







S. 474.

THE  
NATURALIST:

A

MONTHLY JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND.

EDITED BY

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

PRESIDENT OF THE CONCHOLOGICAL SOCIETY, AND HON. SECRETARY YORKSHIRE NATURALISTS'  
UNION, &c.;

AND

WM. EAGLE CLARKE, F.L.S.,

MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION, AND OF THE BRITISH ASSOCIATION  
COMMITTEE ON THE MIGRATION OF BIRDS; HON. SECRETARY YORKSHIRE  
NATURALISTS' UNION, &c.

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1886.

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AND  
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1886.

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## P R E F A C E .

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ON reaching the conclusion of another volume of *The Naturalist*, the Editors believe that it is fully equal in merit to the preceding one, and that it adequately fulfils the objects for which it is conducted, viz., that of being a medium for recording in detail, facts and observations bearing upon the natural history of the North of England, facts and observations which will be of the greatest use to future writers upon any of the subjects of which this journal takes cognizance. For so gratifying and satisfactory a result the Editors are indebted to a numerous array of contributors in all parts of their district.

An inspection of the contents of the volume will show that while numerous valuable papers and notes referring to Cumberland and Westmoreland, Lancashire and Cheshire, Yorkshire and Lincolnshire have appeared, there are on the other hand comparatively few dealing with Northumberland and Durham, the Isle of Man, Notts. or Derbyshire. Surely this is not to be taken as evidence of slackened energy in the naturalists of these latter counties, and the Editors and their readers would be pleased to have evidence in their next volume that this is not the case.

The Editors would draw attention to the bibliographical articles which are given, and which they regard as one of the most useful and valuable features of their journal. In its preparation they wish to enlist co-operation, and would be pleased if such of their friends as are willing to assist will kindly volunteer to do so. Assistance is already given in the geological portion by gentlemen to whom the Editors feel much indebted.

In conclusion, the Editors would ask their present subscribers to assist them in increasing their subscription list. At the commencement of the present year the journal was enlarged, in the hope and expectation that a sufficient number of new subscribers would be forthcoming to recoup the proprietors for the additional cost incurred, but so far this expectation has not been realised. As the Editors derive no pecuniary benefit whatever from the *Naturalist*, they feel fully at liberty to press its claims upon all who sympathise with the objects which it is intended to promote. They base these claims on the solid utility and practical value of its contents. They are quite aware that useful and practical articles are not always readable, but they feel fully justified in asking for the substantial support of all who believe that a repertory of facts of this kind for a definite area is calculated to be of service to science.



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# The NATURALIST.

IT being the wish of the Editors to make the journal the recognised organ for information concerning the natural history of the North of England, they hope to rely on Naturalists keeping them supplied with articles and short notes from time to time.

**Communications** should be written on *one side* of the paper only, and should be sent as soon after the commencement of the month as possible.

**Short Notes** of important occurrences will be received up to the 20th of the month, and specially urgent ones even later.

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**Receipts for Subscriptions** are enclosed with the next Number, and are not sent direct unless stamp be sent for postage.

**Advertisements.**—Scale of charges may be had on application.

## BOOKS RECEIVED.

- Natural History Journal for December, 1885. [J. E. Clark, Editor.  
On the Corallian Rocks of England.—Rev. J. F. Blake, M.A., F.G.S., and  
W. H. Hudleston, M.A., F.G.S., 1877. [Mr. Hudleston.  
Gasteropoda of the Portland Rocks.—W. H. Hudleston, M.A., F.G.S., 1881.  
[Author.  
Contributions to the Palæontology of the Yorkshire Oolites, W. H. Hudleston,  
M.A., F.R.S., 12 papers, 1882-3. [Author.  
The Yorkshire Oolites.—W. H. Hudleston, M.A., F.G.S., 3 parts, 1874-8.  
[Author.  
Report of an Excursion of the Geologists' Association to the West Riding of  
Yorkshire.—W. H. Hudleston, M.A., F.G.S. [Author.  
Hertfordshire Natural History Society.—Transactions, vol. iii, parts 5 and 6.  
[Society.  
Psyche, a journal of Entomology, vol. iv, Nos. 129-134. [Camb. Ent. Club.  
On Slaty Cleavage and Allied Rock-structure, with special reference to the  
Mechanical Theories of their Origin, by Alfred Harker, M.A., F.G.S.,  
40 pages, 8vo. [The Author.  
Midland Naturalist for December 1885. [The Editors.  
The Young Naturalist for December 1885. [J. E. Robson, Editor.  
The Naturalist's World for December 1885. [P. Lund, Editor.  
Illustrated Science Monthly for December 1885. [Bogue, Publisher.  
Science Gossip for December 1885. [Chatto and Windus, Publishers.

## EXCHANGES.

*Notices of Exchange inserted free of charge to Subscribers.*

**Dried Plants.**—DUPLICATES. London Catalogue, 7th Edition: Nos. 7, 11, 26, 40, 41, 131, 273, 273c, 274, 275, 305, 325, 350, 372, 374, 564, 568, 572, 574, 576, 577, 581, 587, 594, 595, 608, 813, 816, 821, 823, 831, 835, 838, 856, 858, 875, 914, 998, 999, 1007, 1008, 1039, 1040, 1261, 1264, 1265, 1276, 1277, 1280, 1282, 1285, 1294, 1297, 1305, 1325, 1327, 1330, 1333. DESIDERATA. Nos. 89, 90, 101, 119, 186, 214, 228, 348, 349, 370, 377, 479, 536, 538, 545, 546, 547, 600, 720, 730, 762, 817, 826, 834, 845, 851, 855, 997, 1027, 1030, 1033, 1042, 1133, 1266, 1267, 1279, 1286, 1302, 1304, 1315, 1320, 1338, 1347, &c.—HERBERT GOSS, Berrylands, Surbiton Hill, Surrey.

**Set of Old Series of Naturalist** (1864 to 1867) wanted immediately, preferable if in numbers as published; state price and particulars.—Editors of the *Naturalist*, Park Row, Leeds.

**IMPORTANT NOTICE.**—On the 19th September the Editors received a communication post-marked 'York,' and directed in a lady's hand, enclosing 2s. 6d. postal order, but with no clue as to the sender.

The cheapest dealer in Birds, Skins, Eggs, Butterflies, Moths, Foreign Shells, etc., is **John Eggleston, Park Place, Sunderland.** Lists free.

# THE NATURALIST

For 1886.

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## LINCOLNSHIRE.

JOHN CORDEAUX, M.B.O.U.,

*Great Cotes, Ulceby, Lincolnshire; Convener of the British Association Committee on the Migration of Birds.*

It is somewhat curious that even in the present day so much misconception should linger in connection with the second in size of English shires, popularly invested with fens and fogs, ague and marsh fever; a haunt of wild-fowl and waders, reeds and watercress; where the rainfall is excessive, floods the order and not the exception. One of the greatest of modern authors adds to this general prejudice when in commencing his work\* he writes 'it was raining down in Lincolnshire,' a remark perhaps as little complimentary as that of Henry VIII, who spoke of the county as 'being one of the most brute and beastly of the whole realm, and of the least experience.'† Even at the commencement of the present century Lincolnshire was comparatively a *terra incognita*, and was looked upon as the *ultima Thule* of English counties. This isolation probably was in great part due to its position with the broad frontage of a great tidal river and the sea to the north, east, and south-east, separated also, as in the Isle of Axholme and the fens, by impassable swamps and morasses from the rest of England. Thus it came to pass that Lincolnshire folks were considered behind the age, and it is yet somewhat of a reflection on the literary enterprise of the shire that, notwithstanding the materials ready to hand, it should stand almost alone in having no county history.

From north to south Lincolnshire extends seventy-five miles, and from east to west forty-five. The area is 1,767,962 acres—the Isle of Axholme containing 50,000; of the whole a very small portion, 5,762 acres, now remains which is not either cultivated or in pasture. Fuller in quaint language likens it to 'a bended bow, the sea making the back, the rivers Welland and Humber the two horns thereof,

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\* Charles Dickens, 'Bleak House.'

† Froude, 'History of England,' (Ed. 1870), Vol. II, p. 527.

whilst Trent hangeth down like a broken string, as being somewhat of the shortest.\*

At the time of the Roman invasion Lincolnshire formed part of the territories of the powerful tribe of the Coritani, their district also comprising Rutland, part of Nottinghamshire, the whole of Leicestershire, and some portion of Warwickshire,† Lindum being their chief city and stronghold, their frontier fortresses at Gainsborough, Aukborough, Yarborough Camp, and Caistor predominating the Trent and Humber, which rivers separated them to the north and north-west from their equally powerful neighbours the Brigantes. When the Romans, probably under Ostorius, about A.D. 70, seized Lincoln, they appreciated its commanding site and strongly fortified it. Subsequently it became a chief fortress—one of the nine *Coloniæ* held by veterans of the legions on condition of rendering military service. They appear also to have utilised for defensive purposes the remaining strongholds of the tribe along the northern frontier, connecting them by roads, *Vie Militares et Vicinales*. Of these the most remarkable is the Ermine Street running above Grantham to Ancaster and Lincoln, and then leaving the camp at the Newport Arch, the most perfect Roman gateway existing in the country, it ran in a direct line to the north through Kirton-in-Lindsey to Wintringham-on-the-Humber, where there was a ferry at Brough on the Yorkshire side, and hence on to York. Through a considerable portion of its course the ‘old strete’ is still used for purposes of traffic, in others, as over part of Lincoln Heath and near its northern extremity, it is a wide green lane bordered by gorse, whin, and bramble thicket; and in solitudes which once echoed to the tramp of the cohorts and the heavy rumbling of baggage trains, and in more recent days the march of great English armies towards Scotland, we now listen to the warbling of innumerable linnets, or the monotonous song of the yellow-hammer. The eastern face of the Roman fortress ran nearly in line with the transepts of the present Minster, which stands partly within and partly without the camp. From its commanding position, overlooking an immense extent of country, it must have been practically impregnable. Those indeed who have climbed the steep slopes from the lower town to the castle-yard can form some estimate of its strength, when massive wall‡ was lined with the hardy veterans of

\* ‘Worthies of England,’ Nicholls’ Ed., 1811, Vol. II, p. 1.

† M. H. Bloxam, ‘Lindum civitas Coritanorum.’ Linc. Diocesan Arch. Soc. 34th Report, 1877, p. 41 et seq.

‡ The walls of Roman Lincoln are computed at 10 to 12 feet thick, and 20 to 25 feet high. The area of the camp was about six or seven acres.—Linc. Dioc. Arch. Soc. report, 1876, pp. 178-179.

the VI. and X. Legions, when iron darts from catapult hurtled through the air, and huge stones from the balistæ bounded down the slopes.

Of the successive waves of conquerors—Saxon, Dane, and Norman—which during the six centuries subsequent to the Roman occupation swept over Lincolnshire, none have so indelibly left their mark as the Dane. The county is still England's Denmark, and the names of 292 towns and villages indicate the prevalence of the Danish element. Of these 212 have the termination *by*, 63 have *thorpe*, one has *with*, four have *toft*, eight have *beck*, and three have *dale*.\* Nowhere else, except in Holderness, have the repeated Danish invasions left such landmarks. And, just as in the present, the emigrant from our shores to the backwoods of America gives to his small freehold the name of the old home beyond the seas, so likewise his Danish fore-elders, for everywhere in Denmark we find names having close affinity to Lincolnshire villages.† Mr. Freeman shows how the Danish invasions of eastern England may be divided into three periods—simple plunder, period of settlement, political conquest.‡ Terrible indeed were the ravages, of which oral tradition still lingers, of these ferocious sea-rovers during the first period. Loosing from the opposite shores of the North Sea in the early spring, they sped across in the long ships with big main-sails spread, wing and wing, running before the east wind and tossing the salt spray above the splendours of their richly-blazoned prows, like falcons swooping on their prey. The Humber offered unusual facilities for landing: berthing their galleys in the muddy creeks, as Grimsby and Tetney havens, where at low-water they lay like painted serpents in the slimy ooze—creeks to which the song of Kal§ the son of Kali is as yet equally applicable as then:

Unpleasantly we have been wading  
In the mud a weary five week,  
Dirt we had indeed in plenty  
When we lay in Grimsby harbour.

There is scarcely a church on our eastern coast which shows not, in some part or other of its structure, red and calcined stones suggestive of Danish ravage; and it is by no means improbable, as

\* Freeman's 'Norman Conquest,' Vol. I, p. 437.

† The whole subject of the occupation and settlement of Lincolnshire by the Danes has been most ably and exhaustively treated by the Rev. G. S. Streatfeild, in 'Lincolnshire and the Danes.' (Kegan Paul, Trench and Co., London, 1884.)

‡ Freeman, 'Norm. Conq.,' Vol. I, pp. 12, 43 seq.

§ 'Orkneying Saga,' Anderson's Ed., p. 76.

is asserted,\* that beneath the broad-headed nails which stud the oaken doors may still be found some withered fragment of the skin of sacrilegious viking.

Of dread portent was the hoisting on the Saxon shore of the Raven banner, surnamed the 'Landwaster';

For there  
Was shedding of blood, and rending of hair,  
Rape of maiden, and slaughter of priest,  
Gathering of ravens and wolves to the feast.

Yet one hundred years later throughout the peaceful Danelagh the savage marauder had become transformed into the peaceful tiller of the soil. What the physical characters of the county were in the second period we may conjecture from the positions chosen by these vikings or 'creekers' for their permanent homes, placed at regular intervals on the slopes or near the foot of the uplands, overlooking the low country or marsh. The house or *by* rising on a foundation of stone—chalk quarried from the wold—the upper part of 'stud and mud' with wattled outbuildings and 'crews,' surrounded by 'garth' and 'wong.' Above them stretched the open wold, rolling uplands of heather and gorse, and coarse tussocks of *Aira caespitosa* and the barren brome grass, stretches of brake bright green in spring and golden-brown in the autumn; here and there solitary hawthorns quite grey with lichen, storm-twisted and venerable; and on the highest ridges many a tumulus and 'hoe'—long since obliterated by the destroying plough. A land without inhabitant; the haunt of bustard and stone curlew, golden plover and dotterel, where in deep dales by chalk stream sides the otter had his home, and in the twilight the red deer and roe came down to graze. Below the wold, covering much of what is now known as the middle marsh, stretched the wide forest of oak, beech, and elm, with an undergrowth of holly, hazel, and yew; dense thickets of blackthorn and bramble, where lurked the grey wolf and wild cat; and above falcon, kite, and buzzard held almost undisputed possession. Beyond the forest was the rich pasture of the maritime marshes merging into salt 'fitties,' purple with sea-lavender and thrift, or grey with the frosted sea-orache, muddy stretches, green with glasswort, and then the flat seabeach—

A coast  
Of ever-shifting sand, and far away  
The phantom circle of a moaning sea.

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\* In a footnote, 'Lincolnshire and the Danes,' p. 4, Mr. Streatfeild says 'the four churches with which such traditions are distinctly connected are Rochester Cathedral, Westminster Abbey, and the churches of Hadstock and Copford in Essex. In the case of Hadstock, the last fragments of skin did not disappear until 1846; and in that of Copford, not until 1843 (see *Archæological Journal*, Vol. V, p. 185; Vol. X, p. 167).

Then beyond Horncastle and Spilsby, where the chalk dips below the fen 'from the foot of the wolds, the green flat stretched away, illimitable, to an horizon where, from the roundness of the earth, the distant trees and islands were hulled down like ships at sea. The firm horse-fen lay, bright green, along the foot of the wold; beyond it the browner peat, or deep fen; and among that, dark velvet alder beds, long lines of reed-rond, emerald in spring and golden under the autumn sun; shining 'eas' or river reaches; broad meres dotted with a million fowl. . . . Here and there, too, upon the far horizon, rose a tall line of ashen-trees, marking some island of firm rich soil. . . . Overhead the arch of heaven spread more ample than elsewhere, as over the open sea; and that vastness gave, and still gives, such cloudlands, such sunrises, such sunsets, as can be seen nowhere else within these isles.\* This was the land of the Girvii or Fenmen, a tribe of Angles who, even in Danish days, remained practically unsubdued within the fastnesses of their impassable morasses.

During the Norman period Lincolnshire contained no less than ninety religious foundations—Abbeys, Monasteries, Preceptories of Knights Templars, alien Priors and Hospitals; four principal castles—Lincoln, Tattershall, Carlton, and Sleaford; and nine crenellated or fortified mansions. Most of these have entirely disappeared, and there is perhaps no other county so utterly devoid of picturesque ruins. With the exception of the great gateway of Thornton, near Ulceby, the western part of Crowland, and some remains at Tupholme, Kirkstead, and Louth, and the castles at Lincoln, Sömerton, and Tattershall, scarce a remnant now remains, and even the site of the buildings is in many cases with difficulty made out.† Nowhere else in England, however, do we find so many interesting churches dating from early Saxon times down to the close of the Perpendicular period at the end of the 15th century. Perhaps the most remarkable amongst many is the 'Mother of Lincoln,' the Saxon church at Stowe, which for some time was the throne of the Bishops of Lindisse, before removal to Lincoln. Lincoln itself at one period contained fifty-two churches, reduced in the reign of the sixth Edward to thirteen. At Boston the magnificent tower of the parish church, 260 feet high, the 'stump,' as it is called, predominates the fens, and it is a prominent object both by sea and land from an immense distance. In times of fen floods the bells were rung to warn the

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\* Kingsley's 'Hereward.'

† For a list of Lincolnshire Religious Houses and Castles, see 'The Lincoln Pocket Guide,' 1880, pp. 178—180, by Sir C. H. J. Anderson, Bart.

district of the impending danger.\* The spire of the church at Louth, in North Lincolnshire, is 288 feet high, and yields to none in England for symmetrical proportions and beauty of decoration. An interesting feature of this church is the weathercock, which was placed in position on Holy Rood-eve, 1515, being made out of a copper basin taken two years previously from the Scottish king by the men of Lindsey, at the battle of Flodden.† St. Guthlac's Abbey of Crowland was entirely destroyed by the Danes in 870; but, as some compensation, on its rebuilding it was richly endowed with gifts by Canute—not the least remarkable of these being the skins of twelve polar bears for the altars, so that the feet of the officiating priests might be kept warm.‡ Crowland at one period had six bells, the 'sweetest in all England.' Much of the beauty and durability of Lincolnshire churches is due to the Barnack-ragstone, which in medieval times was carried by water from the quarries of that name in Northamptonshire to every part of the county. It is a coarse-grained shelly oolite, and probably the most durable freestone in England. The working of the stone appears to have been almost entirely abandoned before the commencement of the 15th century, probably from the exhaustion of the quarries.§

The geological strata of Lincolnshire extend in long ribbon-like bands, which generally correspond to the length of the county, running nearly north and south, and with a dip to the east, overlapping in regular succession, not unlike the leaves of an open book.|| Much of the picturesque beauty of the shire is due to the two main ranges of hills, the chalk wolds and the oolite, having an easy slope to the east, and more or less bold escarpments to the west. The chalk or wold district commences at Barton-on-Humber, and terminates near Burgh-in-the-Marsh, fifty-two miles, dipping beneath the

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\* Miss Ingelow, herself a Lincolnshire worthy, in her poem 'The High Tide on the Coast of Lincolnshire' (1571), graphically pictures the perils of fen life in flood time, when the great bells of Boston rang out night and day to the warning tune of the 'Brides of Mavis-Enderby.'

† Lincoln Pocket Guide, p. 72.

‡ Monasticon Anglicanum, Dugdale, Vol. II, p. 96.

§ See Miller and Skertchly, 'The Fenland Past and Present,' 1878, pp. 78, 79.

|| The Journals of the Geological Society contain several important papers on the geology of Lincolnshire, which may be studied with advantage by those who take an interest in the subject, such are '*Rhaetic beds near Gainsborough*;' '*Strata which form the base of the Lincolnshire wolds*,' 1867, Vol. XXIII, pp. 315, 227; '*Glacial and Post-glacial strata of Lincolnshire*,' Vol. XXIV, 1868, p. 146; '*Neocomian strata of Lincolnshire*,' Vol. XXVI, 1870, p. 326; '*Lias and Oolite of north-west Lincolnshire*,' Vol. XXXI, 1875, p. 115; '*Southerly extension of the Hessle Boulder Clay*,' Vol. XXXV, 1879, p. 397.

fen to appear again beyond the Wash at Hunstanton, its greatest breadth is fourteen miles. The oolite runs like a spine through the whole length of the county, and is represented by a narrow band in the north, and south of Lincoln (where it is once cut through and divided by the bed of the Witham), spreading into the wide elevated district known as the 'Heath,' where on its western side it forms the striking escarpment called the 'Cliff,' predominating the level lias and new red sandstones of the Trent Valley. Between these ranges of the chalk and the oolite lies the great central plain of Lincolnshire—greensands, gault, Kimmeridge, and Oxford clays; these all in South Lincolnshire pass beneath the peats, clays, and gravels of the fens. There is still a third line of elevated land formed by the Lias, Rhætic, and red-marl beds extending from the mouth of the Trent to as far as Gainsborough. At its northern extremity, near Scunthorpe, is the rich bed of iron ore, twenty-seven feet thick, which has already added so much to the wealth and importance of this otherwise poor and barren district. A section across the county from east to west at its greatest breadth, passes first through the chalky boulder-clay, overlaid in north-east Lincolnshire by a considerable thickness of *warp*, and generally along the maritime plain by recent alluvial deposits, sand, and clays. In the Humber marshes borings for water show twelve to forty-five feet of clean stoneless warp, with an occasional cockle-shell; beneath the warp is the forest bed, two and a half feet in thickness, resting on about a foot of whitish clay and sand. This old indigenous forest crops out at various places, both within the Humber and the sea coast, at low-water mark, presenting clay beds thickly interlaced with roots, also scattered stumps of trees *in situ*, identified as oak, beech, elm, birch, holly, yew, hazel, alder, and willow. The only remains of animal life we have found was during the excavation of the new docks at Grimsby—the core of a horn of *Bos primigenius*. In the peat bed, probably of the same date, which lies below the silt and sand of the Freshney Beck in Aylesby parish, we have dug up bones of the red deer, *Bos longifrons*, wolf or large dog, wild boar, probably wild cat, and a human *ulna*, like the rest stained perfectly black with the peat.\* Below the forest bed is

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\* The great forest of Kesteven in the south of the county, of which relics remain in Grimsthorpe Park, with its original herd of red deer, probably extended far into Fenland proper. The buried forests beneath the peat comprise oak, elm, birch, Scotch fir, yew, hazel, sallow, alder, and willow. Some of the oaks are of immense size, and the wood, a specimen of which is now before me, nearly as black and hard as ebony. Years after the drainage of the West Fen the exact position of the great trees was made apparent to the fenmen by the rime frost lying longer above them than on the surrounding fen.

the boulder drift, a reddish clay filled with fragments of chalk and derivative rocks, and varying from 50 to 300 feet in thickness. A peculiarity of the low-lying districts near the sea, as at Tetney and Great Cotes, are the ponds, locally known as 'blow-wells,' popularly supposed to be unfathomable; they are powerful springs, never failing in the driest season, rising from the chalk through the superincumbent drift and alluvium. The blow-wells in the parish of Little Cotes supply the town of Grimsby with an unfailing source of pure water. Many of the low-country springs in the north-east districts are more or less intermittent, the flow of water being regulated by the ebb and flow of the tides. Mr. Clement Reid's recent researches in the north of the county, more especially in connection with the old coast line at the base of the wolds,\* and the deposits of inter-glacial sands have added much to the geological interest of the district.† The examination of the sand pits at Laceby and Croxton has resulted in the determination of numerous species of marine shells, some yet common on the coast, others slightly northern, but not Arctic, whilst some are indicative of a comparatively warm and equable climate. An interesting find at Croxton is *Corbicula fluminalis*, of which living examples are now restricted to the Nile, the lake of Gennesareth, and some rivers of Asia. This shell is extremely abundant at Kelsey Hill ballast pits, north of the Humber, in conjunction with bones of bison, leptorhine rhinoceros, and elephant. A narrow band of red chalk known as the Hunstanton red chalk is traceable all through Lincolnshire from Gunby to South Ferriby. The summit of the wold near Pelham's Pillar is 456 feet above sea-level; the highest point is probably near Normanby clump, about 549 feet. On the western slope of the wolds below Caistor, and running south, there are a series of ironstones, sandstones, and clays to which the term Neocomian has been applied.

Still following the sectional line we find the Kimmeridge clay represented in a narrow band, estimated at 600 feet in thickness; then in succession Oxford clay and Kellaway rocks, passing into the cornbrash and great oolites, forming an elevated belt of varying breadth through the length of the county. The Liassic clays and marlstones are defined by a narrow belt ten to twelve miles wide in the south, and running off to a mile in width near the Humber. Lastly, on the slopes of the Trent Valley are the oldest rocks in the county, the Keuper sandstone.

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\* At this period the coast line of Lincolnshire was represented by a chain of low-lying islands of chalk, separated by narrow and deep fiords.

† 'The Geology of Holderness, and the adjoining parts of Yorkshire and Lincolnshire.' Memoirs of the Geological Survey, 1885. Clement Reid.

Up to the present date Lincolnshire compares unfavourably with other counties\* in having no published list of the Mammalia found within its bounds. The last and most interesting addition to the fauna was the wild cat (*Felis catus*), shot in the early part of March, 1883, in a small plantation close to Bullington Wood, near Wragby.† The marten is sparingly distributed in the chain of great woodlands which extends from Wragby to Bourn, and from information recently acquired we are inclined to think it will be many years before it becomes extinct. The polecat is common; the otter still lingers both in the north and south; the badger probably more abundant than in any of the midland counties. The common seal is frequently seen on the coast in the autumn, and on that labyrinth of great sandbanks in the Wash, between Lynn and Wainfleet—of which some, like the Dogshead and Knock, and Seal's Bank, are only covered at high tides—there has been from time immemorial a considerable colony, and doubtless many young are born in the course of the season. The grey seal is also found in the same locality, and with Mr. T. Southwell, of Norwich,‡ remains the credit of adding this interesting species to the respective faunas of the two counties.§ Of the smaller mammals the dormouse is found in the south-west of the county;|| the red field vole is rare, the lesser shrew local, and the water shrew exceedingly plentiful.

Lincolnshire in the present day can boast of little of its former ornithological pre-eminence; it was truly described by Fuller in his day as 'the aviary of England, for the wild-foules therein: remarkable for their Plenty—Variety—Deliciousnesse.'¶ Few and fragmentary are the records which have come down to us concerning the treasures of the fens in the Liber Eliensis,\*\* the Chronicles of Crowland,†† and

\*The list of Yorkshire Mammalia, in Clarke and Roebuck's Yorkshire Vertebrata, includes forty-five species out of a possible sixty-nine. In Mr. T. Southwell's list for the county of Norfolk, altogether forty-one species are named.

†For a detailed account of the capture see the Naturalist, Sept. 1884, p. 33; Zoologist, Sept. 1884, pp. 360-1; Transactions of the Norfolk and Norwich Naturalists' Society, Vol. III, p. 676a.

‡Trans. Norfolk and Norwich Nat. Soc., Vol. III, p. 670.

§We are afraid a similar joint claim cannot be set up in the north of the county in respect to the recent occurrence of Sowerby's whale, *Physeter bidens*, within the estuary of the Humber, cast up on the shore at Spurn Point in the autumn of 1885.

|| See Mr. G. T. Rope, Range of the Dormouse in England and Wales, Zool., 1885, p. 207.

¶Worthies of England, Vol. II, p. 2.

\*\* Ed. Stuart, 1848.

†† Ingulph's History of Crowland, Bohn's translation.

from William of Malmesbury\* and Camden,† and again more recently in the writings of Gough,‡ Pennant, and Colonel Montagu. Drayton also in quaint verse§ describes the goodly fens and their teeming life. These passages from old writers have frequently been quoted in descriptions of fen scenery, and space will not permit us to do more than allude to them in a general way. A glorious place in its wild natural state was that old fenland before man had come in to bank and drain, and a very paradise to the fowler and fisher were the boggy flats where the ‘dark-green alders, and pale-green reeds stretched for miles round the broad lagoon, where the coot clanked and the bittern boomed, and the sedge-bird, not content with its own sweet song, mocked the notes of all the birds around, while high overhead hung motionless, hawk beyond hawk, buzzard beyond buzzard, kite beyond kite, as far as the eye could see.’|| Some idea may be formed of the enormous number of wild fowl frequenting the fens by the facts as related by Pennant,¶ that in one year from only ten decoys near Wainfleet 31,200 ducks were sent to London. In these times a flock of wild duck has been observed passing along from the north and north-east into the east fen in a continuous stream for eight hours together.\*\*

With the drainage of the fens the bird-life disappeared. Gone now as habitual residents are the harriers and short-eared owls, the grey geese and ducks, the cormorants, grebes, and divers, the bitterns, cranes, spoonbills, and storks; gone also are the smaller fowl—the black-tailed godwit, the avocets, ruffs and reeves, gulls and terns.†† Vanished too has many a fen plant, as the great fen ragwort, the giant cineraria and marsh sow-thistle, whilst others like the fragrant bog-myrtle, water germander, and the marsh and royal ferns manage just to retain a precarious footing, and are probably sooner or later doomed to extinction; and with the lost plants—and mainly perhaps

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\* Temp. 1100.

† Camden's *Britannia*, I Ed., 1695.

‡ Op. cit., Gough's Ed., 1806, Vol. II, pp. 380-1.

§ Polyolbion, Song 25 (Holland's oration).

|| Kingsley, *Prose idylls—the fens*.

¶ British Zoology, Ed. 1768, p. 486.

\*\* In one of the only two existing decoys worked in Lincolnshire, that of Ashby near the Trent, an average of 2,741 ducks, teal, and widgeon, with some others, were captured between the years 1834 and 1867; and since this 6,321 have been taken in a single season, and of these 2,300 in thirty-one days, but in late years the annual take appears to have somewhat fallen off.

†† It is satisfactory to know that for the last four or five years the black tern has nested in Lincolnshire.

from that cause—have disappeared many beautiful insects. The great copper and swallow-tailed butterflies, the red wainscot, rosy-marsh, red leopard and Whittlesea ermine moths, and many another insect treasure too numerous to mention; gone too are the myriad frogs, the ‘Lincolnshire nightingales,’ whose night croakings well nigh drowned all other sounds of fen-life.

Scarcely second to the fens in interest were the vast swamps and wastes of the Isle of Axholme, which as late as the commencement of the present century still swarmed with various fowl. Mr. Stonehouse has left some interesting notes\* in connection with the avifauna of this little known district, having reference to the nesting of the marsh harrier, the nesting habits of the bittern, and the taking of ruffs; he also says ‘the gyr-falcon is sometimes seen sailing over this and the adjacent wastes; it boldly attacks the largest of the feathered race; the stork, the heron, and the crane are easy victims; it kills hares by darting directly upon them.’† In the time of James I. a great herd of red deer wandered over Hatfield levels and the adjacent wastes of Lindholme, and in the inquisition of 1607 it is said that the number mounted to about 1,000 head, and that the herd is much impaired by the depredations of the borderers. From a curious entry preserved in the parish registers of Finningley in 1737, it is probable that some of the herd remained down to the commencement of the 18th century.

In the first twenty years of the present century, ruffs and reeves were common in all the maritime marshes in the north-east of the county, and we have been assured by an old sportsman that he used regularly to make excursions into the Stallingborough and Immingham marshes in the spring to shoot ruffs and dotterel; a friend also recently told us that he has heard his grandfather, who was a great shooter, talk of seeing the bank between Clee and Tetney in the spring covered with ruffs and reeves, and so tired with their long flight that you might almost knock them down with a stick, and that he could soon shoot as many as he could carry.

On the same coast and salt-fitties at that time came regularly to nest great numbers of oyster-catchers, Arctic, common and lesser terns, and the ringed plover; the shelldrake also in the sandhills and warrens, and in the adjoining marsh the hen harrier, spotted crake,

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\* The History and Topography of the Isle of Axholme, by the Rev. W. B. Stonehouse, M.A., 1839.

† In an old map MDCXXVI. of the Isle, before the drainage by Vermuyden, Storkcarre's are marked between Haxey and Wroote, on the east bank of the river Idle (Idille).

ruffs and reeves, snipe, and redshank ; still further inland, in the woods skirting the wolds, the kite,\* buzzard, and hobby. These were the days before the gamekeeper and the trapper were known, and sportsmen were well content with moderate bags, shot over dogs, and with much healthy exercise.

All testimony proves the former abundance of birds in Lincolnshire, and we only know of one exception to this. William Cobbett, who died in 1835, in his 'Rural Rides,' which extended almost over the whole of England, coming to Horncastle, says: 'There is one deficiency, and that with me is a great one, throughout this county of corn and grass and oxen and sheep that I have come over during the last three weeks, the want of singing birds. We are now just in the season when they sing most. Here in all this country I have seen and heard only about four skylarks, and not one other bird of any description ; and of small birds that do not sing I have seen only one yellow-hammer, and it was perched on the rail of the pound between Boston and Sibsey.' Had he passed through the same district in the autumn, when the great wave of migration has set in, he would have probably written differently, seeing the fields swarming with larks, chaffinches, and buntings, the hedgerows alive with blackbirds, thrushes, and redwings, and in the marshes, near the coast, immense flocks of snow buntings, tree sparrows, linnets, and twites, as well as hundreds of that characteristic bird of the county the grey crow ; on the coast itself such flights of knot, godwit, and grey plover as can be seen nowhere else in England.

The old fresh-water fisheries of Lincolnshire had a great reputation, more especially for pike and eels ; enormous numbers of the latter were annually taken, and they formed no small part of the tribute and endowments of the monasteries and religious houses. The fen eels often grew to an immense size—two are mentioned by Yarrell, taken in draining a fen dike, near Wisbeach, one of which weighed 27 lbs., the other 25 lbs.† The pike is plentiful in the rivers and drains of the fens ; there is an old adage which says

Witham pike  
England has neen like ;

and another,

Ankholme eels and Witham pike,  
In all England are nane syke.

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\*The eggs of the last kite recorded as nesting in Lincolnshire were taken from a nest in Bullington Wood, near Wragby, in the spring of 1870. Since this time it has only occurred as an immigrant passing south in the autumn.

† We recently obtained one of four large eels, *Anguilla acutirostris*, caught in a trawl net at sea some miles east of Flamborough Head.

The pike of the Witham, however, in the present day will bear no comparison with the monsters of the old fen meres, as we may judge from the jaws of this fish found in the peat and preserved in the Cambridge Museum. In the collection of the late Mr. Frank Buckland was a pike, weighing over 100 lbs., taken when Whittlesea mere was drained. Valuable salmon fisheries were worked at the beginning of this century on the Humber. Sir Charles Anderson\* states: 'In 1806, John Barrick of Barrow, gamekeeper, stated that his father rented the fishery of Barrow, and that thirty years ago he was present at the taking of eighteen salmon in one tide, one weighed 47 lbs., another 46 lbs., the remainder from 18 to 20 lbs. each, and sold at 6d. per lb.; at Killingholme 100 salmon were caught in one tide.' That curious fish the burbolt; a freshwater cod, is common in the Trent and other rivers; the barbel also is plentiful, and grows to a large size; we have known six taken with a line and rod in little over the hour, the collective weight of which was 42½ lbs.

There are districts in Lincolnshire which require careful and scientific examination before we can form a correct estimate of the existing fauna and flora. Such are the low-lying flats and warp islands at the junction of the Trent, Ouse, and Humber, where the Avocet nested as recently as about 1840,† and the ruff in 1871. Then there are the commons and warrens in the north-west, near the Trent, the habitat of many rare and interesting plants which thus far have escaped the ban of cultivation. Here also nest, or have recently nested, the hen harrier and short-eared owl, sheldrake, shoveller, teal, and wild duck, stone curlew, ruff, redshank, snipe, dunlin, and little grebe; and at Twigmoor, as well as at Manton Common, thousands of black-headed gulls. The great woodlands from Wragby southward to Bourn, and about Horncastle, the last haunt of the wild cat, pine marten, and kite, would well repay a close investigation; also the fenny flats at the head of the Wash, and the estuary itself, the home of the seal, and in the autumn and winter still the chosen retreat of innumerable wild fowl; here too in the summer we have seen flights of various waders and scoter, which from some cause or other have not joined in the spring migration of their fellows to breeding grounds fifteen hundred miles away within the Arctic circle.

Of the present aspect of the shire, its rich fertility and picturesque scenery we have said little; let such as care to estimate its agricultural wealth follow the wold road from Barton-on-Humber, above Caistor, and through Tealby and Market Stainton to Horncastle, at the

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\* The Lincoln Pocket Guide, p. 85.

† Handbook of Yorkshire Vertebrata, Clarke and Roebuck, p. 72.

season when the wide expanse of the hill country is ripening to the harvest. View the unbounding prospect just south of Pelham's Pillar, first northward across the continuous range of the Limber and Brocklesby Woods, and south-east over the rolling uplands to beyond Croxby and Binbrooke, every yard of which is in the highest cultivation, under corn, turnips, and artificial grasses and clover. What perhaps most strikes the observer is the absence of houses or farmsteads, for the wold villages as a rule lie hid away in hollows of the hills or along the main lines of traffic through the valleys, and at the best it is even now a thinly populated district compared with the rest of the county. North-east towards the Humber the wold breaks away through the Gap (the scene of a sharp cavalry skirmish between a detachment of the Newark garrison and the Parliamentary horse), beyond the ancient oak and beech of Riby Park and pleasant Aylesby, of shorthorn fame, with the fertile middle marsh merging into the rich pastures of the maritime plain; there softened by distance, rises the graceful water tower, 300 feet high, towering above the blue smoke haze of Grimsby like a Florentine campanile, and marking the entrance to the Royal Dock; beyond this the broad estuary of the river, Spurn Point and Dimlington high land, and on the outmost verge the silver sheen of the North Sea. Turning south, where the wold dips steeply to the central plain, we see the red-tiled houses and grey church tower of Caistor nestling in a hollow of the hills, with half the county spread out like a map, field succeeding field, with infinite shades of yellow, brown, and green, mingled with pinewood, coppice, and hedgerow timber, league beyond league to where on the blue horizon, like a great rock, rises the stately pile of Remigius—Lincoln Minster. All honour to the great Lord Yarborough, great great grandfather to the present earl, who with a lavish expenditure, and aided by an enterprising tenantry, changed the barren wastes into the garden of England, and who, as the inscription on the pillar in the neighbouring wood states, between 1787 and 1823 planted 12,552,700 trees on his estates.

Take again the view from the heath road south of Lincoln, above Boothby-Graffoe, looking west across Somerton Castle and the level district round Newark to the furthest bounds of Nottinghamshire; southward in one broad curve sweeps the wooded escarpment, mile beyond mile to Grantham, the graceful spires of frequent churches marking the position of each cliff village, till the oolite cliff becomes merged into that lias ridge from which the lordly towers of Belvoir overlook the wide vale of Trent. Still keeping our position, but facing eastward, we overlook the breadth of Lincoln Heath, where the

finest barley is grown and the largest sheep are reared. In the foreground Dunstan Pillar, a lighthouse on land, built in 1751, to guide travellers over the heath. Beyond the woods of Blankney rises at the edge of the fen, the massive square of Tattershall Castle, built by Lord Cromwell, Treasurer to Henry VIII; and still following the same direction, that slight-looking column on the skyline is Boston 'stump,' overlooking the never-ending fen.

Again, drive from Spalding to Boston in the latter part of August, along one of those long, straight fen roads, bordered with pollard willow and flanked by wide drains; from each reed-bed comes the rattling song of the sedge warbler, and here the reed-wren suspends her nest; the white or yellow cups of water lilies float on the peat-stained dike, and beneath the shadow of their rounded leaves we detect close-packed shoals of roach. On each side ripening sheets of corn extend to the horizon, or long rows of closely-placed 'stooks' stand in serried ranks like the encampment of an army—nowhere else in England can we see oats and wheat with such length of straw and size of head; then there are beanfields where each stalk is suggestive of that climbed by Jack in his search for the Giant's home; stretches of golden mustard, now in full flower; fields of dark-green swedes or light-green mangolds, of which each root would not disgrace the stall of the seedsman in the Agricultural Hall. Mighty oxen browse lazily the rich pastures, dotted too with big Lincoln wethers, whose recently shorn fleeces weigh from ten to even twenty pounds. From every side comes the sound of busy labour—the noisy rattle of the reaping machines, creaking of the laden wains, and the rustle of sheaves as they are pitched on the load; and all this under a sky which for intensity of blue and freedom from coal smoke, might compare with that of Southern Europe. Seeing all this, we may well exclaim with Cobbett that 'everything taken together, here in Lincolnshire are more good things than man could have had the conscience to ask of God.'

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### CRYPTOGAMIC NOTES.

**Hedwigidium imberbe and Grimmia hartmanni found in England.**—In looking over some of my old gatherings of mosses I recently found among them *Hedwigidium imberbe* Sm., collected in the Kentmere Valley, in the English Lake District. The only other British habitats, so far as I am aware, hitherto known for this plant, are in the South of Ireland and North Wales.

I may also add that I have gathered *Grimmia hartmanni* Schpr. in the same valley. This has previously been reported from some part of the same province, from the East and West Highlands of Scotland, and from North Wales. It was discovered in Britain first by Dr. Schimper, Dr. Wood and party, when in Scotland in the year 1865.—G. STABLER, Levens, Milnthorpe, Westmoreland, November 12th, 1885.

Jan. 1886.

## ENTOMOLOGICAL NOTES FROM HUDDERSFIELD.

GEO. T. PORRITT, F.L.S., F.E.S.,

*Huddersfield; President of the Entomological Section of the Yorkshire Naturalists' Union;  
Author of the List of Yorkshire Lepidoptera; &c.*

AMONG my captures during the season just over, are the following additions to the Huddersfield list of Lepidoptera:—

**Grapholita geminana.**

Not uncommon in Butter Nab Wood.

**Ephippiphora brunnichiana.**

Abundant among coltsfoot at Birkby, and very variable in colour.

**Penthina sauciana.**

Bred some beautiful specimens from larvæ collected from bilberry in the Nether-ton Wood.

**Gelechia politella (expolitella).**

This very local species I found in plenty in the wood, and on the adjoining moorland hillside overhanging Greenfield Railway Station, in July.

**Argyresthia conjugella.** Common in the wood at Greenfield.

**Coleophora nigricella.**

Abundant in Colonel Thomas Brooke's wood at Armitage Bridge, and less commonly in the Greenfield Wood.

**Tischeria complanella.**

Not uncommon in a wood at Brockholes, in June.

**Lithocolletis salicicolella.** Specimens I took in the Brockholes and Greenfield Woods, Mr. Barrett believes to be this species.

A few notes on several other species may not be without interest. In June, Mr. S. L. Mosley kindly took me to the spot where he last year discovered *Eupacilia dubitana* as new to the county list. We found it again in plenty, and any number might easily have been taken. About thistles in a field near, we also found several *Argyrolepis cnicana*. In August, *Scoparia coarctalis* occurred in profusion on the wall bounding the north side of the Huddersfield Cemetery, and I set considerably over a hundred beautiful specimens, including some I bred from larvæ found in moss on the wall. A few, but not many, *S. muralis* occurred with them, though on other walls that species was common. *Tortrix costana* was also common about docks just outside the cemetery. *Acidalia inornata* I found commoner in its old haunt at Butter Nab Wood than I have seen it for some years, but still in nothing like the abundance it occurred there in 1875. Mr. Henry Stephenson found a specimen of *Sphinx convolvuli* at rest in the town; and I am informed that Mr. Wintermann took a very fine *Acherontia atropos* at Holmfirth.

## ORNITHOLOGICAL NOTES.

**Notes on the Breeding of the Cuckoo and Ring Ouzel.**—In the *Naturalist* for October, Mr. G. T. Porritt gives an interesting account of finding an incubated egg of the Cuckoo on the bare ground. Mr. Darwin in his 'Origin of Species,' chap. viii, p. 213, gives a similar instance on the authority of Adolf Müller, to which he adds the following:—'This rare event is probably a case of reversion to the long-lost aboriginal instinct of nidification.' Perhaps a few further notes on the Cuckoo would be of interest to readers of the *Naturalist*. One does not often hear of two Cuckoo's eggs being found in the same nest. My friend Mr. Wieldt of Loughborough, however, found a Pied Wagtail's nest containing two eggs of the former bird, and either four or five of the latter, and as the two Cuckoo eggs were similar in size and colour he presumed they were placed there by the same bird. Cuckoos sometimes make rather remarkable choices in selecting nests to deposit their egg or eggs in. A neighbour last year brought me an egg he had taken from the nest of a Common Linnet, a seed-eating bird. It would be interesting to know how the young Cuckoo would fare on a graminivorous instead of insectivorous diet. Moorland Cuckoos, which are limited in their choice of nests, generally select that of the Meadow Pipit; but these latter birds are generally sitting by the time the Cuckoo lays, so that it is probable that the young Meadow Pipits will aid in the hatching of their foster brother to be, and may possibly escape the fate generally assigned to them of being shuffled out of the nest before they can take care of themselves. I found this year a Meadow Pipit's nest containing two of its own eggs considerably incubated, and one of the Cuckoo quite fresh; the Meadow Pipit's would have been hatched in about three days or so. I once met with a case in which a Cuckoo laid her egg in an unfinished nest of the Pied Wagtail, the latter bird laying her full complement of eggs some days later. This year, at Miller's Dale, I shot a young full-grown (as regards size) Cuckoo, in a very emaciated but otherwise healthy condition. As I saw no signs of its foster parents I concluded that they had abandoned it, and that it had not yet learned to find itself a sufficient supply of food. I think it probable that a certain amount of mortality occurs amongst young Cuckoos every year from a similar cause.

Writing of moorlands reminds me of my favourite, the Ring Ouzel. A friend has recently written to me asking if I have ever seen or heard of a Ring Ouzel's nest containing five eggs? I have never met with such a case myself. On reading Mr. Seebohm's new book, it struck me that he had transposed his notes, if I may be so bold as to say so, on the number of eggs laid by the Ring Ouzel and Missel Thrush; he says the Ring Ouzel lays *four* or *five* finely-marked eggs, whilst the Missel Thrush's eggs 'rarely exceed four in number, and in but very few cases are less.' My own experience has been exactly to the contrary. I should be glad to hear what northern ornithologists have to say in the matter.—F. B. WHITLOCK, Nottingham, November 4th, 1885.

**Sparrowhawk and Viper.**—The following is an extract from an old newspaper (year forgotten):—'A few days ago the sorter of Messrs. Rex and Co.'s 'establishment in High Ousegate, York, had occasion to go to the top of the 'premises, when he was surprised to find a dying Viper. Near it was laid a Pigeon, 'three Rats, and a Sparrowhawk, all dead. It is presumed the Hawk had taken 'the whole of its prey there to devour, including the Viper, whose bite had 'deprived the Hawk of life.'—J. H. GURNEY, Jun., Northrepps, Norwich, August 13th, 1885.

