *Naturalist* this plant was discovered by me at Ribblehead, in West Yorkshire, on the 12th June last. It was growing in a made road near to the railway bank, but distant from the latter about twelve to fourteen yards, and very near to the centre of the roadway, among the road-metal, which consisted of limestone intermixed with a slaty kind of stone. When first noticed, I was searching and scanning the roadway and rail bank alternately as I walked along, when suddenly my eye was attracted to a patch or two of small bushy plants with large white petals for their size, which were directly in front of me, and also at my feet. From its habit of growth, and bushy appearance, I at once knew that it was a new discovery to me; and on plucking one of the plants and examining it with my pocket lens, I at first concluded that it was some rare species of *Sagina*, quite new to me. Gathering, therefore, a few of the larger specimens and putting them carefully in my vasculum, I left the place to search for other treasures.

On my arrival home later in the evening, I made a closer examination of the plant, and found, to my intense surprise, that it was not a *Sagina* but an *Arenaria*—a genus distinguished from the former by its having a lesser number of styles. This being the case, the question arose in my mind, what species of *Arenaria* it could be. From its bushy habit of growth, its succulent stems with short internodes and its short but broad and fleshy pointed leaves, as well as its showy white flowers, I knew that it was neither *A. serpyllifolia*, *A. verna*, nor *A. trinervis*, all of which I had gathered beforetime In this dilemma, I had recourse to Bentham's and Hooker's Handbooks of the British Flora, and after comparing my examination of the plant's characteristics with those of *Arenaria ciliata* therein described, I at once concluded that my find was none other than that plant, to which I thought it exactly agreed, with the exception that the veins on the sepals were not so prominently ribbed, nor the leaves so blunt or obtuse as figured in the illustrations.

In the belief that the species could not be other than *A. ciliata*, I, on the 15th of June, gave a specimen of the plant to Mr. H. T. Soppitt of Bradford, from whom, a few days afterwards, I received a letter announcing his and Mr. West's inability to name the plant,

and urging me to send a specimen to Mr. J. Gilbert Baker of Kew Herbarium. A specimen was accordingly sent, and in a few days Mr. Baker wrote, saying that he put the plant under *Arenaria norvegica*, but that it differed from the Shetland form of that species in its looser habit and narrower leaves. He added, however, that they had plants of the same form as mine from Iceland, gathered there by Prof. Babington in 1846. At Mr. Baker's suggestion, I also sent a specimen plant to Prof. Babington, who concurred with Mr. Baker in calling it *A. norvegica*, saying that the only difference was in the longer internodes and laxer habit of growth. A few days later I despatched another specimen to Mr. F. Arnold Lees, Leeds, and he also was of the same opinion as Messrs. Baker and Babington, only he said that 'its leaves were more pointed and less succulent, and with longer internodes than usual. It is, too, less smooth, more rough, like a form of *A. serpyllifolia*, but the capsules are larger. It may be really an altered form of *A. norvegica*.' A little later, however, Mr. Lees seems to have mistrusted or suspected the correctness of his first determination of the plant as *A. norvegica*, and sent two specimens to Mr. W. Whitwell, with a request to submit them to Mr. Arthur Bennett of Croydon. After looking at the plants for some time, during which Mr. Bennett and Mr. Whitwell talked much about them, the former also seemed at first to think they were true *A. norvegica*, nor did he hit upon the true determination until he compared them with specimens of *A. gothica* sent him from Sweden by Prof. Nilsson, the confirmation of this being also witnessed by Mr. Whitwell, who avers that the correspondence of both plants to each other was at once apparent and complete.

Such is a concise history of the discovery and determination of the plant so far as I have been able to obtain it from those to whom the specimens have been submitted. Whether or not it is a native of the habitat and place in which it was discovered by me is a question into which I shall not enter, but leave for further investigation and consideration to those more competent to deal with the subject than I am; and to whatever rank the plant may be ultimately relegated, I sincerely trust that its position and place will be strictly guarded from being made public by those who know of it, in order that the plant may grow and flourish and be protected from being annihilated as many others have been. It is a point of no small distinction to have in West Yorkshire a plant new to the district, but the distinction is greatly enhanced when it is considered that the plant in question is not only new to West Yorkshire, but also to the British Flora, a circumstance which renders it all the more worthy of protection by all lovers of plant-life.

Naturalist,

ON THE VARIETIES OF ARENARIA CILIATA.

J. G. BAKER, F.R.S., F.L.S.,
Royal Herbarium, Kew; Ex-President of the Yorkshire Naturalists' Union.

ARENARIA CILIATA Linn. appears to have been first noticed by Tournefort in his 'Institutiones' (p. 243) in the year 1700, under the name of '*Arenaria alpina serpyllifolio multicaulis et multiflora.*' Gay notes that his typical specimen so labelled is still preserved in the herbarium of the Jardin des Plantes at Paris. When Linnæus planned out in detail the binomial nomenclature in 1753 (Species Plantarum, ed. 1, p. 425) he gave it the very appropriate name of *Arenaria ciliata*, and this name has been maintained for the type by all succeeding authors up to the present day. The typical form has a wide range of distribution. It extends from Greenland, Spitzbergen, and Nova Zembla, southward by way of the Jura, Alps, Pyrenees, and Carpathians, to Central Spain, North Italy, and Transylvania. In the mountains of Central Europe it reaches an altitude of 8,000 ft.

The typical form may be described as follows:—*A. ciliata* Linn. Perennial; stems densely tufted, pubescent, 1–3 in. long, spreading; leaves oblong or oblanceolate, acute, sessile, narrowed to the base, 1-6 in. long, moderately firm in texture, strongly ciliated in the lower half of the margin; flowers 1-5 to a stem, on short erect terminal pedicels; sepals ovate-lanceolate, acute, $\frac{1}{8}$ in. long, strongly three-nerved, ciliated on the edge towards the base; petals oblanceolate, white, a little longer than the sepals; expanded flower $\frac{1}{4}$ in. diam.; capsule a little longer than the calyx, dehiscing down to the base into five lanceolate horny valves; seeds copious, brown, reniform, rugose.

Figures will be found in 'Flora Danica,' tab. 346; English Botany, tab. 1745; ed. 3, tab. 238; and Reichenbach's Icones, tab. 346; and dried specimens in Fries' Herb. Norm., and several other published sets of specimens. The plant figured as *ciliata* in Sibthorp and Smith's 'Flora Græca,' tab. 438, is a distinct species, now called *A. cretica* Spreng. 'Flora Danica,' tab. 1269, cited by Pritzel for *A. ciliata*, is not the typical form, but *A. norvegica*. *A. multicaulis* Wulfen in Jacq. Collect. 1, tab. 17, fig. 1 (*A. ciliata* var. *frigida* Koch) is simply a condensed alpine form of *ciliata*, with narrower closer leaves than in the type, and short usually one-flowered stems. It is very curious that, although *A. ciliata* is so widely spread on the continent, it is absent from Britain, and yet re-appears on the mountains of Ireland. It was discovered by

Dr. Mackay in 1807 on the high limestone ridges of Ben Bulben in county Sligo, and has since been gathered by Dr. Moore, Mr. Thiselton Dyer, and many other botanists. It furnishes a unique instance of a common arctic-alpine plant that behaves in this fashion.

A. ciliata var. ? *fugax* Gren. and Godr. Fl. France, 1, p. 259. Of course, like the other widely-spread arctic-alpine species, *A. ciliata* varies greatly according to situation and elevation, becoming more dwarf and condensed in high latitudes and at high altitudes, laxer, with broader leaves and more numerous flowers at lower altitudes.

A plant which grows at the Lac du Joux, in the Jura, has been much discussed. It was first brought into notice by J. Gay, whose specimens, gathered in 1840, are now before me. From typical *ciliata*, as above described, it differs by its annual or biennial root, lax stems attaining a length of half a foot, broader, more spread-out, less distinctly ciliated leaves, and more acute sepals. By Grenier and Godron it is described as a doubtful variety of *A. ciliata*, under the name of *fugax*, and by Grenier in the Bulletin of the Botanical Society of France, 1869, p. lxi, it is referred to *A. gothica* Fries.

Grenier (loc. cit.) writes about it as follows :—' Everyone admits that *A. ciliata* is perennial. Now, I believe I can affirm that the plant of the lake of Pont is annual. The examination of the root and the complete absence of shoots destined to produce flowering stems another year, separate it clearly from *A. ciliata*, of which it has by no means the habit. It has as much the character of an annual plant as *A. serpyllifolia*, which grows along with it.'

We have at Kew recent specimens of the same plant from the same station, received from M. Favrat and Barbey, under the name of *A. ciliata* var. *laxior* = *A. gothica* Gren. non Fries, but in point of fact it approximates to the Scandinavian *gothica* very closely.

A. norvegica Gunner, Fl. Norveg. ii, 144.—*A. norvegica* was characterised as a species by Bishop Gunner as far back as the year 1772. It has not nearly such a wide range of distribution as *ciliata*, being restricted on the continent to Norway and Lapland. As represented by Fries in Herb. Norm., v. 35, it has a perennial root, oblanceolate leaves with a glabrous surface and margin, 1-2-headed short densely-tufted flowering stems, oblong sub-acute glabrous sepals and petals but little longer than the calyx. The well-known Shetland plant, figured Engl. Bot., tab. 2852 (ed. iii, tab. 237), quite agrees with the Herbarium Normale examples. We have it also from Inch-na-damph in Sutherlandshire, and it is said to have been gathered in Orkney. We have it also from Spitzbergen, gathered by Sabine, and from Iceland, gathered by Babington and Sir George Mackenzie. The Iceland specimens are laxer and taller than the

ordinary form, and I see Nyman cites '*A. gothica* Payk. Hb. Island.' under *A. ciliata*. The plant figured in 'Flora Danica,' tab. 1269, is very weak and lax. The English Botany figure is much more typical and satisfactory.

A. gothica Fries, Novit. Mant. alt., p. 33; Herb. Norm., v. 34; Fl. Danica Suppl., tab. 15. This was first noticed by Wahlenberg in 1824 as a variety of *ciliata*, and was first characterised as a species by Fries in 1839, who dealt with it as an endemic Gothland species. It bears the same relation to *norvegica* that *fugax* bears to *ciliata*. It has an annual root, many ascending stems 2-3 in. long, spaced-out oblong acute leaves, glabrous or faintly ciliated on the edge, 1-4 flowers to a stem, oblong acute sepals, petals and capsule scarcely longer than the calyx. The figure in 'Flora Danica' above cited is excellent and characteristic.

I visited the Ribblehead station the second week in September, and found the plant easily from Mr. Rotheray's direction. Some of the specimens I cannot distinguish from the Scandinavian *gothica*; others agree more nearly with the Scandinavian and Shetland *norvegica*. The plant occupies a small area by the side of a road, which not long ago has been copiously mended with limestone. It is associated with *Arenaria serpyllifolia* and *Tussilago Farfara*, and the station is about 600 ft. above sea-level. The locality, standing alone, is not satisfactory as regards the nativeness of the plant, and I expect, confidently, that on further search it will be found upon the limestone cliffs of the neighbouring mountains. Ingleborough, Penyghent, and Whernside are all three within a few miles of Ribblehead, and there are vast areas of limestone scars and limestone pavement within a circuit of twenty miles.