**Quail in North Lancashire.**—When shooting at Pilling, in the Fylde district of North Lancashire, on October 16th, I saw a Quail (*Coturnix communis*). This is the first I have seen or heard of in that district for some years. On reference to Mitchell's 'Birds of Lancashire,' it will be seen that the Quail is now but a rare visitor in that county.—E. T. BALDWIN, London, October 26th, 1885.

**Fulmar Petrels near Hartlepool.**—Two specimens of the Fulmar Petrel (*Fulmarus glacialis*) have been taken here during the recent storm. One was in a ploughed field, and allowed itself to be taken up easily. The other was covered with sand on the beach. Both are in possession of Mr. James A. Mann of this town.—JOHN E. ROBSON, Hartlepool, 24th October, 1885.

**Variety of the Crow (*Corvus corone*).**—An interesting variety of this bird was shot near Settle, in West Yorkshire, on the 27th or 28th of October, and examined by me when in the flesh. In general tint it was of a light silvery grey, with a slightly brindled appearance. The head and throat were darker than the back and under surface, while the tail and wings were lighter and approaching a dove shade. A closer examination revealed the cause of the brindled appearance, and of the distribution of the shades of colour; inasmuch as each and every feather was found to be barred with several bands alternately dove colour and smoky grey; and thus where feathers were smallest and the bars closest the plumage was darkest and *vice versa*. Five bars were counted on one of the feathers from the back, while on the primaries they were much more numerous, though not so close. The usual glossy plumage of the species gave a soft silky appearance, and added to the beauty of the specimen. This bird presents a very remarkable departure from the uniformity of colouration in the feathers of every member of the *Corvidæ*, in maturity and all stages of immaturity. Can it be explained by the strong probability that the Crows—the most highly developed of birds—are descended from speckled progenitors, and that this individual has reverted to the plumage of some remote ancestral type?—WM. EAGLE CLARKE, Leeds, October 30th, 1885.

**Flamborough Bird notes.**—I think nearly if not all the Swallows (*Hirundo rustica*) have taken their departure, as I have not seen any since October 18th. On that day I saw several skimming over some sea-weed at the South Landing, no doubt in search of food. We have had great arrivals of migrants this month. Hooded Crows (*Corvus cornix*) were the first to arrive on October 6th, also numbers—enough to fill the hedgerows—of Crested Wrens (*Regulus cristatus*); likewise several Ring Ouzels (*Turdus torquatus*) were seen on the Headland. Large quantities of Woodcocks (*Scolopax rusticula*) arrived on the 22nd and 23rd. One of our farmer's sons bagged six couple; another one bagged five. The game keeper of Rev. Lloyd Greame, Sewerby, informs me that he also shot twelve couple. They were seen in nearly all the gardens in the village. The other day I shot three Little Gulls (*Larus minutus*), and two Stormy Petrels (*Procellaria pelagica*), all splendid specimens.—MATTHEW BAILEY, October 28th, 1885.

Since writing, three Swallows were seen November 1st.—November 11th, 1885.

### CRYPTOGAMIA.

**Barbula squarrosa in Westmoreland.**—I have great pleasure in recording the occurrence of this moss in Westmoreland. According to the localities given for it in Dr. Braithwaite's 'Moss Flora' (Part ix, p. 228), it appears not to have been found hitherto further north than Derbyshire. I discovered the moss at Brigsteer, near Kendal, in October last. It was growing amongst loose stones in exposed places. I have lately found it on the coast, near Arnside, and in some quarries at Kendal, always on the limestone.—C. H. BINSTEAD, B.A., Broom Close, Kendal, November 26th, 1885.

### LEPIDOPTERA.

**Varieties of *Ephyra punctaria* and *Numeria pulveraria* near Barnsley.**—Strolling through a wood in this neighbourhood in the early part of June last, I accidentally disturbed a Geometer from a small birch bush, which settled amongst the grass, and at first sight I did not recognise it. It, however, turned out to be a curiously-marked *Ephyra punctaria*. In the general type we have the very distinct transverse brown line commencing half-way along the costal margin, passing through to the inner margin, and joining a similar line in the hind wing. Now, in the specimen I have, the brown transverse line commences as usual on the costal margin, but instead of passing right down the fore wing, turns off elbow fashion and terminates at the base of the wings; it also shows a decided dark-brown line on the outer edge or border, heaviest at the tip. Placed beside an ordinary specimen, it looks very striking.

I have also bred a solitary specimen, a female, of *Numeria pulveraria*, in which the broad transverse central band of umber-brown is entirely absent on one wing (the left). I unfortunately kept it too long in the cage, expecting a male, so that it is not quite so perfect as I should like.—JOHN HARRISON, Barnsley, Dec. 9th, 1885.

Naturalist,

## MIGRATION OF THE SALMONIDÆ.

## Part I.

## NOTES ON 'EARLY' AND 'LATE' SALMON RIVERS.

By FRANCIS DAY, C.I.E., F.L.S., &amp;c.,

*President Cheltenham Natural Science Society; Author of a 'History of the Fishes of Great Britain and Ireland,' &c.*

AMONG the many problems respecting salmon and their fisheries, there is none which exceeds in importance how to legislate for the different classes of rivers. For, as is well known, certain of these are termed 'early' and others 'late,' while these terms are employed in two somewhat different senses, one alluding to the ascent of the fish in relationship to the time of year, the other to their ascent for breeding or the period of their spawning. I propose offering a few remarks on this question, leaving the subject of 'migrations' to a further communication.

Early rivers are those in which clean-run salmon, fit for the market, ascend during the first months of the year, as in February, or even in January; while these ascents are deferred much later in other, and occasionally even in contiguous, streams. Thus, as observed by Russel, 'there are great differences between rivers regarding the periods in late winter or early spring at which they contain *clean* fish in quantities sufficient to render fishing profitable, and have got rid in any considerable degree of the foul fish, spawned and unspawned.' He suggested terming the rivers 'short seasoned' and 'long seasoned,' as he was not of opinion that there is much difference between rivers at the end of the season—the season at which a greater or less proportion of the fish begin to get gravid and out of condition. Likewise, it has been considered that breeding commences somewhat earlier, or that the fish complete their spawning operations in a shorter time in some rivers than in others; in either of which cases they would return earlier into condition than in localities where reproduction was deferred until late, or extended over a longer period. The Commissioners appointed in 1861 to investigate the Salmon Fisheries of England and Wales came to the conclusion that 'the great breeding season in England and Wales of all fish of the salmon kind is in the months of November, December, and January . . . and believe it will not vary more than a fortnight in any river . . . in some seasons it may commence a little earlier, or be continued a little later, but the principal breeding operations are performed chiefly in the three months mentioned.'

Professor Huxley suggests that 'we may call the interval between the ascent of the earliest and that of the latest fish in any given river

the "anadromous period" of the river.' But however applicable such a designation might at first sight appear, very strong objections must occur to restricting such a term to migrations of anadromous Salmonidæ. For in some rivers they only ascend at the spawning time, while Char migrate at the same season for breeding purposes, from the depths of lakes or large pieces of water, to suitable streams and shallows, in order to deposit their ova and milt; and this time with the char would be as completely their 'anadromous period' as when similar conditions in the salmon caused similar movements; but char are not anadromous forms: even carps in Asia similarly migrate at spawning time, as well as many other fish, and to term such migrations 'anadromous periods' in some fish and not in others would clearly be erroneous.

In the Report of the Salmon Commissioners for 1861 is a table showing, as far as could be ascertained, the periods at which the local Justices fixed the close time for rivers in their respective districts. Thus, in the Trent and Somersetshire Avon it began on August 12th, in the Ribble August 31st, in many rivers in September, some in October, others in November, a few in December, and in the Devonshire Avon in the middle of January, ceasing on May 6th. These varying periods would seem to show either that the salmon bred at different times in different rivers, or were variously in season at different places, or that the close time was not arranged solely in the interests of the spawning fish, the condition of the trout having possibly been taken into account.

Thus a very important consideration respecting the natural history of salmon rivers is why some should be 'early' and others 'late,' or in other words, why some should contain fishes in a marketable condition prior to other streams, and those frequently being contiguous ones. This is not a question simply regarding the period or season during which the salmon breeds, but at what time sufficient numbers of clean fish may be present in a river which might be reasonably captured for food without injuriously affecting future years' supply.

It is unnecessary to enter upon a detailed examination of how, up to 1858, three different close seasons were in force in Scotland, as for the Solway, the Tweed, and fisheries to the north of the latter river. How in England and Wales, up to 1861, the close season commenced in various localities from August 12th to the middle of January. How after 1861 this season was arbitrarily fixed between September 1st and February 1st; and how in 1873 an Act was passed permitting the commencement of the close season to be varied between certain limits, provided it did not begin later than Novem-

ber 1st. For treating all rivers in an identical manner, whether clean fish were present early or late in the season, and insisting upon fishing beginning or leaving off on a specified day in all, was, as illustrated by a Highland Laird, when before the Salmon Commission of 1825, about 'as sensible a plan as it would be to prohibit the farmers of England from cutting their crops till the harvests were ready in the Highlands.'

G. Little, giving evidence before the Parliamentary Commission in 1824, observed 'that the Eden is earlier than the Esk or the Annan; the fish enter it earlier than they do the others by nearly six weeks. Fishing in the Solway, the Eden, and the Dee at Kirkcudbright, might commence on the 2nd of February; but in the Annan, the Esk, and the Nith, should not begin earlier than the middle of March. The salmon that are caught in the Dee are quite out of season fully a month before they are in the Nith and the Annan; these are two very late rivers.' He likewise stated that in the Nith last season his tenant commenced on the 11th March. He was informed that he then killed upwards of 200 salmon, some of them positively not spawned.

James Gillies deposed (1824) respecting the Tay, where he had fished for twenty-six years, that 'when I went to Perth first, most of the river was over with spawning at December, but you will now scarcely see one fish come there to the redd till about the end of November, and the throng time for spawning is generally in the months of December and January.'

Yarrell considered that 'rivers issuing from large lakes afford early salmon, the waters having been purified by deposition in the lakes; on the other hand, rivers swollen by melting snows in the spring months are later in their season of producing fish, and yield their supply when the lake rivers are beginning to fail.' The general impression seems to have been that the temperature of the river water exercised some influence in acting upon the time at which they were ascended by salmon when desirous of entering for breeding purposes, they usually first selecting such as were the warmest.

Sir William Jardine observed that the causes influencing ascent are as yet undecided, and that where the time varies much in neighbouring rivers they are less easy of solution. With but few exceptions the northern rivers are the earliest, and it has been suggested that this variation in the season may be dependent upon the temperature of the water, and that such Highland rivers as have their origin in large lochs are all early owing to the great mass and warmer temperature at their sources, and that the eggs in such localities are earlier hatched. Thus the Oykel, in Sutherlandshire, springs from a small Alpine lake,

perhaps about half a mile in breadth; while the Shin, which is a tributary of it, coalescing at about five miles from its mouth, takes its rise in Loch Shin, a large and deep extent of water, and connected to a chain of other lochs. The river Shin, from its course between the loch and the tideway of the Kyle, has its temperature several degrees higher in winter than the waters of the rivers Oykel and Cassley, with which it mingles on entering the Kyle; and the temperature is several degrees lower in summer than the waters of the long-run, hill-collected, and sun-heated rivers. 'To be sure respecting the temperature, a thermometer was regularly kept. The salmon soon finds out the warmer side of the estuary, and the river from which that warm water flows. It is well known that salmon during the winter and spring months, when the water of the warmest river is cold, always run on the sunny side of the estuary, that is, as much as possible on the north side, and there during that time the run of fish is to be found. In the summer months, that is, after the 1st of May, the fish run on the opposite side of the estuary. The high temperature of the water at that time induces them to seek as much as possible to get under the cool shade of the south banks, where there is the least influence of the sunbeams.' Of the many rivers going into the estuary, the only one which produces early fish is the warm Shin.

Dr. Heysham was of opinion that in Cumberland salmon at first spawn in the warmer streams, leaving the snow-fed ones until later on; consequently, during the winter and spring, they prefer the Eden to the Esk, the Caldew, or the Peteril. The two first rivers enter the same estuary, their mouths being merely separated by a sharp point of land, yet there is scarcely an instance of a new salmon ever entering the Esk until the middle of April or beginning of May. The fishermen assert that the Eden is considerably warmer than the Esk, the latter having a more stony bed, shallower stream, and broader expanse. When snow-water comes down the Eden the fish will not ascend; by the beginning of summer the temperature of the two rivers is about the same. The Peteril joins the Eden a little above, and the Caldew at Carlisle; yet up these rivers the salmon never run unless in the spawning season, and even then in no great numbers.

I will now give an instance of a river which was originally an early one, but was found to become a late one by the Earl of Home, who in 1837 observed 'that in the Tweed a very great change had taken place within these twenty or thirty years; a considerable portion of the breeding fish not arriving into breeding condition until long after the time they had formerly been in the habit of doing so.' The first inquiry here should be whether this had happened consequent upon any changes in the river, the placing of artificial obstructions in its

course, or an alteration in the natural spawning time in the fish irrespective of the condition of the water. The river itself, it was observed, had changed, due to the draining of the sheep farms on the hills, the effect produced being that a little summer flood which, previous to 1795 took a fortnight or three weeks to run off, now (in 1837) became completely run out in eight hours. The bogs on the hill sides, which were the feeders to the river, have the water at once carried off by drains, causing sudden but short floods, which have all run off before the river has had time to clear itself.\*

Buckland considered that clean scaled, well-developed, fat fish run up some rivers during February and March, possibly earlier; that these ascending fish must meet the descending kelts. Or in short that there is a small *spring migration* ascending in contradistinction to the usual large *autumnal migration* for breeding purposes. He found that the amount of fat upon the pyloric appendages of these spring fresh-run fish, less than what is seen in such as migrated later for breeding purposes. Denying that they are barren, he considered that they would not breed the season they ascended the stream, or in fact that they were temporarily sterile. He thought they had laid up sufficient fat in the sea or estuaries to take a run into freshwater, fancying they might be the early kelts of the previous year, which having reached the sea, say in January, re-appear as clean fish in thirteen months, or February the next year, or even very large fresh-run fish in twenty-five months, or February the succeeding year. He likewise remarked that it is impossible to convert a 'late' into an 'early' river.

Professor Huxley in his Annual Report for 1884, entered upon his views regarding 'early' and 'late' rivers. Having quoted Yarrell's observation, 'that some rivers are much earlier than others, the fish in them coming into breeding condition and beginning to spawn at an earlier period,'† he continued: 'I am not aware of the grounds on

\* Buckland accounted for an alteration in the summer run of grilse from this cause, but up to the present time there have been too few and too superficial inquiries made to be able to decide either whether the period of migration has changed, or is changing, and secondly what influence the Land Drainage Act of 1861, or rather its operation, has in reality effected.

† Yarrell's observations on this point, as remarked by himself, were based on those of Sir W. Jardine, who had observed in the 'Edinburgh New Philosophical Journal' of 1835, from which Yarrell quoted, that 'it is a mistaken opinion to suppose that the spawning season is only between October and February. In many rivers it would commence in the end of August, if the grounds and entrance to the rivers were left open and unmolested; and in some of the Sutherland streams which have been left undisturbed for the last two years, the spawning season has been advanced by a month or six weeks' (pages 48, 49).

which Mr. Yarrell made this statement, and I am unable to discover any satisfactory evidence that it is well grounded. All the evidence to which I have access tends to show that, taking all the salmon rivers in England and Wales together, the spawning season covers more or less of November, the whole of December and January, and more or less of February. It is rare for fish to spawn as late as March, and I know of no conclusive evidence that they spawn earlier than November' (page 28). He concluded that the 'earliness' or 'lateness' of a river being affected by artificial conditions is devoid of foundation, while there is no evidence that any 'early' river was formerly made 'late' by late fishing, or that any 'late' river has since been made 'early' by early cessation of fishing. He instanced the Cumberland Derwent, where the coops at Salmon Hall Weir used to be fished until October 10th, but from 1861 have been closed on September 1st annually; but there is no evidence that the fish have become any earlier than they formerly were. He considered the problem not so much why some rivers are late, as why so many are early, why fish should ascend months prior to any breeding necessity rendering such advisable. The subject of annual or biennial breeding, and whether these fish were temporarily sterile, does not appear to have claimed his attention.

In the same Report the Inspector observed 'in the Tamar, peal are said to be ready to spawn in August, and salmon in September. In the Tavy the salmon are said to be ready to spawn in October, but the peal seldom spawn before November. I very much doubt, however, whether anyone ever saw a salmon or a peal actually spawning so early as August, September, or even October. The opinion that they are 'ready to spawn' is inconclusive. Against this evidence may be cited the case of a neighbouring river, the Plym. I am informed by Mr. Henry Clark, one of the conservators, that the fishermen fishing for herrings and *coarse fish in the tidal waters* of the Plym, in December last, caught at the same time spent peal just returned from spawning, and fresh-run salmon going up to spawn; and that about the same time several salmon, weighing from 14 lbs. to 24 lbs., killed by otters, were picked up below the weir at Cann Quarry, 'full of peas, nearly ripe'; while in March last year some fresh-run peal going up, and spent salmon coming back, were caught together between the weir at Cann Quarry and the tidal waters.' In these instances it is to be regretted that neither the Inspector of Fisheries or his assistant took any steps to personally ascertain the condition of the fish in these rivers at the period referred to, but accepted information received at second hand.

Mr. Willis-Bund, chairman of the Severn Fishery Board, in *Salmon Problems*, 1885, remarked: 'Mr. Huxley says there is no evidence that it (salmon which come into the river in January and February) will spawn before November. The evidence of the Severn goes to prove it would spawn in October' (page 166).\* 'I can only say I have in several years seen fish spawning in October, and the Severn Superintendent tells me he has constantly done so' (page 20). 'This year (1885) I have heard of fish spawning as late as the end of March; and one year I heard of fish, full of spawn, being caught in April. On the Usk, on the 18th of May, 1861, a fish was taken full of spawn' (page 59).

Without further increasing the number of extracts from the writings of authorities on fisheries, or official statements that have been more or less accepted, I propose to briefly consider a few of the causes which have been ascribed, and some of which probably have an influence as to whether certain rivers are early or late.

The existence of lakes near the sources of rivers has been held to influence the earliness or lateness of its waters. In England and Wales we find such conditions present in the Eden, 70½ miles long, with a catchment basin 916 square miles in extent; the Dee, 93 miles long, and with 850 square miles of catchment basin; the Derwent, 35½ miles long, and 268 square miles of catchment basin; the Ehen, 14½ miles long, with 59 square miles of catchment basin; the Irt, 16¼ miles long, with 48 square miles of catchment basin; and the Leven, 6½ miles long, and with 123 square miles of catchment basin. The two first, with the longest course, are early rivers; but not so the remainder, which are rather late than otherwise. Irrespective of which some of the earliest and some of the latest rivers are among such as have no lakes in their course, and are of very different lengths.

Buckland held that large estuaries at the entrance of salmon rivers must have the same influence as lakes near their sources, or in their course; but detailed investigations hardly bear out this theory, while it has been remarked that in a single estuary, as of the Severn, three rivers with different degrees of earliness enter. It has also been suggested that the conditions which occasion the early or late ascent of fish into freshwater may have some connection with the circumstances of the marine life of the salmon, the food which it is able to obtain, or the enemies from which it has to escape.

What the temperature or other conditions of the water in the river, or the food that is present therein at various seasons of the year, has to do with the period at which salmon ascend into it from

\* This question will be discussed in a future paper.

the sea, are worthy of study. Jardine, Yarrell, and others have remarked that the temperature of the river-water exercises some influence in the time of the ascent of these fish, they usually first selecting those that are warmest (of course in moderation), while in most streams the eggs would be more rapidly hatched; thus, other things being equal, the young fish would be hatched earlier in the warmer than in the colder streams. The Salmon Commissioners of the Tweed remarked in 1867 that it was stated by several witnesses that 'salmon do not enter the river freely when full of ice or snow-water, while on the other hand, a high temperature of the river-water equally deters them from entering it.' Mr. A. Young also remarked that as a general rule such Scottish rivers as fall into the German Ocean and Portland Firth are 'early,' while those emptying themselves into the Atlantic are 'late.' And it is suggested that as the German Ocean is a cold sea, so the slight difference between the temperature of its waters and those of the rivers induces salmon to ascend early. Whereas rivers on the west coast mostly descend from snow-fed sources, and are therefore cold, much colder than the Atlantic, consequently the salmon wait until the snow floods have ceased. It is also evident that the same comprehensive rule extends to the English and Welsh rivers, and those on the east coast falling into the German Ocean are earlier than those on the west, or of the south coast of Devonshire and Cornwall, where the warmer Atlantic or the English Channel would have the same influence as pointed out by Mr. Young in Scotland.

But there are also differences in degrees in the temperature of the waters of rivers to be considered, and which may be influenced by the extent of their course, the nature of the country through which they pass, as well as the amount of rainfall. Thus rivers which have their rise in mountains, and after a short and rapid course fall into the ocean, would be colder than such as are longer and more sluggish, and as Sir W. Jardine's and others' observations pointed out, that in the cold months salmon naturally select the warmer streams as well as their most sunny sides. Rainfall has been observed to afford an index to the temperature of rivers, for its distribution is dependent on the level of the land, the result being that such as pass through districts with the heaviest rainfall, would, as observed by Professor Huxley, be late rivers, while those traversing lowlands where the rainfall is less, would be early rivers. According to this view the waters of the Severn should be warmer than those of the Wye, which latter should be of a higher temperature than those of the Usk, and the salmon would ascend these rivers in the foregoing order, which is the order in which they are tabulated

among early and late rivers. But it must be observed that this theory respecting rainfall does not stand the test of examination throughout Scotland and Ireland.

Can any conditions of salmon ascending 'early' or 'late,' or breeding earlier or later, or completing their ova depositing within a shorter period of time, be attributed to constitutional peculiarities affecting the local race of fish? Two main branches of inquiry would seem to be here indicated. *First*, are all these early fish ascending in order to breed the same year? *Secondly*, what are the constitutional peculiarities of early salmon?

It would seem from the few investigations which have been made that it is by no means improbable that some of the early-ascending fish may be seasonally sterile, although it is generally held that in many ova and milt may be discovered on a microscopic investigation to be a very little developed, and although these last would probably be among such as push on to the upper waters, it seems still desirable of proof why it is that they should desire to remain so many months in the stream, away from the sea. This gives rise to the very important question of how frequently do salmon breed? We may dismiss as untenable one consideration which has been advanced, that they may do so twice yearly; still we possess the evidence of Mr Buist that he spawned a particular fish on two successive seasons, and of Mr. Brown, who treated another similarly on two alternate years, but where it was during the intermediate period of course it is impossible to say. Lastly, we have Mr. Frank Buckland, who stated before a Parliamentary committee in 1877, that 'a salmon does not breed every year, but every three years,' and whose further remarks I have already quoted. It is asserted in *Nature*, 1877, page 376, that a gentleman who at different times had marked hundreds of kelts during the months of February, March, and April, while they were descending to the sea, had never seen one returning to spawn in the river that autumn, but he had met with individuals he had marked coming back the next year. He believed that 'they frequent the fresh waters from habit, although there is no sign of milt or roe,' and that these fish are biennial breeders. On this point one looks in vain through the reports of our Inspectors of Salmon Fisheries for any facts, but in such there is absolutely nothing to the point except bare opinions, and those often crude. In the United States Mr. Atkins has been able to prove from a series of experiments, extending over several years, that in the Penobscot the salmon, *Salmo salar* var., breeds every second year. I am not going in this place to enter into the questions of breeding and fertility or sterility, as, prior to any reliable conclusion being formed, it seems desirable that those whose duty it

is to investigate our salmon should ascertain whether they are annual or biennial breeders.

As to the constitutional peculiarities of an early or late race, although summarily dismissed by several authors, it does not appear improbable that such may exist. Many excellent observers have held that the descendants of early-ascending fish would similarly give rise to a race having the same peculiarity. And if this early habit is capable of transmission to offspring, it would be sound economy to stock a late river with an early breed, in order to try and convert it from a late into an early one. At the same time attention must be drawn to the fact that it has not been proved that it is the early breeders that produce the early ascending fish,\* and it is still to be shown whether the parents of these early forms do not deposit their milt and ova at the same time as salmon whose descendants have the late instincts; while I have already drawn attention to the want of evidence respecting the condition of the early ascending fish as regards their fertility or sterility. The Commissioners in 1861 concluded that as to 'the alleged difference of season in certain rivers, we think that artificial causes have much more concern in producing such anomalies, than the laws of nature, . . . . In order to enable the upper waters to be fully stocked, it is necessary to afford a free run to the early spawning fish, which are naturally impelled to seek the highest parts of the stream to breed in. If, however, in consequence of an undue extension of the fishing season, these fish are cut off in their passage up, it follows that no stock will be left to replenish the river, except those later fish which make their ascent under the protection of the close time. It is in this way that some rivers are artificially made later, and the fact accounted for' (page xxviii). Professor Huxley seems to consider that, just as the capture of the early fish in early rivers has not tended in the least degree to make them late, so the preservation of the late fish in the very late rivers has not tended to make them later than they were.' 'I cannot say,' he continues, 'that I can discover any good ground for the belief that any kind of human interference is competent to affect the earliness or lateness of a river. Differences in the habits of fish in the same river have been and are still observed where the artificial conditions are constant'; and he instances weirs, but denies that their presence has altered the inherited instincts of these fish as to their times of ascent.

Mr. Pike, secretary to the Dart Fishery Board, remarked in *Land and Water*, March 28th, 1885, that the Totnes Weir

\*The Commissioners for 1861 observe: 'Experience has fully proved the fact in Ireland, where the enforcement of an earlier closing season has produced within a few years a corresponding early supply in certain rivers' (page xxviii).

entirely prevents salmon ascending the river. 'For a great many years the river had been netted in close time to pass salmon over, but it is only four seasons ago that this netting was permitted before the rod fishing ended on October 31st. Ever since the salmon were passed up early in September they have been seen spawning high up on Dartmoor as early as the first week in October, and young salmon have been hatched out the first week in January. The result is that early spawned fish have returned again to the sea before Christmas, and a goodly number of large fish from 12 lbs. to 20 lbs. have been taken in the nets throughout the month of March. This instance, the correctness of which I assume, is one showing that the lateness in spawning in a certain river may be consequent upon the presence of an artificial obstruction to ascent; remove that obstruction, or pass the breeding fish over it early in the breeding season, the young are earlier reared, and the breeders return sooner into condition than had they been left to wait to a later period before spawning. This and other examples which I have adduced, go to prove that artificial causes may convert an early breeding into a late breeding river; that alter the conditions, and the fish may again breed in the earlier months, but more evidence is requisite to show the result of this on the early ascending fish.

Mr. Francis remarked: 'The Erne and the Bundrowse are only a few miles apart; their capabilities are very similar, both have large lakes for shelter, yet one gives fish in February and the other not till May. The Editor of the *Field* observed, 'Where there are heavy spring runs which are left solely to the rod and never netted, those runs keep up in almost undiminished numbers, but as soon as the nets are brought to bear, they sooner or later die out altogether.'

I would finally observe that it is clear some rivers have early ascending fish, while in others they may be late, and all the intermediate grades are seen as well as several ascents in one stream during the year. I would suggest whether fishermen and the fish-consuming public have not a good reason to require our salmon fishery inspectors to afford some explanation of this phenomenon. One wishes to be informed whether all these early fish will or will not breed the year they ascend, and likewise if the salmon in our rivers are annual or biennial spawners. Assertions or surmises on these points are unavailing for proof, and as this question is one on the solution of which a great amount of our salmon legislation would have to be based, it is surely not asking too much that a definite number of fish should be annually marked; that this should be carried on for several successive years, and the results duly recorded. Every fact ought to be given the fullest publicity, from which everyone would be able to draw their own conclusions.

## BOOK NOTICES.

**Coloured Figures of the Birds of the British Islands.**—Issued by Lord Lilford, F.Z.S., &c., President of the British Ornithologists' Union. London: R. H. Porter, 6, Tenterden Street, W. Part I, October 1885.

The year 1885 has been decidedly an important one for British ornithology, for it has witnessed the completion of the fourth edition of Yarrell's standard book on British Birds, also of Mr. Seebohm's most useful book on their Eggs; and the commencement of the highly important work now under consideration. So far as the letter-press of Yarrell is concerned, little is left to be desired, and for the next quarter of a century it will remain *the* book on the subject, but its illustrations are utterly inadequate to the requirements of a modern scientific production. That a book containing really good coloured figures of our birds was wanted, we venture to say no one acquainted with the subject will venture to deny. True it is that Gould's plates are difficult to surpass, but then it is a work within the reach only of ornithological nabobs, while Lord Lilford's, which we consider at the very least their equals, are issued at a price within the reach of almost all. These chromolithographed plates are the production of Mr. Keulemans, the best of modern bird painters, and we consider them the most satisfactory figures of British birds extant, and it is with extreme pleasure that we recommend them to all our readers who are ornithologically inclined. We should remark that the work, as its title implies, consists of plates only, but a sheet to each picture—giving references to descriptions, &c., of the species by leading naturalists (chiefly British), the faunal position in Britain, and the French, German, and Spanish names—is given.

**Natural History of British Zoophytes**, including the Hydroida, Actinozoa, and Polyzoa, found in Great Britain, Ireland, and the Channel Islands.—By Arthur S. Pennington, F.L.S. Crown 8vo, 363 pages and twenty-four plates (Lovell Reeve and Co.) 10s. 6d.

The publishers are to be congratulated on the appearance of a new volume of their well-known and much appreciated Crown Series of works on British Natural History, and the one now before us is a welcome successor to such useful books as Rye's British Beetles and Staveley's British Spiders have already proved themselves to be. The author, on his part, shows an extensive acquaintance with the literature of his subject, and his book is calculated to prove a useful introduction to the subject in general, and to the more advanced, more bulky, and more technical works of Hincks and Allman. The term Zoophytes not now possessing any rigid scientific application, is a convenient popular term, and as such Mr. Pennington makes use of it to include the Hydroida, Actinozoa, and Polyzoa. After a brief history of zoophytology and a chapter upon classification and distribution, he gives an account of the various families, genera, and species which are to be met with in the British seas, making copious mention of localities (including a great many North of England ones) for the less well-known forms, and giving numerous extracts from the writings of his predecessors in the study. The families and genera are characterized, and brief diagnoses are given for many of the species, a few of which are described as new. It would, however, have been an advantage, and one much appreciated by beginners, if the author could have seen his way to giving either analytical tables, or a brief and terse diagnosis (for space will not permit of elaborate descriptions) for every species. At the end of the book are some useful directions for collecting and preserving these forms of life, a bibliography (which is, however, wanting in precision and detail), a glossary of terms, an index of popular names, and a most valuable index of scientific names and synonyms, the latter being distinguished by italic type. Typographically the book is not quite all that could be desired, for although it is well and handsomely printed, the use of one size of type for the body of the work leads to a sense of confusion on the part of the reader, and a want of the clearness that would have been attained by the judicious employment of a bolder type for the specific names and of a smaller one for the synonyms. The book is a decided acquisition to a natural history library, and the author (who, by the way, is a Lancashire man) is entitled to our thanks, while to his wife we owe the numerous plates which add much to the usefulness of the work.

## NOTES AND NEWS.

The Isle of Man Natural History and Antiquarian Society continues to hold its meetings in different towns of the island. At a recent one papers 'On the Mammals of the Isle of Man,' and on its butterflies (the latter including 23 names) were read.

We are pleased to hear of the establishment of the Kendal Natural History Society, which has been formed in connection with the Kendal Literary and Scientific Institution. The Rev. George Crewdson is chairman, and Mr. Joseph Severs secretary. We note that the society includes several members well known for their scientific work, and we wish them and the society all prosperity.

The Manchester Geological Society held its annual meeting on the 6th of October, when a report of a favourable character was presented. The number of members now stands at 218, and the financial balance at £106. Mr. H. M. Ormerod, F.G.S., who was stated to be the oldest member of the society, was elected president, and Messrs. George Wild, R. T. Burnett, F.G.S., W. S. Barrett, and H. A. Woodward, vice-presidents. Mr. H. S. Ormerod was chosen treasurer, and Messrs. J. S. Martin and Mark Stirrup re-elected secretaries.

The Manchester Microscopical Society having lost a valuable officer in the person of their late Secretary, Mr. Charles L. Cook, who is leaving Manchester, advantage was taken of the opening of the winter session to present him with an illuminated address and a purse containing £23. At the same meeting—held on the 1st of October—the president, Dr. John Tatham, delivered an address, and the veteran Mr. Leo H. Grindon spoke of the beginnings of microscopic study in Manchester more than forty years ago.

It appears that it was in 1842 that microscopy might be said to have begun in Manchester. Several young men, including Prof. W. C. Williamson, then practising as a surgeon, the late Mr. Joseph Sidebotham, Mr. John Ashworth, long since dead, Mr. Thomas Gray, and Mr. Leo H. Grindon, were induced to commence work with the instrument. They gave their attention very particularly to aquatic vegetation and the then famous fossil infusoria from Barbadoes. After the lapse of fifteen years more the little band of students was reinforced by the late Mr. Thomas Brittain, and a little later still by Mr. W. H. Hayes, and little since then the study grew in their hands.

The annual meeting of the Wakefield Naturalists' and Philosophical Society was held on the 23rd of September. The report spoke of the society's position having become much firmer, and gave particulars of the year's proceedings. Mr. E. B. Wrigglesworth, to whom the society is much indebted for his five years' tenure of the secretaryship, retired from that office, and Mr. W. Rushforth was chosen as his successor, Mr. G. Ianson as president, Messrs. G. Parkin and E. B. Wrigglesworth vice-presidents, Mr. Councillor A. Lupton treasurer, Mr. G. C. Ramsden financial secretary, and Mr. H. Emmett librarian.

The 'Elizabeth Thompson Science Fund,' established 'for the advancement and prosecution of scientific research in its broadest sense,' now amounts to \$25,000. As the income is already available, the trustees desire to receive applications, addressed Dr. C. S. Minot, 25, Mt. Vernon Street, Boston, Mass., U.S.A., Secretary of the Board of Trustees, for appropriations in aid of scientific work. This endowment is not for the benefit of any one department of science, but it is the intention of the trustees to give the preference to those investigations, *not already otherwise provided for*, which have for their object the advancement of human knowledge, or the benefit of mankind in general, rather than to researches directed to the solution of questions of merely local importance. Applications for assistance from this fund should be accompanied by a full statement of the nature of the investigation, of the conditions under which it is to be prosecuted, and of the manner in which the appropriation asked for is to be expended.

# METEOROLOGICAL RETURNS FOR OCTOBER 1885.

EDITED BY GEORGE PAUL, F.G.S., F.R.Met.S., *Moortown, Leeds.*

NAME OF STATION; ITS HEIGHT ABOVE SEA-LEVEL; AND NAME OF OBSERVER.	Atmospheric pressure.	TEMPERATURE (IN SHADE).						RAINFALL.					
		Mean Height of Barometer (reduced to zero and to sea-level).	EXTREMES.				Total Rain Collected.	Number of Days on which there fell $\frac{1}{10}$ inch or more.		Greatest Fall in a Single Day.			
			Mean Temperature for Month.		Highest Maximum registered.							Lowest Minimum registered.	
			Amount.	Date.	Amount.	Date.						Amount.	Date.
<b>ISLE OF MAN:</b>													
CRONKBOURNE (140 ft.).... } A. W. Moore, F.M.S. .... }	inch 29'711	deg. 46'07	deg. 55'6	1st	deg. 28'3	25th	inch 4'879	18	inch 1'161	30th			
<b>W. COAST:</b>													
BARROW-IN-FURNESS (—) .. } W. S. Whitworth .....	29'676	46'00	56'0	2nd	34'0	12th	4'130	20	0'740	30th			
LIVERPOOL (BIDSTON) (—) } J. Hartnup, jun. .... }	29'692	45'70	58'0	2nd	35'0	12th	6'230	24	0'720	6th			
<b>CENTRAL HILL REG.:</b>													
NEWTON-REIGNY (Penrith) ) (577 ft.) T. G. Benn, F.M.S. ) HAWES JUNCTION (4,135 ft.) ) Station-master .....	29'701	42'30	55'4	2nd	26'0	12th	4'110	24	0'550	30th			
STONYHURST (381 ft.) .....	28'437	40'00	52'0	2nd	28'0	30th	6'740	27	0'780	2nd			
Rev. S. J. Perry, F.R.S. )	29'718	50'20	56'8	17th	26'9	29th	5'723	22	0'735	30th			
<b>EASTERN LOWLAND REGION:</b>													
NORTH SHIELDS (—) .. } J. W. Irvine .....	29'654	45'30	57'0	2nd	35'0	25th	3'850	21	0'510	10th			
SCARBOROUGH (120 ft.) .. } Allan Rowntree, F.M.S. }	29'661	45'92	56'2	{ 3rd } { 7th }	38'1	28th	4'860	24	0'960	23rd			
YORK MUSEUM (—) .....	29'675	45'30	58'0	{ 2nd } { 3rd }	31'0	{ 12th } { 30th }	4'020	22	0'650	23rd			
The Curator .....	29'679	43'61	56'2	1st	32'5	30th	5'335	24	0'950	23rd			
MOORTOWN, LEEDS (500 ft.) ) G. Paul, F.G.S., F.M.S. )	29'790	45'10	58'4	4th	31'0	12th	4'880	25	1'440	23rd			
HULL, DERRINGHAM (10 ft.) ) Wm. Lawton .....	29'632	46'4	61'0	2nd	38'0	14th	4'570	28	0'970	23rd			
SPURN POINT (19 ft.) .....	29'660	44'16	56'0	2nd	32'0	30th	5'450	25	1'510	23rd			
LOUTH, LINC. (111 ft.) .. } T. W. Wallis .....	29'670	44'77	57'0	16th	33'0	12th	4'890	23	1'540	23rd			
BOSTON, LINC. (24 ft.) .. } W. H. Wheeler, M. In. C. E. }	29'696	45'4	62'0	16th	29'0	30th	5'620	23	1'240	23rd			
LOUGHBOROUGH (—) .. } W. Berridge, F.M.S. .... }	29'709	46'9	60'0	{ 4th } { 16th }	30'0	12th	3'320	19	0'830	23rd			

\* Not reduced to sea-level.

*Wind.*—1st Division (Isle of Man) N. 13, N.E. 10, E. 4, S.E. 1, S. 1, S.W. 6, W. 16, N.W. 7, calm 4 days.

2nd Division: N. 4½, N.E. 5, E. 2, S.E. 2½, S. 1½, S.W. 5, W. 5, N.W. 5, calm 0½ day.

3rd Division: N. 5½, N.E. 4½, E. 3, S.E. 1, S. 0, S.W. 3, W. 9, N.W. 3, calm 2½ days.

4th Division: N. 4½, N.E. 4½, E. 2½, S.E. 1½, S. 1½, S.W. 6½, W. 4½, N.W. 5½, calm 0 day.

London: N. 3, N.E. 2, E. 2, S.E. 2, S. 2, S.W. 6, W. 7, N.W. 5, calm 2 days.

*Gales.*—Isle of Man 7 days; 3rd Division, 5 days; 4th Division, 7 days; and London 5 days.

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*Bright Sunshine.*—Isle of Man, 117 hours; Newton-Reigny, 61'0 hours; Stonyhurst, 68'8 hours; and

Hull, 69'2 hours.

*Highest Temperature in Sun.*—Isle of Man, 111'9° on 1st; Newton-Reigny, 104'9° on 3rd;

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Naturalist,



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## BOOKS RECEIVED.

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Leeds Geological Association.—Transactions, part I, 1883-4-5. [The Association.  
Berwickshire Nat. Club.—Proceedings, vol. 10, No. 3, 1884-5. [The Club.  
Revue Bryologique, 1885, No. 6, and 1886, No. 1. [T. Husnot, Editor.  
Grevillea, a quarterly record of Crypt. Bot., No. 70, Dec. 1885. [Dr. Cooke, Ed.  
New British Micro-Fungi, by G. Masee, F.R.M.S. [The Author.  
British Snakes, by Linnæus Greening, 1885. [The Author.  
British Lizards, by Linnæus Greening, 1885. [The Author.  
List of British Marine Shells, by A. Somerville, B.Sc., F.L.S. [The Author.  
Royal Dublin Society.—Scient. Trans., vol. i (19 parts), 1877-82. [Society.  
Royal Dublin Society.—Scient. Proc., vol. i (3 parts), 1877-8, ii (7 parts), 1878-80, and iii (parts 1 to 5), 1881-2. [Society.  
Journ. of Micros. and Nat. Science for Jan. 1886, vol 5, No. 17. [A. Allen, Ed.  
Manchester Lit. and Phil. Society.—Memoirs, Third Series, vol. 8, 1884; Proceedings, vol. 23, 1883-4, and 24, 1884-5. [The Society.  
Midland *Naturalist* for January 1886. [The Editors.  
The Young *Naturalist* for January 1886. [J. E. Robson, Editor.  
The *Naturalist's World* for January 1886. [P. Lund, Editor.  
Illustrated Science Monthly for January 1886. [Bogue, Publisher.  
Science Gossip for January 1886. [Chatto and Windus, Publishers.

## EXCHANGES.

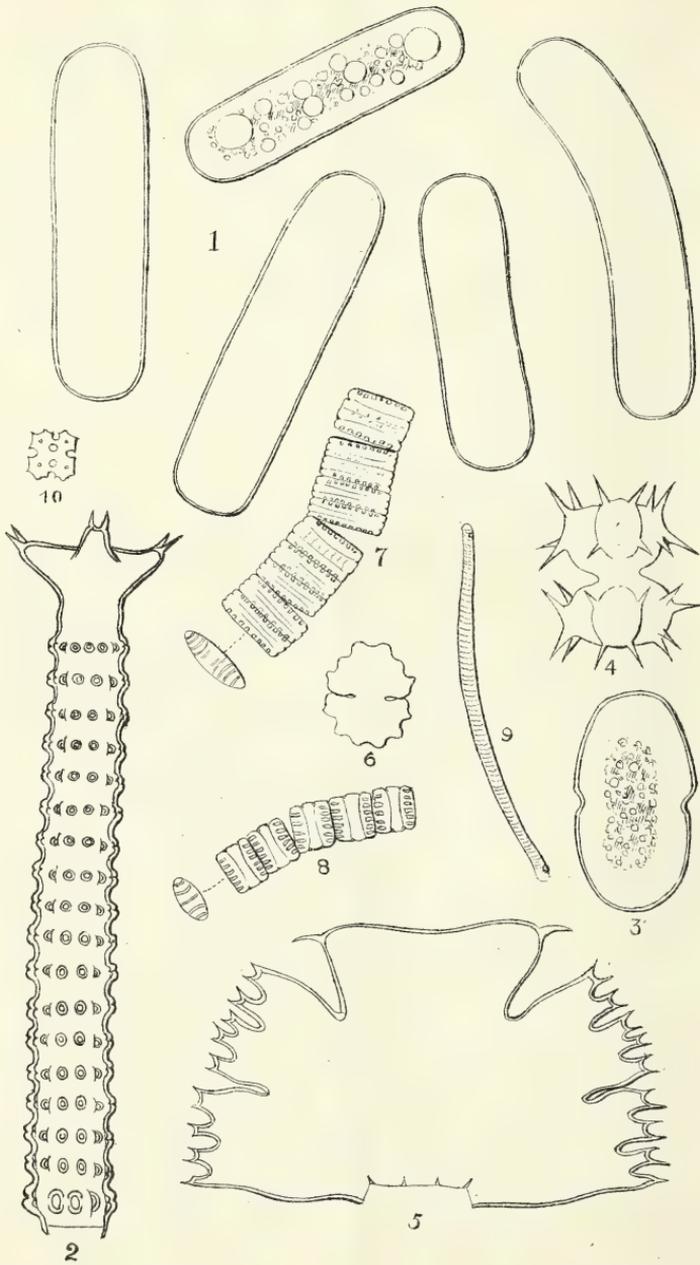
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W. BARWELL TURNER, F.R.MICR.S., F.C.S.,  
*Ex-President of the Leeds Naturalists' Club, &c.*

### REFERENCES TO PLATE.

- Fig. 1.—*Mesotænium De Greyii*, five forms  $\times$  500.  
 Fig. 2.—*Docidium verticillatum*  $\times$  255.  
 Fig. 3.—*Penium (Cylindrocystis) curtum*  $\times$  500.  
 Fig. 4.—*Staurastrum quadri-spinatum*  $\times$  500.  
 Fig. 5.—*Micrasterias platyptera*  $\times$  255.  
 Fig. 6.—*Euastrum* or *Cosmarium*? a very puzzling form extending in its varieties from the rounded form of *Eu. binale* (Turp.) almost to the figure of *Cosm. crenulatum* (Ehr.) Näg. Very common in varietal forms at Strensall  $\times$  500.  
 Fig. 7.—*Odontidium hyemale*  $\times$  450.  
 Fig. 8.—*Odont. mesodon*  $\times$  450.  
 Fig. 9.—*Himantidium gracile*, attenuate form (side view)  $\times$  500.  
 Fig. 10.—*Cosmarium Regnesi*  $\times$  500.

THE dry summers of 1884 and 1885 will long be remembered by both naturalists and fishermen, for their poor yield of sport for microscope and rod! Those microscopists who sought more especially the peaty pools of our moorlands had a thoroughly 'bad time' of it, many of the promising ponds and beds of *Sphagnum* and *Utricularia* being completely dried up. It was therefore hardly to be expected that the journey of the Yorkshire Naturalists' Union to Blubberhouses (on 26th September, 1885) would yield any great results from such habitats; and expectation being wanting, disappointment at the paucity of the 'catch' could not exist.

Our courteous host kindly suggested my examination of two little rock pools (situated on the summits of the highest masses of rock, which form so striking an addition to the scenery of Blubberhouses Moor) which are never dry. In these I regret to say that I found only *Microspora vulgaris* Rabh., with what appeared to be *Conferva tenerrima* Kütz., mingled with atoms of sheep's wool, feathers, and plumules of lepidoptera! My list of algæ is as follows:—

<i>Microspora vulgaris</i> Rabh.	<i>Lyngbya rupestris</i> Agh.
<i>Conferva (tenerrima?)</i> Kütz.)	<i>Zygonium ericetorum</i> De Bary, terrestrial and aquatic forms.
<i>C. fontinalis</i> Berkeley.	<i>Staurospermum gracillimum</i> Hass.
<i>Microthamnion vexator</i> (Turner) Cooke.	
<i>Leptothrix ochracea</i> Kütz.	

### DIATOMACEÆ.

<i>Himantidium undulatum</i> W. Sm.	<i>Navicula rhomboides</i> Ehr., extending to 3,000 ft. altitude.
* <i>H. gracile</i> Ehr., attenuate form.	<i>N. cuspidata</i> Kütz.
* <i>Surirella biseriata</i> Bréb. <i>Synedra</i>	<i>Diatoma elongatum</i> Agh. var. $\gamma$ W. Sm.
<i>ulna</i> Ehr., very large, long. $202\mu =$ $008$ in.	

- \**Odontidium hyemale* Kütz.      *Tabellaria flocculosa* Kütz.  
 \**O. mesodon* Kütz., extending to 6,000ft.      *T. fenestrata* Kütz.  
 alt. Referred by me in 1879 to  
*O. turgidulum* Kütz., a doubtful      \**Pinnularia lata* W. Sm., a sub-alpine  
 species.      species.

## DESMIDIEÆ.

- Penium Brébissonii* Mengh.      *Cosmarium ornatum* Rfs.  
 \**P. curtum*, Bréb.      *C. Meneghinii* Bréb.  
 \**Cylindrocystis crassa* De By.      *Euastrum binale* (Turp.) Rfs.  
*C. diplospora* Lund.      *Staurastrum alternans* Bréb.  
*Tetmemorus Brébissonii* (Men.) Rfs.      *S. paradoxum* Meyen.  
 \**T. levis* Kütz.      \**Mesotænium De Greyii* nov. sp.

Some of the above are from the valley, but on the moor, as its altitude is 1000 feet, it is not surprising to meet with sub-alpine specimens. A few of those noted are new county records, and are marked with an asterisk (\*); the last-named I believe to be entirely new, and it affords me much pleasure to associate the name of Lord Walsingham therewith, as our good ex-president not only put the Frankland motto into practice on the occasion of our visit, but exceeded it by adding a 'libera mensa' thereto. The new species will stand thus:—

**Mesotænium De Greyii** nov. sp. Frond cylindrical, smooth, elongate; no apparent constriction; not tapering at all towards the ends, which are more or less broadly rounded. The largest species in the genus.

Long.  $76 - 104 \mu = .00299 - .004$  in.; Lat.  $20 - 23 \mu = .00078 - 9$  in. Frond straight, rarely curved. The endochrome in the specimens did not exhibit any well-defined chlorophyll-plate, as a transition state was evident, the interior mass being granular, and mixed with large oil-globules. Nearest in all probability to *M. Endlicherianum* of Nägeli. It may perhaps be deemed a *Penium*, but, after some consideration, I have referred it rather to *Mesotænium*.

I have to report several things from Strensall Common, the most important being a new species,

**Onychonema Nordstedtiana** nobis, figured in the December number of the Trans. Roy. Mic. Soc.; and

**Cosmarium Regnesi** Reinsch., very local indeed; though my friend, Mr. J. Roy, informs me that it is common enough on Deeside, N.B.

## NOTES ON NEW SPECIES, &amp;c.

The following may be of interest:—

**Micrasterias platyptera** nov. sp. A large species; segments five-lobed; side lobes rather unsymmetrically divided into lobules, which bear slightly recurved spines (like *M. brachyptera* Lund.);

sinus linear; end lobes truncate, with a stout spine or rostrum at outer angle — these lobes are slightly exerted; frond punctate.

Long.  $272 \mu = \cdot 0107$  in.; Lat. max.  $224 \mu = \cdot 00882$  in.; Lat. lob. pol. apic. (s. sp.)  $112 \mu = \cdot 0044$  in.; Lat. isthmi  $37 \mu = \cdot 00146$  in. Name from *πλατύς* broad, *πτερόν* wing. Near to *M. triangularis* Wolle and *M. depauperata* Nordst. (Note the latter species is described in the Desmids of the U.S. America by Mr. Wolle as *M. Kitchelii*.) Habitat, U. S. A.

**Staurastrum quadri-spinatum** nov. sp. Of medium size, much longer than broad; frond smooth, or lightly punctate; each angle of the segments bearing four stout divergent spines; ends of segments slightly concave; sinus wide, expanding rapidly.

Long. (s. sp.)  $34 \mu = \cdot 00134$  in.; Lat. (s. sp.)  $26 \mu = \cdot 00102$  in.; Lat. isthmi  $8 \mu = \cdot 0003$  in.; Long. spin.  $10 \mu = \cdot 0004$  in. Hab., Trelleck Common, Monmouth; also United States.

I have been tempted to add a figure of **Docidium** (*Triploceras verticillatum* Bailey, for the reason that from its publication (Smithsonian Trans. 1850) till now I have never seen a *valid* icon of this species. Hab., U. S. A.

Long. (semi-cell)  $340 \mu = \cdot 0134$  in.; Lat. max.  $46 \mu = \cdot 0018$  in.; Lat. apic. (s. sp.)  $76 \mu = \cdot 00299$  in.

Finally, I would remark, with respect to the Desmids, that our knowledge of them is but slight; not a single 'life-history' is perfectly known of a tribe numbering about 900 species, or with varieties 1,200. The altitude as affecting their presence has very rarely been noted, though we are aware that *Didymoprium* (*Bambusina*), *Desmidium*, *Docidium*, and *Closterium* *prefer* the low-lands. My own notion is that, while certain species are found everywhere, at moderately low levels, from the Pole to the Equator, being thoroughly cosmopolitan, geological influences have a 'decided something' to do with certain *local* species; and I have long held the opinion (as yet unshaken) (1) that *most* Desmids prefer the Igneous geological districts to others; (2) that *some* are but rarely found in districts newer than the Old Red Sandstone, e.g., *Staurastrum ophiura*, *S. cerastes*, *S. Brasiliense* (?), *S. arctiscon*, *Micrasterias brachyptera*, &c.; (3) that few are found in chalk districts, or on the greensand; and (4) that they are most abundant (at least the commoner species) when the water wherein they live contains a *small* quantity of dissolved iron, though they will not endure so much of this metal as will the Diatoms (with their yellow or brownish endochrome), the colour of which a somewhat large percentage of iron seems to enhance, while an excess kills them!

## NOTES—MAMMALIA.

**Albino Moles in Coverdale and Nidderdale.**—There is now a case containing three White Moles (*Talpa europæa*)—stuffed specimens, at Gouthwaite Hall, Pateley Bridge, which were obtained by Mr. C. Dixon at Cover Head in Coverdale; they were obtained five and eight years ago respectively. Mr. Dixon has also caught White Moles at Angram in Nidderdale.—WM. STOREY, Pateley Bridge, December 31st, 1885.

**Red Deer in Nidderdale.**—There were in June 1885, in Harewell Woods (a patch of the old forest of Nidderdale), a pair of Red Deer (*Cervus elaphus*). Red Deer have now been observed in these woods for the past seven years, and have probably escaped from Studley Park, having been repeatedly seen in Sawley Woods, which adjoin Studley. In the years 1880, 1881, 1882, and 1884 kids were noticed, but I very much regret some ill-disposed persons shot a kid in the last-named year. I have spoken to several landowners in this neighbourhood, who have promised every attention to their preservation. They usually arrive early in the spring, and disappear in the autumn.—WILLIAM STOREY, Pateley Bridge.

**Records of Captures of Badgers in Yorkshire.**—The following records of the occurrence of the Badger in Yorkshire are all that I have met with down to the beginning of 1883; perhaps some other correspondents of the *Naturalist* may be able to make additions from Naturalists' Societies' Reports, newspapers, or magazines, so as to make a more complete list.

Two at Walton Hall, captured alive in 1826. Waterton's Essays. [viii, 188.

One at Hardplatts Wood, Stainland, Halifax, in 1832. C. C. Hanson, Nat.,

Two captured at Hackfall, about 1862. E. F. Firby, Nat., ii, 55.

Two at Kirklees, date not given. Hobkirk's 'Huddersfield,' Ed. 1871.

One captured September 23rd, 1877, near Ripponden. F. G. S. Rawson, 'Rural Notes,' 1877.

One captured at Pickering in 1879. R. Andrews, Nat., v, 53.

One at Bramham Park, March 1880. J. Emmet, Nat., v, 140.

One at Rishworth, about 1880. C. C. Hanson, Nat., viii, 108.

One captured alive near Yarm, January 1882. W. Gregson, Nat., vii, 146.

One killed at Saltburn, May 20th, 1882. T. Raine, Nat., vii, 201.

One at Wentbridge, exhibited at the White Horse Inn, 'a few years since,' no date given. T. W. Tew.

One caught near Yarm, January 1883. W. Gregson, Nat., viii, 123.

GEORGE ROBERTS, Lofthouse, near Wakefield.

**Former occurrence of Badgers in North Lancashire.**—

Formerly the Badger (*Meles taxus*) was tolerably common, and badger-baiting was a favourite pastime with the inhabitants of this part of the county—North Lancashire. Badger-baiting ranked third in the catalogue of manly (?) sports, bull and bear-baiting taking the precedence; but it mainly fell into disuse about half a century ago, although the practice was kept up in the secluded country places until a more recent date. Some of the old inhabitants delight in narrating incidents connected with this 'glorious sport,' and dwell with glee upon the exciting spectacle, extolling the prowess of the different dogs which in turn essayed to 'draw the badger' from the tub or kennel in which it was placed. An old local name for the badger is 'brock,' and it is considered by many eminent writers that a number of place names are derived from it. Thus, in this neighbourhood, we have the Brock, a lovely stream, whose picturesque and well-wooded banks seem peculiarly suited as a habitat for this animal, and where it formerly abounded; and there is an old county family near Garstang of the name of Brockholes, whose coat of arms is the brock, or badger. There is also a large township called Higher and Lower Brockholes. The steep and thickly wooded banks of the Ribble at Red Scar were formerly a favourite haunt of this animal, and I have heard an old farmer talk of them being common there, and tell of the tons of sand they used to excavate from their burrows; but, so far as I can ascertain, it is some time since any were observed in this place. I may mention, incidentally, that the term 'badger' is very generally applied, in this part of Lancashire, to small dealers in greengrocery—e.g., 'potato-badger'—although I am at a loss to account for its being so applied.—ROBERT STANDEN, Goosnargh, near Preston.

## ORNITHOLOGICAL NOTES FROM THE NORTHUMBERLAND COAST.

ALFRED CRAWHALL CHAPMAN.

DURING the last twelve years I have visited the coast of Northumberland pretty regularly at all seasons, but especially during the latter end of August, for the purpose of seeing and collecting the birds which annually visit our shores, after having left their breeding grounds in higher latitudes.

In this paper I have endeavoured to describe the habits of some of our regular migrants, as observed during the time they remain on our shores. Though the autumn migration may be said to commence about the end of July, it is not till a month later that the majority of the migrants appear, and it is usually September before the Little Stint and Grey Plover arrive. It is difficult, perhaps almost impossible, to assign anything like definite limits to the range of such a cosmopolitan order as are the Limicolæ, but I think it may be fairly assumed that the Common Godwit (*Limosa lapponica*), Sanderling (*Calidris arenaria*) (in comparatively small numbers), Turnstone (*Streptilas interpres*), Purple Sandpiper (*Tringa striata*), Knot (*Tringa canutus*), and Grey Plover (*Squatarola helvetica*), are regular winter residents with us; while the Curlew Sandpiper (*Tringa subarquata*), Wood Sandpiper (*Totanus glareola*), Little and Temminck's Stints (*Tringa minuta* and *temmincki*), Whimbrel (*Numenius phæopus*), Dusky Redshank (*Totanus fuscus*), Greenshank (*Totanus canescens*), Ruffs and Reeves (*Machetes pugnax*), the Phalaropes (*Phalaropus hyperboreus* and *fulicarius*), as well as Richardson's Skua (*Stercorarius crepidatus*), are only spring and autumn visitants, passing on to winter quarters in more southern latitudes. This is, at least, my experience of these birds, though I am well aware that stragglers of some of the latter species do occur, and sometimes not unfrequently, on our coasts during the winter months. Their occurrence, however, can hardly entitle them to the appellation of 'winter residents,' as is the case with the Common Godwit, Knot, &c.

The Green Sandpiper (*Helodromas ochropus*) is a typical example of a 'casual visitant,' occurring with almost equal regularity during each month of the year. In Stevenson's 'Birds of Norfolk' a table is given (ii, 223) illustrative of the erratic movements of this species. Though Richardson's Skua is stated by Mr. Hancock, in his 'Birds of Northumberland and Durham,' to be 'an autumn and winter visitant,' I have never once seen it on the coast during winter, and I believe it goes southward with the Terns, about the end of September.

The majority of our migratory ducks and geese, although having a very similar breeding range to the different species of wader already

enumerated, do not arrive here till well on in the autumn, though I have a note of a Widgeon (*Mareca penelope*) shot on September 3rd, probably a Scotch-bred bird. The end of September to the end of October is certainly their normal time of arrival, and the Brent Geese (*Bernicla brenta*) do not arrive in their greatest numbers till January. As soon as the various species arrive they usually select certain places, the nature of which is best suited to their habits, each individual class exhibiting a partiality for particular places, where they find food or rest, according to their varying idiosyncracies. Thus, the Purple Sandpiper is essentially a bird of the rocks ; I have never seen many of them on the coast proper ; they seem to prefer the black basaltic rocks which form the Farne Islands, about four miles out to sea. Here, on August 21st, 1874, we procured four of them, and I well remember their extreme tameness on a cold winter's day, on the Megstone Rock, in January, 1881. They like to run close down to the water's edge, where the surf breaks white on the black basalt, and here they find plenty of food, small marine insects and vegetable substances washed up by the tide.

The Turnstone is also a rock-loving bird, and is rarely seen on the sands proper, and never on the mud. I have frequently found them in August, about the 24th, sitting on the heaps of decomposing seaweed which line the high-water mark, where they feed on the maggots of the sea-weed fly. I have shot them on the north shore of Holy Island, year after year, almost exactly on the same spot, and about the same day of the year. At this season nine out of ten seem to be young birds of the year, in the brown dress. Such birds have pale orange-coloured legs and feet ; the beak is dark brown, black at the tip ; their backs have a pretty purple sheen, especially on the scapulars ; their eyes are nearly black. On August 22nd, 1872, my brother shot an old Turnstone in full red summer dress, with the black and white head. The legs in the adult bird are much brighter coloured than in the young. Both old and young have a fine clear cry, which easily distinguishes the species long before they have been seen.

Whimbrels and Oystercatchers (*Hæmatopus ostralegus*) are also rock-frequenting birds, though the former often go to feed on the mudslakes, and the latter frequently assemble in immense flocks on the extensive sand-flats left dry by the tide. On August 19th, 1885, I killed two Oystercatchers ; both were hard-feathered, full-sized birds, but one had pink or flesh-coloured legs and feet, and a red eye, while the other had French-grey coloured legs and feet, and a hazel eye and orbits. The beaks of both were red and hard, and I am inclined to think that the apparently immature bird was at least one

year old. These birds breed on the shingle banks of the mainland, as well as on the Farne Islands. Their flight is very regular, often in line, and can easily be mistaken for ducks on a dark winter's morning. Their cry can be heard at least a mile away.

Whimbrels seem to prefer black seaweed-covered rocks, and are fond of wading in rock pools for their food. They are generally a shy bird during the short time they remain on our shores. I have sometimes heard them passing overhead on their southern migration, several miles inland. They are generally found singly or in pairs, but they congregate in flocks prior to their final departure.

Such are the birds generally found on the black rocks along the shore, though others—Herons (*Ardea cinerea*), Redshank and Dunlin (*Tringa alpina*)—also frequent such places. The latter are often to be seen sitting amongst the floating seaweed, but their proper haunts are certainly the mudflats and sands recently left by the tide. Some of the sandflats on the Northumberland coast are so extensive and so flat that hundreds of acres, which but an hour ago were all covered with water, are now left dry by the tide, and the amount of sand upheaved in pyramidal heaps by the numberless sandworms in the short space of a few hours is something marvellous. The whole surface is studded with their workings, and in such a place many small waders delight to feed. Here are to be found Dunlin, Ring Plover (*Ægialitis hiaticula*), and Sanderlings in vast flocks; whilst further up, near the dry sand links, with their stiff bent grass, small detachments of Curlew Sandpipers may be seen. I noticed a pair of these birds on August 6th this year, quite close to the town of Sunderland. They were resting high up on the beach, and close to the dry sandhills with the bent grass, for which they evidently have a partiality. I have sometimes walked almost into the middle of a flock of small waders before detecting their presence, generally indicated by the cry of a Dunlin, as he rises within a few paces; then one sees perhaps a dozen, some sitting, some running, their elegant forms reflected in the mirror-like glossy surface of sand.

In August, nearly all these birds are young of the year, though with the binoculars, one can here and there pick out a ragged-feathered, black-breasted Dunlin, with the incubation spot still conspicuous on handling him, but I have never been able to procure in this country a Dunlin with its summer dress, *i.e.*, its black breast, nearly so perfectly developed as are those shot further north on the coast of Norway.

Many of the young birds shot in the end of August have already attained some of the grey feathers of winter. It is not at all rare to find Dunlin several miles inland at this season; they then

seek their food by the side of some secluded pond. I have shot them in such places, and have also occasionally flushed them off stubble-fields when Partridge shooting.

Leaving the sandflats and approaching the mud, with its crop of sea-grass already ripe for the daily raids made on it during the winter months by Brent Geese, Widgeon, and Mallard (*Anas boschas*), one still finds Dunlin as numerous as ever, but I have never met Sanderlings on such ground. Their place is now taken by the Knot, and mixed flocks of these birds and Dunlin may be found feeding together. It is perhaps strange that I have never killed, or seen killed, either an *old* Knot or Sanderling during the month of August. Occasionally Knots and Turnstones may be seen associating together; on August 25th, 1880, I killed both species with the same shot. They were young birds and seemed to be resting, probably after a prolonged flight from their breeding stations. Some young Knots are much more rufous on the breast and flanks than others; their legs are a yellowish-green or olive colour.

On August 19th this year, there were no Knots on ground usually frequented by them, but on the 20th they were numerous, evidently arrived that day. My brother shot several, as well as a brace of Teal (*Querquedula crecca*) with the dusky spotted breasts, and an old Whimbrel in ragged feather.

On August 23rd, 1883, when rowing in a dingey up a bight in Fenham Slake, I chanced to see a bird stretch its wing and gently close it again. It was sitting amongst grey whelk-covered shingle, and though close at hand I could not make it out, so I fired at the place. Nothing flew away; on coming up two young Knots and a Reeve lay dead. This is the only time I have come across the Reeve in Northumberland, though it used to breed at Prestwick Car. Its legs were a yellowish clay colour, the irides dark hazel, nearly black. I had seen a bird the night before which I felt certain was a Ruff, so that probably there were more of them in the neighbourhood. The feathers of the back and tertials are finely edged with yellow in this species, when young.

On August 24th, 1872, my brother shot a young Greenshank, and on the 25th, 1874, I killed another in exactly the same place. These birds seem to prefer feeding along the banks of some of the freshwater streams which run from the country into the saltlakes, and I remember two being killed on a freshwater lough on Holy Island, on August 25th, 1879. These dates show great regularity in the arrival of this species each year. All those here mentioned were young of the year. I have never come across the Dusky Redshank, but Mr. Adamson, in his book 'Some more Scraps about Birds,' says

that so far as he is able to make out, 'its exceptional visits in our northern counties are during August only, and these are exclusively young birds hatched that year.' As might be expected, common Snipe (*Gallinago caelestis*) not infrequently come into the saltlakes from the land to feed, both during the day and night.

The earliest date on which I have observed the Common Godwit is August 11th. This was a single bird, and as usual, one of the year, in the spotted rufous plumage. On August 24th, 1880, a great flock appeared on the Holy Island slakes, out of which I procured six birds, all young. When approaching them in small flocks of five or six, they allowed the punt to glide right up to them within ten yards, without the least suspicion, but these were invariably young birds. The main flock, consisting of several hundred birds, on the same day and under exactly similar conditions, was utterly unapproachable. When they rose, they quickly attained an immense height, and I saw them no more that day, and it is noticeable that on the same ground the following day, hardly a Godwit was to be seen; they had evidently continued their migration. Old Godwits, in the red breeding dress, are sometimes obtained at this season, but the proportion of young to old birds must be very great. They feed along the edges of the sand, and often congregate in immense flocks, as the flood tide gradually covers their feeding grounds. On such occasions, experience proves that even a punt and stanchion gun can seldom approach within range of them. I have never seen Godwits on the rocks, but in some seasons they resort to ploughed fields inland to feed, where, as on the sand, they assemble in such large numbers that the ground appears literally 'grey with them.' Young birds, when changing to winter plumage, assume a pretty marbled appearance on the back. I shot such a bird on October 14th, 1881, a few moments prior to the great storm which devastated both land and sea on that day.\* The Black-tailed Godwit (*Limosa melanura*) must, I think, be a very rare visitor, as I have never even heard of its occurrence (except in books, and that but rarely) on the coast of Northumberland.

As soon as the Common Sandpipers (*Tringoides hypoleucos*) have finished rearing their young by the upland stream sides, they, together with the moor-bred Curlew and Golden Plover (*Charadrius*

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\* My boatman and I retain a lively recollection of clinging to the bottom of the capsized punt for upwards of three hours on this occasion. It was interesting to note the rush of birds southwards, immediately prior to the on-rush of the northerly cyclone. A string of a dozen Grey Geese, a large flock of Widgeon, Oystercatchers, Gulls, and other birds, all hurried on southwards at a tremendous speed in the ten minutes preceding the storm, and the straggling Gulls and Oystercatchers, when overtaken by it, simply flopped down into the mud, and instantly crouching down, headed windwards.

*pluvialis*) come down to the coast. On August 1st, 1870, we got one on the beach near Hartlepool, and I always see a few pairs by the 'gut' sides on the Holy Island slakes in August. They still utter their well-known call-note, but are now generally very wild.

Though Grey Plovers, both the old birds with black breasts, and the young with the yellow-spotted backs, arrive during the month of August, I have never come across one myself. September seems to be *the* month for them, as well as for the Little Stints, when they do occur. A good many Grey Plover remain during the winter, and we have several times got them in January in very hard weather.

The two species of Phalarope can only be considered as casual visitors to our coast, and their occurrence is decidedly rare. In the last report of the Migration Committee, both the Little and Temminck's Stints are mentioned as occurring on the east coast during September. They are, however, scarce, probably attributable to the fact of their line of migration to their winter quarters in South-Eastern Europe and Asia, lying far to the eastward of our coast.

Flocks of young Mallard, Teal, and Shellduck (*Tadorna cornuta*) also come into the tidal estuaries at this season. On August 18th, 1885, my brother found three Shellducks, the old female and two young. He secured one young bird, the other, though so close at hand as to induce him to try and catch it, dived and never reappeared! The young at this age are white from chin to vent; the eye is deep hazel; feet and legs, lead colour; bill, flesh coloured, with a lead-coloured nail. The only other ducks observed at this season are the Eider (*Somateria mollissima*) and the Shoveller (*Spatula clypeata*), though it is not improbable that flocks of immature non-breeding Scoters frequent the coast during the whole summer. The Shoveller breeds annually near Holy Island. This year I was informed by the fishermen that she laid ten eggs, 'rather paler coloured than those of the partridge, and that the old duck was so tame that they could catch her.' The nest appears to have been in a hayfield, some 500 yards from a sheet of fresh-water, and I believe was never allowed to hatch.

Another bird which appears in greater numbers some years than others is Richardson's Skua. I got a dark-breasted female on August 12th, 1877, and on August 18th, 1885, I secured a pair of white-breasted birds. They were both quite white from chin to vent, one of them being slightly barred transversely on the flanks only; the other was barred right across the breast and underparts like a Sparrowhawk. The central rectrices were worn at the ends, and the back and upper parts were *plain* dark brown, the feathers being without the pale edgings of the young bird. This is, I think, a state of plumage but seldom met with in this species. It is difficult to say what the

normal colour of the legs and feet is in this bird; some are quite black, others are patched on the tarsus and sometimes even on the webs of the feet with a pale blue colour. I have killed a bird with one leg nearly all black, and the other having the blue colour predominating, and the same remark applies to Buffon's Skua (*Stercorarius parasiticus*), shot in June at their breeding stations in Lapland. Richardson's Skuas are generally to be seen in pairs at this season, and they frequently exhibit a strange boldness by flying straight at you, which generally leads to their being shot. The Terns rejoice at the death of their persecutor, and a score or more may be seen hovering and screaming over the body of a Skua floating dead on the water. As before remarked, the Skuas take their departure before the winter sets in.

Those species of Laridæ which breed on the Farne Islands are naturally found frequenting the sands and slakes of the Northumberland coast in large numbers during the month of August, but there can be no doubt that the majority of these birds migrate southwards in autumn, their place being taken by more northern arrivals. Common Gulls (*Larus canus*) make their appearance towards the end of August, and they are perhaps the most numerous of the gull tribe during winter. Though the Merganser (*Mergus serrator*) breeds commonly in Scotland, and often on the same loch with Common Gulls, yet they, together with the Divers (*Colymbus arcticus* and *C. septentrionalis*), do not arrive on this coast till well on in the autumn. In August the Lesser Black-backed Gull (*Larus fuscus*) is the most common species on the coast, and its changes of plumage still admit of further investigation. The young of the previous year are at this season in perfect feather; they have already completed the summer moult, but are still a pale, mottled, brownish-grey colour, with flesh-coloured legs and feet, and a dark-brown eye. The young of the year, which are also in excellent feather at this season, are much darker brown than the year-old birds, which, it would appear, do not attain the mature (winter) plumage till the autumn of the third year after they are hatched, after which time they will doubtless breed. Black-headed Gulls (*Larus ridibundus*) also, come to the coast during August, and they may often be found sitting far out on the level fields of sand, where they perform the autumn moult unmolested. One has only to walk over the places whence the flock has just decamped, to find how they are employed at this season—usually the sand is strewn with their feathers. They remain the winter on the coast, and often associate with Common Gulls and Kittiwakes (*Rissa tridactyla*).

Three species of Tern are found, all tolerably common, in August, viz., the Sandwich (*Sterna cantiaca*), Arctic (*S. macrura*), and Common

Terns (*S. fluviatilis*), all of which breed on the Farne Islands, and some on the gravelly shores of the mainland. During August, on a fine warm sunny day, when the spring-ebb has gradually receded so far that the white breakers appear miles away over the rolling wastes of sand, then it is that the habits of the Terns may be best observed. Close overhead a score may be hovering and screaming, while within a few yards others will be taking headers into the little stagnant pools which, but recently left by the tide, are full of small fish, unable to escape the sword-like beak of the watchful birds. Further on a dozen may be seen sitting, all head to windward, their short legs making them appear as if lying basking on the sand. Then, perhaps, a Richardson's Skua, on piracy intent, makes his appearance on the scene, when what was peace and quiet is instantly changed to tumult and confusion. Though the Roseate Tern (*Sterna dougalli*) used to breed plentifully on some of the islands lying off the coast, it can scarcely be said to do so now; nor am I quite certain about the Little Tern (*Sterna minuta*). I have never come across the latter species myself, but some of the fishermen assured me that it still bred, in limited numbers, at one spot on the coast, and that they had taken its eggs this year. Such information is, however, generally unreliable.

The only note I have of the Petrels is a Shearwater, which my brother and I saw flying past the herring-boat, about four o'clock in the morning, August 23rd, 1874. We had gone out to see the herrings caught, and to see the Solan Geese (*Sula bassana*), which having left their breeding station at the Bass Rock, come in numbers close round the boats to pick up the fish which happen to fall out of the meshes of the net. Solans are seldom seen near the shore; on February 16th, 1882, I observed six, all white birds, flying about seven miles out at sea, early in the morning, but I suspect that the majority of them winter further south.

Cormorants (*Phalacrocorax carbo*) are to be seen at all times of the year about Holy Island. They come regularly into the slakes to catch fish in the 'guts.' They roost on the Megstone Rock, one of the basaltic islands of the Farne group, and which is the last visible outcrop we have of the great 'whin sill' of geologists. Thither I have often seen them wending their way in 'bee-lines' towards sunset.

On August 18th, 1874, amongst a varied bag of sea fowl, were two of the Ringed Guillemot (*Lomvia troile*, var.), in which the white eye-streak was perfectly developed on the dark-brown head; quite justly, however, this seems to be considered merely an accidental variety, insufficient to entitle the bird to specific rank.

Such are the birds most generally met with during August. Of their habits I have given merely the results of personal observation.

## NOTES ON THE TWO SPOTTED EAGLES INHABITING THE EUROPEAN CONTINENT.

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

*Northrepps, Norwich; Member of the British Ornithologists' Union; Author of  
'A List of the Diurnal Birds of Prey,' etc.*

THE European Spotted Eagles (so called from the conspicuous white spots which the upper portion of their plumage exhibits whilst they are in immature dress) are divisible into two races or subspecies, for which I adopt the names used by Mr. Dresser in his 'History of the Birds of Europe'—viz., for the larger race that of *Aquila clanga* Pallas, and for the smaller that of *Aquila pomarina* Brehm.

Mr. Dresser (op. cit., vol. 5, p. 500) gives the following wing measurements of *A. clanga*, viz.:—

Males	...	...	...	19'50 in. to 21'30 in.
Females	...	...	...	21'0 in. to 21'80 in.

Of *A. pomarina* he gives the measurements of but one specimen, an adult male from Danzig, with a wing measurement of 17'70 in.

Mr. Seebohm in his 'History of British Birds,' vol. 1, p. 106, records the corresponding measurements of several additional specimens of both races, with the following results:—

### AQUILA CLANGA.

19 Males	...	...	...	20'0 in. to 21'50 in.
9 Females	...	...	...	21'0 in. to 22'0 in.

### AQUILA POMARINA.

16 Males	...	...	...	18'0 in. to 20'0 in.
10 Females	...	...	...	19'0 in. to 21'0 in.

The following wing measurements have been taken by myself from specimens in the Norwich Museum:—

### AQUILA CLANGA.

#### MALES.

Seville, adult	...	...	...	...	19'90 in.
Dobruscha, adult	...	...	...	...	19'35 in.
River Volga, „	...	...	...	...	20'70 in.
Damietta, immature	...	...	...	...	19'85 in.
„ adult	...	...	...	...	19'70 in.
Northern India, adult	...	...	...	...	20'10 in.

#### FEMALES.

Sarepta on the Volga, nearly adult	...	...	...	...	21'65 in.
Damietta, immature	...	...	...	...	20'10 in.
„ „	...	...	...	...	20'10 in.
Smyrna, adult	...	...	...	...	21'20 in.
Northern India, adult	...	...	...	...	20'90 in.

## SEX NOT ASCERTAINED.

Locality unknown, adult	...	...	...	19'60 in.
"    "    "	...	...	...	21'80 in.
Austrian Silesia, "	...	...	...	19'80 in.
Dobruscha, nearly adult	...	...	...	19'70 in.
Southern Russia, "	...	...	...	20'0 in.
Cairo, immature	...	...	...	20'40 in.
India, adult...	...	...	...	20'50 in.
Sumatra (collected by Sir Stamford Raffles), immature...	...	...	...	19'0 in.

## AQUILA POMARINA.

## MALE.

Carpathia, adult	...	...	...	18'75 in.
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## FEMALES.

Pomerania, adult	...	...	...	19'10 in.
Germany, "	...	...	...	19'20 in.

## SEX NOT ASCERTAINED.

Albania, adult	...	...	...	18'20 in.
Beyrout, immature	...	...	...	19'0 in.
Nubia, "	...	...	...	19'40 in.

In the adult dress the two races of Spotted Eagles are indistinguishable, except from the slight difference in size indicated by the wing measurements above referred to; but in the immature stage of plumage, the smaller race is characterised (and as far as I have observed invariably so) by a patch of rufous or luteous colouring generally about an inch in vertical diameter, and a little less if measured across, which is situated a little above the centre of the nape, whilst in the young birds of the larger race the nuchal feathers are either destitute of any rufescent colouring, or those that are so coloured are scattered singly over the hinder part of the neck, and are not gathered together into a distinct patch as in the smaller subspecies.

I have explained at p. 132 of my published list of the Diurnal Birds of Prey, my reasons, founded on the above diagnosis, for referring the Irish Spotted Eagle, which is preserved in the Museum of Trinity College, Dublin, and also the two recorded Cornish specimens, to the larger race, *A. clanga*, and my opinion as regards one of the Cornish examples has been confirmed by Mr. Dresser in the *Zoologist* for 1885, p. 230.

I believe that the Spotted Eagle which was killed at Cresswell, in Northumberland, on 31st of October, 1885, should also be referred to *A. clanga*, and that it is probably a male of that species; and I have formed this opinion from the following information which has been obligingly communicated to me by Mr. R. Duncan of Newcastle, by whom the specimen has been preserved. Mr. Duncan writes, 'I could not ascertain the sex of the Spotted Eagle; it is undoubtedly a bird of the year; the length from the carpal joint to the tip of the wing is 20½ inches; the feathers on the nape of the neck are rufous-brown in the centre, decidedly differing in tint from the other brown portions of the plumage; I think the Eagle is an example of *A. clanga*, as the feathers with rufous centres are scattered over the whole of the back of the neck.'

*A. clanga* appears to be a more numerous species, and with a wider geographical range than *A. pomarina*, and is therefore, perhaps, the more likely of the two to find its way to the British Isles. It will be seen by the list of specimens which I have measured, that the Norwich Museum contains an example from Spain, some from South Eastern Europe, others from Egypt, and others again from India, besides the specimen said to have been obtained in Sumatra, and which was formerly in the Museum (now dispersed) of the Zoological Society.

In 'Les Oiseaux de la Chine,' by David and Oustalet, at p. 14, the former of these naturalists mentions, under the title of '*Aquila Nævia*,' three Spotted Eagles observed by him in China, but I have not had the opportunity of examining a specimen from that country. I may, to avoid confusion, remark, in passing, that the Eagle to which the authors of 'Les Oiseaux de la Chine' apply the name of '*Aquila clanga*' is distinct from the species which in my view is entitled to that designation, and is not one of the Spotted Eagles; it is entered at p. 55 of my list under the title of *Aquila amurensis*.

As regards the northern range of the larger Spotted Eagle in Europe, I may quote Dr. Menzbier's statement in the *Ibis*, 1884, p. 305, that it breeds as far north in Russia as lat. 60°. The same author speaks in the following page of the smaller Spotted Eagle breeding everywhere in the Baltic Provinces, and occasionally visiting the Eastern shores of the Gulf of Bothnia. The most eastern specimen of the smaller race which has come under my notice is that from Beyrout, which is preserved in the Norwich Museum, and the most southern is the Nubian example which is contained in the same collection; the most westerly specimen which I have seen and noted is one from Switzerland, in the Museum at Brussels.

## NOTES—ORNITHOLOGY.

**Nidification of Ring Ouzel and Missel Thrush.**—Referring to Mr. Whitlock's note in your January number about the Ring Ouzel and Missel Thrush, my experience coincides with his. I never found a Ring Ouzel's nest with more than four eggs in. The Missel Thrush lays three, four, or five eggs; not unfrequently, after being disturbed from its first nest, only three.—H. G. TOMLINSON, the Woodlands, Burton-on-Trent.

**Young Skylarks fed by an older nestling.**—In 1884 a nest of Skylarks were taken as fledglings and brought up, and one bird (a cock) was kept until the summer of 1885. This year (1885) another nest of fledglings was taken after both old birds had been limed near the nest. The nest with the young birds and the old birds were all put into a cage with the young cock. The old birds paid no attention whatever to their young, and devoted their whole attention to trying to escape, but after a very short time the young cock began to feed the young birds, and did so until the old birds observing it quieted down, and all three continued to feed the young birds until the latter were able to feed themselves.—H. G. PEARSON, Barrow-in-Furness, January 2nd, 1886.

**Late Brood of Swallows.**—A young naturalist friend told me to-day (October 16th) that last Saturday, the 10th inst., he found at Ravenfield, near Rotherham, a Swallow's nest containing three young ones in a healthy condition. Their characteristic hues were just showing. I should like to know whether, in such a case, maternal instinct has ever detained the mother-bird after her companions have migrated. My friend and his companion took the nest and its contents for the cabinet, believing that the young would perish.—T. W. BREWIS, Rotherham, October 16th, 1885.

**Lesser Spotted Woodpecker and Grasshopper Warbler nesting in Nidderdale.**—I have noticed this summer a pair of the Lesser Spotted Woodpecker in an old oak tree, near to Pateley Bridge. I have endeavoured to obtain information with regard to this bird, but no occurrence of its nesting is remembered in Nidderdale.

I also observed a nest of the Grasshopper Warbler in Guyscliffe, Pateley Bridge. This bird is rather rare in this district. This is the second occurrence of its nesting here.—WILLIAM STOREY, Pateley Bridge, June 10th, 1885.

**Light-coloured Grouse in Nidderdale.**—Mr. Hanley Hutchinson informs me that a few years ago there was a breed of cream-coloured or very light-coloured Grouse (*Lagopus scoticus*) on Grimwith Moor, near Pateley Bridge (Nidderdale). The above gentleman endeavoured to preserve this breed, but without avail, as three of these were shot, and now are stuffed and in the possession of William Newbould, Grouse Inn, Dry Gill, near Pateley Bridge; there is also one now in the possession of Mr. Hutchinson.—WILLIAM STOREY, Pateley Bridge, January 1st, 1886.

**Quail in North Lancashire.**—Referring to Mr. Baldwin's note in your last issue, I saw a Quail while shooting at Rampside (on the opposite side of Morecambe Bay), on the 7th November last.—H. G. PEARSON, Barrow-in-Furness, January 2nd, 1886.

**Stone Curlews on the Yorkshire Wolds.**—Whilst glancing over an article on the Vertebrate Fauna of Yorkshire in the Naturalist for May 1884, I read that the Stone Curlew (*Edicnemus crepitans*) is now becoming very rare in the Southern Wolds, but that a pair bred near Market Weighton in 1881. At Fimber, Burdale, and Thixendale, on the Wolds, the Stone Curlew has bred for the last four years. In fact I have heard their nocturnal cries; and not only that, but seen the old birds and young ones, also their nests and eggs. Old men of the village tell me that the Curlew was very common on the Wolds half a century ago, and before the enclosure, and when many rabbit warrens existed. I wrote Mr. Morris some two or three years ago, telling him that I had a brood of Curlews on my farm, at Fimber. His reply was, that they would be Stone Curlews.

I have heard only last week that a Stockdove has a nest on the side of a corn-stack, with young ones, belonging to Mr. Richard Hartley, Fimber-field, Wharram, York; if so, it is a curious thing to record.—R. MORTIMER, Fimber, Wharram, York, May 5th, 1884.

## ADDITIONS TO THE LICHEN FLORA OF WESTMORELAND.

JOSEPH A. MARTINDALE.

I BEG to put on record the occurrence of the following plants in Westmoreland. Only two of them have been found previously in England, so far as I know, so that they form substantially an addition to the flora of Great Britain.

1. **Calicium roscidum** Flk. D.L. 42. Nyl. Syn. 153. On oaks in Lowther Park.
2. **Lecidea pilularis** Körb. Par. 136. Leight. Lich. Flora, 3rd ed. 342. On mosses in Kentmere. This has previously been gathered in Ireland by Mr. Larbalestier. Larb. Lich. Herb., 231, 270.
3. **Lecidea plumbina** (Anzi) Nyl. Anzi, Comm. Critt. It. (1862), p. 158. Nyl. Flora, 1869, 296. On *Coccocarpia plumbea*, growing on oaks and ashes in Lowther Park. This has been once gathered before by the Rev. W. Johnson, near Keswick (1881).
4. **Lecidea declinascens** Nyl. in Flora, 1878, p. 243. On rocks, Red Screes.
5. **Lecidea rubescens** Th. Fr., Lich. Scand., 631. On rocks and stones near Staveley.
6. **Lecidea obturbans** Nyl. n. sp. *nondum descripta*. On a rock near Winster.
7. **Lecidea acutula** Nyl. n. sp. *nondum descripta*. On larch trees near Staveley, and near Penrith.
8. **Schizoxylon corticola** (Frs.) Nyl., Lich. Scand., 249. Leight., Lich. Flora, 3rd. ed., p. 390. On oaks in Lowther Park. This has previously been gathered by the Rev. J. M. Crombie, near Lyndhurst, in the New Forest.
9. **Platygrapha periclea** (Ach. Meth., p. 156) Nyl. Scand., p. 256. On oaks in Lowther Park.

I have also recently gathered several plants for the first time within the county, but as no general county list has ever been published, and as I intend shortly to draw one up, it would, perhaps, not serve any good purpose to mention them in this communication.

### NOTE—LEPIDOPTERA.

**Heliothis peltigera**.—In June (or July, I forget which) 1884, Mr. R. Wilding of Liverpool beat a fine specimen of this species from an overhanging ledge on the Wallasey sandhills; and either the same day or a few days afterwards picked up the wings of another specimen of the same, the body having been eaten by a bird or spider.—JOHN W. ELLIS, Liverpool, November 30th, 1885.

## LEPIDOPTEROUS FAUNA OF LANCASHIRE AND CHESHIRE.

JOHN W. ELLIS, L.R.C.P., L.R.C.S.E.,

*Liverpool; Honorary Secretary, Lancashire and Cheshire Entomological Society.*

### PART II:—SPHINGES.

(Read before the Lancashire and Cheshire Entomological Society, June 29th, 1885.)

SINCE the list of Rhopalocera was published (*Naturalist*, February and March 1885), Mr. Alfred O. Walker has contributed to the Chester Society of Natural Science a list, with localities, of the macro-lepidoptera of his district. From this paper, a copy of which he has kindly sent me, I have extracted the localities to which his initials are appended.

#### SPHINGES.

Fam. *SPHINGIDÆ*.

ACHERONTIA, Hüb.

**Acherontia atropos**, L. Of frequent occurrence in both counties.

I have records of its occurrence in the following localities:—

**Lanc.**—Blackpool, common in 1868 (J. Thorpe, Ent., v, 143); Bootle (C.S.G.); Bolton, occasionally (W.J.); Formby, where the late Thomas West of Liverpool procured the larvæ in plenty from the labourers in potato fields; Hale (S.J.C., C.S.G.); Leigh, common (Intell., 1859, ii, 27); Elliott Street, Liverpool, in October 1884 (B. Cooke, junr., Y.N., November 1884); Lytham, common in 1865 (W. Gregson, Ent., ii, 313); North Lancashire, generally distributed (J.B.H.); Seaforth, formerly common (W. H. Weightman).

**Ches.**—Bidston (C.S.G.); Hoylake, common (W.G.); Liscard (N.C.); Delamere, Saughall, Tattenhall, and Upton (A.O.W.); Tranmere (E. D. Fish).

In the collection of Mr. C. S. Gregson is an interesting aberration of this species, in which the dark central band of the hind wing is entirely wanting. The specimen was captured at Blackpool.

SPHINX, L.

**Sphinx convolvuli**, L. Occurs occasionally over both counties.

**Lanc.**—Broad Green, near Liverpool (S.J.C.); Bury (R. Kay, Ent., ix, 48, and September 1862, by T. Pollitt, Zool., xx, 8204); Copley, near Staleybridge in October 1871 (M. Kershaw, Ent., v, 443); Droylsden in August 1871 (J. S. White, Ent., v, 411); Fleetwood (S.L.M.); Hale (C.S.G.); Manchester (F. Kenderdine,

*Naturalist*,

Intell., 1859, ii, 3); Middleton in 1881 (J. Thorpe, Ent., xiv, 254); Staleybridge, Stretford, and Barton Moss (J.C.); Southport in 1857 (R. Tyrer, Intell., 1857, ii, 19).

**Ches.**—Between Birkenhead and Hoylake (J. Povall, Ent., viii, 277); Eastham Wood (W.J.); Eaton Park in 1873 (A.O.W.); Liscard (N.C., C.S.G.); New Brighton (C.S.G.); Oxtun (J.F.B., C.S.G.); Claremount Schools, Wallasey (J.W.E.).

**Sphinx ligustri**, L. One specimen recorded from Whittle, near Chorley, by Mr. J. B. Hodgkinson.

DEILEPHILA, Ochs.

**Deilephila euphorbiæ**, L. The only records I can find of the occurrence of this species, always scarce in Britain, are as follows:—

A specimen, now in the cabinet of Mr. C. S. Gregson, captured in an outhouse at Bidston, near Birkenhead, by W. Morgan; two larvæ found on *Euphorbia paralias* between Little Brighton and Hightown by C. S. G.; a specimen captured near Bolton in 1865 (J.B.H., J.C.).

**Deilephila galii**, Rott. Another species of very occasional appearance in our district, although the year 1870 seems to have been marked by the appearance of this species in some places, Wallasey, for instance, in abundance.

**Lanc.**—Bolton, Middleton, and Staleybridge, very rare (J.C.); Bootle (C.S.G.); Lytham, in 1859 (W. Gregson, Intell., 1860, i, 123); Rivington in August 1870 (T. Calderbank, Ent., v, 181); Staleybridge, several specimens in August 1870 (D. Joliffe, Ent., v, 168); Warrington, a specimen captured by Miss Greening, August 1870 (N. Greening, Ent., v, 168); Whitefield, near Bury, in 1842 (R. S. Edleston, Zool., i, 31).

**Ches.**—Only recorded from Wallasey and the immediate proximity to the Cheshire coast sandhills, where the larvæ were found abundantly in the autumn of 1870 (S.J.C., N.C., J.C.M., W. Greasley, Ent., v, 183). The larva is also recorded from Wallasey in August 1859 (T. Galliers, Intell., 1859, ii, 27).

**Deilephila livornica**, Esp. (**Deilephila lineata**, Fab.). A few specimens are recorded, principally from Lancashire.

**Lanc.**—Bury, June 1877 (R. Kay, Ent., x, 191); Chorlton and Withington in June 1844 (R. S. Edleston, Zool., i, 736); Hale in 1847 (C. S. Gregson, Zool., vi, 2032); Middleton in August 1868 (J. Thorpe, Ent., v, 132); Preston, a specimen captured by James Cooper in 1846, in coll. J.B.H. (Zool., v, 1653).

**Ches.**—Knutsford (J.C.).

## CHÆROCAMPA, Dup.

**Chærocampa celerio**, L. This species has frequently been recorded from localities in Lancashire, but only once from Cheshire.

**Lanc.**—Bolton, three specimens (W.J.); ditto, October 1873 (J.B.H., Ent., vi, 564); Lytham in October 1870 (W. Gregson, Ent., v, 204); near Manchester, at Preston, and at Grange (J.B.H.); two larvæ near Newton Heath about 1846 (R. S. Edleston, Zool., iv, 1346); Oldham, September 1880 (J. Taylor, Ent., xiii, 279); Southport in July 1871 (E. Bell, Ent., v, 411) and in September 1873 (H. Burton, Ent., vi, 564); Staleybridge (J.C.); Crosby, September 1885 (G. A. Harker).

**Ches.**—Alderley Edge in May 1878 (W. W. Keyworth, Ent., xi, 160).

**Chærocampa elpenor**, L. Generally distributed throughout Cheshire and South-West Lancashire, but seems to become less frequent as we go north.

**Lanc.**—Recorded from Manchester, where it occurred in 1850 at rhododendron flowers (E. C. Buxton, Zool., viii, 2882); Chotley in 1853 (Ib., Zool., xi, 4037).