To my mind, all the forms which I have enumerated are mere varieties of one and the same species. From a botanico-geographical point of view, the whole series of facts is most interesting, especially the erratic way in which a widely-spread arctic-alpine species is dispersed in Britain, and the way in which a perennial is modified into an annual to suit altered circumstances of station. Taking *ciliata* as the type, we may regard *frigida* and *norvegica* as high alpine or boreal, and *fugax* and *gothica* as low-land forms.

NOTE—ALGÆ.

Cylindrospermum macrospermum near Halifax.—This beautiful Algæ is now in fine condition in Mapledean Clough, Norland, near Halifax. The spore-cells are to be seen in all stages of development; also the cilia-like appendages on the heterocysts. Any member of the Yorkshire Naturalists' Union who desires may have some forwarded on communicating with the writer.—CHAS. CROSSLAND, 4, Coleridge Street, Halifax, July 23rd, 1889.

THE YORKSHIRE NATURALISTS' UNION AT KIRKHAM ABBEY AND ACKLAM BROW.

THE Yorkshire Naturalists' Union brought their excursion programme for 1889 to a close on Wednesday, September 4th, when they paid a visit to the beautiful valley of the Derwent. The ground was chosen with a view to bringing all the forces of the Union into play, and lay entirely in the East Riding. The members from Leeds and the West were up betimes, reaching Kirkham Station soon after nine o'clock. At half-past ten they were joined by the members of the Malton Society and others. The first move was made to Kirkham Abbey, which according to Mr. Fowler Jones, was built and endowed by Walter L'Espec in memory of his only son, killed while out riding at Firby. The archway in the gatehouse, in the Early Decorative period, is a charming piece of work. On the face of it are carved the arms of Clare, Plantagenet, Roos, and Vaux, the bearings of Clare, Earl of Gloucester. After a further examination of the ruins, the Rev. E. Maule Cole, M.A., F.G.S., with whom was Mr. Alfred Harker, M.A., F.G.S., and about a dozen other geologists, proceeded to Acklam Brow, whence, notwithstanding the haze, an extensive view of the surrounding country was obtained. From Leavening the geologists returned by carriage to Malton.

A second party, consisting mainly of conchologists and botanists, wandered down the river-bank to Howsham Woods, permission having been granted by Sir Charles Strickland. Here the immense number and varied colouring of the numerous species of fungi formed a chief attraction. After ranging the woods, and making them disclose their hidden treasures, the party ascended the hill to the Lady Ashes on Spy Hill, where a short halt was called, and a glorious view obtained. To the left, down by the river-side, lay the Elizabethan pile known as Howsham Hall, while on the horizon, almost lost in the dim distance, were seen the two towers of York Minster. On the opposite side of the valley the grey tower of Crambe Church rose among the trees, and a little to the right the white spire of Whitwell, and, on the outskirts of the Castle Howard park, the monument erected to the memory of George, Earl of Carlisle, caught the eye. The way now lay through the pretty village of Westow, and thence to Huttons Ambo Station. Here they were joined by a third party, who, under the guidance of Mr. T. P. Longster, of Malton, had investigated Firby Wood, thanks to the kindness of Mr. E. C. Taylor. The united parties reached Malton by train soon after four o'clock, and thoroughly enjoyed the tea provided at the Crown Hotel.

At a quarter-past five an adjournment was made to the rooms of the Literary Society, which had been kindly placed at the disposal of

the Union. Here, after the sectional meetings had taken place, the general meeting was held, under the chairmanship of the Rev. W. C. Hey, M.A., York. The minutes of the previous meeting were taken as read, and confirmed. The following new members, who had been duly proposed and seconded, were elected:—J. J. Marshall, Market Weighton; J. D. Taylor, Halifax; James Downe, Malton; Rev. Wm. Spiers, M.A., F.G.S., F.R.M.S., etc., Hull, one of the editors of the 'Wesley Naturalist'; William Stonehouse, Whitby; John T. Stewart, Scarborough; and Miss Ada Maria Spiers, Sheffield. The following ten Societies were represented at the meeting:—Liversedge, Bradford, Leeds (three societies), York, Malton, Doncaster, Practical Naturalists' Society, Harrogate, and Hull Geological Society. Mr. Robert Cook then proposed a motion, calling upon the members of the Union to give their best thanks to Mrs. St. Quintin for the kind permission which she had given them to visit Kirkham Abbey; to Sir Charles Strickland, who had allowed them to range Howsham Woods; and to Mr. E. C. Taylor, for permitting them to investigate Firby Woods. They were also indebted to the Rev. E. Maule Cole, Mr. A. H. Taylor, and Mr. T. P. Longster for their services as guides, and to the several gentlemen who had made contributions to the programme. Their thanks were also due to the members of the Malton Literary Institution for the use of their rooms. The vote of thanks having been seconded by Mr. W. Dixon of Hull, and put to the meeting, was carried unanimously.

For the Vertebrate Section, its secretary, Mr. James Backhouse, jun., F.Z.S., of York, reported that twenty-three birds (nineteen residents and four migrants), four mammals, two amphibians, and a fish had been reported, the list being as follows:—

Resident Birds.

Turdus musicus.
Turdus merula.
Erithacus rubecula.
Accentor modularis.
Motacilla lugubris.
Troglodytes parvulus.
Parus cæruleus.
Parus britannicus.
Linota rufescens.
Certhia familiaris.
Fringilla cœlebs.
Pyrrhula europæa.
Emberiza citrinella.
Alcedo ispida.
Corvus corone.
Corvus monedula.
Garrulus glandarius.
Columba palumbus.
Gallinula chloropus.

Migrants.

Phylloscopus collybita.
Phylloscopus sibilatrix.
Hirundo rustica.
Cotile riparia.

Mammals.

Shrew.
Mole.
Rabbit.
Hare.

Amphibia.

Frog.
Newt.

Fish.

Pike.

For the Conchological Section the report was given by Mr. A. H. Taylor, of Malton, as follows:—Walking alongside the Derwent from Kirkham Abbey to Howsham Woods were found *Limnæa peregra*, *Planorbis vortex*, and *Pl. complanatus* in a weedy pond near the river. In Howsham Woods diligent search was made for *Helix fusca*; the members were compensated for want of success in this direction by finding *Limax arborum*—a species new to the East Riding. There were also found here:—the four *Arions*, *Limax maximus*, *L. agrestis*, *Succinea putris*, *Vitrina pellucida*, *Zonites cellarius*, *Z. alliarius*, *Z. nitidulus*, and *Z. crystallinus*, *Helix nemoralis*, *H. arbustorum*, *H. sericea*, *H. rotundata* with var. *alba*, and *H. hispida*, *Clausilia rugosa* and *C. laminata*, and *Zua lubrica*. In a roadside pond near Westow *Limnæa palustris* turned up, and in returning by the river Derwent were fished up *Sphærium corneum*, *Pisidium pusillum*, *Bithinia tentaculata*, and *Ancylus lacustris*. *Vitrina pellucida* was also amongst the day's spoils, making a total of thirty species (including the variety), besides some finds by the Acklam Brow party, of which no report was furnished to the Section.

The Entomological Section was not represented, and no report was given, but the occurrence of several common insects was noted, such as *Dyticus marginalis*, *Polyommatus alexis*, etc.

For the Botanical Section Mr. H. T. Soppitt, of Bradford, reported that about 180 specimens of flowering plants were noted, amongst which were:—

Actæa spicata, (found in Firby Woods, by Mr. Edwin Stoks, of Leeds).
Nasturtium amphibium.
Geranium pyrenaicum.
Myriophyllum verticillatum.
Hottonia palustris.
Utricularia vulgaris.
Linaria minor.
Lysimachia vulgaris.
Verbascum thapsus.
Rumex hydrolapathum.
Parnassia palustris.
Poa compressus.
Carex muricata.

No attention whatever was paid to Mosses, Hepaticæ, Lichens, or Algæ, but of Fungi about 70 species were observed, including many that are generally distributed and common. *Paxillus involutus* was conspicuous by its absence. Amongst the less common species were the following:—

Agaricus (Lepiota) procerus Scop.
Agaricus (Lepiota) rachodes Vitt. (abundant in Firby Woods).
Agaricus (Mycena) acicula Schæff.
Agaricus (Mycena) luteo-albus Bolb.
Agaricus (Pholiota) pumilus Fr.
Agaricus (Inocybe) obscurus.
Agaricus (Inocybe) fastigiata.
Lactarius pallidus Fr.
Russula granulata Cke.
Puccinia sessilis Schneid.
Puccinia baryi B. & Br.
Chlorosplenium æruginosum (Flo. Dan.)
Lachnea hemisphærica Wigg. (Several pretty specimens of which were found in Howsham Wood by Mr. W. Denison Roebuck.)

For the Section of Micro-Zoology and Micro-Botany, its secretary, Mr. J. M. Kirk, of Doncaster, reported that the organisms found between Kirkham Abbey and Huttons Ambo, in the small streams, were as follows :—

Rotatoria.

Floscularia ornata.
Stephanoceros eichornii.
Pterodina patina.
Lindia torulosa.
Diglena lacustris.
Melicerta ringens.
Rotifer vulgare.
Hydatina senta.
Megalotracha flavicans.

Infusoria.

Vaginicola crystallina.
Trochilia sigmoides.
Loxodes bursaria.
Scyphidia rugosa.
Chetonarus larus.
Paramecium aurelia.
Vorticella microstoma.
Nassula elegans.
Epipyxis utriculus.
Epistilis anastatica.
Dileptus folium.
Amphileptus fasciola.
Chilodon cucullulus.
Arcella vulgaris.
Chætomonas globulus.
Carchesium polypinum.
Uvella virescens.

Crustacea.

Gammarus pulex.

Entomostraca.

Cyclops quadricornis.

Diatomaceæ.

Pinnularia (various).

Desmidiaceæ.

Closterium lunula.

Confervoideæ.

Volvox globator (spores).
Gonium pectorale.