**Ches.**—'Kenyon, Rixton, Knutsford, Lymm, High Leigh, and Withington' (J.C.); Wirral (J.F.B.); Delamere and East Cheshire (A.O.W.); larvæ on Bidston Marsh (W.G.); Bromborough and West Kirby (F. N. Pierce); Wallasey (N.C.).

**Chærocampa porcellus**, L. More frequent in its occurrence than the preceding, especially along the coast line of both counties.

**Lanc.**—Crosby Sandhills (G. Harker, F.N.P.); Lytham, where it used to be common (J.B.H.); near Manchester, at rhododendron flowers, in 1850 (E. C. Buxton, Zool., viii, 2882); Patricroft and Dunham Park (J.C.).

**Ches.**—Delamere Forest and East Cheshire (A.O.W.); Wallasey Sandhills, where it is usually collected by the attraction of a bunch of the flowers of the yellow iris (N.C., W.G., J.C.M.); West Kirby (F.N.P.).

## SMERINTHUS, Latr.

**Smerinthus populi**, L. Common throughout the whole of both counties.

**Smerinthus ocellatus**, L. Common throughout the whole of both counties.

## MACROGLOSSA, Ochs.

**Macroglossa stellatarum**, L. This species, so frequently mistaken for the humming-bird by those who have seen the latter *in statu*

*natura*, is fairly common throughout Cheshire and South Lancashire, becoming scarcer towards the north.

**Lanc.**—Blackpool (S.L.M.); Bolton (W.J.); Crosby Sandhills (Geo. Harker and F.N.P.); Humphrey Head near Grange (E.S.); Lytham (J.B.H.); Prestwich, abundant in 1884 (J.C.M.).

**Ches.**—Common throughout the Chester Society's district (A.O.W.); Tranmere, formerly not uncommon (W.G.); Wallasey Sandhills, occasionally abundant but flies only on the tops of the highest hills (N.C., F.N.P., J.W.E.); West Kirby, where Mr. R. Brown saw the species in abundance in 1884.

#### HEMARIS, Dalm.

**Hemaris fuciformis**, L. Recorded as scarce at Bidston by J. F. Brockholes. Probably the following species is intended.

**Hemaris bombylifomis**, Ochs. Two specimens recorded as captured at Bidston by C. S. Gregson. 'The larvæ used to occur on Ribbleton Moor, near Preston, now cultivated' (J.B.H.).

#### Fam. SESIIDÆ.

#### TROCHILIUM, Scop.

**Trochilium crabroniformis**, Lew. (**bembeciformis**, Hüb.). Generally distributed wherever poplars grow through both counties.

In the collection of C. S. Gregson is a remarkable variety, captured near his residence, which has the yellow markings replaced by fulvous orange.

#### SESIA, Fab.

**Sesia spheciformis**, W.V. Chat Moss (R. S. Edleston, Zool., 1845, p. 1220, and J.C.) and Botany Bay Wood in the same neighbourhood (C.S.G.) are the only recorded localities for this species in Lancashire or Cheshire.

**Sesia tipuliformis**, Clerck. Generally distributed in South-West Lancashire and Cheshire, but absent or scarce in North Lancashire.

**Lanc.**—Bolton (W.J.); Crosby (G. A. Harker); Hale and West Derby (C.S.G.); Huyton (S.J.C.); Southport and Warrington (N.C.).

**Ches.**—Hough Green near Chester, and the larvæ common at the Lead Works, Chester (A.O.W.); Bowdon and Withington (J.C.).

**Sesia myopæiformis**, Bork. Taken near Grange Station in 1880 by Mr. Murray of Carnforth (J.B.H. in Ent. Mo. Mag., xvii, 70).

**Sesia culiciformis**, L. Chat Moss, rare (J.C.); a single specimen captured at Hartford (S.J.C.).

Fam. ZYGÆNIDÆ.

INO, Leach.

**Ino stactices**, L. Appears very local in both counties.

**Lanc.**—Crosby and Hale Marsh (C.S.G.); Chat Moss (J.C., W.J.); Railway bank near Chorley (J.B.H.); near Warrington (N.C.).

**Ches.**—Delamere Forest (A.O.W.); Knutsford (T. Harrison, Intell., 1857, i, 123).

**Ino geryon**, Hüb. The only localities for this species of which I have any record are: Grange, not rare (J.B.H.), and Silverdale (J.C.M.).

ZYGÆNA, Fab.

**Zygæna loniceræ**, Esp. Recorded from Knutsford by Thomas Harrison (Intell., 1857, i, 123).

**Zygæna trifolii**, Esp. Very local.

**Lanc.**—Hale Marsh (C.S.G.).

**Ches.**—Bidston Marsh (N.C.); Malpas (A.O.W.); Oak-mere and Knutsford (J.C.).

**Zygæna meliloti**, Esp. 'Formerly common near Manchester, and on the railway bank near Scorton' (J.B.H.).

**Zygæna filipendulæ**, L. Local, but very abundant where it does occur.

**Lanc.**—All along the Lancashire coast from Blackpool to Crosby; in hayfields all over North Lancashire (J.B.H.); near Bolton (W.J.); Chat Moss (J.C.).

**Ches.**—Throughout the Chester Society's district, but local (A.O.W.); Oak-mere and Knutsford (J.C.); Delamere (N.C.).

The aberration with the spots and hind-wings yellow instead of crimson occurs occasionally.

#### NOTE—LEPIDOPTERA.

**Acherontia atropos** and **Sphinx ligustri** near Barnsley.—

The past year having been somewhat remarkable for the unusual abundance of several of the larger Sphingidæ in some districts, it may possibly be of interest to record the few occurrences of the same around Barnsley. As far as I am aware they consist only of two larvæ of *Acherontia atropos* which were brought to me from different localities during September, and one imago of *Sphinx ligustri* taken in the town and brought to me during the same month. Both these species are rare here; *A. atropos* is the more plentiful of the two, having appeared in comparative abundance in some years, but I have no note of more than one in a season being reported since 1869. *S. ligustri* is decidedly unusual; only seven specimens have been taken in the district to my knowledge, five of which were captured in 1862.—WM. E. BRADY, Barnsley, 6th January, 1886.

Naturalist,

**A SEPTEMBER WALK THROUGH LANCASHIRE,  
CHESHIRE, AND STAFFORDSHIRE.**

T. D. A. COCKERELL, M.C.S.,  
*Chiswick.*

HAVING recently had occasion to go to Liverpool, I determined to make the most of my opportunity, and get a glimpse of North of England natural history. I accordingly walked from Liverpool as far as Froghall, in Staffordshire, making observations on the way. My attention was chiefly devoted to conchology, and I only noted such of the other forms of life as forced themselves upon my attention, generally in contrast to the more familiar South. The lists of mollusca given below are arranged in the order in which they were found, and hence the first mentioned will in most cases be the commonest in that particular district.

**September 9th, 1885.**—Before starting from Liverpool I visited the Museum. The collections here, although small, are very well arranged and neatly put up—in this respect far superior to those in the Museum at London. I noticed in the collection a sinistral example of *Helix pomatia*, supposed to be British. There is a similar but smaller 'British' example in the London Museum, but for the present perhaps it would be best not to include this form in the British fauna on the strength of two examples, the precise locality not being stated in either case. There are also some curious examples of *Helix nemoralis* from Oporto, one of them being purplish-fawn, with a formula 00345, and another yellow and bandless.

I will now commence the account of my walk.

**LANCASHIRE.**

**Liverpool to Prescott.**—The Mollusca observed were:—

<i>Limax agrestis</i> , type.	<i>Hyalina cellaria</i> .
,, v. <i>sylvatica</i> .	<i>Helix concinna</i> .
<i>Arion hortensis</i> v. <i>fasciata</i> .	<i>Hyalina nitidula</i> v. <i>nitens</i> .
<i>Helix rotundata</i> (abundant).	<i>Arion ater</i> v. <i>rufa</i> .
<i>Hyalina nitidula</i> .	<i>Limax agrestis</i> var. (1)
<i>Helix rotundata</i> v. <i>pyramidata</i> (one).	<i>Cochlicopa lubrica</i> .
<i>H. hispida</i> .	<i>Arion hortensis</i> var. (2)
<i>Hyalina alliaria</i> .	

The variety of *L. agrestis* (1) was entirely dark greyish; that of *Arion hortensis* (2) was greenish yellow, with a yellow mantle and scarcely perceptible bands. I found several specimens, all alike.

I noticed the larvæ of *Spilosoma lubricipeda* Esp., and of *S. menthastri* Esp.

**September 10th. Prescott to Rainhill.**—*Limnæa peregra* was common in a large pond or reservoir. I noticed the trail of a slug on the pavement at Rainhill, and following it up, found in the road a variety of *Limax flavus*. It was adult, and resembled the typical form in its markings, but the ground colour was very light, almost white. The slime was thick and yellow. The extreme abundance of *Equisetum arvense* by the roadside, both here and round Warrington, seemed rather remarkable. I never saw so much of it in the south.

**Rainhill to Warrington.**—

<i>Planorbis albus</i> (on <i>Nuphar lutea</i> in a pond).	<i>Arion hortensis</i> v. <i>fasciata</i> .
<i>Arion hortensis</i> var. (similar to that found near Prescott).	<i>Helix rotundata</i> .
<i>Hyalina radiatula</i> (one).	<i>Arion ater</i> v. <i>rufa</i> (a very large one).
<i>Pisidium pusillum</i> .	<i>Limax agrestis</i> , type. (In the Liverpool brickfield the type far outnumbered v. <i>sylvatica</i> ; here the reverse was the case.)
<i>Planorbis contortus</i> .	<i>Arion ater</i> (two brown-black specimens).
<i>Limnæa peregra</i> .	
<i>Limax agrestis</i> v. <i>sylvatica</i> .	

*Motacilla lugubris* and *Hirundo rustica* seemed more abundant than I have seen them in the south, especially the former. The Wagtail was also very common in Cheshire.

The most striking point about Lancashire conchology, as far as I was able to investigate it, is the absence or extreme rarity of every species of *Helix* whatsoever, *H. rotundata* alone excepted. *Hyalina* (or, as most British conchologists call it, *Zonites*) was much less rare. *Bulimus acutus* being really a *Helix*, perhaps finds Lancashire as unpleasant as the others do, and on this account does not inhabit that coast, but as to the cause of this dearth of a large and usually prominent genus I am not quite clear.

**CHESHIRE.**

**Warrington to Knutsford.**—The Mollusca observed included:—

<i>Helix rotundata</i> .	<i>Planorbis carinatus</i> .
<i>Hyalina cellaria</i> .	<i>Limnæa peregra</i> .
<i>Limax agrestis</i> v. <i>sylvatica</i> .	<i>Limnæa truncatula</i> .
<i>Hyalina nitidula</i> .	<i>Limax lævis</i> .
<i>Cochlicopa lubrica</i> .	<i>Hyalina nitida</i> .
<i>Carychium minimum</i> .	(b) <i>Arion ater</i> (very young, pale).
<i>Helix hispida</i> .	<i>Hyalina alliaria</i> .
<i>H. concinna</i> .	<i>Arion hortensis</i> v. <i>fasciata</i> .
<i>Limnæa peregra</i> var.	<i>Hyalina crystallina</i> (one under a brick).
<i>Pisidium fontinale</i> .	<i>Physa fontinalis</i> .
(a) <i>Limnæa palustris</i> .	<i>Planorbis albus</i> .
<i>Sphaerium corneum</i> .	<i>Pisidium pusillum</i> .

Those from (a) to (b) inclusive were all found in or round a small pond on the left-hand side of the road, with *Nuphar lutea*, *Lemna*

*minor*, *Alisma plantago*, &c. *Limax lævis* was also common round another pond a little further on.

It was interesting to note how, as the localities changed the plants in the hedges would disappear and give way to others, and these in turn to others. Thus at one place the most conspicuous plant in the hedge was Foxglove (*Digitalis purpurea*), and this in turn gave way to *Gnaphalium uliginosum*, and then this disappeared, and *Campanula rotundifolia* was the principal feature. There is a large rookery two miles from Knutsford. Close to Knutsford I took *Serica brunnea*.

### September 11th. Knutsford to Chelford.—

<i>Helix rotundata</i> .	<i>Limnæa peregra</i> (on <i>Lemna minor</i> in a small pond).
<i>Hyalina alliaria</i> .	<i>Planorbis albus</i> (on <i>Veronica beccabunga</i> in a ditch).
<i>Helix aspersa</i> (one only).	<i>Limax agrestis</i> , type.
<i>Arion ater</i> v. <i>rufa</i> .	<i>Arion ater</i> (very young, pale yellow).
<i>Hyalina nitidula</i> .	<i>Sphærium corneum</i> .
<i>Helix nemoralis</i> v. <i>libellula</i> 00300 (a broken shell found under a stone with <i>Polydesmus complanatus</i> ).	<i>Limnæa peregra</i> v. <i>ovata</i> .
<i>Arion hortensis</i> v. <i>fasciata</i> .	<i>Pisidium nitidum</i> .
<i>Limax agrestis</i> v. <i>sylvatica</i> .	<i>Pisidium pusillum</i> .

Found a specimen of *Donacia dentipes* Fab. on a *Nuphar lutea* leaf, in a pond four miles from Knutsford. Near this pond I saw a flock of Lapwings (*Vanellus cristatus*).

At Chelford I took a specimen of *Hadena protea* Bork. at rest on an oak tree.

### Chelford to Congleton.—

<i>Helix nemoralis</i> v. <i>petiveria</i> 12345.	<i>Arion hortensis</i> var. (with grey body, yellowish shield and faint bands).
<i>Cochlicopa lubrica</i> .	<i>Planorbis contortus</i> .
<i>Limax agrestis</i> v. <i>sylvatica</i> .	<i>Pisidium pusillum</i> var. (large and pale yellow).
<i>Pisidium pusillum</i> .	<i>Limnæa peregra</i> .
<i>Planorbis albus</i> .	<i>Carychium minimum</i> .
<i>Arion hortensis</i> var. (light orange, a small one.)	<i>Hyalina radiatula</i> (one).

I noticed the red hairy gall of *Cynips rosæ*. Also some violet-flowered specimens of *Viola tricolor*, and several patches of *Tussilago farfara* infested with *Æcidium tussilaginis*.

A Squirrel (*Sciurus vulgaris*) ran past me in the hedge close to Congleton.

### Congleton to the county border.—

<i>Limax agrestis</i> v. <i>sylvatica</i> .	<i>Limnæa peregra</i> v. <i>ovata</i> (in a pond with <i>Elodea canadensis</i> and <i>Nasturtium officinale</i> ).
<i>Arion hortensis</i> v. <i>fasciata</i> .	

*Hyalina cellaria.*

[RIVER.]

*Helix rotundata.**Hyalina crystallina.**Cochlicopa lubrica.**Hyalina alliaria.**Helix rotundata* v. *alba*. (One very good one on the top of a wall.)*Limax arborum.**Hyalina radiatula.*

## STAFFORDSHIRE.

Down in a hollow there is a smithy, and here, I was informed, I crossed the border into Staffordshire.

## County border to Leek.—

*Pisidium pusillum.**Limnæa peregra.**Hyalina alliaria.**Hyalina crystallina.**Helix rotundata.**Limax agrestis* v. *sylvatica*.

Fir trees being abundant, mollusca were correspondingly scarce. *Ranunculus flammula* was common in the little streams, as also before Congleton.

At Leek I found a specimen of *Gonoptera libatrix*.

## September 12th. Leek to Cheddleton.—

*Limax arborum*, type.*Helix hispida.*

*H. caperata* (very abundant on a wall, as also the variety *ornata*. One of the latter belonged to Locard's sub-var. *dumortieria*, which has only one band, and that above the periphery).

*Limax arborum* var. appeared quite unicolorous, except on careful examination. The shield is brown, with the bands almost invisible, the body purplish brown, with a light dorsal line, but otherwise almost unicolorous. This variety, which was found on the wall with *H. caperata*, approaches var. *alpestris* Less. & Poll., but is not quite identical with it.

I took a specimen of *Xylina ornithopus* Rott. (= *X. rhizolitha* Fab.) on a wall about three miles from Leek.

## Cheddleton to Kingsley.—Mollusca:—

*Helix nemoralis* v. *rubella* 00300.*Limax agrestis* v. *sylvatica*.*Helix hispida.**Hyalina nitidula.**Pisidium pusillum.**Arion hortensis* v. *grisea*.*Limax agrestis*, type.*A. hortensis* v. *fasciata*.

*Euphrasia officinalis* was very common by the road at one place.

## Kingsley to Froghall Railway Station.—

*Cochlicopa lubrica.**Arion flavus.**A. hortensis* v. *fasciata*.*Helix rotundata.*

*Limax arborum* (keel lighter, and bands less distinct than in the Cheshire one).

*Hyalina cellaria.**Helix concinna.**Hyalina radiatula.**Hyalina nitidula.**Limax agrestis* v. *sylvatica*.*Helix pulchella*, type.*Hyalina cellaria* v. *albida* Jeff.

*Helix nemoralis*. (An extremely young one, with a formula 00300.)

*Conulus fulvus* (one).

The '*Arion flavus*' appears to be identical with the form described under this name. Whether it is distinct from *A. hortensis* is quite another matter. It was, however, found within a foot of a very characteristic example of *A. hortensis* v. *fasciata*.

NEUROPTERA.—By way of postscript I may add that I took two species when in Lancashire, for the names of which I am indebted to Mr. McLachlan. They are *Hemerobius nervosus* from Rainhill, and *Limnophilus lunatus* from the side of a pond between Rainhill and Warrington. They are, he says, 'both very common;' but as so little has been done in recording the geographical distribution of these insects, it will be well to record them.

#### NOTE—MOLLUSCA.

**Achatina acicula (the Needle Agate Shell).**—I read with much pleasure the notes on *Achatina acicula* by Mr. J. Emmet; in the *Naturalist*, and noted his quotation from Gray: 'Found in stone coffins of the Saxon period.' Concerning this quotation, the following remarks may be of interest. During August I visited Bath, and spent a couple of hours in the very excellent museum of the Literary and Scientific Society, in which there is much to interest conchologists. Amongst other things I saw some '*Powdered quartz from two stone coffins (Saxon?) found in Bathwick Hill, 12 feet below the surface.*' Accompanying this powdered quartz were the following objects taken from it, arranged and named. It will be noticed what an extraordinary assemblage of remains was present. The list includes Fossil Shells and Echinoderms, a Sea Lily, Marine and Land Shells, &c.:—*Serpula* (Fossil), oolite; *Terebratula* (Fossil), oolite; *Echinus* spines (Fossil); *Hæmatite* Iron-ore; *Pentacrinites* (Fossil); *Achatina acicula*, 50 specimens; *Zua* (*Cochlicopa*) *lubrica*, 25; *Anomia* *ephippium*; *Limax* (? species); *Helix rufescens*, 1; *Helix pulchella*, 12; *Helix concinna*, 1; *Helix virgata*, 1; *Zonites cellarius*, 1. Can any reader of the *Naturalist* say whether this was the instance upon which Gray's remark was based? (It may be worth while noting that in another case there were many recent Land and Freshwater Shells, of several species, extracted from the head of a Goat, taken from 14 feet below the surface in the Bath Valley. Also there is a *Dinornis* bone from New Zealand, from the hollow of which were taken many shells, *Hydrobia*?, *Helix*?, &c.)—C. T. MUSSON, Nottingham, October 5th, 1885.

#### NOTES—BOTANY.

**Araucaria producing Seed in East Yorkshire.**—There are two very fine *Araucarias* in Burton Constable Park, near Hull, and last autumn I observed on many of the branches clusters of long narrow cones, which I subsequently discovered to be the male cones. On the 11th October last I observed two very large fuzzy masses on one of the trees at the end of the branches, high up. I thought these must be female cones, but could not then get at them. On the 25th October, being very anxious to examine them, I borrowed an old coat from a gamekeeper who lived near, and, at the expense of a few scratches, climbed the tree. On touching one of the cones in question it fell to pieces, and I discovered that it consisted of a great number of long seeds, narrowing to a point at one end, and attached to a tough white cone-shaped substance by their pointed ends. There must have been over fifty of them. The other cone had produced no seeds. I gathered up as many of the seeds as I could find, and intend to have them planted. I presume the cone must have been produced last year, and attained maturity this summer, though I did not observe it last year.—E. W. WADE, Hull, November 3rd, 1885.

**Trientalis europea in Nidderdale.**—On page 160 of the last part of the Transactions of the Yorkshire Naturalists' Union, I see *Trientalis europea* is 'said to grow near Brimham Rocks.' As Mrs. Clark and myself picked it on the right bank slopes opposite Pateley Bridge in some abundance in 1882, I can confirm it.—J. E. CLARK, York, September 24th, 1885.

**Manchester Cryptogamic Society, September 21st, 1885.**—Mr. Thomas Rogers, secretary, exhibited two rare mosses gathered a few days previously at Mere, Cheshire, *Gymnostomum rostellatum* and *Physcomitrium sphaericum*. Mr. Burgess showed specimens of mosses from Knutsford bog. Mr. Forster exhibited a striking variety of *Lastrea filix-mas*—belonging to the section *propinqua*, which he had found a fortnight ago in the neighbourhood of Patterdale.

**Bradford Naturalists' Society—A Year's Botanical Work.**—Five years ago the Bradford Naturalists' Society mapped out a large portion of Mid-West Yorkshire, for the purpose of investigating its fauna and flora. Recorders were appointed for the different sections, and the work commenced in good earnest, and has been unremittingly carried on to the present time. At the close of each year, the recorders give an account of the progress made in their respective departments during the year. Botany, perhaps, receives the lion's share of attention, but only those plants are placed on record which have been gathered by members of the society; by this plan it is hoped that in a few years a practical knowledge will be obtained of the flora of the district. During the past year enthusiasm has run very high, and never before have the results, so far as botany is concerned, been so satisfactory.

Of Flowering Plants 36 species have been added to the list, some of which, however, such as *Bupleurum rotundifolium* L., *Lathyrus hirsutus* L., *Medicago falcata* L., *Agrostis spica-venti* Beauv., &c., are not indigenous to the district. The following are amongst the principal additions:—*Ranunculus sceleratus* L., from Frizinghall; *Colchicum autumnale* L., Grassington; *Calamintha acinos* Clairv., Gordale; *Listera cordata* Br., Penyghent; *Scirpus sylvaticus* L., near Keighley; *Juncus compressus* Jacq., Kilmsey; *Carex ampullacea* Good., near Keighley; *Carex rigida* Good., Penyghent; *Melica nutans* L., Bolton Woods, Ribbleshead, &c. The total number of Phanerogams now known to occur in the society's district is 698, 632 of which have been found in Upper Airedale.

Of Mosses 8 species have been added to the list, including *Tetradontium brownianum*, from Harden; *Atrichum crispum*, Newsome Dean; and *Splachnum ampullaceum*, from Malham Tarn.

Three additional Hepaticæ have been found, amongst which are *Trichocolea tomentella*, from Shipley Glen and Holden Gill; and *Jungermannia capitata*, from near Horton-in-Ribblesdale.

The past year has been remarkable for the abundance of esculent fungi, which made their appearance in great profusion during the autumn months. Many stones in weight of *Coprinus comatus* and *C. atramentarius* have been consumed and appreciated by many members and friends, and large quantities have been gathered of *Peziza venosa* (a most delicious species), *Hygrophorus virgineus*, *H. pratensis*, and *Marasmius oreades*.

Amongst the 85 additions of fungi are:—*Coprinus hemerobius*, from Hawksworth; *Lentinus cochleatus*, Heaton; *Panus torulosus*, Hawksworth; *Hygrophorus ovinus*, Hawksworth; *Schizophyllum commune*, Steeton; *Boletus rubinus*, Bolton Woods; *Cynophallus caninus*, Saltaire; *Chondrioderma umbilicatum*, near Keighley; *Puccinia baryi*, Bolton Woods; *Peziza leporina*, Heaton.

During the spring and summer months, a series of experiments with the Uredines was successfully conducted, and clearly demonstrated the heterœcismal nature of some of these curious parasites.

Of Lichens, 7 species have been met with, including *Stigonema saxicola*, from Ingleton; *Calicium citrinum*, Clapham; *Urceolaria scruposa*, Ingleton; *Amphilonia lanuginosum*, Malham, Clapham, &c.

Of Freshwater Alge 26 additional species have been found, amongst which are:—*Palmodactylon subramosum*, from Newsome Dean; *Horniscia moniliformis*, Cullingworth; *Dictyosphaerium ehrenbergii*, near Bradford; *Chroococcus turgidus*, Cullingworth; *Cylindrocystis diplospora*, Cullingworth.—H. T. SOPPIT and W. WEST, Bradford, December 1885.

Naturalist,

## BOOK NOTICES.

**Proceedings of the Chester Society of Natural Science. No. 3.**

Chester, 1885, 8vo, 133 pages and nine plates. Price 2s. 6d.

It is a pleasure to be able to congratulate a local society upon the production of work of the stamp of the part now before us, and the pleasure is enhanced in this case by the fact that the publication is strictly confined to local work. The papers in the present part are fifteen in number, and embrace a varied range of subject. The president of the society (Prof. T. McKenny Hughes) leads off with 'Notes on the Geology of the Vale of Clwyd,' which are illustrated by means of eight plates. This is followed by a lecture on 'The Denudations of North Wales,' by Mr. Aubrey Strahan, M.A., F.G.S., and this again by the abstract of a paper entitled 'A Problem for Cheshire Geologists,' by Prof. John W. Judd, F.R.S. The next paper is by Mr. D. Mackintosh, F.G.S., upon 'Traces of an Interglacial Land-Surface at Crewe.' Mr. W. Shone, F.G.S., then investigates 'The Silting up of the Dee: its Cause,' after which Mr. A. O. Walker, F.L.S., discusses the 'Climatic Causes affecting the distribution of Lepidoptera in Great Britain,' pointing out that the diminution of the number of species is N.W. rather than N., and attributing a large amount of unfavourable influence to an abnormally damp climate. The same writer gives a useful list of the 'Macro-lepidoptera of the Chester District,' for which the Diurni number 37, the Sphingina 18, the Bombycina 56, the Noctuina 184, the Geometrina 165, and the Pyralidina 69, making a total of 529 species. There is yet another paper by Mr. Walker, in which 'The Climate of the Chester District (including Denbighshire and Flintshire), [is] considered in relation to Fruit Growing.' The succeeding paper is by the Scientific Secretary of the society, Dr. H. Stolterfoth, M.A., who deals with 'Surface Dredging on the Dee,' and notices the various forms of life met with. A 'Note on *Glaucanome disticha*, from the Bala Beds of Glyn Ceiriog,' by Mr. George W. Shrubsole, is of interest to palæontologists, and 'A List of the Land and Freshwater Shells of the District,' by the same writer, equally so to conchologists, although the latter list would be improved by a more copious citation of localities or definition of range and habitat. Another palæontological paper from Mr. Shrubsole's pen is 'On the Occurrence of *Calcisphæra* (Williamson) in the Mountain Limestone of the Eglwyseg Rocks, near Llangollen,' and he chronicles the failure of an attempt at acclimatisation in a note 'On the Occurrence of *Venus mercenaria* (L.) in the Estuary of the Dee.' Next follows a 'List of Caradoc or Bala Fossils found in the Neighbourhood of Bala, Corwen, and Glyn Ceiriog,' by Mr. Thomas Ruddy, of Palé, Corwen, which is given in a succinct and tabulated form. The last paper in the part is by Mr. J. D. Siddall, upon 'The American Water Weed, *Anacharis alsinastrum* Bab.: its Structure and Habit; with some Notes on its introduction into Great Britain, and the causes affecting its rapid spread at first and apparent present diminution,' and is illustrated by a plate. The whole of the papers are of high interest and of much value, and we congratulate the society upon so creditable a volume, and still more so that they resist the temptation to print papers which have no relation to the area of their investigations.

**The Vertebrate Fauna of Sutherlandshire.**—By T. E. Buckley,

B.A., F.Z.S., &c., and J. A. Harvie Brown, F.R.S.E., F.Z.S., &c. Being an appendix to Saint John's Tour in Sutherland, new edition, pp. 291-374.

This is one of the most important and useful papers of its kind that we have seen, and affords a fit model for anyone who feels impelled to construct a local catalogue. The thoroughness with which it is done, the care and detailed accuracy with which the records are given, the adequacy with which the introductory matter is framed so as to afford the reader a clear comprehension of the physical aspects and general appearance of the county as a field for natural history observation, all entitle the work to our warmest praise. So also does the copious list of the books and memoranda which constitute the 'sources of information,' and the fact that it is a 'vertebrate' fauna, the mammals, reptiles, and fishes receiving their fair share of attention instead of the customary neglect. The authors divide the county between them, Mr. Buckley being responsible for the eastern, and Mr. Harvie Brown for the western portion of the county, the high road from Lairg to Tongue serving as the line of demarcation. To descend to details, the list includes

32 mammals, 8 reptiles and amphibians, and 179 birds, besides which certain records are mentioned which are either extinctions, errors, escapes, or otherwise doubtful. The fish-list is for 'Sutherland and the Moray Firth,' 113 species being enumerated. To save misconception we may say that the appendix is not published separately, and would add that any one desiring it would do well to possess themselves of the charmingly-written and classical work to which it is appended.

**Transactions of the Leeds Geological Association**, containing abstracts of papers read and reports of field excursions, during sessions 1883-4-5. Part I.—Edited by the Hon. Secretary, Leeds, 1885, pp. 48.

The vigour and life which now characterises the Association's operations, and the success which has attended the labours of Mr. S. A. Adamson, F.G.S., as honorary secretary, are well exemplified by the contents of the present part. The abstracts (pity 'tis they are so short) show that the field of view of the Association is not limited by local considerations, inasmuch as the subjects range so far afield as Canadian plumbago mines and Australian gold fields, Cornish granite and the Channel Tunnel. We understand with pleasure that future parts will include original papers at length, and we wish all prosperity to the Association.

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### NOTES AND NEWS.

The annual meeting of the Yorkshire Naturalists' Union, which was originally fixed for the 3rd of March, is now postponed to Monday, the 22nd of that month. The meeting will be held at Beverley, and the president, the Rev. W. H. Dallinger, LL.D., F.R.S., etc., will deliver the annual address.

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At a recent meeting of the Linnean Society, Messrs. S. J. Capper of Liverpool, and C. T. Musson of Nottingham, were elected Fellows.

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By the last list of the Fellows and Associates of the Linnean Society, we note that there are 68 in the northern counties, distributed as follows:—in Cheshire, seven; in Cumberland, one; in Durham, five; in Lancashire, thirty, inclusive of eight in Liverpool and seven in Manchester; in Lincolnshire, three; in Northumberland and Notts, one each; in Yorkshire, twenty, six of whom are in Leeds; and none at all in Derbyshire, Westmoreland, and the Isle of Man.

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We are glad to see the issue of the second part of Dr. Spruce's Memoir on the Hepaticæ of the Amazon and of the Andes of Peru and Ecuador, which is published as part of the Transactions of the Edinburgh Botanical Society. The descriptive part of the work is now finished, and the work itself may be regarded as being—to use the author's words—technically complete. Illness (we are sorry to learn) has hitherto prevented Dr. Spruce from finishing his projected introductory portion, dealing with the physical features of the regions explored, their connection with the vegetation, and other like topics. It is hoped, however, to issue it hereafter as a Supplement to the work—a work which Yorkshiremen will regard as a monument of the industry of one of the ablest botanists their county has produced.

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Under the title of 'A Nomenclature of Colours for the use of Naturalists, and a Compendium of useful Knowledge for Ornithologists' will shortly be issued from the pen of Mr. Robert Ridgway, C.M.Z.S., of the Smithsonian Institution, a work of great importance to all naturalists, and one that must be hailed as a boon, as it will supply what is admittedly a most distinct want. It will consist of two parts, the first of which is to be devoted to the Nomenclature of Colours, and embraces a general dissertation on the principles of colour, a chapter on the technique of the subject, and an extensive vocabulary of tints. The plates to this portion of the subject represent, with their names, nearly 200 more or less distinct tints, and indicate the outlines of the principal forms of colour marking. Part II is devoted to the ornithological aspect of the subject, and to the terms used and the measurements adopted by ornithologists. The work is the result of years of labour on the part of a naturalist eminently qualified to undertake the task, since he is well known both as a skilful artist and a talented ornithologist.

Naturalist.

We are pleased to learn that our old friend Mr. Thomas Hick, B.A., B.Sc., of Harrogate, has been appointed assistant to Prof. Williamson, in the Owens College, Manchester, in succession to Mr. Marshall Ward.

The first winter meeting of the Hull Field Naturalists' Society was held on the 19th November, the president (Mr. N. F. Dobrée) in the chair. The reports of the various sections for the summer season were handed in. In ornithology the Grasshopper Warbler was reported as having been as usual heard once or twice. An abnormal number of eggs in the nests of the Blue Tit and Robin was also recorded. A greater number than of late years, of the once numerous Dotterel, were also seen on the Flamborough Heights during the spring migration. Of lepidoptera the same paucity as in other parts of the country was noted. The re-occurrence of *Hadena occulta* after an interval of five years, and the capture of a specimen of *Sphinx convolvuli* were the only noteworthy records. In botany, 16 additions had been made to the local list, the most prominent being *Villarzia nymphæoides*, *Helleborus fœtidus*, *Catabrosa aquatica*, *Hyoscyamus niger*, *Linaria elatine*, and the Wall Rue Fern. The complete list was ordered to be sent to the secretary of the botanical section of the Yorkshire Naturalists' Union. Of micro-fungi a satisfactory list was returned, the *Æcidia* alone numbering 14, the most noteworthy being: *Æcidium pimpinellæ* var. *apii* and *Æcidium primule*.

The tenth annual meeting of the Bradford Naturalists' Society was held on the 7th December. The report showed that the Society had not only maintained but materially improved upon its past prosperity. Reference was made to the new arrangement by which the various Scientific Societies in the town were affiliated for certain purposes, but without prejudice to their independent existence. Under this arrangement all meetings are to be held in the rooms of the Bradford Philosophical Society. The election of officers for 1886 resulted in the selection of Mr. H. T. Soppitt for president, and Messrs. John Eastwood and E. Robinson as secretaries. In addition to vice-presidents, council, and other officers, the following recorders were also chosen:—Botany, Messrs. W. West and the president; Entomology and Vertebrate Zoology, Mr. J. W. Carter; Invertebrate Zoology, Mr. A. I. Kershaw; Geology, Mr. Allan; and Conchology, the president.

The Leeds Naturalists' Club and Scientific Association held its sixteenth annual meeting on the 11th December. The principal feature of the report was a reference to the change of domicile to be effected with the new year. The increasing number of engagements for which the rooms of the Leeds Philosophical Society are now in demand having interfered seriously with the convenience of the club, which has met there for the past two years, arrangements have been made with the Leeds Corporation, whereby a room in the Municipal Buildings is placed at the club's disposal. Another feature greatly to the advantage of the club is that henceforth their library will be placed in charge of the Public Librarian, and the books thereby rendered accessible to the members at all times, while the valuable stores of the Public Reference Library will be accessible to the members during the club's meetings. The approaching publication of a Fauna and Flora of the Leeds District was announced, and the report generally was of a satisfactory nature. Afterwards the club proceeded to the election of officers, most of whom were re-elected, the most important change being the election of Mr. J. W. Addyman, B.A., as joint-secretary with Mr. T. W. Cox.

At the 24th annual meeting of the Heckmondwike Naturalists' Society, Jan. 2nd, 1886, the following office-bearers were elected:—President, J. A. Erskine Stuart, L.R.C.S.E.; vice-presidents, Messrs. J. M. Barber and Walter Exley; secretary, Mr. R. Renton; librarian, Mr. T. Allatt; treasurer, Mr. Thos. Exley; representative to Yorkshire Naturalists' Union, Mr. J. M. Barber. The funds are in good condition, and although the Society is weak in numbers, the excellent library helps to keep it together. It is hoped that the delivery of the Gilchrist Lectures in Heckmondwike during this winter will help the Naturalists' Society, by stirring up an interest in natural science throughout the district.

Feb. 1886.



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### EXTRACTS FROM REVIEWS.

'The authors of this catalogue may take a pride in their work, which has evidently been executed with most conscientious care. They have given a short introductory exposition of the principles by which they have been guided, and an excellent brief sketch of the physical aspects of Yorkshire, and the summary of the results of their investigation of its Vertebrata. The little book is a most valuable contribution to British zoological literature.'—*Ann. & Mag. Nat. Hist.*

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# THE NATURALIST.

*The Editors hope to publish the following papers within the next few months:—*

Moss-flora of Ashton-under-Lyne District—JOHN WHITEHEAD.

Contributions to Phenology—R. ROSENSTOCK, B.A.

The Migrations of the Salmonidæ (Part 2)—FRANCIS DAY, C.I.E., F.Z.S., &c.

Notes on Solway Birds—J. J. ARMISTEAD (Conclusion).

Notes on Birds of High Peak—F. B. WHITLOCK.

List of Wensleydale Birds—JOHN PERCIVAL.

Lepidopterous Fauna of Lancashire & Cheshire (Part 3, BOMBYCES)—Dr. ELLIS.

Hymenoptera near York in 1885—THOS. WILSON.

Liverpool Coleoptera (Parts 7, 8, 9, 10)—J. W. ELLIS, L.R.C.P., &c.

Natural History of Lincolnshire.—The next instalment of this is to be upon the Mammalia, by JOHN CORDEAUX. Schedules have been prepared for obtaining information: one will be sent to any one willing to furnish notes.

Short Notes.—It is the wish of the Editors to give in each number about a page of short notes in each of the various subjects of which the *Naturalist* takes cognisance. To this end they rely upon their friends keeping them well supplied. At present short notes on Botany, Entomology, Palæontology, Microscopy, Conchology, &c., are particularly desired.

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NATURAL HISTORY FOR THE NORTH OF ENGLAND.

EDITED BY

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

AND

WM. EAGLE CLARKE, F.L.S.,

MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION.



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**Short Notes** of important occurrences will be received up to the 20th of the month, and specially urgent ones even later.

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**Advertisements.**—Scale of charges may be had on application.

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## BOOKS RECEIVED.

Journal of New York Microscopical Society, November 1885.	[Society.
Manx Note Book for January 1886.	[A. W. Moore, Editor.
Journal of Conchology for January 1886.	[J. W. Taylor, Editor.
Royal Dublin Society's Scientific Transactions—Vol. II (in 3 parts), 1879-80 [mostly devoted to Dr. Sharp's Monograph of the Dytiscidæ].	[Society.
Midland Naturalist for February 1886.	[The Editors.
The Young Naturalist for February 1886.	[J. E. Robson, Editor.
The Naturalist's World for February 1886.	[P. Lund, Editor.
Illustrated Science Monthly for February 1886.	[Bogue, Publisher.
Science Gossip for February 1886.	[Chatto and Windus, Publishers.
Natural History Journal for February 1886.	[J. E. Clarke, Editor.

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## EXCHANGES.

*Notices of Exchange inserted free of charge to Subscribers.*

Ewald's 'Life and Times of Lord Beaconsfield,' 5 volumes, plates, new; 'Roxburghe Ballads,' 2 volumes; and Forrest's Third Ramble on Rombalds Moor, pamphlet, rare; for Natural History books or cash.—GEO. ROBERTS, Lofthouse, Wakefield.

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## THE BIRDS OF YORKSHIRE.

Information is desired at once on the *Warblers*, their distribution, nidification, and local names, together with full details of the occurrence of rare species, for use in preparing the next portion of this work, which appears in the Transactions of the Yorkshire Naturalists' Union.—W. EAGLE CLARKE, 18, Claremont Road, Headingley, Leeds.

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**IMPORTANT NOTICE.**—On the 19th September the Editors received a communication post-marked 'York,' and directed in a lady's hand, enclosing 2s. 6d. postal order, but with no clue as to the sender.

---

The cheapest dealer in Birds, Skins, Eggs, Butterflies, Moths, Foreign Shells, etc., is **John Eggleston, Park Place, Sunderland.** Lists free.

## HARPALUS CALCEATUS Sturm AT BRIDLINGTON QUAY.

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

Lincoln; Secretary to the Entomological Society of London, and one of the Editors of the Entomologists' Monthly Magazine.

WHILE collecting at Bridlington Quay, in August 1879, I turned a large *Harpalus* out of a sandy place on the cliffs, in a place where *Nebria livida* occurred rather freely. For a long time I had it in my collection as my sole representative of *H. tenebrosus*, which it much resembles in general appearance. A short while ago I had occasion to work the *Harpalus* group more particularly, and at once saw that it was a new species. This opinion was endorsed by Dr. Sharp, and Mr. C. O. Waterhouse, on comparing it for me with the European Harpali in the British Museum, found that it was *H. calceatus* Sturm, a species that has not occurred for fifty years, and that has long been erased from the British lists.

The capture is very interesting, as the species is recorded by Dawson as British in the *Entomologists' Annual* for 1857, p. 66, where he says: 'A single female example was captured near Swansea as long ago as 1830, by the Rev. C. Kuper. I am surprised that the species should not be common with us, and that its claim to be recorded should even now rest on a solitary individual. It is plentiful in France, and occasionally enters lighted apartments in the summer evenings; moreover, it is a large and conspicuous insect, and very unlikely to be overlooked.'

The following is a description of the insect:—

Black, or pitchy black, underside sometimes pitchy brown; antennæ and palpi clear red; thorax much broader than long, with sides feebly rounded in front, and very slightly contracted, almost straight, towards base; posterior angles right angles; the entire base is coarsely and rugosely punctured, and is depressed on each side, but with no evident basal foveæ; elytra rather long, broader in front than base of thorax, with deep impunctate striæ; interstices somewhat convex, the space between the eighth stria and the margin densely and finely punctured, beside the usual marginal row of large pores; metasternum rather strongly punctured; legs black or pitchy black; tarsi clear red. Length 11-13 mm. ( $5\frac{1}{2}$ - $6\frac{1}{2}$  lin.).

Although I have collected in the locality since, I have never found another specimen. The spot is on the south side of the town, about half a mile or three-quarters of a mile along the shore. Should any collector work the place, there is no reason why he should not find the beetle, and he will be pretty sure to find some insects that are worth having. *Nebria livida* is sometimes found abundantly by splitting open the clay crevices of the cliffs. A small and curious

variety of *Dyschirius politus* occurs rarely, and a good *Bledius*, which appears to be *crassicollis*, but concerning the identity of which there appears to be some doubt, may be taken in any quantity, if its casts on the clay cliffs are discovered. It must be either *erraticus* or *crassicollis* (these being the only two in the group of *Bledius* to which it belongs), if it is not a new species to Britain; it certainly is not the former, and in some points differs from Dr. Power's specimens of the latter, but I believe that they are really identical. *Dyschirius thoracicus*, accompanied by *Bledius arenarius* and *Stenus melanopus*, occurs in great numbers, and *Stenus guttula* is also very plentiful. I have taken one specimen of *Amara consularis* in a sandy place near the town. Several *Bembidia* (*saxatile*, *tibiale*, *affine*, &c.) are not uncommon, and in damp places some little way up the cliffs I have found *Georyssus pygmaeus*, looking like little animated balls of mud. I have no doubt that many others might be found, but as I was searching for two or three species particularly, I only observed those that came in my way.

The grassy sides of the cliffs near Filey are exceedingly productive. I never found beetles more plentifully by sweeping than on one occasion on a strip of grass on the top of the cliff, at the edge of a cornfield not far from the town; the best beetle I took near Filey was *Cassida hemisphaerica* (the only other specimen I have ever seen alive was one that I found last summer at Tenby); but some very good Hemiptera, notably the very rare *Deræocoris seticornis*, well repaid me for my trouble.

#### LEPIDOPTERA.

**Oncocera ahenella** and **Catoptria expallidana** in **Yorkshire**.—The claim of *Oncocera ahenella* to be regarded as a Yorkshire insect rests on the recorded occurrence of the species at Huddersfield. In the 'Yorkshire List of Lepidoptera,' p. 111, I expressed the opinion that the specimen had somehow got there accidentally, but I am now compelled to believe otherwise. And, indeed, on the first appearance of the Yorkshire List, Mr. Peter Inghald, F.L.S. (who formerly resided at Huddersfield), wrote me I might rest perfectly satisfied as to the capture and the correct determination of the species at the time. I have now further and very strong confirmation that such was the case, as will be felt from what follows:—Recently I purchased the cabinet and collection of lepidoptera formed by the late Mr. George Liversedge, who was for so many years treasurer to the Huddersfield Naturalists' Society. Mr. Liversedge professed no knowledge of the smaller species of lepidoptera, and had not in any way attempted to arrange or even name them. But for some years, as I well knew at the time, he collected a good many micro-lepidoptera, which he set and put away in some of the unarranged drawers of the cabinet. Scattered among these, in different drawers, I found five specimens of *Oncocera ahenella*, all evidently set in the same manner, and by the same person, as the many surrounding well-known Huddersfield micros. As Mr. Liversedge collected a great deal in the vicinity, and probably on the same ground the original specimen or specimens were supposed to have been taken, there can, I think, now be no reasonable doubt that he actually took them there. Among the micros, too, I picked out a single specimen of *Catoptria expallidana*, the only previous record for Yorkshire being the one taken by myself in my own garden, but near which *Sonchus arvensis* grew freely (See 'Yorkshire List,' p. 129).—GEO. T. PORRITT, Huddersfield, Jan. 27th, 1886.

**Melanippe unangulata at Bradford and Barden.**—Last July my late friend, Mr. John Firth, intimated to me with his usual enthusiasm that he had just seen on the setting board what he thought to be a specimen of *M. unangulata*, but was not quite sure, and requested me to see it. It had been taken about the end of June, resting on a wall at Girlington, by Mr. W. Hodgson, a local collector of lepidoptera. I have seen the specimen, and am very pleased indeed to be able to confirm Mr. Firth's suspicions, for it is a genuine *M. unangulata*, and an interesting addition to our local fauna, and, indeed, a very recent addition to the county list. On looking over Mr. Butterfield's collection, more recently, I was glad to detect another, which he had placed doubtfully under the name *M. rivata*, and which he had taken at Barden two or three years ago.—J. W. CARTER, Bradford, February 1st, 1886.

### MAMMALIA.

**Weasel's Method of Carrying its Young.**—In reference to Mr. Oldfield's note at page 202 of the *Naturalist* for 1885, how can the Squirrel carry its young but in its mouth? I have seen the Weasel carrying its young in its mouth on different occasions. The young are helpless things; where the old one drops them there they remain in a helpless condition even when they appear to be almost as large as the mother. I have taken up the young Weasel and carried it a short distance and put it down, and stood aside, when the old one would return to the place where the young one was put and run off with it. I then frightened the old one; she dropped it again. I put it in a fresh place, stood aside; the mother returned, going almost straight to its young one as if it was the spot where it had been left.—JAS. INGLEBY, Eavestone, near Ripon.

### Additional Records of Captures of the Badger (*Meles taxus*) in Yorkshire.—

One captured near Doncaster, June 1865. Weighed 20 lbs. Doncaster Gazette, June 29th, 1865.

One seen near Masham, December 5th, 1883. Mr. Carter in Rural Notes for 1883.

One captured at Wortley, near Barnsley, April 22nd, 1884. W. E. Brady in Nat., September 1884, p. 34.

One captured at Ingleby, North Riding, February 3rd, 1885. Mr. Lofthouse in Rural Notes for 1885.

One captured at Brimham Rocks, about February 1885. W. Storey in Nat., April 1885, p. 202.

One captured at North Stainley in the winter of 1883-4. R. A. Summerfield in Nat., May 1885, p. 228. GEORGE ROBERTS, Lofthouse, Wakefield.

### ORNITHOLOGY.

**Flocks of Skylarks on the Durham Coast.**—Feb. 6th, immense flocks of Larks (*Alauda arvensis*) made their appearance between Ryhope and Seaham. The fields were absolutely alive with them. On the 8th a thaw set in, and they immediately left. No other kind of birds were to be seen amongst them.—JAMES T. T. REED, Ryhope, near Sunderland.

**Leicestershire Bird-notes.**—The Red-backed Shrike (*Lanius collurio*) bred at Loughborough last year. A clutch of five eggs, now in my collection, was taken on 26th May.

The Hoopoe (*Upupa epops*) also occurred in the same neighbourhood. A pair were seen by my friend, Mr. Wieldt, at the end of April. Both these birds are very rare in that part.—F. B. WHITLOCK, Nottingham, February 6th, 1886.

**Corn Bunting—Diversity of Eggs.**—On the 26th of June, 1884, I found a nest of the Corn Bunting (*Emberiza miliaria*), which contained three eggs all different in size and colour. The largest egg is 1 inch in length, and  $\frac{5}{8}$  inch in breadth, and is coloured and streaked in the usual way. The smallest is  $\frac{5}{8}$  inch in length, and slightly over half an inch in breadth, and is blotched and streaked with light brown, not black like the normal egg. The other is intermediate in size, but approaches the smaller one in ground colour and markings.—GEO. ROBERTS.

March 1886.

**Grouse and the Weather.**—I was out shooting yesterday with Mr. J. Hatfield, at Walton, near Boston Spa, and in one of the woods the keeper picked up a hen grouse. I never saw a bird fatter, or in finer plumage, and by the freshness of its eyes it had evidently been dead only a very short time. Starvation had certainly nothing to do with its death, therefore I conclude that it had killed itself against a tree. I have since heard from Mr. Hatfield that he had had the grouse opened, and found the liver black and the crop full of yewberries, which will probably account for its death. Sand is quite as essential as food, and the want of it becomes another cause of death. The last I saw in this district got up under my feet, behind my house here, in the winter of 1856.—J. CHALONER, Newton Kyme, Tadcaster, February 2nd, 1886.

Judging from the reports which have lately appeared in the northern newspapers, the protracted severe weather has compelled large numbers of grouse to leave the Yorkshire and Durham moors, and to seek their sustenance in lowland districts. It is to be hoped that correspondents living in such localities as they have been observed in will communicate to the *Naturalist* whether, now that the weather has become milder, they appear to possess anything of the 'homing instinct.' I rather doubt it myself, for I remember to have heard some years ago, during a similar winter to the present, large packs of grouse were seen flying out in the North Sea, off the coast of Caithness, by the crews of different fishing smacks. This would appear to show that the migration was haphazard, and without any definite idea of terminus. I notice in the *Naturalist* for February the occurrence in Nidderdale of a brood of light-coloured grouse. For two or three years an albino grouse was observed on a moss near Holker, the seat of the Duke of Devonshire in North Lancashire, and it was shot, I think, in the autumn of 1884.—EDWARD T. BALDWIN, Woodcroft, Ulverston, February 1886.

Large flocks of grouse forced down from the moors by the storm were daily seen during the recent heavy falls of snow to the east of Richmond, where there was scarcely any snow. A large covey paid a visit to Richmond Parish Church, and many flew over the town, and sought refuge in the woods southwards, while others sat in the hedgerows, almost as tame as farmyard hens. A flock of twelve were seen about three weeks ago, hovering near Ferryhill, a sight not remembered by the oldest inhabitant of that village; and near Heworth, in the grounds at North Leam, a hen grouse was seen resting on the lawn, the cock being put up next day in the adjoining field.—T. H. NELSON, Bishop Auckland, February 21st, 1886.

On the 1st of February a fine specimen of the Red Grouse (*Lagopus scoticus*) was picked up near Seaham by the Marquis of Londonderry's keeper. It had, no doubt, been compelled to leave the moors by the severe weather.—JAMES T. T. REED, Ryhope, Sunderland.

In addition to the above, I may state on the authority of numerous informants that immense numbers of grouse have been observed in and around the borough of Leeds, about twenty miles from the nearest moors on which they occur in any quantity, one informant alone having seen as many as five hundred in one day, and numerous other instances are given in the local newspapers.

This remarkable emigration on the part of these most sedentary of birds is not in any way attributable to the severity of the season, but simply to a most unusual succession of meteorological conditions. We had first a heavy snow-storm on the 24th of January, followed by a rapid partial thaw, accompanied by rain, which in its turn was followed by a keen frost. The effect of this was to glaze the snow-clad moorlands with an impenetrable coating of ice, and so totally prevent the birds from reaching their food. This contingency does not occur to any extent in ordinary severe seasons, or even in the extreme—almost Arctic—winters of 1878-9 and 1879-80. In such seasons the birds may leave the high moors and seek the immediately contiguous lowlands, but seldom or never wander so far from their habitat as upon the present occasion. It is to be feared that many of the birds will not be able again to find their accustomed moorlands. Many have died of starvation, and not a few, I regret to say, have been shot.—W. EAGLE CLARKE, Leeds, February 20th, 1886.

NOTES ON SOME OF THE BIRDS OCCURRING IN  
THE SOLWAY DISTRICT.

By J. J. ARMISTEAD,  
*Solway Fishery, Dumfries, N.B.*

(Continued from the *Naturalist* for 1885, page 298.)

**Wren.** *Troglodytes parvulus.*

Common.

**Swallow.** *Hirundo rustica.*

Common.

**Martin.** *Chelidon urbana.*

Common.

**Sand Martin.** *Cotile riparia.*

Common in suitable localities.

**Creeper.** *Certhia familiaris.*

Not uncommon in some places, breeding annually.

**Linnet.** *Linota cannabina.*

Common.

**Lesser Redpoll.** *Linota rufescens.*

Not uncommon.

**Mountain Linnet.** *Linota flavirostris.*

This bird has not come much under my notice, but is probably not uncommon in suitable localities.

**Bullfinch.** *Pyrrhula europæa.*

Occurs sparingly on both sides of the Solway.

**Crossbill.** *Loxia curvirostra.*

As far as I have observed, this bird is only a winter visitor, occurring during some winters only at irregular intervals, and when it does occur frequenting pine woods.

**Starling.** *Sturnus vulgaris.*

Plentiful in some cultivated districts.

**Chough.** *Pyrrhocorax graculus.*

I have never seen this bird in the district, but am led to include it, as it is one that I have watched very closely for. Old inhabitants have given me undoubted evidence of its formerly breeding in our cliffs, but of late years the Jackdaws (*C. monedula*) inhabiting the same cliffs have become much more numerous, and I have reason to fear they have driven it away. It certainly has not been persecuted by man.

**Jay.** *Garrulus glandarius.*

Extinct in many places where it is said to have bred formerly, and very rare throughout the district, though it is still to be found in one or two localities.

**Magpie. *Pica rustica*.**

Very rare on the northern side of the Firth, but commoner in Cumberland, where, however, it is well persecuted. I have seen it nest in very low trees.

**Jackdaw. *Corvus monedula*.**

Common.

**Carrion Crow. *Corvus corone*.**

Common, breeding in trees and cliffs.

**Rook. *Corvus frugilegus*.**

Common.

**Raven. *Corvus corax*.**

Still holds its own in a few places, and breeds annually. The young are, I am sorry to say, usually destroyed by the shepherds.

**Swift. *Cypselus apus*.**

Not near so plentiful as the sand-martin, but is common in localities where it breeds. Why it should only frequent certain places and hardly ever be seen at others which are apparently quite as well suited to its habits is a puzzle.

**Nightjar. *Caprimulgus europæus*.**

Generally dispersed, occurring wherever the ground is suitable, but nowhere very abundant.

**Lesser Spotted Woodpecker. *Dendrocopus minor*.**

I have seen only one specimen of this bird in the district.

**Kingfisher. *Alcedo ispida*.**

Occurs on some streams, and I have often met with it close on the sea coast, frequenting ditches and drains, as well as the brackish waters of rivulets.

**Hoopoe. *Upupa epops*.**

A specimen of this bird was shot in Cumberland to my knowledge about twenty years ago, but was unfortunately allowed to rot and then thrown out by the man who shot it.

**Cuckoo. *Cuculus canorus*.**

Plentiful in the breeding season.

**Cormorant. *Phalacrocorax carbo*.**

Common; breeds.

**Shag. *Phalacrocorax graculus*.**

Rare, and I have not found it breeding here, but once shot a very young bird which could only just fly well. It was commoner fifty years ago.

**Gannet. *Sula bassana*.**

Occurs at uncertain intervals, sometimes in considerable numbers, when following the herring and mackerel shoals.

**Heron. *Ardea cinerea*.**

Common; breeds. Frequents the smallest rivulets at the time trout are spawning and makes havoc amongst them. I have shot them at my trout ponds close to the house, and only a few weeks ago I missed several thousand yearling trout from a nursery pond, and set three or four traps, and next morning had the thief, which proved to be one of these birds.

**Night Heron. *Nycticorax griseus*.**

Has occurred once in Cumberland to my knowledge.

**Bittern. *Botaurus stellaris*.**

Has occurred once in Cumberland to my knowledge.

**Bean Goose. *Anser segetum*.**

Occurs sparingly in winter.

**Pink-footed Goose. *Anser brachyrhynchus*.**

Occurs sparingly in winter.

**Brent Goose. *Bernicla brenta*.**

Much less plentiful than the next species, and only found in one or two localities.

**Barnacle Goose. *Bernicla leucopsis*.**

Plentiful in some localities, and often gathering into large flocks; arrives about the end of October and remains all winter.

**Swan. *Cygnus musicus*.**

Occurs on the Frith sparingly in winter, being mostly observed during very severe weather.

**Bewick's Swan. *Cygnus bewicki*.**

Same as the last species. Eleven of these birds passed close over my head during the winter of 1880, but not having a gun I could not secure a specimen. It is difficult to distinguish from *C. musicus*, its smaller size being the chief guide. In very severe weather tame Swans are often driven off the fresh-water and betake themselves to the sea and mouths of rivers.

**Sheldrake. *Tadorna cornuta*.**

Common during the breeding season, but as soon as the young are able to fly these birds leave our coasts and do not appear again in any numbers until January and February, when they arrive again near their breeding grounds. I have found the nests of these birds several miles inland, and they do not by any means confine themselves to the seashore or its immediate neighbourhood for breeding purposes. A few are occasionally seen between August and January, mostly on the sea.

**Widgeon. *Mareca penelope*.**

Plentiful in winter. A straggler may be got occasionally in September, but the main body puts in an appearance in October,

and in November, the numbers still increase. I cannot ascertain that it breeds with us.

**Pintail. *Dafla acuta.***

A rare bird with us, but occurs most winters on the sea.

**Wild Duck. *Anas boscas.***

Common in winter, and a fair number remain to breed.

**Teal. *Querquedula crecca.***

Common in some localities at times, the numbers being increased by migrants in autumn and through the winter. It breeds with us.

**Shoveller. *Spatula clypeata.***

Occurs very sparingly indeed on the Solway in winter or late in the autumn.

**Tufted Duck. *Fuligula cristata.***

I have seen two specimens killed on the Frith, but it is decidedly rare.

**Scaup. *Fuligula marila.***

Plentiful on the Frith, but very seldom seen on inland waters in proportion to its numbers on the coast. I have shot the Scaup in September, but from November to April is the time they occur in numbers.

**Pochard. *Fuligula ferina.***

Not a common bird, but is to be found every winter on fresh-water; and I have seen them in May, but have not ascertained that they breed with us.

**Goldeneye. *Clangula glaucion.***

I have several times shot the Goldeneye, and it occurs as a regular winter visitor, but in very small numbers.

**Scoter. *Ædemia nigra.***

Very abundant at times, but very local. I have seen hundreds of these birds on the Frith in June and July, and indeed every month of the year, yet it does not breed here.

**Velvet Scoter. *Ædemia fusca.***

Very much less plentiful than the last, but I have occasionally seen a fair number of these birds, usually in company with *Æ. nigra.*

**Goosander. *Mergus merganser.***

Much scarcer than the next species. A straggler sometimes puts in an appearance in winter.

**Redbreasted Merganser. *Mergus serrator.***

Decidedly rare, but occurs every winter.

**Smew. *Mergus albellus.***

Once only have I seen this bird on the Frith in winter.

**Ringdove. *Columba palumbus.***

Generally dispersed, and common in wooded districts.

**Stock Dove. *Columba oenas.***

This bird I have found breeding on the Scotch side of the Frith, an occurrence worth noting, as it is said only to have bred in one other locality in Scotland. I have met with this bird in Cumberland, but not so plentifully as in one locality on the northern shore (see p. 293).

**Rock Dove. *Columba livia.***

Although I have been told this bird breeds with us and have reason to believe it has done so, yet I have never seen a single example, although I have looked for it frequently. Some of our sea caves are full of pigeons that breed there, and are quite wild, and these are called Rock Doves by the inhabitants, but out of a score or more I have shot no two are alike in colour. They are brown, white, buff, blue, &c., &c., but no true Rock Doves among them.

**Pheasant. *Phasianus colchicus.***

Plentiful in preserved districts where well wooded.

**Partridge. *Perdix cinerea.***

Generally dispersed, and common.

**Quail. *Coturnix communis.***

Rare, but breeds in the cultivated parts of the district occasionally. I know one locality in Cumberland where I remember it as common, and have seen several nests in a season; but being for a season or two much persecuted it has, I believe, never regained its original numbers.

**Virginian Quail. *Ortyx virginianus.***

I have come across two instances in which this bird has been shot, one at Allonby in Cumberland, and the other in Colvend, Kirkcudbrightshire, both occurring about the same time. I have ascertained that some of these birds were prior to this turned out by the Duke of Buccleuch at Drumlanrig, in Drumfriesshire, but whether this accounts for the individuals shot will never be known.

**Red Grouse. *Lagopus scoticus.***

Common on moorlands and on some mosses that are preserved.

**Black Grouse. *Tetrao tetrix.***

Common in suitable localities. I have seen as many as sixty to eighty of these birds together at times in winter.

**Water Rail. *Rallus aquaticus.***

Tolerably common in some localities, frequenting ditches and sedgy places.

**Spotted Crake. *Porzana maruetta*.**

Probably commoner than is supposed. I have come across several examples.

**Corncrake. *Crex pratensis***

Common in summer in suitable localities.

**Moorhen. *Gallinula chloropus*.**

Common ; breeds.

**Coot. *Fulica atra*.**

Common ; breeds.

**Common Crane. *Grus communis*.**

I have never seen this bird, but one was once seen in Cumberland by my friend Mr. T. Mann of Aigle Gill.

**Golden Plover. *Charadrius pluvialis*.**

Common ; breeds on our moorlands, and in autumn gathers into flocks, frequenting the fields and the seashore. After a few days of intense frost I have seen many thousands of these birds passing overhead continually by day for several days, all going south, and flying high. Only occasionally have they been within gunshot. A week later not one was to be seen in the district.

**Grey Plover. *Squatarola helvetica*.**

Occurs sparingly as a winter migrant, usually during frosty weather.

**Ringed Plover. *Ægialitis hiaticula*.**

Common, but rather local.

**Dotterel. *Eudromias morinellus*.**

Occurs sparingly on our coasts and pasture lands, occasionally as a spring migrant.

**Lapwing. *Vanellus vulgaris*.**

Abundant.

**Turnstone. *Strepsilas interpres*.**

Arrives in August, and is to be found sparingly all through the winter frequenting places where there is a mixture of ooze and shingle.

**Oystercatcher. *Hæmatopus ostralegus*.**

Very abundant in autumn, and more or less so through the winter and into early spring, when the main body leaves us, a few, however, remaining to breed.

**Red-necked Phalarope. *Phalaropus hyperboreus*.**

A rare visitor on the autumnal migration.

**Gray Phalarope. *Phalaropus fulicarius*.**

I have only once met with this bird as an autumnal migrant.

**Woodcock. *Scolopax rusticula*.**

A good many breed on the Scotch side of the Frith, and in November the migrants arrive sometimes in considerable numbers. I never found these birds on the seashore here, except occasionally during intense frost in winter.

**Snipe. *Gallinago cœlestis*.**

Generally distributed, and breeds with us.

**Jack Snipe. *Limnocyptes gallinula*.**

Common in winter in some localities, but I have never met with it on the Saltings, where I have occasionally flushed the last species.

**Dunlin. *Tringa alpina*.**

Abundant in autumn and winter. A few remain to breed.

**Little Stint. *Tringa minuta*.**

I have only twice seen one of these birds on the Solway, in autumn.

**Curlew Sandpiper. *Tringa subarquata*.**

Occurs occasionally on the autumnal migration in September.

**Knot. *Tringa canutus*.**

Arrives in October, and is often abundant during winter. I have never met with it in full summer plumage, but have seen a specimen with a good deal of red about it.

**Ruff. *Machetes pugnax*.**

A rare occasional autumnal visitor.

**Sanderling. *Calidris arenaria*.**

Same as the Turnstone, but of much rarer occurrence.

**Common Sandpiper. *Tringoides hypoleucus*.**

Common as a summer migrant, appearing in June; breeding on the margins of rivers and lakes, and leaving in September.

**Green Sandpiper. *Helodromas ochropus*.**

Occurs as an occasional straggler in September.

**Redshank. *Totanus calidris*.**

Common in autumn and winter, and a few remain to breed.

**Greenshank. *Totanus canescens*.**

I have shot very young birds early in August with down still adhering to the feathers. It occurs regularly as an autumn migrant, but is not at all plentiful, and is decidedly local, frequenting muddy creeks and estuaries, where I have shot it several times in December and January during very severe weather. A few spend the winter with us regularly.

**Bar-tailed Godwit. *Limosa lapponica*.**

A regular visitor in autumn, a few arriving in August and September, but the main body does not appear until the end of

the month or in October, when they are sometimes very abundant. They remain in diminished numbers into winter, but as soon as hard frost occurs they usually depart, though I have shot them in January during severe weather, and occasionally seen a good flock of them at that time of year.

**Black-tailed Godwit. *Limosa ægocephala.***

A very rare visitor to the Solway during the autumnal migration. I have only seen three in five years.

**Curlew. *Numenius arquata.***

Breeds in some numbers on the moorlands, and at other times frequents the seashore. I have seen them very badly off in severe frost. On one occasion I passed within easy gunshot of several poking their bills into a lot of stable manure just outside a farm yard.

**Whimbrel. *Numenius phæopus.***

Occurs in small numbers in August and September, and occasionally later in the season, but I have not met with it in winter. In May it often appears in large flocks.

**Arctic Tern. *Sterna macrura.***

An occasional visitor as an autumn migrant.

**Common Tern. *Sterna fluviatilis.***

Common, but very local; breeds.

**Lesser Tern. *Sterna minuta.***

An occasional straggler. Have not found the eggs in the district, but have been informed that it has been known to breed.

**Sandwich Tern. *Sterna cantiaea.***

Rare, but I usually see a few in August. I have not found it breeding in the district.

**Black Tern. *Hydrochelidon nigra.***

I have a specimen shot along with some others of the same species some years ago, when I believe a colony of these birds would have been established, but they were so persecuted as to be either shot or driven off.

**Ivory Gull. *Pagophila eburnea.***

A bird supposed to be this species I once saw on the Cumberland coast about 25 years ago. I was then but a schoolboy, and not sufficiently well up in the gulls to be absolutely certain, but I believe I am right as to the species.

**Kittiwake. *Rissa tridactyla.***

I have often seen these birds in spring and autumn, but they do not breed with us.

**Glaucous Gull. *Larus glaucus.***

I have only once seen a specimen on the Frith.

**Herring Gull. *Larus argentatus*.**

Common ; breeds.

**Lesser Black-backed Gull. *Larus fuscus*.**

Common ; breeds.

**Common Gull. *Larus canus*.**

Very common in winter ; less so in summer, but breeds in fair numbers.

**Great Black-backed Gull. *Larus marinus*.**

A fair number of these birds frequent the Frith in winter, but it does not breed here.

**Black-headed Gull. *Larus ridibundus*.**

Plentiful ; breeds.

**Pomarine Skua. *Stercorarius pomatorhinus*.**

An autumnal visitor, occasionally plentiful, but most seasons decidedly rare.

**Richardson's Skua. *Stercorarius crepidatus*.**

Much commoner than the last, in autumn. I have seen it on the Frith in May.

**Buffon's Skua. *Stercorarius parasiticus*.**

An individual was killed at Allonby in Cumberland, in October, some years ago.

**Storm Petrel. *Procellaria pelagica*.**

An occasional storm-struck specimen is to be met with.

**Fork-tailed Petrel. *Procellaria leucorrhoea*.**

One individual I picked up in Sandy Hills Bay, after a heavy gale from the westward, in winter.

**Manx Shearwater. *Puffinus anglorum*.**

Often seen on the Frith, and I fancy it may breed sparingly, but have never found its nest. From the cunning manner in which it approaches and leaves its nesting-places it might easily be overlooked.

**Great Northern Diver. *Colymbus glacialis*.**

I have frequently seen this bird in winter and late in spring, once as late as June and apparently in full summer plumage.

**Red-throated Diver. *Colymbus septentrionalis*.**

Fairly common on the Frith in winter.

**Slavonian Grebe. *Podiceps auritus*.**

I record this bird having once only met with a drowned specimen at sea during very severe frost.

**Little Grebe. *Tachybaptus fluviatilis*.**

Resident ; rare ; breeds.

**Razorbill. *Alca torda*.**

Common; breeds. Occurs in diminished numbers all winter, as well as the Guillemot.

**Guillemot. *Lomvia troile*.**

Common on the Frith; breeds. A great many of these birds, as well as Razorbills, are cast ashore after winter storms.

**Ringed Guillemot. *Lomvia lacrymans*.**

I have seen an occasional example. It probably occurs wherever the last named is common.

**Little Auk. *Mergulus alle*.**

Very rare. I have seen two of these birds only in winter.

**Puffin. *Fratercula arctica*.**

Decidedly a rare bird on the Solway, and only occurring well out at sea. I have not met with it breeding. A specimen occurs in winter occasionally, as well as a few in summer.

Probably there are many birds that have occurred, some of them perhaps frequently, but which are not reported in the foregoing list. It must be remembered in cases of this kind that I have, as a rule, only recorded what I have seen.

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### MOLLUSCA.

**Marine Shells at Whitby.**—In the *Naturalist*, p. 349, I see it recorded that the Rev. W. C. Hey found *Trochus cinereus* at Whitby. Should this not rather be *T. cinerarius*, a common littoral shell? *T. cinereus* is in fact only known as British as a fossil, except that a single specimen was dredged in 1,230 fathoms off Galway, Ireland, with *Trochus minutissimus* and *Arca glacialis*. Very many species of shells have been recorded for Yorkshire that are not mentioned in Mr. Hey's list of Yorkshire marine shells—for instance, *Odostomia nitidissima*, *Bulla utriculus*, and among the Nudibranchs *Doris depressa*.—T. D. A. COCKERELL.

[It should not be forgotten that Mr. Hey's paper was simply a record of his own captures and of notes from private collections, and did not profess to include all the Yorkshire marine shells. As to the *Trochus*, Mr. Hey tells us that if he erred he did so on good authority, for in Sowerby's British Shells, in the explanation of plate xi., we read: 'Fig. 17, *T. cinereus* Linn.—*T. lineatus*, *T. perforatus*, etc.—Brit. co. generally, C. Littoral, small umbilicus.'—Eds.]

**Varieties of *Bythinia tentaculata*, *Zonites excavatus*, and *Cochlicopa lubrica* in N.E. Cheshire.**—The three following varieties I have recently obtained in this part of Cheshire:—*Bythinia tentaculata* var. *decollata* at Lostock Gralam, in a small pond full of cinders; *Zonites excavatus* var. *vitrina* at Northwich; and *Cochlicopa lubrica* var. *hyalina* at Ashley Hall, where I found it hibernating in a ditch full of dead leaves. In all three cases the species was plentiful, and only in the last accompanied by the typical form.—J. G. MILNE, Bowdon, 14th February, 1886.

**Shells at Millom, Cumberland.**—Among the numerous shells which Mr. C. T. Musson has allowed me to inspect are a few collected at Millom, Sept. 1882, viz.:—*Helix rufescens*, *H. aspersa*, *H. rotundata*, *Pupa umbilicata*, *Cl. rugosa*, and *Balia perversa* (with v. *simplex*), all common; *H. rupestris*, fine; *Zonites cellarius*, *Z. fulvus*, and *Z. radiatulus*.—J. W. TAYLOR.

*L. peregra* m. *decollatum* and *Bythinia tentaculata* m. *decollatum* in Cheshire.—I noted the occurrence of *L. peregra* m. *decollatum* about April last, in a pond near Chester Canal. The form was small, elongated, and rather thin. Apparently feeding on the thick green growth which half choked the pond.

Later on I found *Bythinia tentaculata* m. *decollatum* in a ditch, which, though near this pond, had no communication with it; while it was accompanied by ordinary sized *L. peregra*, slightly inclined perhaps to var. *ovata*, but not decollate. What I wish to note is the occurrence of these two species decollate in neighbouring pools, while on the other hand the *L. peregra* occurring with *B. tentaculata* were of normal growth.—BROCKTON TOMLIN, Pembroke College, Cambridge, November 15th, 1885.

**Pupa marginata var. brevis (Baudon) in Yorkshire.**—Amongst some shells collected by Mr. W. Denison Roebuck on June 27th, 1885, at Runswick Bay, near Whitby, I found a very characteristic specimen of this variety, which has not previously been recorded as British. It is described by Baudon as 'Très raccourcie, robuste, bourrelet épais, blanc au peristome.' The average size of the type as given by Dr. Jeffreys is 0·133, or about  $3\frac{1}{4}$  mm., and breadth 0·6, the latter presumably an error for 0·06 which is equal to about  $1\frac{1}{2}$  mm. The specimen of var. *brevis* is 2 mm. long and about  $1\frac{1}{2}$  mm. broad, is composed of a whorl less than usual, and the mouth being perfectly finished shows it to belong to the edentate form of the species.—J. W. TAYLOR, Leeds.

**Mollusca at Louth, North Lincolnshire.**—In September last I began to work at the mollusca of this district, and since then have found 31 species; 9 of which were not recorded for North Lincolnshire (vice-county 54) in the 'census' published in the *Journal of Conchology* in 1885.

*H. rufescens* is the commonest *Helix* here. *Sphærium corneum*, *Planorbis spirorbis*, *Planorbis vortex*, *Physa fontinalis*, *Limnæa peregra* var. *ovata*, *Arion ater*, *Arion hortensis* and var. *grisea*, *Limax agrestis* and var. *sylvatica*, *Limax arborum* (mostly on beeches), *Helix aspersa*, *H. nemoralis*, *H. hispida*, and *H. rotundata* are common and generally distributed throughout the district. *Bythinia tentaculata*, *Valvata piscinalis*, *Planorbis carinatus*, and *Planorbis contortus* are found in the Louth Canal. *Anodonta cygnea* is common in the canal, and in a large sheet of water known as Burwell fish-pond;  $5\frac{1}{4}$  inches is the largest measurement found as yet. All the specimens of *Limnæa peregra*, both from ponds and streams, are referable to var. *ovata*, with the exception of some from a brick-pit in the village of South Reston, which are *Limnæa peregra* proper. Mr. Cockerell of Bedford Park returns one specimen from a quick-running stream as *Lim. peregra* var. (not *ovata*). Full-grown specimens of *Limnæa stagnalis* swarm in a little stream known as Monk's Dyke; most of these on being lifted out of the water discharged their violet-coloured liquid. This species is also found in the canal. *Limnæa palustris* is plentiful in water which collects under some willow trees during the winter months, and is also found in the canal. *Ancylus fluviatilis* adheres to the stones in clear quick-running streams. *Zonites cellarius*, *Z. glaber*, and *Z. nitidulus* are not uncommon. *Helix arbustorum* has been found in several situations in this neighbourhood, but is most plentiful on a hedge-bank in the village of Hallington. *Helix ericetorum* has been found in four places, and swarms on a certain chalky bank, where also *Helix caperata* is abundant. *Bulinus obscurus* occurs on the trunks of trees, and under moss. *Balea perversa* I have as yet only found on ash. *Clausilia rugosa* is very abundant, and appears to be commonest on the trunks of beech and hawthorn.

The following varieties have also been found, and kindly named for me by Mr. T. D. A. Cockerell of Bedford Park. *Arion ater* var. *bicolor*, immature (among *Tussilago farfara* in a chalk pit); *Limax arborum* var. *betonii*, *Helix aspersa* var. *minor*, *Helix nemoralis* vars. *libellula* and *rubella* (with various bands, formulæ), *Helix arbustorum* var. *conoidea* and var. approaching *marmorata*, *Helix hispida* var. *subrufa* and var. *nana*, *Helix caperata* var. *major* and var. *ornata* and *Helix ericetorum*, var. approaching *alba*.—H. WALLIS KEW, Louth, February 1886.

March 1886.

**Lancashire Helices.**—I was very pleased with Mr. T. D. A. Cockerell's account of his September walk, especially the part relating to his progress through my native county, but his remarks upon the scarcity of the Helices rather surprised me, for the fact does not at all apply to those portions over which my own conchological researches have extended, and a few notes on the subject may perhaps interest him and other conchologists. I have searched the coast line from Formby to Blackpool, and find that *H. nemoralis* is very common on most of the sandhills. Near Blackpool it is so abundant that it is almost impossible to walk along in some places without treading the shells underfoot. Close to the town little heaps of broken shells may frequently be observed, where some busy thrush has been at work, hammering them to pieces on some convenient stone to get at the contents. In some of the sand drifts I have seen dead shells blown together by the wind in such numbers that they could be gathered by the handful. These dead shells are collected by the town's children, and threaded alternately with *Turritella communis* in long strings, and hawked about the streets for sale. I find that after the type, v. *libellula* 00000 and v. *rubella* 00300 are the most common forms found on the sandhills. Var. *rubella* 00345, (12)3(45), and v. *libellula* 00300, 00345, 10345, (123)(45), and several others occur more sparingly. *H. hortensis* is not so common here, and I have only found the type and v. *lutca* 00000. All the above-mentioned vars. occur pretty plentifully about Goosnargh and Newsham, and the neighbourhood of Preston, and from these localities I have collected v. *castanea* 00000 and v. *olivacea* (123)(45), of *nemoralis*; and *H. hortensis* v. *incarnata* 00000 and v. *lilacina* 00000. Just outside Southport, *H. caperata*—and, sparingly, its var. *ornata*—is abundant. *H. ericetorum* and *H. virgata* also occur there in limited numbers. *H. aspersa* occurs at Walton-le-dale, Newsham, near Glasson Dock, and by the Wyre, at Preesall, in abundance. At the latter place I may safely say it might be collected by the *wheelbarrowful*; especially at this season of the year, when large congregated masses of from a dozen to fifty shells, firmly cemented together, may be picked up from the hedge banks; and after a shower in spring or summer, they may here be seen swarming upon the thorn bushes, which they climb even to the topmost twigs, and present a curious spectacle. *H. rufescens* is the most common land shell about Goosnargh, and its var. *rubens* is also plentiful there. *H. rotundata* I have found common wherever I have collected, except along the coast. *H. arbustorum* (type and v. *flavescens*) is found along the banks of the Brock, and *H. hispida* at Farrington and Leyland. My own somewhat limited experiences are embraced in these notes, in which I have quoted localities where I have found the species most numerous, leaving unmentioned many others where I have found various specimens in limited numbers. I am looking forward to the discovery of many more localities during the coming season, when I propose to prosecute my researches in places perhaps hitherto unexplored.—R. STANDEN, Swinton, Manchester, February 9th, 1886.

**Scarcity of Helices in N. E. Cheshire.**—In reference to Mr. T. D. A. Cockerell's note on the scarcity of Helices in Lancashire, a few remarks on their corresponding scarcity in north-east Cheshire may be of interest. In the plain of red marl which stretches across the county southward from Runcorn and Stockport, the only *Helix* that is generally distributed is *H. rotundata*. *H. nemoralis* is found sparingly about the Bollin and Mersey valleys; but all the remaining species I have found north of the Weaver live where the marl is overlaid with other deposits—*H. aculeata* in the marshes at Ashley Hall; *H. aspersa* on the sand at Bowdon; *H. hispida* in the Bollin and Weaver valleys, on alluvial soil; *H. pulchella* in the Bollin valley and on Hale Moss; and *H. pygmaea* in Knutsford Bog. On the carboniferous rocks, east of Stockport to the county border, Helices are much more numerous. The distribution of *Zonites* is very different; all the British species are found in the north-east part of the county, most of them being common everywhere; and all but *Z. radiatulus* and *Z. glaber* are to be found within three miles of Bowdon Church.—J. G. MILNE, Bowdon, 14th February, 1886.

**Testacella haliotidea v. scutulium at Chester.**—Mr. G. W. Shrubsole informs us that this occurs in the green lanes near some nursery gardens, but not in them. Mr. Taylor and I have seen the fine specimen he is keeping in captivity.—W. DENISON ROEBUCK, Sunny Bank, Leeds, February 1886.

Naturalist,

## PALÆONTOLOGY.

**Palæontological Notes from the British Museum Collections.**—A day or two ago, when in the fossil department at the British Museum in Cromwell Road, I jotted down a few notes concerning North of England specimens, which it may be of interest to record. They are as follows:—

**FISHES.**—Dermal tubercles of *Gyracanthus*, from the coal measures, Newcastle; *Carcharopsis prototypus* Ag., Pateley Bridge, Yorkshire; *Petalodus hastingsiæ* Owen, carboniferous limestone, Derbyshire; and *Janassa (Climadoxus) lingueformis* Atthey, coal measures, Newsham, near Newcastle.

**MOLLUSCA.**—*Astarte levis* Phil., *Tellina minuscula* Bean, *Pholadidea constricta* Phil., *Nucula cordiformis* Bean, *Isocardia angulata*, *Trochus antiquus*, *Cerithium aculeatum*, *Trochus pulcherrimus*, *Panopæa speetonensis*, *Nucula subrotunda*, *Inoceramus venustus*, and *Pinna gracilis*, all from the Speeton clay, Speeton, Yorkshire; *Placunopsis jurensis* and *Nerita costulata* Desh., from Scarborough; '*Turbo*' *mancuniensis* Brown, Manchester; *Arca tumida* Sby., *A. speluncaria* Schl., and *A. striata* Schl., all three from Durham; *Axinus truncatus* King, Durham and Manchester; *Mytilus squamosus*, Sby., Durham; *Rissoa gibsoni* Br., Manchester; and *Rhynchonella acuminata* var. *plicatula* Dav., Derbyshire.

**ECHINODERMATA.**—*Ophioderma milleri* Phill., lias, Robin Hood's Bay, Yorkshire, and from Staithes, Yorkshire; and *Platycrinus megastylus* Ph., Lancashire.—THEO. D. A. COCKERELL, London, December 31st, 1885.

## REPTILES.

**Reptiles of Warrington District.**—We have been favoured with reprints of two papers—one on British Snakes and another on British Lizards—by Mr. Linnæus Greening, which have been read by him at a meeting of the Warrington Field Club. The papers are of an exhaustive character, and, among other things, include some local notes, which we judge will be of sufficient interest to our readers for reproduction here.

The Viper (*Pelias berus*) is spoken of as being found in Delamere Forest, Cheshire, where it is apparently not uncommon.

The Ring Snake (*Tropidonotus natrix*) is found round about Warrington, Harford being a place where Mr. Greening has seen it frequently.

The Sand Lizard (*Lacerta agilis*) is common on the sandhills at Southport, and report has it that it was once common on the Overton hills, though, so far as Mr. Greening knows, it has not been found there within the last fifteen years.

The Common or Viviparous Lizard (*Zootoca vivipara*) occurs locally in the neighbourhood of Birkenhead and Liverpool, also at Weston (Cheshire), where they are known as 'Swifts,' and are to be found in the cuttings running down from the quarries to the river.

The Slow-worm (*Anguis fragilis*) is reported to have been found locally in the Frodsham district. It is not uncommon in Mid-Cheshire, and is often found by the platelayers on the railway between Knutsford and Chester.

## FISHES.

**Whitby Fish-notes.**—Three Grey Mulletts were caught in the salmon nets off Whitby, 12th August last.—THOS. STEPHENSON, Whitby, 25th September, 1885.

**Goole Fish-notes.**—The Salmon-fishery here has been very good this season. Several Sturgeons (*Acipenser sturio*) have been taken, also an Angler-fish (*Lophius piscatorius*), and some Shad (*Clupea alosa*), or as they are called here, Scad.—THOMAS BUNKER, Goole, September 2nd, 1885.

**Vendace and Gwiniad in the English Lakes.**—At the Zoological Society, 19th May, 1885, Mr. Francis Day exhibited a specimen of the Vendace (*Coregonus vandesius*) which, he observed, was one of three received from Mr. W. Kimsey Dover that had been taken in Derwentwater and Bassenthwaite Lakes, where Dr. Davy had recorded their occurrence in 1858, but whose statement had been generally overlooked. Mr. Day also remarked that the Gwiniad (*C. coregonoides*) would seem to be restricted in the Lake District to Haweswater and the lake system that joins the Eden.

## BOOK NOTICES.

**The Geology of Holderness and the adjoining parts of Yorkshire and Lincolnshire.**—By Clement Reid, F.G.S. (Memoirs of the Geological Survey of England and Wales). 8vo, 170 pp., with woodcuts and a plate of charts.

This memoir is a most valuable contribution to the Glacial and Post-glacial geology of the country, and will be a useful work of reference for local geologists. After a preliminary chapter on the origin and physical features of the district, the author proceeds to describe the 'Basement' Boulder-Clay, and to give a resumé of the discoveries of the fossiliferous patches known as the 'Bridlington Crag.' With reference to the latter, he adopts Mr. Lamplugh's view, that these shell-bearing masses have been bodily transported to their present position. The Boulder-Clays above the Basement Clay are described together, being scarcely distinguishable and not always separable; the red colour and absence of chalk in some parts are ascribed to the effects of weathering. Chapter IV is devoted to the Stratified Glacial Beds, and chapters V and VI to the Interglacial beds, including the Mammaliferous Gravels of Bridlington and Hessele, and the Marine Gravels of Kelsey Hill, etc.; of these full descriptions are given, with lists of fossils. Chapters VII and VIII treat of the Post-glacial deposits, especially of the ancient meres. The next chapter, headed 'Changes now in progress,' summarises the evidence for the rapid waste of the Holderness coast, which averages about  $2\frac{1}{4}$  yards yearly. The last chapter deals with Economic Geology, and in two appendices are given the particulars of nearly 200 well-sections and borings, and a list of 150 works bearing on the geology of the district. The changes in the Humber since 1684 are illustrated by charts.

[List of] **British Marine Shells, comprising those of the Brachiopoda and Mollusca (Proper).** 4 pp., printed for A. Somerville, B.Sc., F.L.S., Glasgow, January 1886. (To be had of A. Stenhouse, bookseller, University Avenue, Glasgow, price 3d. each, or 2s. 6d. per dozen, post free).

A list of this kind was much wanted, and we cordially welcome the appearance of the present one, which is well and clearly printed, and calculated to be very useful. The arrangement is that of Jeffreys' 'British Conchology,' with additions to 1885, and excluding three species which that author included in his book on the strength of dead shells, viz.:—*Arca obliqua*, *Neera rostrata*, and *Torellia vestita*. There are certain other species omitted which Jeffreys (in his appendix) recommended to be taken into the British lists. The deep-sea species of the 'Lightning' and 'Porcupine' expeditions are also excluded. But these are none of them strictly British species, unless British seas are to be taken as extending into mid-ocean, and the species which Mr. Somerville includes are alone those which are likely to fall into the hands of ordinary collectors. Mr. Somerville includes varieties, distinguishing them by the use of smaller type, and we do not think he is far wrong in discarding the use of the word 'var.' or letter 'v.' The authorities are correctly given, and bracketed in accordance with the British Association Rules. We would suggest that in future editions the author should set back the names of the varieties, and also that the useless comma which is interposed between the name of a species and the authority for it should be omitted.

**Botanical Exchange Club of the British Isles.—Reports for 1883 and 1884,** 8vo, pp. 83-100 and 101-120.

These two pamphlets comprise valuable information on the critical plants sent in by the various members during the above years, and also lists of many new county records. The club is certainly doing good work, and no practical botanist can fail to be instructed with the very careful criticisms on the many doubtful plants that have been sent in, especially as the critics are themselves well-known field-botanists. The remarks on the *Rubi* and *Rosæ* are particularly interesting and consoling to those who have had the satisfaction (?) of labouring at these groups, and we shall look forward with interest to any future reports on the

former, following as they will Mr. Baker's present article in the *Journal of Botany*. We are afraid that these reports show that the genus *Potamogeton* is going to be more of a puzzle than ever for some time, except perhaps to practised specialists. The genus *Carex* also comes in for a fair share of attention, and there is a very interesting account of the recently found *Carex salina* Wg. We should have been glad to have noticed many things in detail, but must forbear, as it would be almost impossible to select a few when there are so many that we should gladly touch upon did space permit. Above 8,000 plants have been distributed to the members during the two years.

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### NOTES AND NEWS.

The Bibliography for 1885 is in course of preparation, and its publication will shortly be commenced. We shall be pleased to enlist the co-operation of all who are interested in making it a complete reflex of what has been published for the North of England during the year; and we have pleasure in announcing that Mr. S. A. Adamson, F.G.S., has kindly undertaken the charge of the geological portion of it.

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The Rev. W. C. Hey, M.A., of St. Olave's Vicarage, York, would be pleased to enlist the co-operation of Yorkshire coleopterists in preparing a full catalogue of the Beetles of Yorkshire, which he intends for publication in the Transactions of the Yorkshire Naturalists' Union. He would be glad to receive lists of captures—with detailed localities—of Yorkshire species, and where doubt or uncertainty exists, he would be pleased to have the opportunity of seeing specimens.

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Dr. M. C. Cooke announces that he has determined to issue a work on 'British Desmids,' as a supplement to and uniform with his 'British Freshwater Algæ,' with coloured plates, in about 10 parts, octavo, containing 8 plates each, with descriptive letterpress, at the uniform rate of Five Shillings per part, provided a sufficient number of subscribers send in their names before the 1st of March to warrant the undertaking. A reduction of 20 per cent. will be allowed as discount to subscribers on advance, or *immediate* payment.

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At the anniversary meeting of the Entomological Society of London, January 20th, Mr. R. McLachlan, F.R.S., president, in the chair, an abstract of the Treasurer's accounts was read by Mr. H. T. Stainton, F.R.S., one of the auditors, and the Secretary read the report of the Council. The following were elected as the Council for 1886:—President, R. McLachlan, F.R.S.; Treasurer, E. Saunders, F.L.S.; Secretaries, H. Goss, F.L.S., and the Rev. W. W. Fowler, M.A., F.L.S.; Librarian, F. Grut, F.L.S.; other members of council: T. R. Billups, E. A. Fitch, F.L.S.; F. Du Cane Godman, M.A., F.R.S.; W. F. Kirby, E. B. Poulton, M.A., F.G.S., H. T. Stainton, F.R.S., S. Stevens, F.L.S., and J. Jenner Weir, F.L.S. The president then delivered an address, for which the thanks of the society were voted to him.

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The annual meeting of the Hull Field Naturalists' Society was held on the 21st of January. The report bore testimony to the flourishing state of the society, and referred to the establishment of sections and appointment of Sectional Recorders (so far five in number, for Botany, Entomology, Conchology, Geology, and Ornithology), and to the affiliation which had been effected with the Hull Literary and Philosophical Society, who had kindly granted the use of their museum for reference, and of a room in the Royal Institution for meetings. Numerous excursions, general and sectional, had been made, and the winter evening meetings well attended. The election of officers resulted in the appointment of Mr. N. F. Dobrée as president, Mr. W. L. Shooter as secretary, Mr. T. Dennis as treasurer, Mr. F. F. Walton as librarian, together with vice-presidents and a committee, and the following recorders of sections:—Botany, Messrs. E. A. Peak and T. Birks, jun.; Entomology, Mr. J. W. Boulton; Conchology, Mr. H. L. Duncum; Geology, Mr. J. Stears; and Ornithology, Mr. E. W. Wade.