For the Geological Section, its president and leader, the Rev. E. Maule Cole, M.A., F.G.S., conducted a party of ladies and gentlemen, in the first instance, to the quarries at Westow, where the Millepore, or Whitwell Limestone of the Lower Oolites has been largely quarried on both sides of the road to Pocklington. The limestone was found to be intensely oolitic in structure, most of the grains being globular or oval, but a few curiously elongated. The blocks, as usual, were blue-hearted inside, very similar to the beds at North Cave, the outer drab-coloured coating, several inches thick, being due to oxydation. Several fossils were obtained, amongst them a *Gervillia*, *Lima*, *Pecten lens* and *fibrosus* (?) small *Phasianella*, *Isocardia*, and *Cardium*, the so-called 'Millepore' not being found. Crossing the Abbey Lands of Lower Lias, the party next proceeded to a spur of the Oolites, running from Gally Gap to Leavening. The latter village stands on a terrace of Lower Calcareous Grit, resting on Oxford Clay, and supported by Kellaways Rock, which is visible just below the village on the left. Above the village a beautiful limpid stream of water was seen, issuing from the base of the Chalk, and it was pointed out by the leader that similar streams are frequent all round the outer margin of the Wolds, whilst on the inner or Eastern side, only two are to be found, viz., at Duggleby, and at

Thixendale. A move was next made to the scene of the landslip on Leavening Brow, where there is an exposure of Red Chalk, with a trace of Neocomian (6 in.) below. The latter is, doubtless, not in situ, but is easily recognised as the bed described by Mr. W. Hill, (Q.Y.G.S., No. 175), 'yellowish-brown sandy material, with quartz, and dark-coloured oolitic grains and nodules of Ironstone showing oolitic structure.' Mr. Cole then led the way to the top of Woonig Nab, between Leavening and Acklam, whence a magnificent view, described in the circular, may be seen under favourable conditions. Unfortunately, on the present occasion, there was a thick haze, which quite concealed the glories of the scene. Ascending to the top of the Wolds (751 ft.) several large tumuli and entrenchments were pointed out and briefly described, and then a move was made across the fields, to show the characteristic features of the scenery produced by the geological formation in the shape of Nabs. The base of the Chalk is at this point 500 ft. above sea-level. On the sides of the Wolds, facing north, terraces of Lower Calcareous Grit are to be seen, exactly similar to the Nabs which appear on the Northern slopes of the Tabular Hills. The top of each nab, or projecting spur, is composed of Lower Calcareous Grit, the sides of Oxford Clay, and the base of Kellaways Sand Rock. On one of these nabs, the site of an ancient castle of the Fossards, built more than 700 years ago, was pointed out; no trace, however, of this now remains. After a very enjoyable walk, the party returned to Leavening, and thence, in carriages, to Malton.

A hearty vote of thanks to the chairman, proposed by Mr. J. M. Kirk, of Doncaster, and seconded by Mr. T. J. Blanche, Secretary of the Malton Natural History Society, concluded the meeting.—E.P.K.

NOTES AND NEWS.

There is a serious erratum in the note on the derivation of mushroom at p. 278 of our September number. The word 'korí' (thorn) was printed 'koú,' which latter does not exist in the gypsey tongue.

In the September number of our Liverpool contemporary 'Research,' our valued friend, Mr. S. A. Adamson, F.G.S., has an interesting and remarkably well-illustrated article on the 'Geology of Scarborough and District,' being the fifth of a series of articles on the scientific aspects of health resorts.

Referring to the notice of the 'Fourstones' at Bentham, given at p. 311 of our current volume, Mr. R. R. Balderston (whose opinion coincides with that expressed by Mr. Hardcastle), writes to disclaim having reported it as an Erratic, although he had entered it under the heading 'Isolated Boulder' in a printed schedule furnished by the Boulder Committee.

The forthcoming issue of a new bird-book is announced. It is to be entitled 'British Water Birds, an introduction to their Study,' and is from the pen of our old contributor, Rev. H. A. Macpherson, M.A., of Carlisle. It is to be illustrated by plates drawn by Mr. F. O. Pickard-Cambridge, and special attention will be paid to descriptions of the young and nestling birds.

Naturalist,

THE BRITISH ASSOCIATION AT NEWCASTLE.

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,—There is, happily, no lack of material on which to base a report of the British Association Meeting in Newcastle in so far as its proceedings affect Yorkshire.

Four societies in the county were represented officially, viz.:—Leeds Geological Association, in the person of Mr. S. A. Adamson, F.G.S.; Malton Field Naturalists' and Scientific Society, by Mr. M. B. Slater, F.L.S.; Yorkshire Geological and Polytechnic Society, by Mr. J. W. Davis, F.G.S. (though only in name, for he was not present); and the Yorkshire Naturalists' Union by your Delegate. In addition to the above, the following Yorkshiremen served on one or other of the Sectional Committees:—J. G. Baker, F.R.S., F.L.S.; Sir I. Lowthian Bell, Bart., D.C.L., F.R.S., F.C.S.; G. Brook, F.L.S.; Prof. A. Denny, F.L.S.; T. Fairley, F.R.S.E.; C. P. Hobkirk, F.L.S.; Prof. A. Lupton, M. Inst. C.E., F.G.S.; S. Lupton, M.A.: Prof. L. C. Miall, F.G.S.; Canon Isaac Taylor, D.D.; Prof. W. C. Williamson, LL.D., F.R.S.; and J. W. Woodall, M.A., F.G.S.

Every member of the General Committee was presented with three handbooks. In that which treated of the 'Geology and Natural History of Northumberland and Durham,' we could not fail to be pleased with the tribute which was paid in the introduction to 'the very useful yearly Bibliographical lists, relating to North Country Natural History and Geology which *The Naturalist* has contained of late years.'

The first conference of delegates of Corresponding Societies was held on Thursday, September 12th, under the presidency of Mr. F. Galton, M.A., F.R.S., F.G.S., F.R.G.S.; the Corresponding Societies' Committee being further represented by Prof. Lebour, F.G.S., Secretary; Mr. W. Whitaker, B.A., F.R.S., F.G.S., and Mr. W. Topley, F.R.S., F.G.S., A.I.C.E.

The Chairman said it must be satisfactory to the delegates that, by the utility of their proceedings, and the business-like way in which such proceedings were conducted, they were gradually growing into an important and integral part of the British Association. He thought it would be better for them to follow the precedent of last

year, and that he should begin by moving that the report of the Corresponding Societies' Committee to the General Committee should be taken as read. This was carried.

This report contained the following paper by Professor Bayley Balfour, which is too valuable to omit or condense.

Life-histories of Native Plants. '*Suggestions for those studying the Life-histories of British Flowering Plants*:—

'1. Seeds should be collected, and opportunity may be taken at the time of collection to note how they are disseminated in nature—whether the fruit opens or not, whether they have appendages for promoting transport by animals or otherwise, whether they have colour or other features of attraction, etc.

'2. The seeds being sown, their germination should be watched; its rapidity and manner noted. The variations and differences between albuminous and ex-albuminous seeds are worthy of special note. The movement of the parts of the embryo in germination until it acquires its fixed position are also deserving of study. Further, the form of the parts of the embryo is various and instructive.

'3. The development of the seedling into the adult can be readily watched in annuals and biennials and smaller perennials. The succession of leaves after the cotyledons should be noted, and the forms which the leaves assume, and their positions and spread. The relative succession of buds in or adjacent to the axils of the later leaves and of the cotyledons should be observed, as also the ultimate fate of the buds developed. This will give a clue to the branching of the main axis of the plant upon which its whole form and habit depend.

'4. An important point to look at in the development is the amount, character, and position of any clothing of hairs the seedling may possess.

'5. The development of the underground part of the seedling must not be neglected. The continuance of the primary root and its branching or its replacement by adventitious roots are points for particular attention, and also the formation upon it of any excrescences or buds. A sufficient number of seedlings must be grown to allow of proper study of these features.

'6. The form of branching of the stem and leaves may be studied in the mature plant, which may be gathered wild. The formation of false axes should be specially looked for, and the complex relations often resulting from branching, may be worked out upon the young top of a mature plant. It is not necessary to wait for the maturing of the seedling, but reference back to the seedling

will show whether any observed relations are of late or early development in the life-history.

'7. In the case of perennials, the mode of perenniation is an interesting feature for observation, as well as the methods of vegetative propagation. In some cases the two processes are merged in one. Properly to understand perenniation the perenniating portions must be examined at all periods of the resting season, as well as when they are starting anew into vegetative activity. Seedlings of perenniating plants watched during two or three seasons, will give a clue towards elucidation of the development.

'8. When the seedlings begin to form flowers the relation of the flower-shoots to the vegetative organs should be noted, and especially their sequence with reference to vegetative shoots. The succession of the flowers should be noted, as of course should be their structure and their adaptations to proper pollination. Many seedlings will not, of course, flower for years, and the sequence of flowers in such plants—and, indeed, in all cases—may be well traced in the mature plant growing wild.

'9. After flowering and pollination, the development of fruit must be studied. The parts concerned in forming fruit, the adaptations to scattering of the fruit or seed, are points to be precisely noted.

'10. The presence and position of any nectar-secreting structures, outside as well as inside the flower, are of much significance, and they should be carefully studied.

'11. In connection with every point observed of structure and development, the observer should ask himself—Why is this? What is this for? and endeavour to obtain some answer to the query.

'12. A series of observations upon a specific plant made by a careful observer will enable him or her to draw up a complete history of its life, such as is hardly to be found recorded at the present day.

'I may add, as a corollary, that an interesting field for observation, which local societies might do good work in, is that of the relation of plants to animals as food-plants. Some are discarded by browsing animals, others are preferred, and there are degrees of favouritism. Is there any principle of selection?'

The Chairman next invited the delegates to make statements respecting the work done by the committees appointed last year, or in connection with other subjects referred to in the report.

A Catalogue of Ancient Monuments.—Mr. W. Gray, M.R.I.A., said that at the request of the Belfast Naturalists' Field Club, he had prepared a catalogue of the monuments and settlements of the counties of Antrim and Down, and he had prepared

maps on which they were marked in accordance with the recognised code of signals adopted by the International Congress on Archæology a few years ago.

Mr. John Evans, F.R.S., said the Society of Antiquaries had undertaken an archæological survey of the country, and they intended to publish maps showing all the pre-historic monuments and remains.

Geological Photographs.—Your delegate, speaking on behalf of the Yorkshire Naturalists' Union, referred to the Boulder Committee, which had this year submitted some fifty reports to the British Association; to the Yorkshire Fossil Flora Committee, which worked on the same lines as the British Association Committee; to the lately-formed Sea-Coast Erosion Committee, and to the Marine-Zoology Committee; and then proposed the formation of a Committee to arrange for a collection of photographs illustrating the geological features of each county of the United Kingdom. This gave rise to a long discussion, in which Mr. John Evans, Mr. Adamson, Rev. H. H. Winwood, The Dempster Gill, Mr. W. Grey, and Mr. Jeffs, the originator of this movement, took part. As the Chairman held that such a resolution could not be brought before that meeting, it was informally agreed to bring the matter before the Committee of the Geological Section.

Geological Record.—Mr. W. Topley appealed to the delegates to bring the publication of the Geological Records before their respective Societies, and urge them to give it greater pecuniary support.

Earth Tremors.—Professor Lebour spoke of the work of the Earth Tremors Committee, and said that the spot selected for the instruments was too near the sea, and not suitable for the experiments. They were having a new set of instruments made, and placed in another position. They were just ready for observation, but no observation had yet been made. In reply to questions he said that two instruments would be placed underground and two on the surface, so that for the first time the observations would be taken simultaneously. The readings were automatic, and taken continuously. This concluded the business.

On Monday, the 16th, twenty-five of the delegates and their friends dined at the County Hotel, Mr. W. Topley occupying the chair.

The second Conference took place on Tuesday, the 17th, under the presidency of Mr. W. Topley. After the minutes of the preceding meeting had been read by Prof. Lebour, the following subjects were brought before the Conference:—

Temperature Variation in Lakes, Rivers, and Estuaries.—Dr. H. R. Mill, of the Royal Scottish Geographical Society, drew attention to the report of the Committee on the Surface Temperature of Rivers and Estuaries, and said he should be glad if the delegates present representing societies which had not yet seen their way to take up the work of making observations on the waters in their own neighbourhood, would endeavour to find out some of their members who would be able and willing to make such observations. If they would communicate with him, instructions would be immediately sent out for setting the observations a-going.

Mr. J. Brown, of the Belfast Natural History Society, thought the work might be taken up by the rainfall observers.

Mr. A. S. Reid, M.A., said that the East Kent Natural History Society had taken up the work.

Underground Waters.—Mr. De Rance said that the Committee was appointed to inquire into the water obtained from the New Red Sandstone and Permian formations, as a source of water-supply to towns. A series of questions had been drawn up, which practically grasped the whole subject, and they would be supplied to those provincial secretaries who might desire to have them.

Erratic Blocks.—Dr. Crosskey, in presenting his seventeenth Report to the Geological Section, stated that care should be taken to note the point of origin of the boulders, their elevation and distribution, and whether they ever occurred in relation to shell-beds, and said that their position should eventually be marked on contour maps. He held up the Yorkshire Naturalists' Union as an example for other counties to follow. In answer to Mr. W. Grey, Mr. De Rance said it was important that the boulders of Ireland should be recorded in the same manner as they were in England, and suggested that a Committee might be formed in Ireland, which would eventually be amalgamated with the present English Committee.

Sea-Coast Erosion.—Mr. W. Topley asked local societies to note how far the rate of erosion had been accelerated by artificial means, such as by the removal of shingle, the erection of buildings, or by sea-walls constructed on false principles. He asked them to consult old plans, documents, and deeds, and suggested that local observers might take measurements from some known spot to the sea, and in a year or two take other observations, and by this means ascertain the amount of erosion which was taking place.

Geological Photographs.—Prof. Lebour said that the recommendation which had been sent from their last meeting had been received with the greatest unanimity by the Committee of the Geological Section. They had appointed a Committee for making

a Geological Photographic Survey of the United Kingdom, with Prof. Geikie as chairman and Mr. O. W. Jeffs as secretary. Mr. Adamson was also on this Committee. This was a matter in which local societies could render valuable aid, for it required some person on the spot to take photographs of fleeting sections, such as those exposed in railway cuttings. It was intended to keep a register of all photographs which were accepted by the Committee.

The Committee of the Biological Section was represented by your delegate, who was authorised to bring two subjects before the Meeting.

Disappearance of Native Plants.—The work of this Committee had been restricted hitherto to Scotland, and the attention of its correspondents had been confined to complete or threatened extinction. They found that injudicious actions of botanists themselves and of botanical exchange clubs had been a potent factor in the changes which had taken place, and that the 'dealer' and 'collector' figured largely, especially in connection with the disappearance of ferns. They felt, however, that neither local dealers nor their customers were, as a rule, amenable to any ordinary appeal, or to sentimental considerations, and would suggest, therefore, that the local Natural History Societies or Field Clubs should keep careful guard over any rare plants to be found within their respective spheres of action, and by appeal to the owner, or in other preferable way, should endeavour to effect their preservation.

Invertebrate Fauna and Cryptogamic Flora of the Fresh-Waters of the British Isles.—This was a new Committee, with Canon Norman as chairman and Prof. J. C. Ewart as secretary. Its object was to make a systematic investigation of the minute animal and vegetable life of our inland waters. There was an immense amount of latent microscopical energy in the country, which this Committee might be the means of calling forth and directing. Observers were requested to note the physical features of the stream or lake which they studied, and to take the temperature at different periods of the year, and in the case of lakes, at various depths.

Handbooks to Museums.—Mr. John Brown (Belfast) thought it would be useful if the local societies would draw up notes on some of the more interesting objects in their museums, that visitors might know at once what were the chief features to which they should direct their attention.

Geography.—Signor J. Batalha-Reis, delegate from the Lisbon Geographical Society, spoke of the good scientific results which might follow from a conference of the Geographical Societies of the

world, for geography included all the sections of the British Association.

Mining Institutes.—Prof. Lebour said the Committee on Explosives was now in full working order. They had taken up the work of examining the properties of so-called flameless explosives, the main object of which was a philanthropic one. They wished to avoid the possibility of a flame being projected from a blown-out shot in an atmosphere laden with flying particles of dust. If coal-dust was there, it would carry an explosive further than it would otherwise go, and change what might be a comparatively trifling accident into a catastrophe of a very destructive character. There was another Committee, consisting of the Mining Institutions of the North of England, of the Midlands, and of South Wales, which had joined together for the purpose of carrying out a series of experiments with fans. The reports of that joint committee were of very great value to engineers, not only connected with mines, but with other works requiring artificial ventilation. They would be exceedingly glad to receive any hints or information which would tend to the better securing of the objects he had mentioned.

Tumuli.—Dr. Garson, who represented the Anthropological Section, requested that before any burrow or tumulus were opened, a paper containing a series of directions should be obtained from the Anthropological Institute, Hanover Square, London, in order that no object of interest should be overlooked.

Status of Delegates.—Prof. Lebour proposed a resolution to the effect that the relation of delegates to the Sectional Committees, as at present constituted, was unsatisfactory, and should be reconsidered by the Corresponding Societies' Committee. Your delegate seconded the motion, which was carried, and the proceedings closed.

At the meeting of the General Committee, held on Monday, the 16th, it was agreed that the next meeting of the Association should commence at Leeds, on Wednesday, the 3rd of September, 1890, under the presidency of Sir F. A. Abel, C.B., D.C.L., F.R.S.

The Report of the Committee on the Migration of Birds, of which Mr. John Cordeaux is secretary, which was appointed at Bath to make a digest of the observations on Migration of Birds at Lighthouses and Lightvessels, which have been carried on during the past nine years, was read in the Biological Section by your delegate. The Committee reported that one of their number, Mr. W. Eagle Clarke, had undertaken to prepare the digest of the observations. They felt that no apology was necessary for the non-completion of the digest this year, and they respectfully solicited their re-appointment with the same object as before.

The following papers, which are of interest to Yorkshire naturalists, were read in their respective sections :—

J. G. Baker.—The Occurrence of *Arenaria norvegica* in Yorkshire.

R. Tiddeman.—On Concurrent Faulting and Deposit (Craven, Yorkshire), with a note on Carboniferous Reefs.

G. W. Lamplugh.—Report on an Ancient Sea Beach near Bridlington.

Dr. H. W. Crosskey.—Report on Erratic Blocks (this Report contained particulars of about fifty erratics supplied by the Yorkshire Boulder Committee).

G. W. Lamplugh.—Note on a new locality for the Arctic Shell-beds of the Basement Boulder Clay on the Yorkshire Coast.

Many of the subjects touched upon in the above report are beyond the scope of our Union, but there are others in which we are well qualified to render assistance. We have already four Committees working in harmony with the British Association, and the writer hopes that the Council will, at the annual meeting at Hull, recommend the formation of three more Yorkshire Committees :—

1. To collect information as to the Disappearance of Native Plants from their Local Habitats.

2. To investigate the Invertebrate Fauna and Cryptogamic Flora of the Fresh Waters.

3. To make a Photographic Geological Survey of the County.

September 26th, 1889.

NOTES—LEPIDOPTERA.

Colias edusa near Scarborough.—I have to record the capture of a very good specimen of the Clouded Yellow Butterfly, on 15th Sept., in Mr. W. Rowntree's garden at Westwood, Scarborough.—A. H. Burtt, 47, Newborough, Scarborough, Oct. 24th, 1889.

Colias edusa near Lincoln.—Seeing notices in your pages of *Colias edusa* having been caught in Yorkshire, I may mention that on the 29th of August I caught one near Lincoln, a male. It was a small but good specimen. On the following day I saw another, not a quarter of a mile away from where the first was caught, but was not fortunate enough to catch it. Since then, although I visited the spot once or twice, I have not seen another one.—W. Hawker Smith, 95, Adelaide Road, South Hampstead, N.W., October 2nd, 1889.

Variation in Arctia mendica at Huddersfield.—At the meeting of the Entomological Society of London, held July 3rd, 1889, Mr. G. T. Porritt exhibited a remarkable series of *Arctia mendica* L., bred from a small batch of eggs found on the same ground at Grimescar, Huddersfield, as the batch from which the series he had previously exhibited before the Society was bred. This year he had bred forty-five specimens, none of which were of the ordinary form of the species : as in the former case, the eggs were found perfectly wild, and the result this year was even more surprising than before.—W. W. Fowler, Hon. Sec.

Acherontia atropos in Notts.—The larvæ of this species are unusually abundant this year. A friend secured three examples, and while he was telling me of this, one was brought to me. On placing it in a flower-pot of moist earth it burrowed almost immediately, leaving a large hole to mark the place of its retirement. A pupa obtained soon after I placed on the surface of the earth in the same pot and lightly covered it, but it soon kicked the clothes off, and persistently refuses to be covered, except to a small extent at the head end.—W. A. Gain, Tuxford, September 24th, 1889. Naturalist,

No. 173. DECEMBER 1889.

THE NATURALIST:

A

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NATURAL HISTORY FOR THE NORTH OF ENGLAND.

CONDUCTED BY

WM. DENISON ROEBUCK, F.L.S.,
Sunny Bank, Leeds;

WITH THE ASSISTANCE IN SPECIAL DEPARTMENTS OF

J. GILBERT BAKER, F.R.S., F.L.S., Royal Herbarium, Kew;

CHAS. P. HOBKIRK, F.L.S., Dewsbury;

W. EAGLE CLARKE, F.L.S., M.B.O.U., Museum of Science & Art, Edinburgh;

GEORGE T. PORRITT, F.L.S., F.E.S., Greenfield House, Huddersfield;

ALFRED HARKER, M.A., F.G.S., St. John's College, Cambridge;

W. BARWELL TURNER, F.C.S., F.R.M.S., 38, Sholebroke Avenue, Leeds.

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Cumbld. and Westld. Assoc.—Trans., No. 14, 1888-1889, 8vo. [The Association.
Alford Nautralists' Society.—Report for year 1889. [The Society.
Torrey Bot. Club.—Bulletin, Vol. 16, No. 10, Oct. 1889. [T. D. A. Cockerell.
Trenton Nat. Hist. Society.—Journal, Vol. 2, No. 1, Jan. 1889. [The Society.
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Robert Fisher—Flower-Land: an Introduction to Botany. 8vo, cloth, 240 pp., 1889. [Bemrose & Sons, publishers.
H. Saunders—Illustrated Manual of British Birds, Parts 15 to 20, 1889. [Gurney & Jackson, publishers.
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The Young Naturalist, Part 119, for Nov. 1889. [Mr. John E. Robson, editor.
The Zoologist, 3rd Series, Vol. 13, No. 155, Nov. 1889. [J. E. Harting, Editor.

Addresses wanted.—The Editors of the *Naturalist* would be glad to learn the present addresses of the following gentlemen:—

Mr. John Aitchison (formerly of Belford, Northumberland).
Mr. T. E. Denham (formerly of Rotherham and afterwards of Huddersfield).
Rev. Isaac Harding (Wesleyan minister, last at Mere Beck, Long Preston).
Rev. Adrian Peacock (formerly of Barkingside, Ilford, Essex).