# METEOROLOGICAL RETURNS FOR DECEMBER 1885.

EDITED BY GEORGE PAUL, F.G.S., F.R.Met.S., *Moortown, Leeds.*

	Atmospheric pressure.	TEMPERATURE (IN SHADE).						RAINFALL.				
		NAME OF STATION; ITS HEIGHT ABOVE SEA-LEVEL; AND NAME OF OBSERVER.	Mean Height of Barometer (reduced to zero and to sea-level).	Mean Temperature for Month.	EXTREMES.				Total Rain Collected.	Greatest Fall in a Single Day.		
					Highest Maximum registered.		Lowest Minimum registered.			Number of Days on which there fell 6 or more.	Amount.	
					Amount.	Date.	Amount.	Date.			Amount.	Date.
<b>ISLE OF MAN:</b>												
CRONKBOURNE (140 ft.) . . . . .	inch	deg.	deg.	deg.	deg.	deg.	inch	inch	inch	inch	inch	
A. W. Moore, F.M.S. . . . .	30'136	41'32	53'5	16th	25'0	8th	1'928	13	0'515	30th		
<b>W. COAST:</b>												
BARROW-IN-FURNESS (—) . . . . .	30'138	39'90	51'0	3rd	25'0	8th	1'410	17	0'410	30th		
W. S. Whitworth . . . . .						11th						
LIVERPOOL (BIDSTON) (—) . . . . .	30'164	40'40	53'0	3rd	27'0	9th	1'550	15	0'370	30th		
J. Hartnup, jun. . . . .												
<b>CENTRAL HILL REG.:</b>												
NEWTON-REIGNY (Penrith) (577 ft.) T. G. Benn, F.M.S. . . . .	30'129	36'20	53'7	16th	13'8	8th	1'750	14	0'330	28th		
HAWES JUNCTION (1,135 ft.) Station-master . . . . .	* 28'864	34'30	50'0	18th	15'0	11th	3'140	15	0'490	30th		
STONYHURST (381 ft.) . . . . .	30'180	44'10	56'3	22nd	16'1	10th	2'697	14	0'988	30th		
Rev. S. J. Perry, F.R.S. . . . .												
<b>EASTERN LOWLAND REGION:</b>												
NORTH SHIELDS (—) . . . . .	30'078	38'90	57'0	16th	20'0	11th	0'640	12	0'150	30th		
J. W. Irvine . . . . .												
SCARBOROUGH (120 ft.) . . . . .	30'109	38'81	51'3	17th	25'0	11th	1'090	17	0'270	30th		
Allan Rowntree, F.M.S. . . . .												
YORK MUSEUM (—) . . . . .	30'144	37'60	53'0	3rd	16'0	11th	0'840	12	0'280	9th		
The Curator . . . . .				16th								
MOORTOWN, LEEDS (500 ft.) . . . . .	30'162	36'63	51'1	16th	19'0	11th	0'610	11	0'125	28th		
G. Paul, F.G.S., F.M.S. . . . .												
HULL, DERRINGHAM (10 ft.) . . . . .	30'190	38'20	51'5	3rd	21'5	11th	0'700	12	0'180	30th		
Wm. Lawton . . . . .				17th								
SPURN POINT (19 ft.) . . . . .	30'126	38'80	52'0	3rd	27'0	9th	0'790	13	0'200	30th		
J. B. Smith . . . . .						11th						
LOUTH, LINGS. (111 ft.) . . . . .	30'150	36'61	51'0	16th	22'0	11th	0'910	7	0'300	30th		
T. W. Wallis . . . . .												
BOSTON, LINGS. (24 ft.) . . . . .	30'150	36'06	50'0	16th	17'0	11th	0'930	8	0'330	30th		
W. H. Wheeler, M.In.C.E. . . . .												
LOUGHBOROUGH (—) . . . . .	30'187	38'3	52'0	16th	21'0	8th	0'500	11	0'210	28th		
W. Berridge, F.M.S. . . . .				17th								
LONDON . . . . .	30'222	39'1	52'0	3rd	22'0	11th	1'220	11	0'360	5th		
				15th		12th						

\* Not reduced to sea-level.

*Wind.*—1st Division (Isle of Man) N. 8, N.E. 5, E. 3, S.E. 2, S. 7, S.W. 14, W. 14, N.W. 6, calm 3 days.  
 2nd Division: N. 3, N.E. 4½, E. 1½, S.E. 3, S. 3, S.W. 6, W. 5½, N.W. 4½, calm 0 day.  
 3rd Division: N. 3, N.E. 3, E. 1½, S.E. 1½, S. 1, S.W. 6, W. 10, N.W. 2, calm 4 days.  
 4th Division: N. 3, N.E. 1¼, E. ¾, S.E. 1½, S. 3¼, S.W. 8, W. 7½, N.W. 5½, calm 0 day.  
 London: N. 3, N.E. 2, E. 1, S.E. 2, S. 5, S.W. 8, W. 5, N.W. 2, calm 3 days.

*Gales.*—Isle of Man, 3 days; 2nd Division, 5 days; 3rd Division, 8 days; 4th Division, 18 days; and London, 2 days.

*Snow.*—Isle of Man on 3 days; 3rd Division, 7 days; 4th Division, 3 days; London, 3 days.

*Bright Sunshine.*—Newton-Reigny, 31'55 hours; Stonyhurst, 36'8 hours; and Hull, 27'9 hours.

*Highest Temperature in Sun.*—Isle of Man, 85'0° on 26th; Newton-Reigny, 75'2° on 1st; Stonyhurst, 92'9° on 5th; Leeds (Moortown) 88'5° on 10th; and Hull, 64'5° on 17th.

Naturalist,

**MOSES OF ASHTON-UNDER-LYNE DISTRICT.**

JOHN WHITEHEAD,

*Oldham; Honorary Member of the Manchester Cryptogamic Society.*

THE following list is presented to the readers of the *Naturalist* as a pretty full account of the Mosses known to occur within a radius of ten miles of Ashton.

The district extends into the counties of Lancashire, Cheshire, Yorkshire, and Derbyshire, and includes some favourable habitats reaching an altitude of 1,980 feet on Kinder Scout, thus accounting for the occurrence of several alpine or sub-alpine species.

The initial letter after each locality represents the county in which such locality is situated.

The geological formation of the district is chiefly millstone grit, coal measures, and new red sandstone.

My thanks are especially due to Mr. G. A. Holt, of Manchester, for his valuable assistance.

ACROCARPI.

*SPHAGNACEÆ.*

- Sphagnum acutifolium** Ehrh. Stayley Brushes (C.), in fruit; Greenfield (Y.), in fruit; Charlesworth Coombs (D.), barren; Kinder Scout (D.), barren. Fruits in July.
- Sphagnum acutifolium** b. **deflexum** Schpr. Kinder Scout (D.), barren, G. A. Holt.
- Sphagnum acutifolium** l. **lætevirens** Braithw. Kinder Scout (D.), barren, G. A. Holt.
- Sphagnum acutifolium** m. **patulum** Schpr. Kinder Scout (D.), barren, G. A. Holt. Fruits in July.
- Sphagnum fimbriatum** Wils. Ogden Clough, Hollingworth (C.), in fruit; Reddish (L.), in fruit; Kinder Scout (D.), barren. Fruits in July.
- Sphagnum strictum** Lind. Kinder Scout (D.), barren, G. A. Holt and John Whitehead. Fruits in July.
- Sphagnum squarrosum** Pers. Near Middleton (L.), in fruit; Hattersley (C.), in fruit; Charlesworth Coombs (D.), barren; Kinder Scout (D.), barren. Fruits in July.
- Sphagnum intermedium** Hoffm. Charlesworth Coombs (D.), barren; Kinder Scout (D.), barren. Fruits in July.
- Sphagnum cuspidatum** Ehrh. Kinder Scout (D.), barren. Fruits in July.

- Sphagnum rigidum** b. **compactum** Brid. Kinder Scout (D.), barren, J. Whitehead. Fruits in July.
- Sphagnum rigidum** c. **squarrosulum** Russ. Kinder Scout (D.), barren, Whitehead and Holt.
- Sphagnum subsecundum** Nees. Carr Brook (C.), barren; Stayley Brushes (C.), barren; Kinder Scout (D.), barren. Fruits in July.
- Sphagnum subsecundum** b. **contortum** Schultz. Stayley Brushes (C.), barren; Greenfield (Y.), barren; Charlesworth Coombs (D.), barren; Kinder Scout (D.), barren. Fruits in July.
- Sphagnum papillosum** Lindb. Kinder Scout (D.), barren, Whitehead and Holt. Fruits in August.
- Sphagnum cymbifolium** Ehrh. Stayley Brushes (C.), barren; Greenfield (Y.), barren; Charlesworth Coombs (D.), barren; Kinder Scout (D.), barren. Fruits in August.
- Sphagnum cymbifolium** c. **squarrosulum** Nees. Stayley Brushes (C.), barren.

## ANDREÆACEÆ.

- Andreæa petrophila** Ehrh. Greenfield (Y.), barren, R. Buxton; Charlesworth Coombs (D.), barren; Kinder Scout (D.), barren. Fruits in May.
- Andreæa rothii** W. & M. Stayley Brushes (C.), fruit. Fruits in May.
- Andreæa crassinervis** Bruch. Crowden (C.), fruit, Jno. Whitehead; Woodhead (D.), fruit, John Whitehead; Kinder Scout (D.), West. Fruits in May.

## WEISSIACEÆ.

- Gymnostomum tenue** Schrad. Park Lane, Broughton (L.), barren, Holt and Wilde. Fruits in July.
- Gymnostomum rupestre** Schwg. Bamford Wood (L.), fruit; Marple (C.), fruit. Fruits in September.
- Gymnostomum curvirostrum** Ehrh. Kinder Scout (D.), barren, Whitehead and Holt. Fruits in September.
- Gymnostomum squarrosulum** N. and H. Hattersley (C.), fruit, Whitehead and Schofield. Fruits in April.
- Weissia viridula** Brid. Near Oldham (L.), in fruit; Bamford Wood (L.), in fruit; Romiley (C.), in fruit; Marple (C.), in fruit. Fruits in April.
- Weissia mucronata** Bruch. Hattersley (C.), in fruit, Whitehead and Schofield. Fruits in April.
- Weissia cirrhata** Hedw. Stayley Brushes (C.), in fruit; Mellor (D.), in fruit; Charlesworth Coombs (D.), in fruit; Kinder Scout (D.), in fruit; Bamford Wood (L.), in fruit. Fruits in February.

- Dichodontium pellucidum** Linn. Bamford Wood (L.), in fruit; Stayley Brushes (C.), in fruit; Ogden Clough, Hollingworth (C.), in fruit. Fruits in November.
- Dichodontium pellucidum** b. **serratum** Schpr. Stayley Brushes (C.), barren; Marple (C.), in fruit, Jno. Whitehead.
- Dichodontium pellucidum** c. **fagimontanum** Brid. Clifton Junction (L.), barren, G. A. Holt.
- Dicranella crispa** Hedw. Near Oldham (L.), in fruit, L. Tetlow; Sailor's Shore (L.), in fruit. Fruits in November.
- Dicranella schreberi** Hedw. Rochdale (L.), in fruit, G. A. Holt.
- Dicranella schreberi** b. **leata** Schpr. Rochdale (L.), in fruit; between Stretford and Sale (C.), in fruit, G. A. Holt; Stirrup Wood (D.), in fruit, John Whitehead; Kersal Moor (L.), barren, C. J. Wilde; Bamford Wood (L.), barren, G. A. Holt. Fruits in October.
- Dicranella squarrosa** Schrad. Bamford Wood (L.), barren; Stayley Brushes (C.), in fruit; Crowden (C.), in fruit; Greenfield (Y.), barren; Charlesworth Coombs (D.), barren; Kinder Scout (D.) in fruit. Fruits in September.
- Dicranella cerviculata** Hedw. Ashton Moss (L.), in fruit; Cheetham Hill (L.), in fruit; Kersal Moor (L.), in fruit; Rochdale (L.), in fruit; Charlesworth Coombs (D.), in fruit; Kinder Scout (D.), in fruit. Fruits in June.
- Dicranella varia** Hedw. Common in fruit on clay banks. Fruits in December.
- Dicranella varia** b. **tenuifolia** Bruch. Marple (C.), J. Whitehead.
- Dicranella varia** s. **callistoma** Dicks. Near Assize Courts, Manchester (L.), in fruit, G. A. Holt.
- Dicranella rufescens** Turn. Mossley (L.), in fruit; Sailors' Shore (L.), in fruit; Boggart Hole Clough (L.), in fruit; Stayley Brushes (C.), in fruit; Stirrup Wood (D.), in fruit; Hayfield (D.), in fruit; Prestwich (L.), in fruit. Fruits in December.
- Dicranella subulata** Hedw. Formerly at Stayley Brushes (C.), in fruit, J. Tinker; Boggart Hole Clough (L.), in fruit, W. Kent. Fruits in November.
- Dicranella heteromalla** Hedw. Common in fruit. Fruits in December.
- Dicranum fuscescens** Turn. Stayley Brushes (C.), barren; Charlesworth Coombs (D.), in fruit; Kinder Scout (D.), barren. Fruits in August.
- Dicranum scoparium** (Linn.). Ogden Clough, Hollingworth (C.), in fruit; Marple (C.), in fruit; Kinder Scout (D.), barren; Charlesworth Coombs (D.), barren. Fruits in August.

- Dicranum majus** Turn. Stayley Brushes (C.), barren; Charlesworth Coombs (D.), barren; Kinder Scout (D.), barren. Fruits in August.
- Dicranum palustre** Brid. Stayley Brushes (C.), barren; Greenfield (Y.), barren; Kinder Scout (D.), barren; Charlesworth Coombs (D.), barren. Fruits in September.
- Dicranodontium longirostrum** Web. and Mohr. Stayley Brushes (C.), barren; Stirrup Wood (D.), barren; Kinder Scout (D.), barren. Fruits in October.
- Campylopus atrovirens** De Not. Kinder Scout (D.), barren, Robert Gordon.
- Campylopus flexuosus** Brid. Bamford Wood (L.), barren; Stayley Brushes (C.), barren; Marple (C.), in fruit; Charlesworth Coombs (D.), barren; Kinder Scout (D.), barren. Fruits in November.
- Campylopus paradoxus** Wils. Kinder Scout (D.), barren, John Whitehead.
- Campylopus fragilis** B. and S. Stayley Brushes (C.) barren; Charlesworth Coombs (D.), barren; Kinder Scout (D.), barren; Mellor (D.), barren. Fruits in December.
- Campylopus pyriformis** Brid. Greenfield (Y.), in fruit, G. E. Hunt; Kinder Scout (D.), barren, G. A. Holt. Fruits in October.

## LEUCOBRYACEÆ.

- Leucobryum glaucum** Linn. Stayley Brushes (C.), barren; Charlesworth Coombs (D.), barren; Kinder Scout (D.), barren. Fruits in December.

## BRUCHIACEÆ.

- Archidium phascoides** Brid. Hyde Road, Manchester (L.), in fruit, G. E. Hunt. Fruits in March.
- Pleuridium nitidum** Hedw. Daisy Nook, Ashton (L.), in fruit; Dukinfield (C.), in fruit; near Stirrup Wood (D.), in fruit; Werneth Low (C.), in fruit. Fruits in March.
- Pleuridium subulatum** Linn. Godley (C.), in fruit; Marple (C.), in fruit; Mellor (D.), in fruit. Fruits in March.
- Pleuridium alternifolium** B. and S. Hattersley (C.), in fruit, Whitehead and Schofield. Fruits in March.

## SELIGERIACEÆ.

- Seligeria recurvata** Hedw. Bamford Wood (L.), in fruit; Greenfield (Y.), in fruit; Marple (C.), in fruit; Kinder Scout (D.), in fruit. Fruits in May.

- Campylostelium saxicolum** W. and M. Romiley (C.), in fruit, Whitehead and Holt. Fruits in December.
- Blindia acuta** Hedw. Bamford Wood (L.), barren, G. A. Holt; Kinder Scout (D.), barren, Holt and Whitehead. Fruits in June.

## POTTIACEÆ.

- Sphærangium muticum** Schreb. Near Stirrup Wood (D.), John Whitehead. Fruits in March.
- Phascum cuspidatum** Schreb. Hattersley (C.), in fruit, John Whitehead. Fruits in March.
- Pottia minutula** Schwg. Marple (C.), in fruit, John Whitehead. Fruits in January.
- Pottia truncata** Linn. Daisy Nook, Ashton (L.), in fruit; Rochdale (L.), in fruit; Marple (C.), in fruit; near Stirrup Wood (D.), in fruit. Fruits in February.
- Pottia intermedia** Turn. Hatherlow (C.), in fruit; Marple (C.), in fruit, John Whitehead. Fruits in February.
- Pottia lanceolata** Dicks. Hatherlow (C.), in fruit, R. Buxton, Fruits in March.
- Didymodon rubellus** B. and S. Common about Marple (C.) and Mellor (D.), in fruit. Fruits in November.
- Didymodon flexifolius** Dicks. Buckton Castle (C.), in fruit, Jethro Tinker; Charlesworth Coombs (D.), in fruit; Kinder Scout, (D.), in fruit. Fruits in January.
- Eucladium verticillatum** Linn. Romiley (C.), barren, John Whitehead. Fruits in July.
- Ditrichum homomallum** Hedw. Stirrup Wood (D.), in fruit; Charlesworth Coombs (D.), in fruit; Kinder Scout (D.), in fruit. Fruits in November.
- Trichostomum topiaceum** Brid. Newton Heath (L.), in fruit, Robert Lees; Kersal Moor (L.), in fruit; Clifton Junction (L.), in fruit; Hattersley (C.) in fruit; Marple (C.), in fruit; Kinder Scout (D.), in fruit. Fruits in November.
- Barbula rigida** Schultz. Roe Cross (C.), in fruit; Hyde (C.), in fruit; Romiley (C.), in fruit. Fruits in December.
- Barbula ambigua** B. and S. Romiley (C.), in fruit, John Whitehead. Fruits in December.
- Barbula aloides** Koch. Hattersley (C.), in fruit; Romiley (C.), in fruit; near Stirrup Wood (D.), in fruit. Fruits in December.
- Barbula muralis** Linn. Common. Fruits in May.
- Barbula muralis** c. *rupestris* Schultz. Mellor (D.), in fruit.
- Barbula unguiculata** Dill. Bardsley (L.), in fruit; Marple (C.), in fruit. Fruits in December.

- Barbula fallax** Hedw. Bardsley (L.), in fruit; Daisy Nook, Ashton (L.), in fruit; Marple (C.), in fruit. Fruits in December.
- Barbula rigidula** Dicks. Stayley Brushes (C.), in fruit; Marple (C.), in fruit. Fruits in December.
- Barbula revoluta** Schwg. Mellor (D.), barren. Fruits in April.
- Barbula convoluta** Hedw. Marple (C.), in fruit; Disley (C.), in fruit; Mellor (D.), in fruit. Fruits in April.
- Barbula tortuosa** Linn. Greenfield (Y.), barren; Stirrup Wood (D.), barren. Fruits in July.
- Barbula subulata** Linn. Romiley (C.), in fruit; Marple (C.), in fruit; Matley (C.), in fruit. Fruits in May.
- Barbula ruralis** Linn. Marple (C.), barren. Fruits in April.
- Ceratodon purpureus** Linn. Common. Fruits in April.

## CALYMPERACEÆ.

- Encalypta streptocarpa** Hedw. Romiley (C.), barren; Mellor (D.), barren; Kinder Scout (D.), barren; Greenfield (Y.), barren. Fruits in August.

## GRIMMIACEÆ.

- Grimmia apocarpa** Linn. Romiley (C.), in fruit; Ermcrist Wood (D.), in fruit; Kinder Scout (D.), in fruit. Fruits in December.
- Grimmia apocarpa** b. **rivularis** Brid. Romiley (C.), in fruit, John Whitehead.
- Grimmia pulvinata** Dill. Hattersley (C.), in fruit; Marple (C.), in fruit; Mellor (D.), in fruit; Greenfield (Y.), in fruit. Fruits in April.
- Grimmia doniana** Sm. Kinder Scout (D.), in fruit, John Whitehead. Fruits in December.
- Rhacomitrium aciculare** Linn. Stayley Brushes (C.), in fruit; Greenfield (Y.), in fruit; Charlesworth Coombs (D.), in fruit; Kinder Scout (D.), in fruit. Fruits in December.
- Rhacomitrium fasciculare** Schrad. Apethorn (C.), in fruit; Ogden Clough (C.), in fruit; Greenfield (Y.), in fruit; Charlesworth Coombs (D.), in fruit. Fruits in March.
- Rhacomitrium lanuginosum** Hedw. Greenfield (Y.), in fruit; Charlesworth Coombs (D.), in fruit; Kinder Scout (D.), in fruit. Fruits in March.
- Ptychomitrium polyphyllum** Dicks. Romiley (C.), in fruit; Marple (C.), in fruit; Stayley Brushes (C.), in fruit. Fruits in March.
- Orthotrichum saxatile** Brid. Hatherlow (C.), in fruit; Marple (C.), in fruit. Fruits in May.

*SPLACHNACEÆ.*

- Tetraplodon mnioides** Linn. fil. Near Tintwistle (C.), in fruit, Whitehead and Schofield. Fruits in June.
- Splachnum sphæricum** L. fil. Stayley Brushes (C.), in fruit ; Kinder Scout (D.), in fruit ; Greenfield (Y.), in fruit. Fruits in June.
- Splachnum ampullaceum** Linn. Stayley Brushes (C.), in fruit ; Greenfield (Y.), in fruit. Fruits in July.

*FUNARIACEÆ.*

- Discelium nudum** Dicks. Boggart Hole Clough (L.), in fruit ; Houghton Dale (L.), in fruit ; Sailors' Shore (L.), in fruit ; Marple (C.), in fruit ; Ram's Clough, Delph (Y.), in fruit. Fruits in March.
- Ephemerum serratum** Schreb. Near Stirrup Wood (D.), in fruit, John Whitehead ; Marple (C.), in fruit. Fruits in December.
- Physcomitrium pyriforme** Linn. Near Taunton (L.), in fruit ; Matley Wood (C.), in fruit ; Marple (C.), in fruit ; near Stirrup Wood (D.), in fruit. Fruits in May.
- Entosthodon ericetorum** Bals. Ogden Clough (C.), in fruit, A. Wood ; Crowden (C.), in fruit, John Whitehead ; Greenfield (Y.), in fruit, Hobson. Fruits in April.
- Funaria hygrometrica** Linn. Common. Fruits in June.

*BARTRAMIACEÆ.*

- Amblyodon dealbatus** Dicks. Marple (C.), in fruit, G. E. Hunt. Fruits in June.
- Bartramia pomiformis** Linn. Stirrup Wood (D.), barren ; Charlesworth Coombs (D.), barren ; Kinder Scout (D.), barren. Fruits in May.
- Philonotis fontana** Linn. Near Ashton (L.), barren ; Stayley Brushes (C.), barren ; Ogden (C.), in fruit ; Kinder Scout (D.), in fruit. Fruits in June.
- Philonotis calcarea** B. and S. Ram's Clough, Delph (Y.), barren ; Kinder Scout (D.), barren. Fruits in June.
- Breutelia arcuata** Dicks. Formerly at Stayley Brushes (C.), in fruit, J. Tinker ; Kinder Scout (D.), barren, John Whitehead. Fruits in December.

*BRYACEÆ.*

- Leptobryum pyriforme** Linn. Frequent in greenhouses throughout the district ; Clifton Junction (L.), G. A. Holt. Fruits in June.
- Webera polymorpha** Hoppe. Kinder Scout (D.), barren, Robert Gordon. Fruits in July.

- Webera nutans** Schreb. Taunton (L.), in fruit; Stayley Brushes (C.), in fruit; Ernicroft (D.), in fruit; Greenfield (Y.), in fruit. Fruits in May.
- Webera annotina** Hedw. Gravel Pit, Taunton (L.), in fruit; Bamford Wood (L.), in fruit; Clifton Junction (L.), in fruit; Ogden Clough (C.), barren; Charlesworth Coombs (D.), barren; Kinder Scout (D.), barren. Fruits in June.
- Webera carnea** Linn. Arden Hall (C.), in fruit; Clifton Junction (L.), in fruit; Marple (C.), in fruit; Hattersley (C.), in fruit; Stirrup Wood (D.), in fruit. Fruits in April.
- Webera albicans** Wahl. Gravel Pit, Taunton (L.), in fruit; Arden Hall (C.), in fruit; Marple (C.), in fruit; Charlesworth (D.), in fruit. Fruits in May.
- Bryum pendulum** Hornsch. Gravel Pit, Taunton (L.), in fruit; Matley (C.), in fruit; Mellor (D.), in fruit. Fruits in May.
- Bryum inclinatum** Swartz. Dukinfield (C.), in fruit; Mellor (D.), in fruit. Fruits in May.
- Bryum warneum** Bland. Gravel Pit, Taunton (L.), in fruit, Whitehead and Schofield. Fruits in August.
- Bryum lacustre** Brid. Gravel Pit, Taunton (L.), in fruit, Prof. Schimper. Fruits in June.
- Bryum calophyllum** R. Br. Gravel Pit, Taunton (L.), in fruit, Robert Gordon. Fruits in August.
- Bryum uliginosum** Bruch. Gravel Pit, Taunton (L.), in fruit, G. E. Hunt; Hattersley (C.), in fruit, John Whitehead. Fruits in August.
- Bryum intermedium** W. and M. Gravel Pit, Taunton (L.), in fruit; Romiley (C.), in fruit; Marple (C.), in fruit; Charlesworth Coombs (D.), in fruit. Fruits in October.
- Bryum bimum** Schreb. Gravel Pit, Taunton (L.), in fruit; Clifton Junction (L.), in fruit; Marple Aqueduct (C.), barren. Fruits in June.
- Bryum bimum** b. *cuspidatum* Bry. Eur. Gravel Pit, Taunton (L.), in fruit; Romiley (C.), in fruit.
- Bryum atropurpureum** W. and M. Cheetham Hill (L.), in fruit; Clifton Junction (L.), in fruit; Dukinfield (C.), in fruit; Hattersley (C.), in fruit; Compstall Bridge (C.), in fruit. Fruits in May.
- Bryum caespiticium** Linn. Bamford Wood (L.), in fruit; Stretford (L.), in fruit; Dukinfield (C.), in fruit; Godley (C.), in fruit. Fruits in June.
- Bryum argenteum** Linn. Common. Fruits in November.

- Bryum argenteum** b. **majus** Schpr. Romiley (C.), barren, John Whitehead and G. A. Holt.
- Bryum capillare** Linn. Marple (C.), in fruit; Romiley (C.), in fruit; Charlesworth (D.), in fruit; Mellor (D.), in fruit. Fruits in June.
- Bryum pallens** Swartz. Gravel Pit, Taunton (L.), in fruit; Boggart Hole Clough (L.), in fruit; Sailor's Shore (L.), in fruit; Ogden Clough (C.), in fruit. Fruits in July.
- Bryum pseudo-triquetrum** Hedw. Bamford Wood (L.), in fruit; Stirrup Wood (D.), barren; Kinder Scout (D.), barren. Fruits in July.
- Bryum turbinatum** Hedw. Gravel Pit, Taunton (L.), in fruit, Robert Gordon; Marple (C.), in fruit, John Whitehead. Fruits in June.
- Bryum roseum** Schreb. Marple (C.), barren. Fruits in December.

## MNIACEÆ.

- Mnium affine** Bland. Medlock Vale (L.), barren; Reddish (L.), in fruit, John Whitehead and Schofield; Hazel Grove (C.), barren. Fruits in May.
- Mnium undulatum** Hedw. Greenfield (Y.), in fruit, A. Wood; frequently barren. Fruits in April.
- Mnium rostratum** Schrad. Bamford Wood (L.), in fruit; Marple (C.), in fruit; Stirrup and Whitebottom Woods (D.), in fruit. Fruits in April.
- Mnium hornum** Linn. Common, abundant in fruit in Stirrup and Emericroft Woods (D.). Fruits in May.
- Mnium serratum** Schrad. Bamford Wood (L.), in fruit, G. A. Holt; Clifton Junction (L.), barren. Fruits in June.
- Mnium punctatum** Hedw. Bamford Wood (L.), in fruit; Marple (C.), in fruit; Stayley Brushes (C.), in fruit; Stirrup Wood (D.), in fruit; Greenfield (Y.), in fruit. Fruits in February.
- Mnium subglobosum** B. and S. Near Ashton (L.), in fruit; Stayley Brushes (C.), in fruit; Charlesworth Coombs (D.), in fruit; Hayfield (D.), in fruit; Carr Meadow (D.), in fruit. Fruits in February.
- Aulacomnium androgynum** Linn. Near Stockport (C.), barren, John Whitehead. Fruits in June.
- Aulacomnium palustre** Linn. Gravel Pit, Taunton (L.), barren; Charlesworth Coombs (D.), barren; Kinder Scout (D.), in fruit. Fruits in June.

## TETRAPHIDACEÆ.

- Tetraphis pellucida** Linn. Common, barren; Stirrup and Whitebottom Woods (D.), in fruit, John Whitehead. Fruits in August.  
**Tetrodontium brownianum** Dicks. Stayley Brushes (C.), in fruit; Hattersley (C.), in fruit; Greenfield (Y.), in fruit. Fruits in June.

## POLYTRICHACEÆ.

- Oligotrichum hercynicum** Ehrh. Stayley Brushes (C.), barren; Kinder Scout (D.), barren. Fruits in July.  
**Atrichum undulatum** Linn. Common. Fruits in November.  
**Atrichum crispum** James. Rochdale (L.), barren; Cheetham Hill (L.), barren; Prestwich Clough (L.), barren; Stayley Brushes (C.), barren; Greenfield (Y.), barren. Fruit unknown in Britain.  
**Pogonatum nanum** Neck. Near Stirrup (D.), in fruit, E. Clough and Robert Gordon. Fruits in November.  
**Pogonatum aloides** Hedw. Frequent on clay banks. Fruits in November.  
**Pogonatum urnigerum** Linn. Marple (C.), in fruit; Charlesworth Coombs (D.), barren; Kinder Scout (D.), barren. Fruits in November.  
**Pogonatum alpinum** Linn. Kinder Scout (D.), in fruit, E. Clough. Fruits in June.  
**Polytrichum gracile** Menz. Ashton Moss (L.), in fruit; Cheetham Hill (L.), in fruit; Stirrup Wood (D.), in fruit. Fruits in May.  
**Polytrichum piliferum** Schreb. Stayley Brushes (C.), in fruit; Ogden Clough (C.), in fruit; Kinder Scout (D.), in fruit; Charlesworth Coombs (D.), in fruit. Fruits in May.  
**Polytrichum juniperinum** Willd. Charlesworth Coombs (D.), barren, John Whitehead. Fruits in May.  
**Polytrichum strictum** Banks. Kinder Scout (D.), barren, John Whitehead and G. A. Holt. Fruits in June.  
**Polytrichum commune** Linn. Common on the hills. Fruits in June.  
**Diphyscium foliosum** Linn. Greenfield (Y.), in fruit, Hobson. Fruits in August.

## BUXBAUMIACEÆ.

- Buxbaumia aphylla** Hall. Ogden Clough (C.), in fruit, Hannan, Wood, and Whitehead. Fruits in February.

## AMPHOCARPI.

## FISSIDENTACEÆ.

- Fissidens bryoides** Hedw. Frequent in woods and on hedge-banks. Fruits in December.  
**Fissidens exilis** Hedw. Daisy Nook (L.), in fruit; Romiley (C.), in fruit; near Stirrup Wood (D.), in fruit. Fruits in February.

- Fissidens incurvus** W. and M. Daisy Nook (L.), in fruit; Mankum Wood (C.), in fruit; Oak Wood (C.); near Stirrup Wood (D.), in fruit. Fruits in February.
- Fissidens viridulus** Wils. Tintwistle (C.), in fruit, A. Wood; Woodley (C.), in fruit, John Whitehead. Fruits in November.
- Fissidens pusillus** Wils. Near Marple Hall (C.), in fruit; Mankum Wood (C.), in fruit; Stirrup Wood (D.), in fruit. Fruits in September.
- Fissidens osmundoides** Hedw. Stayley Brushes (C.), barren; Ogden Clough (C.), in fruit; Kinder Scout (D.), in fruit. Fruits in December.
- Fissidens adiantoides** Hedw. Gravel Pit, Taunton (L.), in fruit; Bamford Wood (L.), in fruit; Stayley Brushes (C.), in fruit; Stirrup Wood (D.), in fruit; Kinder Scout (D.), in fruit. Fruits in December.
- Fissidens taxifolius** Linn. Frequent on clay banks. Fruits in December.

*SCHISTOSTEGACEÆ.*

- Schistostega osmundacea** Dicks. Charlesworth (D.), in fruit; New Mills (D.), in fruit, John Whitehead. Fruits in March.

## CLADOCARPI.

*RIPARIACEÆ.*

- Cinclidotu fontinaloides** Hedw. River Goyt, Marple Aqueduct (C.), in fruit, Jethro Tinker; probably extinct. Fruits in March.
- Fontinalis antipyretica** Linn. Waterhouses (L.), in fruit; Newton Moor (C.), in fruit; Hatherlow (C.), in fruit; Hollingworth (C.), in fruit. Fruits in June.
- Fontinalis antipyretica** c. **gracilis** Lindb. Charlesworth Coombs (D.), barren, John Whitehead; Carr Meadow (D.), barren, G. A. Holt.
- Fontinalis squamosa** Linn. Stayley Brushes (C.), barren; Hollingworth (C.), in fruit; Kinder Scout (D.), barren. Fruits in June.

*CRYPHÆACEÆ.*

- Hedwigia ciliata** Dicks. Kinder Scout (D.), in fruit, John Whitehead. Fruits in March.

## PLEUROCARPI.

*NECKERACEÆ.*

- Neckera complanata** Linn. Arden Hall (C.), barren; St. Chad's Well, Chadkirk (C.), barren; Mellor (D.), barren. Fruits in December.
- Homalia trichomanoides** Schrad. Marple (C.), in fruit. Fruits in December.

## HOOKERIACEÆ.

**Pterygophyllum lucens** Sm. Stayley Brushes (C.), in fruit ; Marple (C.), in fruit ; Greenfield (Y.), in fruit ; Stirrup Wood (D.), in fruit. Fruits in December.

## FABRONIACEÆ.

**Myrinia pulvinata** Wahl. Formerly on trees, Jackson's Boat, but now lost through the trees being cut down (L.), R. Buxton. Fruits in June.

## LESKEACEÆ.

**Leskea polycarpa** Ehrh. Jackson's Boat (L.), in fruit, G. E. Hunt. Fruits in May.

**Heterocladium heteropterum** Bruch. Bamford Wood (L.), barren ; Marple (C.), barren ; Mellor (D.), barren ; Stirrup Wood (D.), barren ; Kinder Scout (D.), barren. Fruits in December.

**Thuidium tamariscinum** Hedw. Marple (C.), barren ; Mellor (D.), barren ; Stirrup Wood (D.), barren ; Kinder Scout (D.), barren. Fruits in November.

## HYPNACEÆ.

**Thamnum alopecurum** Linn. Whitebottom Wood (D.), in fruit ; Mellor (D.), in fruit. Fruits in November.

**Climacium dendroides** Linn. Stirrup Wood (D.), in fruit ; Marple (C.), in fruit. Fruits in November.

**Homalothecium sericeum** Linn. Arden Hall (C.), barren ; Hatherlow (C.), barren ; Mellor (D.), barren. Fruits in December.

**Camptothecium intescens** Huds. Kersal Moor (L.), barren, G. A. Holt. Fruits in December.

**Brachythecium g areosum** B. and S. Kersal Moor (L.), G. A. Holt ; Romiley (C.), barren, John Whitehead. Fruits in December.

**Brachythecium velutinum** Linn. Cheetham Hill (L.), in fruit ; Reddish (L.), in fruit ; Marple (C.), in fruit ; Werneth Low (C.), in fruit ; Mellor (D.), in fruit. Fruits in December.

**Brachythecium rutabulum** Linn. Frequent in the Marple district. Fruits in December.

**Brachythecium rivulare** B. and S. Reddish (L.), barren ; Mellor (D.), barren ; Charlesworth Coombs (D.), barren ; Kinder Scout (D.), barren. Fruits in December.

**Brachythecium populeum** Hedw. Bamford Wood (L.), in fruit ; Hollingworth (C.), in fruit ; Marple (C.), in fruit ; Mellor (D.), in fruit ; Charlesworth (D.), in fruit ; Greenfield (Y.), in fruit. Fruits in December.



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Contributions to Phenology—R. ROSENSTOCK, B.A.

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List of Wensleydale Birds—JOHN PERCIVAL.

Lepidopterous Fauna of Lancashire & Cheshire (Part 3, BOMBYCES)—Dr. ELLIS.

Hymenoptera near York in 1885—THOS. WILSON.

Liverpool Coleoptera (Parts 7, 8, 9, 10)—J. W. ELLIS, L.R.C.P., &c.

Natural History of Lincolnshire.—The next instalment of this is to be upon the Mammalia, by JOHN CORDEAUX. Schedules have been prepared for obtaining information: one will be sent to any one willing to furnish notes.

Short Notes.—It is the wish of the Editors to give in each number about a page of short notes in each of the various subjects of which the *Naturalist* takes cognisance. To this end they rely upon their friends keeping them well supplied. At present short notes on Botany, Entomology, Palæontology, Microscopy, Conchology, &c., are particularly desired.

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MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION.

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**Advertisements.**—Scale of charges may be had on application.

## BOOKS RECEIVED.

- Journal of New York Microscopical Society, November 1885. [Society.  
Midland Naturalist for March 1886. [The Editors.  
The Young Naturalist for March 1886. [J. E. Robson, Editor.  
The Naturalist's World for March 1886. [P. Lund, Editor.  
Illustrated Science Monthly for March 1886. [Bogue, Publisher.  
Science Gossip for March 1886. [Chatto and Windus, Publishers.  
Natural History Journal for March 1886. [J. E. Clarke, Editor.  
Revue Bryologique, 13th Annee, 1886, No. 2. [T. Husnot, Editor.  
Notarisia, commentarium phycologicum; Rivista trimestrale consacrata allo studio delle alghe, Anno I, No. 1, Gennaio 1886. [Signori G. B. de Toni e David Levi, Redattori.  
A British Moss new to Science—8vo reprint. [Mr. G. A. Holt, Author.  
Natural History Teacher, vol. ii, No. 15, March 1886.—Edited by S. L. Mosley. [Mr. G. T. Porritt.  
Bot. Soc. of Edinburgh.—Trans. and Proceed., vol. xvi, part 2. [The Society.  
New York Microscopical Society.—Journal, vol i, No. 9—Dec. 1885. [Society.  
Occurrence of Sowerby's Whale on the Yorkshire Coast, by T. Southwell and W. Eagle Clarke, 8vo reprint. [Authors.  
Notes on Australian Lepidoptera, with Descriptions of new Species, by Rudolph Rosenstock, B.A., two 8vo reprints, 1885. [Author.  
Essex Field Club.—Transactions, vol. iv, part 1, June 1885, and Proceedings, vol. iv, part 1, June 1885. [The Club.  
The Garner, and Science Recorder's Journal, Nos. 1 and 2, October and November, 1885. [A. Ramsay, Editor.  
Grevillea, No. 71, March 1886. [Dr. M. C. Cooke, Editor.  
Note on the Habit of the young Cuckoo in ejecting eggs, &c., by John Hancock, 8vo reprint, 1885. [The Author.  
Hertfordshire Nat. Hist. Soc.—Trans., vol. iii, part 7, Dec. 1885. [Society.  
Société Royale Malacologique de Belgique.—Procès-verbaux, 1883-4-5. [La Société.]

## THE BIRDS OF YORKSHIRE.

Information is desired at once on the *Warblers*, their distribution, nidification, and local names, together with full details of the occurrence of rare species, for use in preparing the next portion of this work, which appears in the Transactions of the Yorkshire Naturalists' Union.—W. EAGLE CLARKE, 18, Claremont Road, Headingley, Leeds.

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- Eurhynchium myosuroides** Linn. Mellor (D.), barren, Stirrup Wood (D.), barren. Fruits in November.
- Eurhynchium striatum** Schreb. Mellor (D.), barren, Mr. John Whitehead. Fruits in December.
- Eurhynchium piliferum** Schreb. Dan Bank (C.), in fruit, Whitehead and Schofield ; Whitebottom Wood (D.), barren. Fruits in November.
- Eurhynchium swartzii** Turn. Marple (C.), in fruit ; Mellor (D.), in fruit ; Stirrup and Whitebottom Woods (D.), in fruit. Fruits in December.
- Eurhynchium praelongum** Dill. Marple (C.), in fruit ; Mellor (D.), in fruit ; Stirrup and Whitebottom Woods (D.), in fruit. Fruits in November.
- Eurhynchium pumilum** Wils. Bamford Wood (L.), barren, G. A. Holt ; Marple (C.), barren ; Stirrup Wood (D.), barren. Fruits in December.
- Hyocomium flagellare** Dicks. Stayley Brushes (C.), in fruit ; Hollingworth (C.), in fruit ; Charlesworth Coombs (D.), barren ; Kinder Scout (D.), barren ; Greenfield (Y.), barren. Fruits in December.
- Rhynchostegium tenellum** Dicks. Mellor (D.), in fruit, John Whitehead. Fruits in November.
- Rhynchostegium depressum** Bruch. Marple (C.), in fruit, R. Gordon and J. Whitehead. Fruits in October.
- Rhynchostegium confertum** Dicks. Frequent in Marple (C.) and Mellor (D.), in fruit. Fruits in November.
- Rhynchostegium murale** Hedw. Marple (C.) and Mellor (D.), in fruit, John Whitehead. Fruits in December.
- Rhynchostegium ruscifolium** Neck. Common in streams, in fruit. Fruits in November.
- Plagiothecium latebricola** Wils. Hattersley (C.), barren, Roger Schofield. Fruits in December.
- Plagiothecium denticulatum** Linn. Stirrup Wood (D.), in fruit. Fruits in June.
- Plagiothecium denticulatum** b. *sulcatum* Spruce. Common in woods, in fruit. Fruits in June.
- Plagiothecium borrierianum** Spruce. Bamford Wood (L.), barren ; Stayley Brushes (C.), barren ; Stirrup Wood (D.), barren ; Kinder Scout (D.), barren ; Mellor (D.), barren ; Ernicroft Wood (D.), in fruit, Ashton and Nield. Fruits in April.

- Plagiothecium sylvaticum** Linn. Marple (C.), in fruit, John Whitehead; Mellor (D.), barren, John Whitehead. Fruits in September.
- Plagiothecium undulatum** Linn. Stayley Brushes (C.), in fruit; Charlesworth Coombs (D.), barren; Kinder Scout (D.), barren. Fruits in May.
- Amblystegium serpens** Linn. Waterhouses (L.), in fruit; Dukinfield (C.), in fruit; Marple (C.), in fruit; Stirrup Wood (D.), in fruit. Fruits in May.
- Amblystegium radicale** P. Beauv. Marple (C.), in fruit, Whitehead and Holt. Fruits in May.
- Amblystegium irriguum** Wils. Hazel Grove (C.), in fruit; Mellor (D.), in fruit, G. A. Holt. Fruits in May.
- Amblystegium fluviatile** Swartz. Marple (C.), John Whitehead. Fruits in May.
- Amblystegium riparium** Linn. Bamford Wood (L.), in fruit; Kersal Moor (L.), in fruit; Clifton Junction (L.), in fruit; Dukinfield (C.), in fruit; Mellor (D.), in fruit. Fruits in May.
- Hypnum aduncum** b. *kneiffii* Bry. Eur. Ashton Moss (L.), barren, G. E. Hunt. Fruits in May.
- Hypnum exannulatum** Gmb. Stayley Brushes (C.), in fruit; Charlesworth Coombs (D.), barren; Kinder Scout (D.), barren; Greenfield (Y.), fruit. Fruits in May.
- Hypnum vernicosum** Lindb. Kinder Scout (D.), barren, Whitehead and Holt. Fruits in May.
- Hypnum sendtneri** Schpr. Kinder Scout (D.), barren, Whitehead and Holt; Carr Meadow (D.), barren, G. A. Holt. Fruits in May.
- Hypnum revolvens** Swartz. Stayley Brushes (C.), in fruit; Carr Meadow (D.), in fruit; Kinder Scout (D.), barren. Fruits in May.
- Hypnum fluitans** Linn. Clifton Junction (L.), in fruit; Stayley Brushes (C.), in fruit; Hollingworth (C.), in fruit; Kinder Scout (D.), barren. Fruits in May.
- Hypnum uncinatum** Hedw. Bamford Wood (L.), in fruit; Hatherlow (C.), barren; Hattersley (C.), barren; Stirrup Wood (D.), barren. Fruits in June.
- Hypnum filicinum** Linn. Medlock Vale (L.), in fruit; Dukinfield (C.), in fruit; Marple (C.), in fruit. Fruit in May.
- Hypnum commutatum** Hedw. Bamford Wood (L.), in fruit; Romiley (C.), barren; Marple (C.), in fruit; Whitebottom Wood (D.), in fruit; Kinder Scout (D.), in fruit. Fruits in May.
- Hypnum falcatum** Brid. Kinder Scout (D.), in fruit, John Whitehead; Greenfield (Y.), in fruit, Roger Schofield. Fruits in May.

- Hypnum cupressiforme** Linn. Frequent in the Marple district in Fruit. Fruits in November.
- Hypnum cupressiforme** d. **ericetorum** Bry. Eur. Charlesworth Coombs (D.), in fruit ; Marple (C.), John Whitehead.
- Hypnum resupinatum** Wils. Marple (C.), in fruit, John Whitehead ; Carr Meadow (D.), in fruit, G. A. Holt. Fruits in November.
- Hypnum patientiæ** Lindb. Stayley Brushes (C.), barren ; Hollingworth (C.), barren ; Romiley (C.), barren ; Stirrup Wood (D.), barren. Fruits in June.
- Hypnum molluscum** Hedw. Bamford Wood (L.), barren ; Rochdale (L.), barren ; Kinder Scout (D.), in fruit. Fruits in December.
- Hypnum palustre** Linn. Bamford Wood (L.), in fruit ; Rochdale (L.), barren ; Marple (C.), in fruit ; Hyde (C.), in fruit. Fruits in June.
- Hypnum ochraceum** Turn. Stayley Brushes (C.), in fruit ; Hollingworth (C.), in fruit ; Little Hayfield (D.), in fruit, G. A. Holt ; Diggle (Y.), barren. Fruits in June.
- Hypnum chrysophyllum** Brid. Gravel Pit, Taunton (L.), in fruit, John Whitehead. Fruits in June.
- Hypnum polygamum** B. and S. Gravel Pit, Taunton (L.), in fruit, Robert Gordon ; Rochdale (L.), barren. Fruits in June.
- Hypnum stellatum** Schreb. Waterhouses (L.), barren ; Marple Aqueduct (C.), barren ; Mellor (D.), barren. Fruits in June.
- Hypnum cordifolium** Hedw. Reddish (L.), in fruit ; Werneth Low (C.), in fruit ; near Mottram (C.), in fruit ; Mellor (D.), barren. Fruits in May.
- Hypnum cuspidatum** Linn. Common in boggy places, but rather rare in fruit. Fruits in May.
- Hypnum schreberi** Ehrh. Stayley Brushes (C.), barren ; Charlesworth Coombs (D.), barren ; Kinder Scout (D.), barren ; Greenfield (Y.), in fruit, Jethro Tinker. Fruits in December.
- Hypnum purum** Linn. Marple (C.), barren ; Mellor (D.), barren. Fruits in October.
- Hypnum stramineum** Dicks. Stayley Brushes (C.), in fruit ; Charlesworth Coombs (D.), barren ; Kinder Scout (D.), barren ; Greenfield (Y.), in fruit. Fruits in May.
- Hypnum scorpioides** Linn. Near Glossop (D.), barren, John Whitehead. Fruits in May.
- Hylocomium splendens** Dill. Marple (C.), barren, John Whitehead. Fruits in April.
- Hylocomium brevirostrum** Ehrh. Charlesworth Coombs (D.), barren, Whitehead and Schofield. Fruits in December.

**Hylocomium squarrosum** Linn. Stayley Brushes (C.), barren; Charlesworth Coombs (D.), in fruit; Kinder Scout (D.), in fruit. Fruits in December.