LINCOLNSHIRE SAND AND CLAY PLANTS.

Rev. WILLIAM FOWLER, M.A.,
Vicar of Liversedge, Yorkshire; Vice-President of the Yorkshire Naturalists' Union.

In addition to the *maritime* and *moorland* sand-plants mentioned in former papers, there are several others occurring on the diluvial and alluvial strata which overlie the older formations, of which it may be well to give a list. Such strata are found on the Chalk Wolds and on the Oolitic hills, as well as on lower levels in the neighbourhood of Spilsby, Horncastle, Tattershall, and Sibsey near Boston. In some places stiff clay prevails, in others sand, or a mixture of sand and gravel, so that often within a few miles the character of the Flora altogether changes.

On the Clays are found:—

Anemone nemorosa.
Ranunculus Ficaria.
Cardamine pratensis.
Senebiera Coronopus.
Viola sylvatica.
Angelica sylvestris.
Dipsacus sylvestris.
Scabiosa succisa.
Pulicaria dysenterica.
Achillea Ptarmica.
Tussilago Farfara.
Arctium majus.
Hieracium boreale.
Primula vulgaris.
Lysimachia vulgaris.
Lysimachia Nummularia.
Lysimachia nemorum.
Anagallis arvensis.
Scrophularia nodosa.
Veronica hederifolia.
Lamium Galeobdolon.
Ajuga reptans.
Plantago major.
Listera ovata.
Epipactis latifolia.
Carex glauca.
Carex panicea.
Deeschampsia cæspitosa.
Bromus giganteus.
Bromus asper.
Ophioglossum vulgatum.
Equisetum maximum.

The above plants seem not only to grow on stiff clay, but to prefer it, so far as my experience goes, not only in Lincolnshire, but also in other counties.

On the sandy tracts we find:—

Papaver Argemone. Sawcliffe.
Papaver hybridum. Sawcliffe.
Corydalis claviculata. Tattershall.
Erophila vulgaris.
Sisymbrium Thaliana. Bromby.
Sisymbrium Sophia. Frodingham.

Senebiera didyma. Ferriby.
Lepidium campestre.
Lepidium Smithii.
Teesdalia nudicaulis.
Polygala vulgaris.
Silene anglica. Sandy lanes, near Gainsborough.
Cerastium semidecandrum.
Arenaria trinervia.
Arenaria serpyllifolia.
Sagina ciliata.
Sagina nodosa.
Spergula arvensis.
Hypericum humifusum.
Hypericum pulchrum.
Radiola linoides.
Geranium columbinum. Corby. Morton.
Erodium cicutarium.
Genista anglica.
Ulex europæus.
Ononis repens.
Ononis spinosa.
Trifolium arvense.
Ornithopus perpusillus.
Potentilla Tormentilla.
Alchemilla arvensis.
Saxifraga tridactylites.
Saxifraga granulata.
Sedum acre.
Peplis Portula.
Epilobium angustifolium.
Conium maculatum.
Conopodium denudatum.
Anthriscus vulgaris. Tattershall.
Daucus Carota.
Caucalis nodosa.
Galium verum.
Galium saxatile.
Galium tricorne.
Erigeron acre.
Filago germanica.
Filago minima.
Matricaria Chamomilla.
Senecio sylvaticus.
Carlina vulgaris.
Carduus nutans.
Onopordon Acanthium.
Centaurea Cyanus.
Arnoseris pusilla. Laughton.
Lactuca virosa. Saltfleetby.
Jasione montana.
Specularia hybrida.
Calluna Erica.
Erica Tetralix.
Erica cinerea.
Pyrola minor. Market Rasen.
Erythræa Centaurium.
Cynoglossum officinale.
Lycopsis arvensis.
Myosotis collina.
Myosotis versicolor.
Echium vulgare.
Solanum nigrum. Laughton.
Hyoscyamus niger.
Linaria Elatine.
Linaria spuria.
Digitalis purpurea.
Rhinanthus major.
Galeopsis Ladanum.
Galeopsis dubia. Twigmoor.
Teucrium Scorodonia.
Plantago Coronopus.
Scleranthus annuus.
Polygonum Hydropiper.
Rumex Acetosella.

Urtica urens.
Salix ambigua.
Salix repens.
Salix repens var. argentea.
Juncus bufonius.
Juncus squarrosus.
Scirpus setaceus.
Carex arenaria.
Carex muricata.
Agrostis canina.
Agrostis alba.
Agrostis vulgaris.
Aira caryophyllea.
Aira præcox.
Deeschampsia flexuosa.
Holcus mollis.
Holcus lanatus.
Molinia cærulea.
Poa compressa.
Festuca myurus. Laughton.
Festuca ovina.
Festuca rubra.
Nardus stricta.
Hordeum murinum.
Pteris aquilina.
Lomaria Spicant.
Athyrium Filix-fœmina.
Lastræa Oreopteris.
Howsham, Laughton.
Lastræa Filix-mas.
Lastræa dilatata.
Botrychium Lunaria.
Lycopodium clavatum.
Lycopodium inundatum.
Selaginella selaginoides.

The rarest and most interesting plants of Lincolnshire are those which grow on the Oolitic limestones which run through the county from north to south, but these I must reserve for a future paper.

NOTE—GEOLOGY.

Shap Granite Boulder near Spurn.—The recent heavy gales have completely exposed a remarkably fine boulder of Shap Granite near Spurn. It lies on the beach about five hundred yards south of Kilnsea Beacon, but before this notice appears in print will probably have been removed to Mr. Hewetson's garden at Easington. It is sub-angular, roughly measuring 38 × 28 inches; there are deep striæ or groovings in the direction of the long axis. It is smooth and polished-looking, and altogether a most beautiful example of an erratic. The many boulders and blocks of Mountain Limestone, Whinstone, and other rocks partly exposed in situ on this coast, as a rule, seem to show striæ running from N.W. to S.E.—John Cordeaux, Easington, November 11th, 1889.

NOTE—HEPATICÆ.

Cephalozia Lammersiana near Dewsbury.—In the early part of September last I was attracted by the abundance of a bright-green Hepatic in an old brick-pond at Bretton, wide of Dewsbury, tangled among the roots of *Juncus supinus* and its erect variety, *J. uliginosus*, which grow there profusely. I sent specimens to my colleague in the secretariate of the Botanical Section, Y.N.U., Mr. M. B. Slater, who states that my gathering is *Cephalozia Lammersiana* (Hübn.), a diœcious species coming very near the widely-distributed monœcious species, *C. bicuspidata*, and that they were the male plant only.

The flowers are terminal on the stems, and have single antheridia in the axils of the bracts. *Cephalozia Lammersiana* is not recorded in 'West Yorkshire' for the Calder drainage district; therefore, this will be an addition to the Flora for that portion of the West Riding, in Vice County No. 63.—P. Fox Lee, Dewsbury, November 16th, 1889.

THE DATE OF THE OCCURRENCE OF EMBERIZA CIOIDES AT FLAMBOROUGH.

W. EAGLE CLARKE, F.L.S., M.B.O.U.,
Natural History Department, Museum of Science and Art, Edinburgh; etc.

From the information furnished me by Mr. R. W. Chase and Mr. Matthew Bailey it would seem to be quite inexplicable as to how the date October 1887 ever came to be quoted for the occurrence of this bird.

Mr. Chase tells me that he sent Mr. Bailey's original letter—which I have had the advantage of perusing, and wherein the date is stated to be November 1886—to Canon Tristram, and this makes the confusion that has arisen the more surprising.

Mr. Matthew Bailey has kindly furnished the much desired information respecting the true date of this rare bird's occurrence at Flamborough. He says :—

'All I can say respecting the date for the rare Bunting is that October 1887, is a mistake; November 1886, is the correct date. It was caught alive on the beach, at the foot of the cliffs south of the headland, near to the Flamborough Head Light House, by William Gibbon, fisherman, of Flamborough. I bought it at the same time, and, thinking it something very rare, I preserved it. When caught, a gale of wind was blowing from the east.'

NOTE—ORNITHOLOGY.

Nightingales near Knaresborough.—I have pleasure in being able to put on record the occurrence and nesting of two pairs of Nightingales in some woods within a short distance of Knaresborough. I am not at liberty to be more precise as to the locality, as I have given an undertaking not to do so.—E. P. Knubley, Staveley Rectory, 21st August, 1889.

NOTES—FISHES.

Muller's Topknot off the Yorkshire Coast.—I obtained from our fishmongers to-day (November 4th) a very fine example of this rare fish (*Rhombus punctatus* Bl.) taken in a trawl-net off the Yorkshire coast. Messrs. Clarke and Roebuck, in their 'Handbook of Yorkshire Vertebrata,' have recorded several occurrences at Redcar, and the last at Bridlington taken May 27th, 1881.—John Cordeaux, Great Cotes, Ulceby, Lincs., November 7th, 1889.

The Porbeagle Shark on the Cumbrian Coast.—I have much pleasure in recording an occurrence of the Porbeagle Shark (*Lamna cornubica*) on the coast of Cumberland. The example in question was captured in a trawl-net about four miles off St. Bees, on October 30th. When being hauled up on the beach, it disgorged a quantity of plaice and other flat-fish, some of them being alive. It measured 7 ft. 9 in. in length, and from its dentition appeared to me to be immature. The heart struck me as rather small for so large an animal. Future research will probably prove that this species visits the north-west coast of England every year, and that it is by no means uncommon in our waters.—H. A. Macpherson, Carlisle, November 8th, 1889.

SHELLS OF THE LINCOLNSHIRE COAST.

H. WALLIS KEW, F.E.S.,

London; late Secretary to Naturalists' Society, Louth, Lincolnshire.

THE present paper, which contains such information respecting the shells of the Lincolnshire coast as I have been able to collect, is, for the most part, merely a record of shells collected on the beach —mostly dead, and often much water-worn—and as such I trust it will be useful to conchologists who may collect on the coast in the future; it is not, however, put forward as giving much actual and precise information respecting the littoral, estuarine, and marine mollusca which *inhabit* the shore, its estuaries, and the sea-bed beyond. References are made to all previously published records with which I am acquainted, but this list does not pretend to be complete in this respect, although, it is imagined, very little has been written on the subject.

I have pleasure in acknowledging my indebtedness to Mr. J. T. Marshall, Mr. B. Sturges Dodd, and Mr. Arthur Smith, of Grimsby, for kind co-operation and assistance, and indeed I have personally done little more than collect and arrange the information. The bulk of the records stand to the credit of Mr. Dodd, who has obligingly furnished detailed lists of species collected on the beach from Mablethorpe to Skegness, a distance of about sixteen miles; from Mr. Marshall, notes of a number of interesting forms have been received; and Mr. Smith has communicated the results of collecting done by him on about three miles of shore near Grimsby and Cleethorpes, in verification whereof he obligingly forwarded a number of specimens. As it seems very important that a local list, if it is to be of any use, should be duly authenticated, it may be well to state that, as regards records here published for the first time, specimens of every species (except in the one instance referred to below) have been seen by Mr. Marshall or Mr. Dodd; all the Lincolnshire shells in my possession, together with those received from Mr. Smith, were submitted to Mr. Marshall, to whom also, as I am informed, Mr. Dodd showed many of his shells, including all doubtful forms.

The coast of Lincoln, as is well known, does not present varied characters; indeed, from the Humber to the Wash we have one expanse of sand and mud, and little else. At low-water, during spring-tides, a bed of peat, abounding with stumps and roots of trees, may be seen cropping out from under the sand and underlying clay, and the sea-bed for many fathoms is said to be of this character. Such coasts as this are doubtless uninteresting enough from some

points of view, but to a naturalist they have their own peculiar charms, as all who are familiar with Mr. Cordeaux's writings will admit. Mr. Dodd has paid much attention to the drift débris of the coast, of which he has taken away and carefully examined large quantities, and some of which he sent to Mr. Marshall; many of the small species enumerated below have in this way been obtained. Mr. Dodd has obligingly communicated the following notes respecting the drift, which is generally blackish in colour from fragments of coal, of which it is largely composed. It contains large quantities of Sertularidæ, etc., together with sandy cases of annelides, young Echinus, various fossil fragments and other rejectamenta, including, of course, a few land and freshwater shells and aquatic insects washed down the marsh 'drains,' and it is intermingled with fragments of wood from the outcrop of the subterranean peat-bed, or so-called submerged forest; valves of *Pholas*, *Mya*, *Mytilus*, *Cardium*, *Mactra*, and *Solen* are conspicuous; and some molluscs, such, for instance, as the *Cardiums*, young of *Mya truncata*, *Scrobicularia alba*, *Venus gallina*, and occasionally *Saxicava rugosa*, are found among the débris in a living state. Tidal currents, rough seas, and change of wind cause alterations in the position of the drift; sometimes it is much spread and scattered, while at other times it becomes accumulated in large quantities over confined areas.

Of exotic shells, *Venus mercenaria* appears to have long been known in the Humber (Science Gossip, 1889, pp. 114-5); *Crepidula fornicata* comes with American oysters, which are deposited in the same estuary, and is found by Mr. Smith commonly on the Grimsby beach (Naturalist, 1888, p. 275); a specimen of *Nassa cornicula* has been found at Chapel by Mr. Dodd, by whom it is regarded as a ballast-shell, for wooden vessels are sometimes purchased at Hull and elsewhere, brought down the coast, stranded, and broken up during the winter. The species or form of *Trochus*, *T. conulus*, was stated by Mr. Bean to have been taken by his son, in a living state, attached to a sounding-lead, off the Lincolnshire coast, during his voyage in a collier from Newcastle to London; but, as Mr. Jeffreys states (British Conchology, iii. 332), the discoverer had then recently been in the Mediterranean, on the shores of which *Trochus conulus* is common.

A minute brachiopod found by Mr. Dodd in the drift, both at Skegness and Sutton, after having been submitted to Mr. Edgar Smith, the Rev. Merle Norman, and the Rev. Boog Watson, was described and figured as new to science, under the name of *Terebratula papillosa* Marsh., at pp. 186-190 of the fifth volume of the Journal of Conchology; subsequently, however, on the discovery of

other specimens, one imbedded in a matrix of limestone conglomerate, the presumed recent origin of the shell was considered untenable, and Mr. Marshall now agrees with Mr. Etheridge, to whom specimens were sent, that it is *Terebratulina striata* D'Orb., a cretaceous fossil (Journal of Conchology, v. 278).

ANOMIIDÆ.

Anomia ephippium L.

OSTREIDÆ.

Ostrea edulis L. Very common. Large beds are kept in the Humber, and with the American oysters placed there *Crepidula fornicata* is introduced, but it does not appear to live long.

PECTINIDÆ.

Pecten pusio (L.). Valves (B. S. Dodd).

Pecten varius (L.). Common; mostly valves.

VAR. **nivea** Macg. Near Chapel, in good condition (B. S. Dodd).

Pecten opercularis (L.). Common; mostly valves.

VAR. **lineata** DaC. Valves (B. S. Dodd).

Pecten tigrinus Müll. Valves; not plentiful (B. S. Dodd).

Pecten maximus (L.). (B. S. Dodd).

MYTILIDÆ.

Mytilus edulis L. Abundant; living.

VAR. **pallida** Marsh. Dead shells, in good condition (B. S. Dodd).

Mytilus modiolus L.

Mytilus barbatus L. Not plentiful (B. S. Dodd).

Modiolaria marmorata (Forb.). Two valves found (B. S. Dodd).

Modiolaria discors (L.). Young living specimens taken (B. S. Dodd).

ARCIDÆ.

Nucula nucleus (L.). Common; a great favourite with visitors to the sea-side because of the iridescence of the inside of the shell.

Leda minuta var. **brevirostris** Jeff. A few dead shells found (A. Smith). Tolerably plentiful in dredgings from Lynn Deeps taken by H.M.S. Porcupine, when on survey (J. T. Marshall).

Pectunculus glycymeris (L.). (B. S. Dodd).

Arca tetragona Poli. Valves; not plentiful (B. S. Dodd).

KELLIIDÆ.

Lepton squamosum (Mont.). (B. S. Dodd).

Montacuta bidentata (Mont.). In drift (B. S. Dodd).

Montacuta ferruginosa (Mont.). In drift (B. S. Dodd).

LUCINIDÆ.

Lucina borealis (L.). Young (B. S. Dodd).

Axinus flexuosus (Mont.). Valves (B. S. Dodd).

CARDIIDÆ.

Cardium exiguum Gm. Plentiful (B. S. Dodd).

Cardium fasciatum Mont. (B. S. Dodd).

Cardium nodosum Turt. Young shells (B. S. Dodd).

Cardium edule L. The cockle-beds are very extensive, and, as every visitor to the coast knows, little groups of people are generally to be seen 'cockling' on the flats when the tide is out.

VAR. **rustica** Chem. Mablethorpe; dead shells (H.W. K.).

VAR. **crenulata** Lmk. Plentiful; two interesting small forms obtained (B. S. Dodd).

Cardium norvegicum Speng. Valves (B. S. Dodd).

CYPRINIDÆ.

Cyprina islandica L. Occasionally.

Astarte triangularis (Mont.). In drift (B. S. Dodd).

VENERIDÆ.

Venus lincta Pult. In drift (B. S. Dodd).

Venus ovata Penn. (B. S. Dodd).

Venus gallina L. Not uncommon (B. S. Dodd).

Tapes aureus (Gm.). (B. S. Dodd).

Tapes virgineus (L.). (B. S. Dodd).

Tapes pullastra (Mont.). Rather uncommon (B. S. Dodd).

Tapes decussatus (L.). Valves; not plentiful.

TELLINIDÆ.

Tellina crassa var. **albida** Jeff. Not plentiful (A. Smith).

Tellina balthica L. Common. Lives in large numbers in the flats with the common cockle.

VAR. **rosea** Ckl. Mablethorpe (H.W. K., Naturalist, 1886, p. 172).

Tellina tenuis DaC. Moderately common.

Tellina fabula Gron. Moderately common.

Psammobia ferröensis (Chem.). Valves occasionally (B. S. Dodd).

Donax vittatus (DaC.). Valves; not abundant.

MACTRIDÆ.

Mactra solida L. Occasionally; living.
Mactra subtruncata (DaC.). Young; living (B. S. Dodd).
Mactra stultorum L. Abundant; living.
VAR. **cinerea** Mont. Common; living (B. S. Dodd).
Scrobicularia prismatica (Mont.). Valves (B. S. Dodd).
Scrobicularia nitida (Müll.). Valves (B. S. Dodd).
Scrobicularia alba (Wood). Common; living (B. S. Dodd).
VAR. **curta** Jeff. (B. S. Dodd).
Scrobicularia tenuis (Mont.). From the drift; scarce (B. S. Dodd).
Scrobicularia piperata (Gm.).

SOLENIDÆ.

Solen ensis L. Occasionally.
Solen siliqua L.

CORBULIDÆ.

Corbula gibba Olivi. Young shells; not plentiful (B. S. Dodd).

MYIDÆ.

Mya arenaria L. Common (A. Smith). In 1886 I saw some barge-men at Tetney carrying away a large number of these 'clams,' which they had dug out of the mud-flats adjoining the haven (H.W.K., Naturalist, 1886, p. 347).
Mya truncata L.
Mya binghami (Turt.). Scarce (B. S. Dodd).

SAXICAVIDÆ.

Saxicava rugosa (L.). Very common.
VAR. **arctica** (L.). (B. S. Dodd).

PHOLADIDÆ.

Pholas dactylus L. Mablethorpe (W. Gain, Naturalist, 1884, p. 31).
Pholas candida L. Common. This and the next species may be obtained living by digging during spring-tides. Very large quantities are sometimes thrown up on the beach.
Pholas crispata L.

DENTALIDÆ.

Dentalium entalis L. Dead; not plentiful (B. S. Dodd).

PATELLIDÆ.

Patella vulgata L. Not common; much worn.

VAR. **intermedia** Knapp. Mablethorpe; dead shell (H.W.K., Naturalist, 1886, p. 172).

Helcion pellucidum (L.). Occasionally (B. S. Dodd).

VAR. **lævis** (Penn.). Occasionally (B. S. Dodd).

Tectura virginea (Müll.). Occasionally (B. S. Dodd).

CAPULIDÆ.

Capulus hungaricus (L.). Occasionally found on the Grimsby shore; in good condition (A. Smith). Specimens not seen.

TROCHIDÆ.

Trochus magus L. Occasionally (B. S. Dodd).

Trochus tumidus Mont. Occasionally (B. S. Dodd).

Trochus cinerarius L. Plentiful. Living shells taken near high-water mark at Cleethorpes (H.W.K.).

Trochus umbilicatus (Mont.). Occasionally (B. S. Dodd).

Trochus zizyphinus L. Not very common; often worn. The description of a shell which Lister records for Lincolnshire in his 'Historiæ Animalium Angliæ,' seems to correspond, as Mr. Somerville thinks, with this species.

TURBINIDÆ.

Phasianella pullus (L.). Occasionally (B. S. Dodd).

LITTORINIDÆ.

Lacuna crassior (Mont.). Common.

Lacuna divaricata (Fabr.). Moderately common (B. S. Dodd).

Lacuna puteolus (Turt.). Not common (B. S. Dodd).

Littorina obtusata (L.). Fairly common.

Littorina rudis Maton. Common. Lives in great plenty with *Hydrobia ulvæ* in the muddy pools south of Saltfleet Haven; shells taken there were referred to the vars. *tenebrosa* (Mont.) and *similis* Jeff. (H.W.K., Naturalist, 1886, p. 251).

Littorina littorea (L.). Very common on many of the mud-flats. Most of the specimens taken by me at Tetney were referred to var. *paupercula* Jeff. (Naturalist, 1886, p. 347).

Rissoa costata (Ad.). Moderately common (B. S. Dodd).

Rissoa parva (DaC.). Common (B. S. Dodd).

VAR. **interrupta** Ad. Common (B. S. Dodd).

Rissoa inconspicua Ald. Common (B. S. Dodd).