**Hylocomium squarrosum** b. **calvescens** Wils. Mellor (D.), barren, John Whitehead.

**Hylocomium loreum** Linn. Charlesworth Coombs (D.), barren; Kinder Scout (D.), barren. Fruits in December.

**Hylocomium triquetrum** Linn. Marple (C.), barren; Disley (C.), barren. Fruits in December.

### BOTANICAL NOTES.

**Rosa lucida (Ehrh.) in Westmoreland.**—I noticed several bushes of this handsome species last August, in a thicket near the southern end of Meathop Moss. I am indebted to Mr. Baker for the determination of the species, for which only one locality (in Cumberland) is given in his 'Flora of the Lake District.' It seems difficult to account for the occurrence of an American species in such a locality as Meathop Moss.—H. Goss, Surbiton Hill, Surrey, March 17th, 1886.

**Additions to the Flora of the Hull District.**—During the past year the following plants have been added to the list of plants of the Hull district:—*Helleborus viridis*, Kilnwick; *H. fetidus*, Melton, Mrs. Wilson; *Nymphaea alba*, Hornsea Mere; *Cochlearia danica*, Hornsea, the coast; *Capsella bursa-pastoris*; *Senebiera coronopus*, common; *Silene maritima*, Hornsea; *Montia fontana*, Swine Moor; *Geranium lucidum*, Brough, Mr. Kingston; *Erodium maritimum*, Spurn; *Ilex aquifolium*; *Acer campestre*, Risby; *Sarothamnus scoparius*, Risby; *Trifolium medium*, Willoughby Lane; *Lotus major*, Marfleet Lane; *Orobus tuberosus*, Willerby Lane; *Rubus rhamnifolius*, Willerby Lane; *Rosa mollissima*, South Cave, Mr. Birks; *Pyrus aria*, Spring Head; *Cornus sanguinea*, Willerby Lane; *Asperula odorata*, Beverley Westwood; *Fraxinus excelsior*; *Limnanthemum nymphaeoides*, near Cave Castle, may have been planted there; *Cuscuta trifolii*, near Hull Bank House and Spurn; *Orobanche major*, near keeper's cottage, Brantingham; *Beta maritima*, Hornsea, Mr. Dennis; *Parietaria diffusa*, Cottingham Church; *Pinus sylvestris*; *Luzula sylvatica*, Bentley Woods; *Asplenium ruta-muraria*, Cottingham Church.—ED. PEAK, Hull Park, Hull, March 1st, 1886.

#### Manchester Cryptogamic Society, January 18th, 1886.—

A communication from Mr. G. A. Holt on *Thamnum angustifolium* (Holt) was read, wherein he described the characters of this new British species which he discovered a few years ago in the neighbourhood of Miller's Dale. For several years after its discovery in 1879, Mr. Holt and other bryologists in Britain considered it a variety of *Thamnum alopecurum*, its nearest ally, and with which it is associated in its habitat of growth. Mr. Holt, when finding better specimens during May of last year, came to the conclusion that it had sufficiently distinct characters to justify its rank as a species, and having sent specimens to Dr. Kindberg, a Swedish botanist in Linköping, he unhesitatingly confirmed Mr. Holt's views, and published it shortly afterwards in his 'Critical Revision of European Pleurocarps.' Mr. Holt exhibited the two species and drawings of the dissections of each species. He also said that he had received a letter last month from the eminent Swedish bryologist, Prof. Lindberg, who said, 'Your *Thamnum* is new and an excellent species.' Mr. J. E. Sunderland sent specimens of the rare *Cosciodon cribosus* which he had gathered at Coniston on the second of January last.

#### Manchester Cryptogamic Society, March 15th, 1886.—

Mr. Holt distributed copies of reprints from the *Journal of Botany* describing his new *Thamnum angustifolium* from Miller's Dale. The reprints were accompanied with drawings from the pencil of Dr. Braithwaite.

## DESCRIPTIONS OF NEW BRITISH LICHENS.

TRANSLATED BY JOSEPH A. MARTINDALE.

DR. NYLANDER has recently given, in the current volume of the 'Flora,' p. 100, excellent descriptions of the two new species of *Lecidea*, whose occurrence in Westmoreland was recorded on p. 49 of the present volume of the *Naturalist*.

The following is a translation:—

### LECIDEA OBTURBANS Nyl.

Thallus cinereous rugose unequal (0·2—0·5 mm. in thickness), limited by the black hypothallus; apothecia blackish or black, dull, pale within, immarginate convex (0·5—0·9 mm. diam.), the younger ones margined; spores 8 colourless oblong 1-septate, 0·10—11 mm. long by 0·035 mm. broad; paraphyses hardly discrete, epithecium and perithecium dark (nigricant). Hymenial gelatine turning first blue, then vinous red with iodine.

On clay slate in England, at Winster, not far from Kendal (Martindale).

A species belonging to a new group, approaching, it would seem, *L. bahusiensis* Blomb. Spermatia oblong or shortly cylindrical 0·04—0·045 mm. long and 0·006—7 mm. thick. Thallus rather loosely affixed, turning yellow both without and within with hyd. of potash. Nitric acid does not change the colour of the epithecium.

### LECIDEA ACUTULA Nyl.

Thallus cinereo-virescent or cinereo-fuscescent, thin, granuloso-squamulose, squamules minute, subimbricate rather convex, of various shapes; apothecia black, slight (·5 mm. or less in breadth) margined, margin thin, somewhat acute, often angularly subplicate; spores 8 colourless fusiform simple 0·12—15 mm. long 0·025—35 mm. broad; paraphyses free, epithecium, perithecium and hypothecium slightly obscured (fusco-nigrous). Thecæ turning vinous red with iodine.

On fir bark at Staveley, near Kendal, in Western England (Martindale).

A species belonging to the *ostreata* group, easily recognised by the above characters. Thallus K— The dark perithecium becomes slightly purpled with hyd. of potash.

## GEOLOGY AND PALÆONTOLOGY.

**Jointing in the Mountain Limestone of the Austwick District.**—In respect of the jointing of rocks, the Mountain Limestone district of West Yorkshire is classic ground. Prof. Phillips' observations, published fifty years ago, are still the chief source of information on the subject. The following notes were made last autumn, during a visit to the neighbourhood of Austwick, near Settle. It will be seen that, despite local variations, the joints may be divided into two sets, A and B, approximately at right angles to one another. The beds are mostly horizontal, or dip at low angles.

STRIKE.		DISTANCE APART.	LOCALITY.
A.	N. 30° or 40° W.	3 ft. to 5 ft.	{ Bottom of basement conglomerate, Norber Brow; beds 2½ ft. to 4 ft. thick.
B.	N. 60° E.		
A.	N. 62° W.	2 ft. to 4 ft.	{ Upper part of basement conglomerate, Norber Brow; beds 1 ft. to 2 ft. thick.
B.	N. 45° E.		
A.	N. 60° W.	1 ft. 6 in. to 2 ft.	{ Base of Limestone proper, Norber Brow; beds 4 in. to 2 ft. thick.
B.	N. 30° E.		
A.	N. 54° W.	irregular.	{ Limestone, top of Norber Brow; beds 8 in. to 2 ft. thick.
B.	N. 32° E.		
A.	N. 60° W.	...	Limestone, N.E. of Ingleborough Cave.
A.	N. 45° W.		
B.	N. 67° E.	1 ft. to 3 ft.	Limestone, E. of Gaping Gill.
A.	N. 43° or 50° W.	2 ft. or 4 ft.	{ Limestone, near Gaping Gill; beds 1 ft. or 3 ft. thick.
B.	N. 60° E.		
A.	N. 55° W.	6 in. to 2 ft.	{ Limestone on Moughton Fell.
B.	N. 35° E.	2 ft. to 3 ft.	

The average direction of the A series is thus about N. 50° W.; that of the B series, N. 47° E.—ALFRED HARKER, St. John's College, Cambridge, March 1st, 1886.

**Joints cutting through Pebbles.**—The base of the Mountain Limestone in West Yorkshire is often conglomeratic, consisting of a hard limestone matrix, containing pebbles of quartz, slate, and other materials. There may be noticed a peculiarity sometimes seen in other conglomerates. The joints by which the rock is intersected often cut quite cleanly and without interruption through the included pebbles, even those of quartz. This is well seen on a joint-face that has been weathered, the pebbles standing out in relief for perhaps half an inch, but all cut sharply off at the same level. Good localities for observing these joints are at the mouth of Crummack Dale, just below Norber Brow, where the conglomerate is 40 ft. thick; and higher up the dale, at Crummack Beck Head. We may notice, too, the fact, which is true of many basement conglomerates, that the very base (about 5 ft. at Norber Brow) is often almost or entirely devoid of pebbles. In the Eden Valley there is often a considerable thickness of sandstone without pebbles at the base of the conglomerate which forms the lowest member of the Carboniferous.—ALFRED HARKER, St. John's College, Cambridge, March 1st, 1886.

**Asteracanthus ornatissimus in the Middle Oolites near Malton.**—During the past month the members of the geological section of the Malton Naturalists' Society had the pleasure of examining an exceptionally rare fossil. One of the members, a short time ago, had the good fortune to secure a remarkably fine fossil spine, supposed to belong to the dorsal fin of an ancient Shark. This peculiar form was described some years ago by Prof. Agassiz, and named by him *Asteracanthus ornatissimus*. The principal source from which they have been derived is the formation known as the Kimmeridge Clay in the Upper Oolites. This is the only authenticated specimen that has ever been found so low down in the Middle Oolites before in England. Mr. W. H. Hudleston, F.R.S., F.G.S., in a paper read before the Geologists' Association in 1878, mentions the fact of having a specimen in his collection, which he queries as from the Lower Calcareous Grit, but there being no locality, it is open to doubt as to where it came from. The specimen found here has just been presented to the Society's museum. It is as near perfect as possible, showing a very fine section of the tubercles and hooked barks on the lateral surface. It will materially help to enhance the value of the already very complete collection of fossils gathered from the Middle Oolites of this neighbourhood.—S. CHADWICK, Norton, Malton, May 5th, 1885.

## LEPIDOPTEROUS FAUNA OF LANCASHIRE AND CHESHIRE.

JOHN W. ELLIS, L.R.C.P., L.R.C.S.E.,

*Liverpool; Honorary Secretary, Lancashire and Cheshire Entomological Society.*

### PART III:—BOMBYCES.

(Read before the Lancashire and Cheshire Entomological Society, June 29th, 1885.)

Fam. *LITHOSIIDÆ*.

NUDARIA, Steph.

**Nudaria mundana**, L. Local, but abundant where it does occur.

**Lanc.**—Preston district (J.B.H.), and Silverdale (J.C.M.).

**Chesh.**—Chester Society's district (A.O.W.); Eastham Wood (W.J.); Prenton, near Birkenhead (C.S.G.); Wirral (J.F.B.).

SETINA, Schrank.

**Setina mesomella**, L. Apparently confined to the moss-lands of both counties. Mr. Hodgkinson informs me that the male flies about 7 p.m. in search of the female.

Chat Moss and all the other Lancashire mosses (J.B.H.); Chat Moss and Risley Moss, not common (J.C.); Simmonswood Moss (C.S.G.).

East Cheshire (A.O.W.).

LITHOSIA, Fab.

**Lithosia griseola**, Hüb. Wallasey and Bidston, scarce (J.F.B.).

The variety **flava**, Haw. = **stramineola**, Doub., is recorded from Dunham-on-the-Hill by Mr. A. O. Walker.

**Lithosia lurideola**, Zinck. = **complanula**, Boisd. Generally distributed throughout Cheshire and South Lancashire, but apparently scarce in the north. Localities recorded are:—

**Lanc.**—Grange (J.B.H.); Prestwich district, common (J.C.M.); West Derby (C.S.G.).

**Chesh.**—Bromborough (W.G.); Bidston Hill (W.J.); Chester (A.O.W.); Delamere Forest (A.O.W., J.C.); West Kirby (F.N.P.); throughout Wirral, scarce (J.F.B.).

**Lithosia sericea**, Gregs. = **molybdeola**, Guén. Found only on the moss-lands, as Chat Moss (J.B.H., J.C., W.J.); Rixton Moss (N.C.); Simmonswood Moss (C.S.G.).

GNOPHRIA, Steph.

**Gnophria rubricollis**, L. Recorded only from Delamere Forest (N.C., J.C.) and East Cheshire (A.O.W.).

Fam. *ARCTIIDÆ*.

## DEIOPEIA, Curt.

**Deiopeia pulchella**, L. Only two specimens of this very scarce species have been recorded from the district. One of these, a female, was taken in the railway coal-yard at Middleton Station, September 8th, 1871 (J. Thorpe, Ent. Mo. Mag., viii, 111, and Ent., v, 412), and Mr. Hodgkinson records a specimen in his collection taken at Marple.

## EUCHELIA, Boisd.

**Euchelia jacobææ**, L. Occurs in profusion all along the Lancashire coast sandhills, where the plants of ragwort are often eaten to the root by the swarms of larvæ. It occurs occasionally on the Cheshire sandhills, as at Wallasey (W.G., J.C.M.), and more rarely still, inland, as Delamere (J.C.) and Chester (A.O.W.).

In the collection of the late Alfred Owen, of Maghull, is a specimen of the very rare aberration in which the crimson colour is replaced by yellow. The specimen is probably a Lancashire one.

## NEMEOPHILA, Steph.

**Nemeophila russula**, L. Almost confined to moss and moor-lands.

Chat Moss (J.B.H., W.J.); Rixton Moss (N.C.); Carrington Moss (J.C., J.C.M.); Barton Moss (J.C.); Delamere and East Cheshire (A.O.W.); Hale (C.S.G.); Silverdale (J.C.M.).

**Nemeophila plantaginis** L. Occurs on the Lancashire heaths and mosses. I have no record of its occurrence in Cheshire.

Blackstone Edge, Staleybridge, Rudd Heath (J.C.); Chat Moss (W.J.); Longridge, near Preston (J.B.H.); Silverdale, common (J.C.M., J.B.H.).

## ARCTIA, Schrank.

**Arctia caja**, L. Abundant everywhere.

Many interesting aberrations have been obtained in the district, and are in local collections. Among these may be mentioned a specimen in the cabinet of Mr. S. J. Capper, which was bred by Mr. Lello, in which the fore-wings are nearly unicolorous cream; and a specimen in the collection of Mr. W. Johnson, in which the fore-wings are suffused with brown, and the scarlet of the hind-wings becomes replaced by tawny yellow. Both these are figured in Mosley's Varieties, *Arctia*, pl. ii.

Mr. Gregson's collection is singularly rich in varieties of this species.

**Arctia villica**, L. Recorded only from Cheshire, viz., Bowdon (J.C.M.) and Delamere (A.O.W.).

SPILOSOMA, Steph.

**Spilosoma lubricipeda**, Fab. Abundant over the whole of both counties.

**Spilosoma menthastri**, W.V. Abundant throughout both counties. In collection C.S.G. is a beautiful aberration, taken in the neighbourhood of Liverpool, in which the spots have become so elongated as to form distinct rays.

**Spilosoma mendica**, L. Local.

Preston, Chorley, and Bolton (J.B.H.); Chorley (W.J.); Warrington (N.C.); Blackpool, Bucklow Hill, and Withington (J.C.); Tranmere (J.F.B.); about old gardens in Wirral (C.S.G.); East Cheshire (A.O.W.); Warrington (N.C.).

In Mr. Gregson's collection is a peculiar variety of the male, captured at Bolton, with the ground colour of all the wings smoky, but with dark costæ and cilia.

PHRAGMATOBIA, Steph.

**Phragmatobia fuliginosa**, L. Common throughout both counties on heaths and mosses, and especially abundant on the coast sandhills.

Fam. LIPARIDÆ.

ORGYIA, Ochs.

**Orgyia antiqua**, L. Abundant everywhere; often seen flying in the streets of the larger towns.

DASYCHIRA, Steph.

**Dasychira fascelina**, L. Common all along the Lancashire coast, from Lytham and Blackpool to Crosby. On the Cheshire sandhills it also occurs, but not so frequently.

In Mr. Johnson's collection is a male specimen which has a large black patch on the costa of each fore-wing.

**Dasychira pudibunda**, L. Generally distributed, but nowhere common.

**Lanc.**—Chat Moss, rare (J.C.); Lytham (W.J.); Preston, rare (J.B.H.).

**Chesh.**—Chester district, but not common (A.O.W.); Delamere (N.C.); Eastham Wood (R. Wilding); Rock Ferry (W.G.).

## LEUCOMA, Steph.

**Leucoma salicis**, L. Very abundant all along the Lancashire coast; less frequently on the Cheshire coast, at Wallasey and Hoylake.

## OCNERIA, Herr.-Schaf.

**Ocneria dispar**, L. A specimen of this species (a male, in the collection of Mr. Hodgkinson), was taken near Warrington forty years ago. Recorded from Staley Brushes by J.C.M.

## PORTHESIA, Steph.

**Porthesia auriflua**, W. V. Common all over both counties; occasionally abundant.

In Mr. Gregson's collection is a remarkable aberration of this usually constant species, a male, taken near Manchester, which has the black spot at the apex of the fore-wing joined to the one at the anal angle by a curved black line.

## LÆLIA, Steph.

**Lælia cænosa**, Hüb. 'My friend, T. Townley, first discovered this species at Altcar, and afterwards on Bidston Marsh' (C.S.G.).

## Fam. COSSIDÆ.

## COSSUS, Fab.

**Cossus ligniperda**, Fab. Generally distributed throughout the wooded portions of the counties.

## ZEUZERA, Latr.

**Zeuzera æsculi**, L. The only notice of its occurrence is in a letter from the Rev. H. H. Higgins, who mentions having seen one many years ago at Rainhill.

## Fam. HEPIALIDÆ.

## HEPIALUS, Fab.

**Hepialus humuli**, L. Abundant throughout the district.

Mr. C. S. Gregson informs me that on the moss-lands of North Lancashire, where the species is extremely abundant, and where, at the time of its emergence it forms a favourite food of the Black-headed Gull, a variety of the female is of very frequent occurrence in which the usual red markings are entirely absent, all the wings being of a unicolorous pale buff colour.

**Hepialus velieda**, Esp. Generally distributed.

**Lanc.**—Bolton (W.J.); Chat Moss (J.C.); moors in North Lancashire, common (J.B.H.); Simmonswood Moss (C.S.G.).

**Chesh.**—Delamere Forest (N.C., F.N.P.); Eastham Wood (J.F.B.).

The variety *gallicus*, Led. (usually known as *carnus*, Esp., but which is exclusively a scarce alpine species) occurs in Delamere Forest (S.J.C.).

**Hepialus sylvinus**, L. Generally distributed through both counties.

**Hepialus lupulinus**, L. Common throughout the whole of the district, but not so abundant now as formerly, according to Mr. Hodgkinson.

**Hepialus hectus**, L. More local than either of the two preceding species, though common where it does occur. Localities recorded are as follows:—

**Lanc.**—Aigburth, near Liverpool (J.W.E.); Bolton (W.J.); Croxteth and Hale (C.S.G.); Huyton (S.J.C.); abundant near Preston (J.B.H., E.S.); Prestwich (J.C.M.).

**Chesh.**—Alderley and Bowdon (J.C.); Chester district, common (A.O.W.); Bromborough (C.S.G.); Delamere Forest (F.N.P.); Wirral (J.F.B.).

Fam. *PSYCHIDÆ*.

FUMEA, Haw.

**Fumea nitidella**, Hüb. Recorded from the Preston neighbourhood by Mr. Hodgkinson; and by J. F. Brockholes as having been taken in Patrick Wood, near Lower Bebington, by Mr. F. Archer.

**Fumea roboricolella**, Bruand. The only records I have of its occurrence in the district are the following Lancashire localities:—Pilling Moss (J.B.H., Ent. Mo. Mag., ii, 186); Stayley Brushes and Chat Moss (J.C.).

Fam. *DREPANULIDÆ*.

CILIX, Leach.

**Cilix spinula**, W.V. (*glaucata* Scop.). Common throughout both counties, occasionally abundant.

PLATYPTERYX, Lasp.

**Platypteryx lacertinaria**, L. Common among birch on all the mosses of Lancashire, and in similar localities—Delamere, for instance, in Cheshire.

**Platypteryx falcataria**, L. Commoner than the preceding species, and in the same localities.

Fam. *SATURNIDÆ*.

SATURNIA, Schrank.

**Saturnia carpini**, W.V. Common on mosses and heaths both in Lancashire and Cheshire. I have known as many as 70 males taken in one day with a single female by the process of 'calling.'

In Mr. Gregson's collection is a splendid aberration of this species, taken at Bolton; it is a male, in which the whole of the markings are so suffused with the dark ground colour that the insect appears nearly black.

Fam. *LASIOCAMPIDÆ*.

LASIOCAMPA, Schrank.

**Lasiocampa potatoria**, L. Abundant throughout the two counties.

In Mr. Gregson's rich collection is a peculiar variety of the female, which has the wings coloured like the male, and the thorax with a dense black tuft, which gives the individual a strange appearance. It was captured in the vicinity of Liverpool.

**Lasiocampa trifolii**, W.V. Occurs on all the coast sandhills from Blackpool and Lytham to Wallasey, but is not nearly so plentiful as formerly. Within the last few years the species has been nearly exterminated at Crosby owing to the cupidity of collectors for exchange.

**Lasiocampa quercus**, L. Abundant on the mosses, heaths, and coast sandhills of both counties. I believe all our specimens belong to the race *callunæ*, but Mr. Joseph Chappell, after referring to *callunæ* as common on all the mosses, records *quercus* as not uncommon at Bowdon (Cheshire) and Moss-side, near Manchester.

**Lasiocampa rubi**, L. Abundant on heaths, mosses, sandhills, and waste lands.

CLISIOCAMPA, Steph.

**Clisiocampa cratægi**, L. Scarce. The only records of its occurrence that I possess are:—

Silverdale, rare (J.C.M.); 'Reared from larvæ found at Saighton by Miss H. Smith, Hampton Lodge, Chester' (A.O.W.). Stainton refers (Manual, p. 155) to its occurrence in the Preston district.

**Clisiocampa populi**, L. Generally distributed, but nowhere common.

**Lanc.**—Bolton (W.J.); sparingly around Liverpool (F.N.P.); throughout the Manchester district, but not common (J.C.); Preston (J.B.H.); Warrington (N.C.); West Derby (C.S.G.).

**Chesh.**—Bidston and Birkenhead (J.F.B.); Bidston Light-house (C.S.G.); East Cheshire (A.O.W.).

**Clisiocampa neustria**, L. Local, but tolerably common where it does occur.

**Lanc.**—Blackpool and Lytham (J.C.).

**Chesh.**—Hoylake (W.J.); West Kirby (C.S.G.); Upton Valley (J.F.B., C.S.G.).

ERIOGASTER, Germ.

**Eriogaster lanestris**, L. Of more frequent occurrence than the preceding.

**Lanc.**—Arnside near Silverdale (E.S.); between Grange and Carnforth (S.L.M.); Blackpool and Morecambe (J.C.); common all over the Fylde district from Preston to Fleetwood (J.B.H.).

**Chesh.**—Chester and West Kirby (A.O.W.); Tranmere, Prenton, and Parkgate (W.G.); Upton Valley (J.F.B.).

Fam. *NOTODONTIDÆ*.

PYGÆRA, Ochs.

**Pygæra pigra**, Hufn. (*reclusa*, W.V.). The only record I have of the occurrence of this species in either county is found in the *addenda* to Mr. Gregson's list of Liverpool lepidoptera: 'A single specimen in an old wood at Kirkby' (Lancashire).

PHALERA, Hüb.

**Phalera bucephala**, L. Common throughout the whole of both counties.

CERURA, Schrank.

**Cerura vinula**, L. Common, and generally distributed throughout the district, being rather more abundant near the coast.

**Cerura bifida**, Hüb. The commonest of the 'Kittens' in our district.

I have records of its occurrence in the following localities:—

**Lanc.**—Generally distributed (J.C.); Crosby, scarce (G. A. Harker and F.N.P.); Preston district (J.B.H.).

**Chesh.**—Wirral, Chester, and East Cheshire (A.O.W.); Prenton and Wallasey (C.S.G.).

**Cerura furcula**, L. All round the Preston district (J.B.H.); Chat Moss and Delamere Forest, rare (J.C.); East Cheshire (A.O.W.); Wirral, scarce (J.F.B.).

**Cerura bicuspis**, Borkh. This scarce species was first taken in England by James Cooper, on an alder near Preston, in 1847 (Zool., v, 1863). Since that time its occurrence all round Preston has been occasional, in some years as many as eight or nine specimens being taken in a week by Mr. Hodgkinson. Also recorded from near Stoneyhurst (J.B.H., Ent., xiii, 204).

## PTEROSTOMA, Germ.

**Pterostoma palpina**, L. A single specimen at Puddington in 1864 (J.F.B.).

## LOPHOPTERYX, Steph.

**Lophopteryx camelina**, L. Fairly common throughout both counties, especially on the 'mosses,' where the larva feeds upon the stunted birch trees.

## LEIOCAMPA, Steph.

**Leiocampa dictæa**, L. Generally distributed, but nowhere common. Localities noted are:—

Preston district (J.B.H.); near Ribchester (J.B.H., Ent., xiii, 105); Liverpool district (C.S.G.); Crosby, Wallasey, and West Kirby (F.N.P.); Wirral and East Cheshire (A.O.W.); Chat Moss, Bowdon, Pendleton, Withington, Barton, Stretford, Knutsford, &c. (J.C.).

**Leiocampa dictæoides**, Esp. Of frequent occurrence on the mosslands, but only occasional elsewhere.

**Lanc.**—Chat Moss, Carrington Moss, Risley Moss (J.C.); Crosby (F.N.P.); Simmonswood Moss (J.W.E.); near Longridge (J.B.H.).

**Chesh.**—Bidston Lighthouse (C.S.G., Zool., 1850, 2898); Bidston, scarce (J.F.B.); Delamere Forest (C.S.G., Zool., 1850, 2898); East Cheshire (A.O.W.); Wallasey and West Kirby (F.N.P.).

## DRYMONIA, Hüb.

**Drymonia chaonia**, W.V. So far as I know, this species has only occurred in Cheshire, viz.:—

Dunham Park, rare, and Timperley, a single specimen (J.C.); a specimen captured by the late Benjamin Cooke in Eastham Wood (J.F.B., C.S.G.); two at Hooton, by T. Harris (C.S.G.).

**Drymonia dodonæa**, W.V. Recorded from East Cheshire by Mr. Alfred O. Walker, on the authority of the late Noah Greening.

## PERIDEA, Steph.

**Peridea trepida**, Fab. Recorded only from Delamere Forest (S.J.C., J.C.M., E. C. Buxton in Zool., ix, 3181).

## NOTODONTA, Ochs.

**Notodonta dromedarius**, L. Common on all the mosses, especially in the larval condition. Preston district, not rare (J.B.H.); Bidston and Rock Ferry, not common (J.F.B.); Bidston (J.W.E.). 'On the mosses this species is deep rich brown, the variety

**subfuscata** of authors, not deep red as in the typical form' (C.S.G., Ent, iv, 491).

**Notodonta ziczac**, L. Generally distributed.

**Lanc.**—Crosby, common (G. A. Harker and F.N.P.); Chat Moss, Barton Moss, and Kenyon, rare (J.C.); Preston district, not rare (J.B.H.); Simmonswood Moss (F.N.P., J.W.E.).

**Chesh.**—Wirral and Delamere (A.O.W.); Wallasey sandhills (J.W.E.).

Fam. *CYMATOPHORIDÆ*.

GONOPHORA, Bruand.

**Gonophora derasa**, L. Generally distributed.

**Lanc.**—Huyton and Hale (S.J.C.); Hale and the Dingle, near Liverpool (C.S.G.); Preston, common (J.B.H., E.S.).

**Chesh.**—Bowdon, Delamere, &c. (J.C.); Bidston, common (C.S.G.); Chester Society's district, not uncommon (A.O.W.); Lymm (J.C.M.); West Kirby (F.N.P.); Wirral (J.F.B.).

THYATIRA, Ochs.

**Thyatira batis**, L. Generally distributed and fairly common throughout the whole of both counties.

CYMATOPHORA, Tr.

**Cymatophora or**, W.V. Occurs occasionally about Preston (J.B.H.); near Ribchester (J.B.H., Ent., xiii, 105).

**Cymatophora duplaris**, L. Between Roby and Huyton Quarry (C.S.G.); not rare among birch in the Preston district (J.B.H.); Chat Moss and Worsley, not common (J.C.); Prenton Wood, scarce (J.F.B.).

ASPHALIA, Hüb.

**Asphalia diluta**, W.V. Very local. Oak Woods at Hale, abundant (C.S.G.); Mere Clough, Bury, uncommon (J.C.); Eastham, occasionally (C.S.G.).

**Asphalia flavicornis**, L. Common on all the mosses, and occasionally found elsewhere.

**Lanc.**—Chat, Risley, and Carrington Mosses (J.C.); all round the Liverpool district (C.S.G.); Longridge (J.B.H.); Simmonswood Moss, common (F.N.P., J.W.E.).

**Chesh.**—Bidston (J.F.B.); East Cheshire (A.O.W.); Hartford (F.N.P., G. A. Harker); Bowdon (J.C., J.C.M.); Wallasey and Eastham Wood (J.C.M.).

**Asphalia ridens**, Fab. 'One specimen taken in the Boor's Wood, Hale, by Frederick Hitchmough' (C.S.G.); on the Lancashire side of Windermere (J.B.H.); rare at Staley Brushes (J.C.).

## MAMMALIA.

**The Badger on the Yorkshire Wolds.**—Records have lately been published in the *Naturalist* of captures of Badgers in Yorkshire. So far the fringe only has been touched. You must go to the Wolds to learn about Badgers, and more especially to Fimber. Fimber is a small village in the parish of Wetwang. To the antiquary it is a place of great interest, as it probably marks the site of the long-lost Delgovitia mentioned in Antonine's Itinerary. It is surrounded by massive entrenchments, and a mile from the village two Roman roads intersect, viz., the one from Malton, by Wharram-le-Street, to Beverley, and the one from York, by Stamford Bridge and Garrowby Street, to Bridlington. Near the cross-roads is a chalk promontory called Fimber Nab, projecting from a network of dales. There is a railway station there now, and you can get your London paper at 11.20 a.m.; but formerly it was considered, and was, a terribly out-of-the-way place, and a threat of sending anyone to Fimber Nab implied much the same thing as sending a person to Coventry. Possibly, in consequence of the retired nature of the place, it was selected as a fitting home by a gentleman badger and his wife; and here they bred and multiplied, and, as their sons and daughters grew up and settled in life, colonized the neighbouring woods and dales. Indeed, one of the principal seats of the family is still known as Badger Wood. But an evil time was at hand. The records of the family do not go back as far as the Norman Conquest, though doubtless their ancestors did live then, and probably occupied large territories; so we pass to their descendants, who flourished and smelt in the year 1830. The first raid made upon them in that year was rewarded with the capture of three fine Badgers in one night, two 'greyhounds' and a 'pig.' You must know that a 'greyhound' Badger has fine hair, and a smart head, and was probably a sort of 'masher' in his day; whereas a 'pig' Badger has strong coarse hair, short legs, and a heavy cast of countenance. He is heavy in other respects, too, weighing upwards of two stone. The Badger's hole is good to tell, because he or she is partial to a comfortable bed of grass, and as the grass has to be obtained at some little distance, there is a regular trail of it leading to the hole, and inside. The hole itself is sometimes 5 ft. deep, and extends, with numerous ramifications, for several score yards. A man engaged once in digging out a Badger, had himself to be dug out, for the earth fell in and buried him up to his neck; meanwhile Mr. Badger, with a complacent smirk on his countenance, calmly walked out at a hole 40 yards off. For years together, after the date above mentioned, seven or eight badgers were regularly secured every year. In 1860 two Badgers a night were twice obtained, and for the next twenty years one or more were sure to be caught annually. The last of the family was captured in a chalk pit in the daytime in 1880; but though the holes are still numerous, they are, alas! tenantless, and nothing remains but the smell to prove the glory that has been.

*Sic transit gloria mundi.*

On the whole it is clear that something like a hundred Badgers have been caught on the Wolds during the last half-century.—E. MAULE COLE, Vicar of Wetwang, March 18th, 1886.

**Badgers in Durham.**—The following are some of the dates of the captures of Badgers in the county of Durham:—

In 1840, one was captured at Eastgate, Weardale.

In 1880, one was caught in Castle Eden Dene.

In the summer of 1883, two young ones were caught by cur dogs in the Wear Valley, below Wolsingham.

One was caught in a gamekeeper's trap (date and situation unknown).

One was seen in the spring of 1885, in a railway cutting between Tow Law and Crook.—J. W. LINNÆUS M. TRISTRAM FAWCETT, The Grange, Slatley, March 4th, 1886.

**Badgers in Northumberland.**—On May 15th, 1885, a Badger was seen by Mr. W. White, Low Staples, to enter a stone drain near that place. It was taken from the drain, after much labour, and weighed 22 lbs. The Badger was preserved, and is now in the possession of Mr. Stobbs, Dalton.—J. W. LINNÆUS M. TRISTRAM FAWCETT, Slatley Grange, March 22nd, 1885.

**Records of Captures of Badgers in Yorkshire.**—As a supplement to Mr. Robert's list of Badgers taken in Yorkshire, the following may be interesting to some of your readers.

One was caught by the Cleveland fox hounds at Marton, in the late autumn of 1876 or 1877. I saw it in the flesh, and considered it a very large one. I remember another being exhibited in the market at Middlesbrough, previous to this, but I cannot remember the year.

Two were caught alive near Thirsk, in February 1881, and two days afterwards the female gave birth to two young. I saw the four alive on the 23rd of April following.

One was exhibited in the market at Middlesbrough, on the 4th of March, 1882. A female, which weighed about 30 lbs., was caught near Ormesby, on the 6th of March, 1882. I saw this; it was not a very large one.

One was found in a small building in the Middlesbrough Cricket Field, in the beginning of May 1882, and escaped.

One was caught at Ingleby, on the 3rd of February 1885. There is a stuffed specimen in Ingleby Manor House, which was also probably caught here.

One was caught at Guisborough in the spring of last year, 1885.

I have a note of one caught at Crathorne, near Yarm, about the end of January 1882, which weighed about 30 lbs. This, I presume, is the same as that mentioned by Mr. Roberts as caught near Yarm about the same date.—R. LOTHOUSE, Middlesbrough, February 22nd, 1886.

**Badger in Lincolnshire.**—A very fine Badger, weighing 38 lbs., was found on the M. S. and L. Railway, near Housham Station, on Sunday, the 16th January, 1886. It was splendidly marked, and probably one of the finest caught in this county for many years. It was dead when found, having apparently been caught by a late special from Lincoln to Hull. It was found by Mr. John Sanderson, foreman on the railway, and is now in his possession. In the neighbourhood of Somerby several young Badgers have lately appeared.—J. N. DUFTY, Grammar School, Tuxford, Notts., February 11th, 1886.

**Captures of Otters in County Durham.**—One was found dead on the banks of the Wear at Bortley, near Bishop Auckland (date unknown). One about three parts grown was killed on February 3rd, 1884, on the Linburn, an affluent of the Wear, about one mile above Wetton Bridge, by two collie dogs.—J. W. LINNÆUS M. TRISTRAM FAWCETT, Satley Grange, March 22nd, 1886.

**Large Stoat near Boroughbridge.**—A Stoat (*Mustela erminea*) weighing 12½ ozs., was trapped a few days ago. He seemed much larger than usual.—RD. PAVER-CROW, Ornham's Hall, Boroughbridge, 5th March, 1886.

**Foumarts near Huddersfield.**—A fine pair of Foumarts were trapped on Marsden Moors, the male in February, the female in March 1884.—C. C. HANSON, West Vale, Halifax, November 19th, 1885.

**Whiskered Bat in Cheshire.**—Although this species (*Vespertilio mystacinus*) is by no means an uncommon one, animals of this group are so seldom definitely and precisely determined, that it will be of interest to record one sent me for inspection by Mr. C. Oldham, of Sale, who found it at Fermlee, near Whaley Bridge, Cheshire, on a stone wall, right on the top of the wall, in broad daylight, asleep, the 30th May, 1885. Mr. Oldham took it home, and tried to feed it with raw shredded meat, but it refused to eat, and died next day.—WM. DENISON ROEBUCK, Leeds, March 1st, 1886.

**Noctule in County Durham.**—The following item from the *Durham County Advertiser*, February 26th, 1886, evidently refers to this species (*Vesperugo noctula*), and is therefore of interest in view of the fact that Durham county forms the north limit of its range. 'In the Duke of Cleveland's timber yard in Winston Lane, near Barnard Castle, squeaks were heard while a workman was cross-cutting the trunk of a large oak, near the roots. On the crevice being opened, twenty-five 'rat-bats' were found in a cluster. The species is the largest known in this country. These measured, from tip to tip of the wings, from eight to ten inches, and the only sign of life was the exhibition of formidable teeth. Put into a cage and warmed they became animated, and were set at liberty.'—WM. DENISON ROEBUCK, Leeds.

## ORNITHOLOGY.

**Migration of Birds on the West Coast of England and Wales.**—As the member of the British Association Committee in charge of the above section of the migration report, I shall be pleased to receive from ornithologists and others, as early as possible, observations on the migratory movements of all species, and on the occurrence of rare and uncommon ones, within the region (inclusive of inland localities) during the spring, summer, autumn, and winter of 1885. When possible, the notes should be accompanied by observations on the direction of the wind and state of the weather at the time. By such assistance it is hoped to make the report more complete. All co-operation will be duly acknowledged.—WM. EAGLE CLARKE, 18, Claremont Road, Headingley, Leeds.

**Flamborough Notes.**—I have to inform you of a rare visitor, the Shore-lark (*Otocorys alpestris*) being shot at Flamborough, south of the headland, on or about January 4th, 1886, by Mr. Christopher Forge. It is now in the possession of Mr. Thomas Machin, Bridlington Quay. I remember shooting two out of a flock in February 1865. In last week's issue of *Land and Water*, a gentleman writes about the scarcity of land birds. Had he been with me to-day he would have seen the turnip fields and stubbles literally covered with Rockdoves, Field-fares, Redwings, Lapwings, Golden Plovers, Starlings, Larks, Thrushes, Black-birds, &c.—MATTHEW BAILEY, Flamborough, March 3rd, 1886.

**Lapwing—Diversity of Eggs.**—The note by Mr. Roberts, in your issue for March, on the varying size of eggs of the Corn Bunting, induced me to take the measurements of two abnormally small eggs of the Lapwing in the collection of my brother, J. H. Ashford. The smallest measures 26 by 20 mm., nearly elliptical in shape, ground colour dark olive, relieved by a few small blackish spots and two large black blotches; taken on Flixton Moor, near Scarborough, April 1871; weight 102 grs. unblown. This egg is about the size of that of the Corn Bunting, but rather broader. Another is a little larger than the preceding, 27.5 by 22.5, broadly oval, the dark olive ground colour about half concealed by very numerous blackish dots and spots, pretty evenly distributed; from Flixton Moor, April 1869. The usual size of the Lapwing's egg is about 45 by 33 mm., and weight, with contents, 450 grains more or less. A third egg from the same locality makes a striking contrast in size, shape, and distribution of markings. It is 60.5 by 33 mm., remarkably produced towards the smaller end; spots small, and scattered on one side, but on the other larger, more numerous, and tending to condense into an uncompleted oval ring.—C. ASHFORD, Christchurch, Hants, March 15th, 1886.

**Eagle Owl near Huddersfield.**—On the 1st of January, 1885, Mr. Joseph Firth, while standing near a bushy place at Fixby, saw a big brown bird flying rapidly from him, which he shot at, but failed to stop. After considerable search he found it sitting in a large tree, close to the trunk, and a second shot secured it. It was a beautiful specimen of the Eagle Owl, in perfect plumage, and showing no signs whatever of having been in captivity. It is now in Mr. Firth's possession at the Shepherd's Rest Inn, Cowcliffe, where it may be seen. It is a male specimen. In length, from the tip of the beak to the end of the tail it is two feet, and four feet four inches in expanse of wing; in weight, a little over 4 lbs. In my opinion, which is shared by Mr. Goff, taxidermist, Huddersfield, it is a specimen of the Virginian Great Horned Owl (*Bubo virginianus*), being less in size and finer in markings than the European Eagle Owl (*B. maximus*).—C. C. HANSON, Greetland, Halifax, December 9th, 1885.

[We asked the opinion of Mr. J. H. Gurney, who is the recognised authority on the Owls, and have been favoured with the following reply:—]

I do not think it is possible from the information submitted to me to say whether the Owl in question should be referred to *B. ignavus* or to *B. virginianus*, especially as the latter is a very variable species. If I could see the bird I could readily determine the question, but not otherwise. If the bird be an escaped one it may possibly not belong to either of the above, but to some other species of the genus *Bubo*; but I doubt whether any reliable opinion could be given without personal inspection of the specimen.—J. H. GURNEY, 9th February, 1886.

Naturalist,

## MIGRATION OF THE SALMONIDÆ.

### Part II.

### PERIODS OF MIGRATION.

By FRANCIS DAY, C.I.E., F.L.S., &c.,

*President Cheltenham Natural Science Society; Author of a 'History of the Fishes of Great Britain and Ireland,' &c.*

IN the first portion of this paper I discussed the question of 'early' and 'late' salmon rivers, and have now to consider the migrations of the salmon during different periods of the year, as well as some of the numerous statements that have been advanced. These fish, as we know, are 'anadromous,' being forms which enter our rivers chiefly to perpetuate their race; for this purpose they select suitable spots wherein to deposit their eggs; here the young are hatched, while they remain in the stream for the first years of their existence. Consequently, during their youth they live and feed in fresh water; as they grow older they descend to the sea, from whence, after a time, they return to the rivers; thus the waters they select for their residence differ from each other in their specific gravity, taste, temperature, and products.

I do not intend following out the life history of these fishes from the rivers where they were born and the fresh waters which they as smolts deserted for the ocean, returning again as breeding grilse, which again descended to the sea after they had propagated their kind, but I propose offering a few remarks as to how they subsequently migrate to our coasts and to our rivers. For where they pass their sojourn in the deep does not at present much concern the practical fisherman, who only troubles himself as to how he can capture them, while the fish-culturist is aware that their eggs will not hatch if deposited in salt water.

These migrations from the sea are, broadly speaking, of two kinds: *first*, what may be generally described as the great autumn and winter one, for the purpose of spawning; and *secondly*, much more irregular ascents, consisting of a few or many fish, occurring throughout the year, or restricted to certain months. This inquiry would embrace several considerations, such as the following:—How do salmon return from the sea to our coasts? How do they enter and continue in estuaries prior to their ascent into the stream? How do they ascend rivers? How do they return to the sea?

As a general rule, as I have observed when under the head of 'early and late salmon rivers,' these fish migrate towards rivers sooner from cold seas, as the German Ocean on the east coast of the British

Isles, than they do along the west coast, presumably because the Atlantic is warmer than the German Ocean; while among the latest rivers they ascend are those of Devonshire and Cornwall, where the temperature of the sea is the highest.

With the object of attaining the estuaries or mouths of rivers up which they purpose ascending, salmon in small assemblages or schools keep along the shore, only a short distance from land, swimming rather high in the water, and betraying their presence by occasionally leaping out of the sea as if they were endeavouring to reconnoitre their way, or else they throw off a ripple in a calm as they move along the surface; while, as Mr. Sinclair remarks, their tracks are as well known as those of cattle returning to the farmyard. Mr. D. Mackenzie has also observed that along the coasts of Scotland salmon shoals pass a short distance from the land, and 'when a shoal meets with a stake net some of the fish are caught in the traps or cruives, or what are called its chambers, others start off; in short, the shoal is broken and dispersed. The scattered fish, however, always guided by their instincts, gather in again to the land, singly or in groups, and continue their course with the tides, until they meet with another similar engine, when the same capture and dispersion is repeated.' While packs of Seals, Porpoises, Grampuses, and other enemies have been observed to deter salmon from entering rivers, and also to break up and scatter the shoals of fish.

Salmon appear to possess a homeing instinct which induces them to endeavour to return to the river where they were originally reared, but instances are occasionally brought to notice when such could not have been the case. Thus almost yearly we hear of a grilse or of a salmon being captured off the mouth of the Thames or Medway, sometimes even attempting to ascend, but from which localities all these fish have long since been destroyed; consequently they could not be descended from eggs hatched in those rivers.

Buckland recorded how a friend of his, who owned a well-known island on the west coast of Scotland, netted a certain pool in his fishery, and out of a number of fish which he captured he marked twenty or thirty. He then put them on board his yacht, where they were kept alive, and he sailed with them almost round his island, then up a creek to the mouth of a river, and turned them into a lake about half a mile from the source of the stream from which they had been originally captured, but with which it was in no way connected, the two rising from different watersheds. It was as though the salmon had been carried from one heel of an enormous horse-shoe round to the other heel, and then taken right into the middle of the horse-shoe, and there let loose. During the *same season* some of

these marked fish were caught in or near their own pool, to do which they must have come back a circuit of at least forty miles, and passed by six or seven tributaries.

Were the homeing instinct in these fishes very strongly marked, such as were hatched from eggs brought from a certain river might (like the Blue-rock Pigeons reared from eggs obtained from another dovecote) return to the locality where the ova were originally deposited. But if such were an invariable rule, the re-stocking of salmonless rivers from distant sources would be useless, while experiments have demonstrated the procedure to be almost invariably satisfactory.

Still a very strong opinion exists, and which observations have proved to be to a certain extent correct, that salmon return to the river they were originally reared in. Some have imagined that they select the purest waters, or recognise the taste or smell of their native stream; but, on the other hand, it has been asked, how could the purity of the water induce salmon to enter certain rivers, for they generally ascend during a flood, when they are most full of mud, but at which times the fish are keenest to pass up.

Mr. D. Milne Home, when writing about the Tweed, observed that marked fish from that river had been taken in the Frith of Forth, the Don, and Dee, while to the south at Holy Island, the Tyne, Shields, and even Yarmouth. This last was a so-called 'Bull Trout,' caught in the Whitadder, a tributary of the Tweed, on March 29th, 1852; it was netted at Winteston, near Yarmouth, April 2nd, 1852, or nearly 300 miles distant, within four days. A second, marked in the Whitadder, March 10th, 1860, was taken at Yarmouth, May 5th, 1860. He considered it certain that salmon, after having frequented particular rivers from time immemorial, have abandoned them; and the inference is that they betake themselves to other rivers which they deem preferable. As an example of this, the Whitadder may be referred to: it has a course of about forty miles from the Lammermuir Hills. This river joins the Tweed at a distance from its mouth of about three miles, so that all the salmon caught in the higher waters of the Tweed must have passed the Whitadder. The tide flows into it as well as into the Tweed, going up the latter for six or seven miles. Formerly the true *Salmo salar* frequented the Whitadder, but during the last thirty years none of that species has been seen in it. It is now only frequented by 'Bull Trout.' In the Midlothian Esk, he also remarked, that about fifty years ago he had seen hundreds of true salmon wriggling up over the mill weirs; but for the last twenty years there has been no such fish in that river.