Rissoa membranacea (Ad.). (B. S. Dodd).

Rissoa striata (Ad.). Common (B. S. Dodd).

VAR. **arctica** Lov. Occasionally (B. S. Dodd).

Rissoa proxima Ald. In Skegness drift (B. S. Dodd).

Rissoa cingillus (Mont.). Moderately common (B. S. Dodd).

Hydrobia ulvæ (Penn.). Swarms on the mud-flats and salt-marshes.

VAR. **albida** Jeff. Fairly abundant and fine, Sutton, Skegness, etc. (B. S. Dodd and J. T. Marshall).

VAR. **barleei** Jeff. Skegness (J. T. Marshall).

Hydrobia ventrosa (Mont.). Occasionally (B. S. Dodd). Living in great abundance in a drain, land-foot of sandhills, Somercotes (H.W. K.).

TURRITELLIDÆ.

Turritella terebra (L.). Occasionally (A. Smith).

PYRAMIDELLIDÆ.

Aclis unica (Mont.). In Skegness and Sutton drift; sometimes living; rather scarce (B. S. Dodd and J. T. Marshall).

Aclis ascaris (Turt.). Sutton (J. T. Marshall).

Aclis supranitida (S. Wood). In drift, Skegness (B. S. Dodd).

Odostomia albella (Lov.). Occasionally (B. S. Dodd).

Odostomia rissoïdes Han. Common (B. S. Dodd).

VAR. **dubia** Jeff. Common (B. S. Dodd); Skegness (J. T. Marshall).

Odostomia pallida (Mont.). (B. S. Dodd).

Odostomia plicata (Mont.). (B. S. Dodd).

Odostomia dolioliformis Jeff. Skegness; rather scarce (B. S. Dodd and J. T. Marshall).

Odostomia indistincta (Mont.). Rather scarce (B. S. Dodd).

Odostomia interstincta (Mont.). Somewhat scarce (B. S. Dodd).

Odostomia spiralis (Mont.). Common (B. S. Dodd).

Odostomia lactea (L.). Not common (B. S. Dodd).

NATICIDÆ.

Natica catena (DaC.). Dead shells; moderately common on the sands. In 'Historiæ Animalium Angliæ,' Lister records a shell for Lincolnshire which Mr. Somerville thinks is probably this species.

Natica montacuti Forb. Not plentiful (B. S. Dodd).

VELUTINIDÆ.

Velutina lævigata (Penn.). Washed up occasionally.

CERITHIIDÆ.

Cerithium reticulatum (DaC.). Common (B. S. Dodd).

BUCCINIDÆ.

Purpura lapillus (L.). Common.

VAR. **major** Jeff. Occasionally (B. S. Dodd).

Buccinum undatum L. Abundant. Large quantities of whelks are brought from Grimsby to Billingsgate Market (British Conchology, iv. 290). Monst. *sinistrorsum* has been found on the Lincolnshire coast (British Conchology, iv. 287).

MURICIDÆ.

Murex erinaceus L. Rather common.

Trophon muricatus (Mont.). Occasionally (B. S. Dodd).

Trophon truncatus (Str.). Occasionally.

Fusus antiquus (L.). Common; sometimes living. The monstrosities of this—the 'almond' or 'red' whelk—are chiefly from Kent and Lincolnshire (British Conchology, iv. 325).

Fusus gracilis (DaC.). One young shell in good condition (B. S. Dodd).

NASSIDÆ.

Nassa reticulata (L.). Common.

Nassa incrassata (Str.). Occasionally.

PLEUROTOMIDÆ.

Pleurotoma costata (Don.). Occasionally (B. S. Dodd).

Pleurotoma nebula (Mont.). Occasionally (B. S. Dodd).

Pleurotoma rufa (Mont.). Mr. Marshall found in dredgings from Lynn Deeps (about forty fathoms), taken by H.M.S. Porcupine when on survey, three ribless specimens of this species much resembling *Pleurotoma pyramidalis*, a Norwegian and Arctic species.

Pleurotoma turricula (Mont.). Occasionally.

Pleurotoma trevelyana Turt. Scarce (B. S. Dodd).

CYPRÆIDÆ.

Cypræa europæa Mont. Mr. Dodd has not, nor have I, found this in very great plenty on the beach; it appears, however, to be washed up in large numbers on the Grimsby shore.

The Rev. G. Shaw, of Grimsby, as Mr. Smith tells me, collected about 60,000 cowries in two years, during his accustomed morning walk on the sands; one morning he picked up 1,300 between Grimsby and Cleethorpes; they were lying in little groups of about five or six the whole of the way.

BULLIDÆ.

Cylichna cylindracea (Penn.). Occasionally (B. S. Dodd).

Utriculus obtusus (Mont.). Common. Muddy estuaries, such as, amongst others, those of the Humber and Wash (British Conchology, iv. 424).

VAR. **lajonkaireana** (Bast.). (B. S. Dodd).

Utriculus hyalinus (Turt.). Sutton and Skegness; fine; rather scarce (B. S. Dodd and J. T. Marshall).

Acera bullata Müll. One or two (B. S. Dodd).

Philine catena (Mont.). Scarce (B. S. Dodd).

Philine angulata Jeff. Four or five specimens of this mollusc, which is everywhere rare, taken at Skegness, etc. (B. S. Dodd and J. T. Marshall).

Philine aperta (L.). Two or three specimens (B. S. Dodd).

CARYCHIIDÆ.

Melampus myosotis (Drap.). Not plentiful on the beach (B. S. Dodd). Lives at the margins of the muddy pools near the sandhills to the south of Saltfleet Haven (H.W.K.).

SEPIOLIDÆ.

Sepiola rondeletii Leach. Living (B. S. Dodd).

SEPIIDÆ.

Sepia officinalis L. Dorsal plate (B. S. Dodd).

On the Lincolnshire coast, as elsewhere, collecting shells on the sands is a favourite sea-side amusement, especially with children. Cowries (*Cypræa europæa*) are much sought for, and are called 'Blackamoor's teeth' by children. The valves of *Pholas* are spoken of as 'Angels' wings,' those of *Pecten* as 'Jane shells' and those of *Solen* are called 'Knives and Forks.' The shells of *Tellina* are much in favour, especially those which have been bored, and can be threaded upon strings; but I do not know that any popular name is applied to this kind of shell in the county, nor even to *Nucula nucleus*, which is much prized.

IS THE STARLING (STURNUS VULGARIS) DOUBLE-BROODED ?

THE answer to this question, relating as it does to one of our commonest and most familiar birds, is, it would appear, not an easy one, even with the aid of the host of modern bird-books, including those of the recognised masters. Thus, to take two examples: Prof. Newton (Yarrell's British Birds, ii. 234) says, regarding the rearing of two broods in a year, 'such an occurrence seems to be very rare in this country'; while Mr. Seebohm—who claims to be original in all things ornithological, and cannot, it is thought, be denied that claim in this particular connection—tells us (British Birds, ii. 14) that the 'Starling, in most cases, rears two broods in the year, sometimes three, though this has been denied.'

We must thank Mr. Mitchell for bringing this vexed question under the notice of our readers. We are gratified to find that it has resulted in a crop of notes on the subject, made during the past breeding-season, being sent to us, and we now print them, for convenience, under a common heading. These contributions, interesting and valuable as they are, will not be regarded by all as furnishing a satisfactory solution of the question, since the opinions expressed are decidedly divided.

Perhaps I may be here allowed to give my own observations on the subject. A pair of Starlings have their breeding-quarters on the roof of a building on a level with, and only about ten feet from, the windows of my room in the Museum. Here, contrary to the observations of the authorities quoted, they were daily to be seen all through the last autumn and winter, but I am not sure that they roosted in the nest-hole, which is under the spouting, though they popped in and out of it continually in the daytime. A brood was reared here in the spring, and left the place of their birth, along with their parents, about the 5th of June. No more Starlings were seen until the 5th of October, when the old birds returned, and are now seen daily over and about the nest, which they frequently enter for a few moments.

The notes contributed are arranged under two headings :—

I. Those in favour of single-broodedness, and which regard double-breeding as an exceptional circumstance. These are placed first, because it is thought that single-broodedness must be considered the rule.

II. Those devoted to upholding the double-breeding as general, and single-broodedness as exceptional.—W. EAGLE CLARKE, Museum of Science and Art, Edinburgh.

Naturalist,

I.

Out of the dozen nests of the Starling which have been under my observation this year, only two have had a second brood in, and these were too awkwardly placed for me to examine whether the first clutches of eggs had been hatched off in their entirety, so that I have no direct evidence beyond the fact of this so small proportion having been used a second time. I am glad to say, however, that Mr. Thomas Altham, of Clitheroe, has examined all the nests, a large number, in his immediate neighbourhood, with the result that he has found only two second broods to have been reared, and in each case the first broods have been abnormally small, viz., two and three respectively. This goes a long way to prove that, unless a small proportion only of the first clutch of eggs comes to maturity, the Starling, as is the case with so many other birds, does not rear a second family.

Mr. J. Whitaker, of Rainworth Lodge, Mansfield, in an interesting communication to me on the habits of Starlings, which he has breeding round him in about thirty nesting-boxes, all occupied, says that 'out of them only one pair in eight or ten nest a second time, and in such comfortable quarters surely, were it the birds' habit, we should have two broods here.'—F. S. Mitchell, Clitheroe, August 12th, 1889.

Probably not less than from fifteen to twenty pair of Starlings nest annually about my premises at Great Cotes. The places chosen for nesting are in the ivy round the house, under the tiles of the buildings, several pairs in the pigeon-cote, under the eaves of stacks when left standing late in the summer, holes in buildings and trees. They are very irregular in the time of nesting, commencing in April, and continuing throughout May.

Long after our resident birds have commenced nesting, we have immense flights in the marshes. These depart late in April, and in cold backward seasons will tarry late into May. When the young are hatched, the old and young together may be daily seen on the grass-plots and tennis-lawn, or in the home paddocks, but these soon collect into flocks and leave the neighbourhood of the villages, and may be found throughout the summer in flocks of various sizes foraging on the grass lands in the marshes.

I am quite certain that, as a rule, the Starlings nesting about these premises, if they succeed in bringing off a brood, do not nest a second time. If the first brood is destroyed before leaving the nest, I think it is not improbable a second attempt is made to nest

and bring off the young, but these occasions must be considered quite exceptional. I have no particular facts to prove that the same pair of Starlings rear a second brood in this way, except that I have sometimes noticed the old birds flying to a nest and feeding their young late in the summer, long after the bulk have departed.—JOHN CORDEAUX, Great Cotes, Ulceby, Lincs.

According to my observations, the Starling is not, as a rule, double-brooded, but is occasionally so, as I have proved to my satisfaction this spring, a nest at the corner of our house having been occupied twice, and two lots of young, both of which got away, being reared therein.

In some of the old quarries near here, I have several times known two different sets of young come from the same hole, but whether they were both the progeny of the same parent birds I am unable to say.

Starlings have increased with astonishing rapidity in this district during the past few years, so that where we formerly had hundreds, I might safely say we now have thousands.

At the present time (August) there is hardly a Starling left in the town, they, like the sparrows at harvest time, having betaken themselves to the fields; my mind's eye rests on one field where a good deal of fish-refuse is deposited; here the stone walls and bushes are literally white with the droppings of the large numbers of birds, old and young, which frequent the place.

I have several times found, in this district, Starlings' nests containing nine and ten eggs, and on one occasion fifteen, the latter being built in the corner of an out-house, in Haverah Park. No doubt the scarcity of nesting-places had caused two birds to use the same hole and nest.—RILEY FORTUNE, Harrogate, August 9th, 1889.

I have had five nests of the Starling under close observation this year. The birds commenced building early in April; on the 8th of May two nests contained young birds and the others eggs. The earliest brood left the nest on the 5th of June, and on the 18th of that month all the nests were tenantless. Since that date, except for an occasional peep, not a bird has been near the nests. About the 10th of June one of the young birds, when half-fledged, had the misfortune to fall from its nest. My little boy, who found the nestling, was not tall enough to replace it, so he carefully deposited it in another Starling's nest, about fifty yards away, from which the young had already flown. To our surprise it was carefully tended,

whether by its own or by foster parents I cannot say, and in due course took wing.

Mr. Paver Crow tells me that he always lets the Starlings nest where they please about his buildings, even though they choose the spouts for their home, because if they are allowed to get off their young he has no further trouble with them. This certainly points to the bird being single-brooded.

Though not coming under the scope of the present inquiry, it may interest readers of *The Naturalist* to know that in dry times Starlings will leave the meadows to make descents upon strawberry beds, and that when they do this they take all before them, whether green or ripe.

It is rather humiliating not to be able to give a direct answer to this query. And yet the bird is common enough. Its nesting-place is, as a rule, apparent, not to say conspicuous, and the bird is anything but shy and retiring in its habits. One admires the methodical way in which it visits the sheepfolds or hunts the grass in search of food. The business-like manner, the quick step, the straight rapid flight to the nest—all this we see and admire, but when we are asked a simple question as to its nesting habits, we are at a loss for a decided answer. What is the reason for this? Is it that too much attention has been given of late years to mere specimen-collecting as opposed to the study of the life-history of birds? That we are becoming cabinet naturalists in place of field-naturalists? We may be sure that the possession of a long series of skins, be they labelled ever so accurately, will not qualify the possessor to be regarded as a student of nature. Whatever then be its outcome, the best thanks of naturalists are due to Mr. F. S. Mitchell for suggesting this inquiry, for it has been the means of calling forth many observers, and has resulted in many interesting facts being recorded as to the habits of this useful bird.—E. P. Knubley, Staveley Rectory.

A pair of Starlings nested and hatched their young in the roof of my house this summer. After the young ones were fledged, they disappeared for some time, when the old pair returned, and after carefully inspecting the hole for a day or two, just as they did in the spring before they began to build, returned to it every night to *sleep*, leaving early in the morning; and remained there till last month, since when I have not seen them. My boys tell me that they have twice this year found Starlings' nests with an unfertile egg remaining from the first brood, long after they would have laid again had they intended to do so in the same nest.—R. A. Summerfield, North Stainley Vicarage, Ripon, October 12th, 1889.

The answer to the question 'Is the Starling double-brooded?' must certainly be a negative one with regard to this district. Starlings are very numerous here, and after reading Mr. Mitchell's query in the April number, I set myself the task of carefully attempting to decide the matter. I watched many nests built in different situations, and in no single instance has a second brood been reared, unless the first was disturbed.

One nest, built in a hole in a tree, contained one egg on May 26th; this egg was almost colourless. Some days afterwards I again visited the nest, and found it to contain five eggs, the light-coloured one having disappeared. The young were hatched in due course, and after they had taken their departure, I gave the old birds three weeks in which to nest again, but they did not take advantage of the opportunity. I then examined the nest in search of the single egg, and found that a second nest (the one in which the young were reared) had been built over the first one, in which latter I discovered the missing egg.

It has been suggested that two broods may be reared in the season, but in different sites. This I think we may at once dismiss, when we consider how tenaciously Starlings hold to one nesting-place, even though the eggs be repeatedly removed. Moreover, in this district at any rate, the birds flock before there would be time to rear a second brood.—Edgar R. Waite, Headingley, Leeds, August 15th, 1889.

In South Notts I should say the rule is 'certainly not.' Let us just glance at this bird's habits during the breeding season. I do not think the winter flocks entirely break up, as some are always to be seen, no doubt containing non-breeding birds.

In the country, nest-building commences about the first or second week in April, in the town, where possibly two broods may be reared, I have noticed Starlings carrying straws in the middle of March. Full clutches of fresh eggs may be found by the 25th April or thereabouts, five or six being the usual complement of eggs. It is a most abundant bird in this district, and several colonies exist near my house. Seeing the inquiries in *The Naturalist*, I paid particular attention to a colony of about thirty pairs, occupying a stone pier abutting into the Trent. A rise in the river early in May enabled me to examine the nests without difficulty. Most at that date contained eggs, and one or two had young, newly hatched. I noticed in others that three eggs had the appearance of being incubated with two others, apparently fresh. I took the eggs from two nests and marked the nest-holes. A fortnight later, I visited the spot again, and found

clamorous young in nearly all the nests. A further visit revealed the fact that all the young had flown from the nest-holes, with the exception of those, now again occupied, from which I had taken the eggs. By the middle of June the breeding-place was quite deserted, but the lanes and hedge-rows abounded with parties of Starlings numbering from six to eight birds, without doubt a brood of young and the parent birds. These parties have now united into small flocks, which again, as winter approaches, will form the enormous flocks that do such damage to the Norfolk reed-beds, breaking down the crop by their weight whenever they alight.

To my thinking, the Starling is very closely allied to the crows, and it must be remembered that the young birds in this family also are fed by their parents, long after they leave the nests, and that they are very seldom double-brooded. A flock of Rooks, Jackdaws, and Starlings intermixed, is a familiar sight.—F. B. Whitlock, Attenborough, August 2nd, 1889.

II.

There are three or four pair of birds which breed annually in our house, and I believe that most of them rear two broods in the year; one or two pair certainly do.

I cannot say that I have ever noticed this occurrence in other nesting-places away from the house, but will make closer observations next year.

Their habit of adopting the holes bored by Woodpeckers, alluded to by Mr. Mitchell, has often made me feel spiteful towards them. They are very numerous around here.—Basil Carter, Masham, Yorkshire.

My reply to the question 'Are Starlings double-brooded?' must be distinctly in the affirmative, and my opportunities of observation have been manifold and convincing. In my early youth—say, sixty years ago—the Starling was accounted a genuine rara avis, and hardly known to nest in Cumberland. I well remember that the first Starlings' eggs I ever had in my possession were taken from a hollow tree that had been cut down on my grandfather's farm, about seven miles to the southward of Carlisle. Gradually they increased in numbers, until of late years they have constituted a very considerable factor in the avifauna of the North-West of England. In some of their better-known roosting-haunts, as at Whitefield House on Overwater, at Flimby Wood, in the grounds at Gilgarron, etc., they may be reckoned by thousands, morning and evening, especially during the late summer or early autumn months.

The assertion contained in my opening paragraph may be sustained by the following brief statement of facts. In the spring of 1878 I was elected, for the second time in my life, to the mastership of the Endowed School of Watermillock, near Penrith. At that time three pairs of Starlings annually reared their young under the projecting eaves of the building. In addition to these, two pairs occupied the church tower, and another family chose the forks of an ancient yew in the churchyard for their abode. In all, *nine* nests could be counted from my bedroom window, all within a radius of little over one hundred yards. Of course, the birds were hourly almost under the observation of the school children and the members of my own family, two of my sons especially being keen students of bird-life. Our united experience is that, with hardly any exception, these birds reared two broods every season, and we are persuaded that a third family has been seen in the same nest, the latest brood not taking wing until September. In one case it is known that the second brood had unaccountably perished, and possibly a similar contretemps might be answerable for the other instances of late rearing. We remarked that the young Starlings kept possession of the nests from the date of hatching for a longer period than nestlings of the blackbird or throstle. The first broods left the nests about the date of Her Majesty's birthday, and their successors about the last week in July.

During the terrible months of February and March 1881, the Turdidæ were so near the brink of extermination that of the nine pairs of Starlings only three pairs and an odd bird appeared to claim their accustomed domiciles. The Throstles fared even worse, and did not appear in their usual numbers until 1884.—William Hodgson, Workington.

In *The Naturalist* for April last Mr. F. S. Mitchell has a very interesting note on the Starling (*Sturnus vulgaris*), in which he endeavours to prove that the Starling is not double-brooded. I am bound to agree with him to a certain extent, but as the Editor invites correspondence on this point, I beg leave to quote one case that has come under my observation of the Starling being double-brooded and of choosing a curious nesting-site. In the spring of 1886 a pair of Starlings built their nest in the ball of a water hydrant at the North Eastern Railway Station, Starbeck, and successfully brought off two broods; the same thing was repeated in 1887, but I am not in a position to say whether it was the same parents. I have also noticed that a nest has been used by two pairs of birds in the same season.—F. R. Fitzgerald, London, July 10th, 1889.

Naturalist.

Regarding the question 'is the Starling double-brooded?' I have made careful observation this summer. A pair of Starlings nested in a hole in the wall of the church here, and the young birds left the nest the last week in May. Another pair built in a spout on my premises, and the young birds also safely left the nest at the end of May. Both these pairs of Starlings reared second broods, which left the nest during the second week in July. I also saw other Starlings busy carrying feathers to other nesting-places at the end of June, undoubtedly repairing their nests to rear a second brood.—F. G. S. Rawson, Thorpe, Halifax, August 1st, 1889.

The season has approached again for me and others to prove that the Starling (*Sturnus vulgaris*) rears more than one brood in a season. This year, 1889, in the same nesting-sites where I have observed them for forty years, I can vouch that on May 30th a clutch came out from one nest, which was cared for by the old birds, who still at the same time proceeded with repairing the old nest up again. On June 12th it was examined and found to be in readiness for more eggs, and on July 5th inst. I, along with others, saw the parents bring food and heard the young in the nest chirping whilst being served.—John Ward, Pymont House, Lofthouse, July 6th, 1889.

In *The Naturalist* for April and May 1889 there are notices in connection with the double-brooding of the Starling. In support of this, permit me to give facts which have come under my observation.

In a hollow tree not far from here, there have, for the last ten or twelve years, been two broods of Starlings. In another hollow tree there has been *one* brood of Starlings for at least thirty years, and for most of the period *two* broods. In the same tree, and in the same hole, I have several times known a brood of Rock Doves (*Columba livia*) [? Stock Dove (*Columba œnas*)], and what is more remarkable, on one occasion, about twelve years since, there was also in the same hole a brood of the Spotted Flycatcher (*Muscicapa grisola*), which, however, perished during a heavy fall of rain that occurred before they were fully fledged.

These facts respecting the Starling do not, of course, *prove* that it is generally double-brooded, and I have not followed out my observations sufficiently to make it clear that the two broods occurring in the year were by the same pair of birds, although I am inclined to think that such was the case in many instances.—C. W. Smith, Harum, Nawton, York, May 23rd, 1889.

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