In the Coquet the salmon were similarly observed to have become scarce, and it was suggested by H.M. Inspectors of Fisheries that

such was owing to the presence of 'Bull Trout'; consequently, if these latter were destroyed salmon would again flourish! From 1868 to 1872 the annual close time for migratory trout was suspended, and the destruction of these anadromous forms ruthlessly carried on. The amount of trout was soon reduced, their stock was rapidly diminished, but the salmon would not increase, so the massacre was stopped. And now again, in 1885, the Inspector observes of the Coquet that it 'is a much later river than any of its neighbours in the east, but this may be accounted for by the fact that that river is infested by Bull Trout,\* whose habits are different from those of the true salmon.'

The foregoing are instances in which salmon have deserted certain rivers, and which desertion cannot be ascribed to pollution or artificial impediments to ascent, but owing to some as yet unascertained cause. Possibly the numerous drainage works in the agricultural country through which these rivers pass have had some effect in rendering them less suitable than formerly for the residence of these fish, as the surface water, instead of gradually percolating through the soil, and so by degrees obtaining access to the main stream, is now rapidly carried off in a short period by means of drainage works; while I have previously alluded to an 'early' river having changed to a 'late' one, possibly from this cause.

It has been suggested that along the colder seas of our eastern coast salmon do not remain in the ocean, but ascend the warmer rivers, and consequently do not hang about the rivers' mouths; while, on the contrary, they behave differently along the Atlantic, or on our southern shores. Thus, off the 'late' river Fowey, Buckland remarked that a larger number of salmon than are due leave the sea and play about the mouth of the river. These fish come in from the north, south, east, and west. They are big fish, from 25 lb. to 30 lb. in weight. They come late in the year. They are very fat, and greatly different in every way from the native salmon of the Fowey. In these warmer seas, with abundance of food, these fish may continue in the sea until compelled by the near approach of the reproductive period to ascend rivers towards their spawning beds, or they may be fish which are sterile for the season. None seem to have been examined on this point, and only vague surmises have been offered.

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\* Buckland refers to the Sea Trout of the Coquet as the *Bull Trout* or *Salmo eriox*; from that river I have not as yet obtained a specimen, but presume it must be identical with *Salmo trutta*, found in all the contiguous rivers; while this seems the first time that it has been assumed that the presence of migratory Sea Trout in a river occasions it to be a late salmon river!

It has long been a vexed question as to the manner in which salmon enter estuaries and ascend rivers on their arrival from the sea, and although doubtless local circumstances may occasion certain differences, still the mode of migration would probably in all places be somewhat similar were it unchecked. Mackenzie remarked of the Scottish rivers that 'the salmon proceed with the flood tide, and rest during the ebb in eddies and in easy water, hence great numbers are always caught in the flood traps of the stake nets placed in their course, while comparatively few are got in the ebb traps. If the ebb sets in, and the water becomes shallow from the receding of the tide, they drop down with the tide into deeper water, until the return of the flood tide enables them to continue their course, and in this dropping down some fall within the range and are caught in the ebb traps of the engines in question; but it is in the summer season, in dry weather, that by far the greatest number are so caught.' At this period the water in the rivers is so low that they swim about with the tide, awaiting a flood.

Admitting that the foregoing distinctly proves that in some localities at least, large numbers of fish ascend with the flood tide, it does not disprove that a great many also descend with the ebb, and that in times or places when the very low condition of the water could hardly be deemed a sufficient cause to obstruct ascent. In the Severn, in the stretch of tidal water from Newnham to the railway bridge, there are about seven sets of puts and putchers on the right bank, all being fixed with their mouths *up stream*. On May 26th, 1885, I visited two of these sets of engines, and saw seven fish taken, all with their heads fixed in the puts and putchers, and directed *down stream*, and when captured they must have been descending the river with the ebb tide. The stop-net fishermen carry on their occupation during the ebb tide, more especially in the slack water, rendering it evident that in this river these fish both ascend and descend in tidal waters.\*

In the Severn these fish are observed to swim up with the tide, which regulates their pace, as they rarely get in advance of it, and follow a fixed track, probably the channel of the river; but as the tide turns they leave the track by which they ascended, and are found in the shallows. If once disturbed or frightened from their regular

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\* Three views concerning these migrations were held at a meeting of the Dee Conservators at Chester, in December 1884:—(1) That salmon run up with the flood-tide; (2) That they rest during the flood tide, and run up with the ebb; (3) That they allow themselves to be carried up with the stream of the flood tide, with their heads towards the sea, and that when the tide begins to ebb they turn, and continue their upward course against it.

course, they would appear to be slow to again return to it; thus Mr. Willis Bund remarks that there used to be a good fishery just above the place where the tunnel passes under the river Severn. In consequence of the boring operations, chiefly the blasting, the fish have left that part of the river, and the fishery is almost worthless; and although the blasting has now (October 1885) ceased for some time, the fish do not return. In the McCloud River the blasting operations of the Constructive Corps of the Central Pacific Railway Company prevented the parent salmon ascending the river as usual (Livingston-Stone: Bull. U.S. Fish. Comm., 1885). But the remarks of Sir W. Jardine and others must not be overlooked, that temperature in estuaries is occasionally, at least, a cause as to the side they select when migrating, for they have been observed to select the sunny side during the cold months, and the shady during the warmer portions of the year.

But the period arrives when these fish consider it necessary to migrate from the tidal portions of a river and ascend into the fresh waters, where, instead of going with the tide, they have to pass on against the stream; and fishermen, at least in the Wye, appear to consider that it is a rule, excepting during a fresh, that these migrations take place chiefly during the night-time—in fact, so strong on this point is the opinion of some, that they do not hesitate to say that, were night-fishing in this river to be put an end to, their occupation would be gone. It may be worthy of investigation, whether the constant netting to which these fishes are subjected is not one cause of their selecting to ascend during the night-time.

The salmon in the sea having stored up fat, especially on and around its pyloric appendages, and possibly, especially if in the autumn, being in such a condition that within a definite period its roe or milt must be deposited, commences its migrations towards its inland breeding-ground. Buckland remarked that when examining spring fresh-run fish, he found the amount of fat on the pylorics less than what is present on one entering rivers for immediate breeding purposes. His investigations seemed to indicate that the fat in both instances might serve as nutriment to them while they resided in fresh water; and the reason why the fish maturing its eggs has an excess of fat over one not so engaged, is supposed to be due to the great amount of nourishment which is required by the females while the eggs are rapidly maturing.

In November 1885, being with Sir J. Gibson-Maitland searching for salmon eggs at the Teith, near Stirling, we took a female, 15 lbs. weight, so injured by seals that it succumbed. It was a clean silvery

fish,\* with ovaries 4·7 inches in length, the two weighing  $2\frac{1}{2}$  ounces, and each egg being 0·1 inch in diameter. It is clear that a salmon having eggs one-tenth of an inch in diameter at the end of November, could not have its ova sufficiently ripe to spawn within the next two months, while experience tells us that no other period for depositing eggs will normally come round before this time the succeeding year. It has long been accepted as a physiological necessity that a female smolt must descend to the sea before it can develop eggs, the reason advanced being that the development of ova requires far more nourishment than that of milt; that in the ovary of the female the eggs are formed nearly simultaneously, and their development is uniform, one being enveloped in as large an amount of albumen as another. But in order to produce this albumen, a far greater quantity of food is needed than the fish can normally procure in freshwater rivers. On the other hand, grilse at Howietoun, both last year and during the present season, have given eggs without going to the sea; and also the land-locked salmon breeds in fresh water without descending to the ocean.

I think that the explanation of these apparently contradictory facts is possible. Thus, it is generally admitted that salmon, while residing in rivers, do not increase in weight, but rather fall off the longer they are absent from the sea, existing as they mainly do upon the fat which they have accumulated while feeding in the salt water, and such food as they can procure sufficient for nutrition of the body, but insufficient in females for breeding purposes. If this is so (and of it I think there can be no reasonable doubt), they would be unable to obtain enough nourishment wherewith to develop eggs so long as they continued in the river, that, in short, they could not do so without another visit to the sea; consequently these early-ascending salmon, until they have again descended to the salt water, cannot be those fish from which we have to expect ova for replenishing the stock in our rivers. Knox, in 1854, observed that a smolt, after first descending to the ocean and tasting its marine food, never again resorts to its infantile food as a constant mode of nourishment.

This brings me to the question of how it is possible to prove that insufficient nourishment can impede or prevent spawning among the

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\* Three similar ones were likewise captured that day, but being uninjured were at once returned to the Teith. This must not be considered an exceptional occurrence, as clean fish at this time are invariably netted when seeking for gravid salmon. In the Rhine, Barfurth observed in 1874, that spawners ascend from September to November, while there is likewise a barren winter variety coming sporadically and for a brief season from September until May.

Salmonidæ, or, in fact, render a fish temporarily sterile. At Howietoun it was observed in 1884, that the American Char (*Salmo fontinalis*) suffered a good deal from fungus, owing, it was believed, to their over-feeding. Consequently, in 1885 their diet was reduced, and that with the best results as regards fungus; but when the breeding season came round it was found that large numbers were sterile. That this is solely a question of food a most interesting instance in pond No. 5 may be quoted. Here the hybrids were kept and fully fed, and one female *fontinalis* was placed along with them. She attained to a large size, and in November 1885 was found to be full of eggs. Deficiency of food may, therefore, occasion sterility by an arrest of development in the ova, or, should the eggs be formed in the ovaries, it may arrest (possibly not entirely) their further augmentation in size, as cold will retard the development of the embryo in eggs that have been deposited, as has been abundantly proved by transmitting them to distant countries by the assistance of ice. Possibly in some few instances these early-ascending fish may find a locality where food from some cause is unusually abundant, allowing the ova to augment in size, and *that* this is the explanation of occasionally a female salmon with large eggs being captured at the end of the summer; but normally these fish will be sterile during the year of their ascent in the condition described, at least until after they have revisited the sea.

But it may be advanced, if this is so, how do land-locked salmon breed? Here we have an entirely different set of circumstances to deal with. The fish have never been to the sea-feeding grounds, but have been compelled to adapt themselves to local conditions. Thus, in large lakes, as Wenern and other suitable places, where food abounds, they breed, or else they may become 'demoralised salmon,' as Agassiz remarked; or, finally, they may die out, due to sterility, the nourishment which they are able to obtain being insufficient or unsuited to allow them to perpetuate their race.

The foregoing makes me think that Mr. George was in error when he reported to the Severn Fishery Board in 1885, that, due to a long series of dry weather, no run of spawning salmon occurred until the beginning of December. The first salmon spawned in the Barrow, November 12th, 1884, and in the Verniew on the 15th. These were fish that had been in the fresh water all the summer. Without being marked, it is difficult to be sure on such a subject, and I would rather hold to the opinion that these were fish lately ascended from the sea.

There is hardly a month in the year when fresh-run salmon may not be found in our rivers,\* but the main run for spawning purposes occurs as a rule from October to January, or even later. Some of the December and January fish, however, are in that condition, as I have shown, that they could not spawn for many months to come; and I am disposed to think that it is only autumn and winter ascending ones that breed, but experiments are much needed to test this. I now propose adverting to such facts as have been recorded respecting the various runs of salmon which ascend our rivers.

Mr. Willis-Bund, in his account of the Severn ('Salmon Problems'), shows at least eight distinct runs during the year. They may be summarised as follows:—(1) End of December or January, the largest run of the season, and spawning fish. (2) End of January or February, or later; spawning fish fewer in number, but generally large in size. (3) A run in February of large clean fish, but at the end of the month of gillings.† (4) February and March, a spring run of gillings, which press up to the head-waters of the river, and are the early spawners for the next season. (5) A small run of grilse, and some small salmon, during April. (6) June and July, the main run of grilse. (7) Autumn run of Michaelmas gillings. (8) Great run of spawning fish, in October and November. But it must be noted that all of the foregoing do not take place invariably every year—thus grilse or gillings may be absent; but there are, as a rule, three distinct runs of spawning fish, and five runs of clean fish, and, irrespective of the foregoing, there are individuals moving about. Fish which are ascending alone do not appear to be so eager to press up, but stop at the foot of weirs in the pools; while the largest run of salmon is on a spring tide. Possibly male fish pass up sooner than do the females, for at certain times in the Usk the higher up the

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\* Dr. Frie came to the following conclusions respecting the migrations of the Bavarian salmon (he omits the grilse), among which he observed three distinct times of ascent from the sea. A. *Not ready for spawning when ascending*: (1) At the end of February under the ice, or March until May. Large and strong fish from 25 lbs. to 50 lbs. (avoirdupois), famous as 'violet salmon.' (2) From the middle of June till August, if the rivers are not too low. From 12½ lbs. to 22½ lbs. Flesh reddish, and known as 'rose salmon.' B. *Ready to spawn on arrival*: (3) First half of September until the end of November, and in mild winters until December. Weak fish from 3 lbs. to 10 lbs., or even 15 lbs. Flesh pale, and known as 'silver salmon' (U.S. Fishery Reports, 1876, p. 607).

† 'Gillings' is a local term for salmon from 8 lbs. to 15 lbs. weight, or after it has ceased to be considered a grilse, and fish of this size are supposed to be in their second breeding year, and to migrate together, and not along with other salmon, while grilse or botchers are fish up to 8 lbs. weight.

river the netting takes place, the greater is the percentage of males to females which are caught.

Mr. Anderson writes to me respecting the Forth, and the migrations of salmon and grilse therein, remarking that his observations extend over a period of 50 years. (1) The first run of salmon, the beginning of December till nearly the end of February, should there be a fresh in the river; they are coarse-looking fish, from 16 lbs. to 30 lbs. (2) About the middle or second spring tide in February, clean spring-run fish; the fish 3 lbs. or 4 lbs. in weight, increasing in weight every week until the end of April, when some are from 8 lbs. to 10 lbs. (3) The summer salmon enters with the first spring tide in May, or earlier should the river be in flood; they are from 12 lbs. to 20 lbs. (4) The first run of grilse, from 1½ lbs. to 3 lbs., enters the river in May; in 1881, the first were recorded on June 28th, and in 1882, a week later. (5) The second run of grilse ascends about the middle of June, or during the second spring tide; they are from 3 lbs. to 5 lbs. (6) The 'autumn salmon' ascend at the end of June; are from 16 lbs. to 40 lbs. (7) With the first spring tide in July, quantities of grilse ascend. (8) With the first spring tide in August, grilse from 8 lbs. to 16 lbs. ascend in shoals, and many are heavy in spawn. (9) The 'grey schule salmon,' or the regular breeders, ascend with the first spring tide in September, or later if the water is low. Many are from 20 lbs. to 50 lbs.; some are very dark, others very red. (10) There is also the 'grey schule grilse'; the most are ugly looking fish, dark red and grey, very coarse made fish; the males with long snouts, and very shiny all over their scales.

Russel (*The Salmon*, 1864) remarked that the reason salmon ascend rivers more or less every month of the year, while grilse only do so at certain periods, or so to speak come all at once, must be owing to one being an adult form capable of ascending at any time, while the other is a young fish which first attains to that capacity at that season when its ascent is practically bound to begin. The following return shows the proportions of salmon, grilse, and trout to every 1,000 of each kind caught on an average of years in the net fisheries of the river Tweed:—

	SALMON.	GRILSE.	TROUT.
February (2nd half of) ...	22 ...	0 ...	8
March ...	56 ...	0 ...	7
April ...	89 ...	0 ...	23
May ...	128 ...	1 ...	56
June ...	138 ...	13 ...	173

	SALMON.	GRILSE.	TROUT.
July ... ..	233	371	254
August ... ..	151	408	164
September ... ..	113	154	129
October (1st half of) ... ..	71	53	186

Salmon ascend in every month of the year, in numbers comparatively not very unequal. Grilse, speaking roundly, do not ascend in the first half of the year, and all but a fraction within two consecutive months in the middle of the year; subsequently, their ascent is checked. Forms ascending throughout the year being adults; those coming in shoals being the young of the same species. That this is so, is further borne out by the trout column, wherein are comprised both old and young, and in June they suddenly increase by 300 per cent., and another 50 per cent. in July, during which month a fourth of the whole of the year's captures were recorded, while the average weight falls off during the months when the young appear to be ascending. The increase in trout in October is due to fishes ascending to spawn, when the average weight of the fish increases. Russel has also shown that in examining some returns of takes of grilse and salmon from the Tweed, he found that the proportion which the grilse of any one year bore to the average number of grilse, was found to have been just about the proportion which the salmon of the following year bore to the average number of salmon. Taking a series of years, the average weight of grilse captured in the Tweed was found to be in June, 3 lbs. 11¼ ozs.; July, 4 lbs. 5¼ ozs.; August, 4 lbs. 15 ozs.; September, 5 lbs. 12½ ozs.; October, 6 lbs. 11¼ ozs.: the late comers having been longest in the sea.

During their migrations up river these fish have to overcome many obstructions, whether natural obstacles or artificial impediments, as weirs, and frequently these can only be surmounted during a heavy flood. If the water in any river is very low, possibly the pools would contain no safe resting places for ascending salmon, and spring fish would be very unlikely to accomplish their ascent, for they would most probably be captured by man or destroyed by vermin.

Mr. Stephen deposed, before the Committee on the Salmon Fisheries in 1824, that, 'Our cruives in the river Don are so constructed that salmon of 10 lbs. weight can at all times go up, but none can descend past the cruives. We fish generally in the pools above the cruives, and if the unspawned salmon returned again down the river we would undoubtedly catch them there, which is never the case. They are never seen to descend the river, except as kelts, after having spawned.'

James Halliday deposed that salmon which enter rivers at any period, but not for spawning, would return again to the sea\* at times, were such return not cut off by want of water on the shallows; but if floods occur, they descend. He continued, respecting the Sand Pool in the Annan: 'Although we had fished this pool quite clean of fish before the rain came on, yet whenever the rain did come on we then continued fishing constantly, until the water rose so high that we could not manage it, and we got the salmon and grilises coming down the river all the time into the pool; some of them had the appearance of having lain long in the water, and were very much exhausted—quite changed in the colour, as if they had hung in a smoky chimney for some time; others were very red in the skin, by having been in the fresh water for some time. I have known us take 103 fish in one night in that pool after the rain commenced, although we had fished it clean immediately before. Our opinion was that the fish came down from the river above, out of the rocky waters of the Bridekirk, Loos, and Hoddam. The reason for fishing the pool at that particular time, was that the river at the foot of it parted into three small branches, and the pool itself was very deep. When the water was rising the fish could not find their way so readily down there, and they turned into the deep pool, and we kept drawing constantly as long as we could manage the water.'

Mr. Willis-Bund ('Salmon Problems') has advanced reasons for supposing that were a clean fish interrupted in its journey up stream in fresh water, it drops back. Thus, he remarked that a poacher who has missed gaffing a fish, first looks for his lost game in the pool below, not in the one above. It has also been observed of the Californian salmon, that when a rack is placed across a river the unripe fish drop back. In November 1885 we proposed to investigate this on a small scale in the Teith, and when netting salmon for the purpose of obtaining ova, so far as was practicable each fish, on being returned into the river, had an elastic band slipped over its tail; and out of eight shots with the net, and a total take of 43 fish, three of which were clean, we only recaptured one marked specimen. We worked down stream, except for the last two shots, and it was at shot No. 7 that the marked fish was taken.

During their ascent these fish must keep to the middle, or deepest and safest part of a river, where, however, they are constantly pursued by the netter, and this causes them to become shy. They will not lie up, but seem more disposed to push on to their breeding

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\* Dr. Günther observed that a salmon changing from salt to fresh water, and *vice versa*, several times in the year, only occurs in rivers falling into the Moray Firth.

grounds. This question of rapidity of ascent is one by no means settled, while it is of the greatest consequence to the upper riparian proprietors. Mr. Willis-Bund considers that in the Severn they go up stream very leisurely, as two or three miles an hour; consequently, in a river having a long course, the weekly close time merely changes the locality where they are captured, for he believes none attain to the upper waters during the netting season. As a corroboration of this, it is observed that, except under exceptional conditions, it is some days after the nets are off rivers before the upper proprietors have much chance of hooking a fish.

Livingston-Stone remarked that 'it frequently happened that a whole run of salmon for several days will be composed almost entirely of males, the effect of which, of course, is to leave the females together by themselves, whether they take an active part or not in bringing about the separation. In fact, in hauling a seine frequently in a river for some time, it is generally very noticeable that the sexes alternate in running up the river about the spawning season, a large body of males being followed by a large body of females, and these by a run of males again, and so on through the season' (Bull; U.S. Fish. Com., 1885, p. 468). Mr. Willis-Bund has also observed 'that the male fish swims up the river more quickly than the female; at all events, the higher up the river the netting takes place, the greater percentage of males to females caught' ('Salmon Problems,' page 156).

In their course up stream it is very remarkable what difficulties they will overcome. Fleming asserted that he had known a salmon leap up over a fall of 30 ft., but probably he intended to mean in a succession of jumps from one pool or resting-place to another. Twiss ('Travels in Iceland') declared that from personal observation he knew they were able to dart themselves nearly 14 ft. perpendicularly out of the water. Professor Landmark has stated (*Nature*, August 6th, 1885) that he had witnessed their jumping 16 ft. perpendicularly, but continued, 'Such jumps are rare.' Scrope, after making a number of observations, came to the conclusion that 6 ft. or 7 ft. came nearer the truth. At impassable cascades they have been observed to die, consequent upon repeated but fruitless exertions in attempting to ascend.

In the Severn it has been observed that after the exertion of crossing a weir or ascending a rapid, they take a rest; for the best draught of these fish are captured *above* the obstruction in the dead-water. Kelts, when obstructed in their course down a river, strike up stream; thus, we are told that at Powick weir, which solely captures ascending fish, kelts are often taken in the spring, and usually when there is a slight fresh in the river.

When descending seawards, it would appear that the salmon usually pass gradually into the salt water, but a heavy flood sometimes carries weak fish down stream. The pinks or smolts keep to the sides of the river, but having once arrived at the ocean would seem to seek the deep water, to return again as breeding grilse.

### NOTES AND NEWS.

Dr. Dallinger, F.R.S., has been elected president of the Royal Microscopical Society for a third time, the bye-law providing that a Fellow should not be elected for more than two years being set aside by a special vote.

The annual meeting of the Manchester Scientific Students' Association was held on the 20th of January. The 25th annual report stated that the work of the past year embraced fourteen winter evening meetings, at which papers were read and discussed; nine Saturday afternoon excursions; one whole day excursion; an excursion at Whitsuntide; six evening rambles; and four visits to institutions and works. The number of members on the roll for 1885 is 297. The council invited the attention of the members to an important feature in its organisation. The proposed creation of an astronomical section will, it is hoped, lead the way to the formation of other sections for the study of those branches of science which still remain unrepresented in this great industrial centre. The library was removed during the autumn from Bridge Street to the space set apart for it on the basement floor of the rooms of the Literary and Scientific Society. The year started with a favourable balance of £26, and ended with a balance of £13 7s. 3d. The officers and members of the Council were elected for the coming year. Prof. Williamson, F.R.S., is again the president; Messrs. Alfred Brothers, R. T. Burnett, Samuel Okell, and John Plant are the vice-presidents; Dr. C. P. Bahin, honorary secretary; Mr. Samuel Massey, treasurer.

An open meeting of the Microscopical and Natural History Section of the Literary and Philosophical Society of Manchester, was held on the 7th of December, 1885, when Prof. Herdman, of University College, Liverpool, delivered an address, in which he described the results of the work undertaken by the Liverpool Marine Biology Committee. A large number of exhibits were made by members and associates, including Messrs. R. D. Darbishire (marine and land and freshwater shells, and in conjunction with L. E. Adams, characteristic British Stalk-eyed Crustacea, mainly from Penmaenmaur and the Irish Sea), Dr. Alcock, F. Nicholson, F.Z.S., Thomas Rogers, H. Hyde, Mark Stirrup, F.G.S., Prof. Williamson, F.R.S., Prof. A. Milnes Marshall, F.R.S., Prof. Boyd Dawkins, F.R.S., J. R. Hardy, Peter Cameron, J. Cosmo Melvill, F.L.S. (a most extensive series of exhibits, viz.:—Selected Foreign Mollusca from his collection, including 29 original types of *Conus*, 19 of them being unique specimens, and fine rare and unique forms of *Voluta*, *Mitra*, *Marginella*, *Cypræa*, *Bullia*, *Pseudoliva*, *Rostellaria*, *Murex*, an almost complete set of the genus *Typhis*, a selection of the genus *Pecten*, etc.; exotic Coleoptera, of the families *Cetoniidæ* and *Rutelidæ*; selected drawers of exotic Rhopalocera of the orders *Papilionidæ*, *Nymphalidæ*, and *Lycenidæ*; and a few insects exhibited together to exemplify mimicry amongst Lepidoptera of widely differing orders), Hastings C. Dent, F.L.S., Charles Bailey, F.L.S. (numerous rare and critical plants, including the principal forms of aquatic Buttercups growing in Britain, the *Hieracia* of Middle Europe, belonging exclusively to one section, the *Piloselloidea*, and a set of British *Erythraeæ*), T. Sington, F. A. Huet, L.D.S., R.C.S., J. Barrow, A. Brothers, F.R.A.S., Blackburn, F.R.M.S., John Boyd, Pettigrew, Dr. Tatham, and Wilde. The gathering constituted one of the most interesting meetings that has taken place in Manchester within the historic walls of the Literary and Philosophical Society; and was one to which ladies were, for the first time in the annals of the Society, admitted, upon the occasion of the reopening of the rooms at 36, George Street, after the very extensive alterations and rebuilding there.

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Liverpool Coleoptera (Parts 7, 8, 9, 10)—J. W. ELLIS, L.R.C.P., &c.

Natural History of Lincolnshire.—The next instalment of this is to be upon the Mammalia, by JOHN CORDEAUX. Schedules have been prepared for obtaining information: one will be sent to any one willing to furnish notes.

Short Notes.—It is the wish of the Editors to give in each number about a page of short notes in each of the various subjects of which the *Naturalist* takes cognisance. To this end they rely upon their friends keeping them well supplied. At present short notes on Botany, Entomology, Palæontology, Microscopy, Conchology, &c., are particularly desired.

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Midland Naturalist for April 1886. [The Editors.  
The Young Naturalist for April 1886. [J. E. Robson, Editor.  
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## THE BIRDS OF YORKSHIRE.

Information is desired at once on the *Warblers*, their distribution, nidification, and local names, together with full details of the occurrence of rare species, for use in preparing the next portion of this work, which appears in the Transactions of the Yorkshire Naturalists' Union.—W. EAGLE CLARKE, 18, Claremont Road, Headingley, Leeds.

The cheapest dealer in Birds, Skins, Eggs, Butterflies, Moths, Foreign Shells, etc., is John Eggleston, Park Place, Sunderland. Lists free.

## THE RAVEN IN BOWLAND.

F. S. MITCHELL, M.B.O.U.,

*Clitheroe; Author of 'The Birds of Lancashire.'*

ON the hills of Bowland, across which runs the boundary of Lancashire and Yorkshire, and east and west from which flow the Hodder, the Wyre, and some of the tributaries of the Lune, the Raven (*Corvus corax*) has often been seen, and but for the scurvy reception it has met with, would no doubt have remained a regular inhabitant.

In 1885, however, a pair contrived to keep their whereabouts a secret until they had almost brought their young to maturity, and it was only in the second week of April that the nest was discovered and poked down, two of the contained birds being killed and the remaining two haled off into captivity.

Hearing not long ago that the birds had been again seen about the place, a visit was paid on the 7th of March, and in exactly the same spot as last year a big nest had been constructed, the situation being a recess protected by an overhanging rock and about 20 feet from the foot of the crag. A good deal of snow was on the ground and footing thereby treacherous, but by the aid of a rope and a small mountain-ash which happily grew in a crevice near, it was ascertained that only one egg had been laid, and this was completely covered up by the thick sheeps-wool of the lining. The birds were exceedingly wary, and could only be seen hovering at a great height, and heard to give an occasional croak.

A second visit was paid on March 14th, and on approaching the sitting bird was seen to leave the nest, being immediately joined by her mate, who had evidently been perching near. By mounting on each other's shoulders the climbers obtained a view of the inside of the nest before disturbance, and the four eggs it contained were seen to be lying with no sort of symmetry, and all at some little distance from each other. The nest was about two feet thick, and had an inside diameter of ten inches.

The birds showed rather more anxiety than on the previous occasion, and came once near enough to have been shot, but as it is beginning to be believed that they do not do much damage to the game, and that a dead sheep is far more agreeable to them than any amount of grouse, it may be hoped they will be allowed to remain unmolested.

## BIRDS OF THE DERBYSHIRE PEAK.

F. B. WHITLOCK,

*Nottingham.*

HAVING repeatedly visited various parts of the Peak during the last four or five years, for the purpose of observing its birds, I think I can lay before the readers of the *Naturalist* a fair account of what species are to be found there.

In general appearance, with the exception of the Buxton and Kinder Scout mosses, all parts of the Peak have much in common—high rolling moorlands covered with heather, bilberry, and cloudberry, or steep green hills with narrow, rocky, and wooded valleys lying between them, most of the valleys, or dales as they are usually called, having pretty trout streams flowing through them; large woods are the exception, but in parts, as at Buxton, there are a good many smaller plantations, usually of a mixed growth.

Kinder Scout, about 2,100 feet high, is the principal mountain; it consists of a large table-land, the surface of which is covered with very spongy peat, into which one sinks to the knees. The peat through the action of rain-water is cut up into innumerable islands, on which heather and a little bilberry struggle for existence. Bird life on this wide stretch of country is extremely scarce, the only species I noticed being one or two Meadow Pipits and a solitary Swift and Swallow. On the steep sides of the Scout, however, the heather and bilberry and various ferns and plants flourish; here bird life is more common, the Red Grouse, Ring Ousel, and a few smaller birds being frequently seen.

The Buxton mosses are similar to the summit of Kinder Scout, but have not such a barren or dead-level appearance. The heather is more luxuriant, and Grouse and Ring Ousels may be found on any part of them. Having said so much of the general appearance of the Peak, I will commence my list with the

**Merlin.** Several pairs of Merlins breed in the neighbourhood of the Scout, but I think the young seldom get off.

**Peregrine Falcon.** A gentleman described to me a large hawk which he killed while Grouse shooting, which I have little doubt was of this species.

**Kestrel.** Fairly common; breeds both in trees and on rocks throughout the Peak.

**Sparrowhawk.** Not so common as the Kestrel, but may be found wherever there are woods.

**Rough-legged Buzzard.** Occasionally occurs. A gamekeeper told me he shot one not long since. According to Mr. Seebohm they pass over this part of Derbyshire pretty regularly.

- Song Thrush.** Common; where trees and bushes are scarce I have found it breeding on brook sides like a Blackbird.
- Redwing.** Occurs in the dales in winter.
- Fieldfare.** Occurs in fair numbers; I found a dead one on 19th May last year, somewhat decomposed, on the summit of the Scout.
- Missel Thrush.** Common in all parts; I have found it breeding on the rocks.
- Blackbird.** Common; breeds in the stone walls where no bushes and trees are to be found.
- Ring Ousel.** Common. Arrives about 28th March; seems to be most abundant where the bilberry and cloudberry are found in greatest profusion. The earliest young I saw were on 19th May, just hatched.
- Dipper.** Not common; I have seen its nests near Hayfield and in Miller's Dale.
- Redbreast.** Common, except on the wildest moors.
- Redstart.** Fair numbers. Breeds in the stone walls.
- Wheatear.** Breeds in scattered pairs on the hill sides.
- Whinchat.** Same as last; rather commoner near Hayfield.
- Spotted Flycatcher.** Occurs near woods.
- Blackcap.** Rather rare.
- Whitethroat.** Owing to the absence of hedge-rows this familiar bird is only found in such places as Edale.
- Wood Wren.** I have heard this bird near Hayfield.
- Willow Wren.** Common in all the dales; seems to be fond of frequenting the stones in brooks.
- Goldcrest.** Occurs in the fir plantations.
- Great Titmouse.** Common near and in woods.
- Blue Titmouse.** Common near and in woods.
- Marsh Titmouse.** I have seen this species in the autumn in Ashwood Dale and near Ashover.
- Hedge Accentor.** Common. I have seen it amongst the large boulders that lie all over the sides of Kinder Scout.
- Wren.** Common in all parts.
- Carrion Crow.** A few are to be seen; they breed in the larger woods and forage on the adjacent moorlands.
- Rook.** Not so common as in more cultivated parts. Flocks pass the Dymus at Hayfield very regularly every day.
- Jackdaw.** Common; breeds in many of the dales.
- Magpie.** Scattered pairs breed where there is shelter.
- Starling.** Fairly common.

- Bullfinch.** Uncommon, but is found in the more wooded dales.
- Greenfinch.** Breeds in the more cultivated parts.
- Chaffinch.** Common everywhere.
- Linnet.** Breeds on some of the moors, but is commonest in the autumn.
- Snow Bunting.** Occurs near Hayfield most winters.
- Reed Bunting.** Occurs in Edale.
- Yellow Bunting.** Occurs in Edale.
- Common Bunting.** Occurs in the more cultivated parts.
- Swallow.** Common.
- House Martin.** Common; breeds on the rocks in Ashwood Dale.
- Sand Martin.** Rather local.
- Pied Wagtail.** Common, especially in Ashwood and Miller's Dale.
- Grey Wagtail.** Breeds in Miller's Dale, and a few also winter there.
- Yellow Wagtail.** Fairly common.
- Tree Pipit.** Common.
- Meadow Pipit.** Very common.
- Skylark.** Fairly common.
- Swift.** Rather rare.
- Kingfisher.** Occurs on the larger streams.
- Cuckoo.** Very common on the moorlands.
- Ringdove.** Fair numbers in the woods.
- Red Grouse.** Common on all the moors.
- Black Grouse.** A few are to be found near Hayfield.
- Pheasant.** Uncommon in the wild state.
- Partridge.** Uncommon in the higher parts of the Peak.
- Common Heron.** Occurs, but I know of no breeding place in the Peak.
- Land Rail.** Occurs in the broader dales.
- Moorhen.** Breeds on the larger streams; I saw a nest with eggs on 4th August last year.
- Golden Plover.** Breeds all over the Hayfield moors in scattered pairs.
- Lapwing.** Very common on the hill sides. Leaves early in August.
- Curlew.** A few pairs breed near Hayfield.
- Common Sandpiper.** Common where it occurs. The only place I know of where it breeds is near Hayfield.
- Woodcock.** Has been known to breed near Hayfield.
- Common Snipe.** Fair numbers breed all over the district. I saw four or five on the wing near Mam Tor in April last.
- Jack Snipe.** Occurs regularly in the winter.
- Black-headed Gull.** Often to be seen flying overhead.

## FLORA OF STRENSALL AND DISTRICT, YORK.

ALFRED RAINEY WALLER,

*Secretary of the Watson Botanical Exchange Club.*

In drawing up the following list of Strensall plants, I have been materially helped by the late Mr. H. Ibbotson, who very kindly placed all his notes on York plants at my disposal. My thanks are also due to Miss Milner, of York, Mr. Le Tall, M.A., of York, and Miss G. Horner, of Earswick, for information with regard to plants seen in the district.

The ground covered by this paper includes Strensall Village and Common, Stockton Forest and its Common, Towthorpe Common, Sandburn Woods, Hazel Bush, the Malton Road in the near vicinity, and part of the river Foss.

I have not yet sufficiently examined the Rubi, Rosæ, and Salices of the district to enable me to give a satisfactory list of these genera, and have therefore decided not to include them in this paper. The list of Ferns is taken largely from Mr. Ibbotson's 'Ferns of York,' edited, in 1884, by Mr. Le Tall and myself.

**Anemone nemorosa** L.

**Ranunculus trichophyllus** Chaix. In one or two ponds on Strensall Common.

**Ranunculus heterophyllus** Fries. Much commoner than the above.

**Ranunculus hederaceus** L. Very plentiful about the middle of the Common, and in ditches by the first lane leading off the Common towards Strensall.

**Ranunculus sceleratus** L. **R. flammula** L.

**Ranunculus lingua** L. One or two plants at Stockton Forest.

**Ranunculus auricomus** L. Not at all common. In shady places at Sandburn.

**Ranunculus repens** L. **R. acris** L. **R. bulbosus** L.

**Ranunculus hirsutus** Curt. Very rare. One or two plants at Sandburn.

**Ranunculus arvensis** L. **Ficaria verna** Huds. **Caltha palustris** L.

[I have a specimen of *Aquilegia vulgaris* L. from Stockton, but it is undoubtedly an escape there. Mr. Ibbotson informs me he has seen it on the Malton Road, but not recently.]

**Nymphæa alba** L. In the river Foss.

**Nuphar luteum** Sm. In the river Foss.

**Papaver rhœas** L. **P. dubium** L.

**Chelidonium majus** L. Walls at Stockton Forest. An escape?

- Fumaria pallidiflora** Jord. Rare. In hedges about Strensall.  
**Fumaria officinalis** L. **Raphanus raphanistrum** L.  
**Barbarea vulgaris** Br. By the Foss.  
**Nasturtium officinale** Br. **N. palustre** DC.  
**Cardamine pratensis** L. **C. sylvatica** Lk. **C. hirsuta** L.  
**Alliaria officinalis** Andr. **Sisymbrium officinale** Scp.  
**Sisymbrium thalianum** Gay. **Brassica campestris** L.  
**Sinapis arvensis** L. **Draba verna** L. **Teesdalia nudicaulis** Br.  
**Lepidium draba** L. Colonist at Strensall, B. B. Le Tall.  
**Lepidium campestre** Br. Fields at Stockton Forest, but not at all common.  
**Coronopus procumbens** Gil. (= **C. Ruellii** All.). By damp roadsides near Strensall Common, and at Stockton Forest.  
**Capsella bursa-pastoris** Mch.  
**Viola sylvatica** Fr. (both vars.).  
**Viola canina** L. var. **flavicornis** Sm. On the Common in one or two places.  
**Viola odorata** L. **V. tricolor** L. (and var. **arvensis** Murr.).  
**Drosera intermedia** Hay. **D. rotundifolia** L. **Polygala vulgaris** L.  
**Githago segetum** Dsf. **Lychnis flos-cuculi** L.  
**Lychnis diurna** Sibth. **L. vespertina** Sibth. **Silene inflata** Sm.  
**Silene anglica** L. Very plentiful in cornfields by the railway across Strensall Common.  
**Silene noctiflora** L. Very rare. In fields near Strensall Common.  
[**Silene armeria** L. 'Once gathered at Stockton Forest.' *H. Ibbotson*. A casual.]  
**Saponaria officinalis** L. 'Hedge bank near the Lobster House, on the Malton Road.' *H. Ibbotson*.  
**Malachium aquaticum** Fr. Banks of the Foss.  
**Cerastium vulgatum** L. (= **C. triviale** Lk.).  
**Cerastium semidecandrum** L. **C. viscosum** L. (= **C. glomeratum** Th.).  
**Stellaria media** Cyr. **S. holostea** L.  
**Stellaria palustris** Ehrh. (= **S. glauca** With.). **S. graminea** L.  
**Stellaria uliginosa** Murr. **Arenaria trinervis** L. **A. serpyllifolia** L.  
**Sagina nodosa** Fzl. **S. procumbens** L. **Spergularia arvensis** L.  
**Spergularia rubra** P. At Sandburn, and on sandy roads across Strensall Common, but very scarce.  
[**Linum angustifolium** Huds. A few plants at Stockton Forest in 1881. Probably an escape.]  
**Linum catharticum** L. **Radiola linoides** Rth.  
**Malva rotundifolia** L. **Hypericum pulchrum** L.  
**Hypericum tetrapterum** Fr. **H. perforatum** L. **H. humifusum** L.

- Hypericum elodes** L. Plentiful in pools and marshy places on Strensall Common, and at Stockton Forest.
- Acer pseudo-platanus** L. (planted). **A. campestre** L.
- Geranium phæum** L. Three or four plants in a ditch between Stockton and Strensall, in 1882. *Miss G. Horner*. 'Walls at Stockton Forest. No doubt introduced.' *H. Ibbotson*.
- Geranium dissectum** L. **G. molle** L. **G. pusillum** L.
- Geranium robertianum** L. **Erodium cicutarium** l'Her.
- Oxalis acetosella** L. **Ilex aquifolium** L. **Rhamnus frangula** L.
- Rhamnus catharticus** L. Hedges near Strensall, especially towards Sheriff Hutton.
- Ulex europæus** L. **Sarothamnus vulgaris** Wimm. (= **S. scoparius** K.)
- Genista anglica** L.
- Genista tinctoria** L. In a lane between Strensall Common and Thornton.
- Ononis campestris** K.Z. (= **O. spinosa** L.). Common.  
[**Ononis arvensis** L. is conspicuous by its absence.]
- Anthyllis vulneraria** L. **Medicago lupulina** L.
- Melilotus altissima** Th. (= **M. officinalis** W., non **M. officinalis** Desr.).
- Melilotus alba** Desr. Mr. Ibbotson informs me he has seen this by the railway near the saw-mill (formerly Mr. Pearson's), between Warthill and Holtby Stations, but he has not seen it recently.
- Trifolium pratense** L. **T. medium** L. **T. striatum** L.
- Trifolium repens** L. **T. procumbens** L. **T. minus** Sm.
- Trifolium filiforme** L. **Lotus uliginosus** Schk. (= **L. major** Sm.).
- Lotus corniculatus** L.
- Lotus tenuis** Kit. A little occurs in the railway cutting between Warthill and Holtby, between Strensall and Sutton, and in fields near Rufforth.
- Ornithopus perpusillus** L. Plentiful on Strensall Common, and in sandy fields near.
- Lathyrus pratensis** L.
- Orobus tuberosus** L. and var. **tenuifolius** Rth.
- Vicia cracca** L. **V. sepium** L. **V. sativa** L. **V. hirsuta** K.
- Vicia tetrasperma** Moench.
- Prunus avium** L. 'I have seen the wild cherry in hedges in this district, but do not at present recollect where.' *H. Ibbotson*.
- Prunus insititia** L. **P. spinosa** L.
- Spiræa salicifolia** L. 'There is a little in a plantation near the Malton Road, but it has probably been planted there.'  
*H. Ibbotson*.
- Spiræa ulmaria** L.

- Spiræa filipendula** L. In very small quantity at Hazel Bush, near Towthorpe Common.
- Fragaria vesca** L. **Comarum palustre** L.
- Potentilla anserina** L. **P. reptans** L. **P. tormentilla** Scp.
- Potentilla fragariastrum** Ehrh. Plentiful in the ditches across Strensall Common.
- Geum urbanum** L. **G. rivale** L. **Agrimonia eupatoria** L.
- Alchemilla arvensis** Scp. **Sanguisorba officinalis** L.
- Pyrus malus** L.
- Pyrus communis** L. Rare. In a hedge by the roadside at Stockton Forest.
- Pyrus aucuparia** L. **Cratægus oxyacantha** L.
- Cratægus monogyna** Jacq. **Bryonia dioica** Jacq.
- Epilobium angustifolium** L. Not uncommon. Stockton Common (a part of Strensall Common). Wood at Hazel Bush, etc.
- Epilobium hirsutum** L. **E. parviflorum** Schreb.
- Epilobium tetragonum** L. **E. montanum** L. **E. palustre** L.
- Epilobium roseum** Schreb. At Stockton Forest. On the banks of the Foss.
- [**Myriophyllum spicatum** L. Reported from Stockton Common, but neither I nor Mr. Ibbotson have seen it.]
- Myriophyllum verticillatum** L.
- Myriophyllum alterniflorum** DC. Stockton Forest.
- Callitriche verna** Kütz.
- Ceratophyllum demersum** L. In the Foss.
- Lythrum salicaria** L. In a lane leading to Strensall Common from the Malton Road.
- Peplis portula** L. **Montia fontana** L. **Scleranthus annuus** L.
- Sedum vulgare** Lk. (= **S. telephium** auct. mult.). Rare. Fields near Stockton and Strensall.
- Sedum acre** L. In rather considerable quantity in one or two roadsides near Strensall Common.
- Saxifraga tridactylites** L. Walls about Strensall Common.
- Daucus carota** L. **Torilis anthriscus** Gm. **Angelica sylvestris** L.
- Pastinaca sativa** L. In small quantity near the railway at Strensall.
- Heracleum sphondylium** L. **Silaus pratensis** Bess.
- Æthusa cynapium** L.
- Œnanthe phellandrium** Lam. Banks of the Foss.
- Œnanthe fistulosa** L. **Anthriscus sylvestris** Hfn.
- Chærophyllum temulum** L. **Scandix pecten-veneris** L.
- Conopodium denudatum** K. (= **Bunium flexuosum** With.).
- Sium latifolium** L. Banks of the Foss.

- Sium angustifolium** L. **Ægopodium podagraria** L.  
**Pimpinella magna** L.  
**Pimpinella saxifraga** L. Much rarer than *P. magna*. Hazel Bush, Towthorpe, Stockton Forest. In small quantity at all these places.  
**Helosciadium nodiflorum** K. **H. inundatum** L.  
**Conium maculatum** L. On the banks of the Foss, near Strensall Bridge.  
**Sanicula europæa** L. In woods in the neighbourhood, but not plentiful.  
**Hydrocotyle vulgaris** L. **Hedera helix** L. **Cornus sanguinea** L.  
**Sambucus nigra** L. **Viburnum opulus** L.  
**Lonicera periclymenum** L. **Galium saxatile** L.  
**Galium uliginosum** L. **G. palustre** L. **G. verum** L.  
**Galium aparine** L. **G. cruciata** Scp. **Sherardia arvensis** L.  
**Valeriana officinalis** L. **V. dioica** L. **Valerianella olitoria** Poll.  
**Valerianella dentata** Poll. Not uncommon in cornfields at Strensall; scarce elsewhere.  
**Scabiosa succisa** L. **S. arvensis** L. **Bidens cernua** L.  
**Doronicum pardalianches** L. 'Near Stockton Forest.' *H. Ibbotson*. Scarcely naturalised.  
**Senecio aquaticus** Huds. **S. jacobæa** L.  
**Senecio erucifolius** L. In many places close to the Malton Road, and also at Hazel Bush. Nearly as common as *S. sylvaticus* L.  
[**Senecio viscosus** L. and **S. lividus** Sm. I have specimens in my herbarium of these two, gathered at Stockton Forest by a York gentleman, in 1860. I have not seen them there, nor has Mr. Ibbotson.]  
**Senecio sylvaticus** L. **S. vulgaris** L. **Anthemis arvensis** L.  
**Anthemis cotula** L. **Achillea ptarmica** L. **A. millefolium** L.  
**Chrysanthemum segetum** L. **C. leucanthemum** L.  
**Matricaria inodora** L.  
**Tanacetum vulgare** L. Scarce. Only at Towthorpe, I think.  
**Artemisia vulgaris** L. **Gnaphalium uliginosum** L.  
**Gnaphalium sylvaticum** L. Not common. In sandy fields near Sandburn and Strensall.  
**Filago germanica** L. **F. minima** Fr.  
**Solidago virgaurea** L. Very scarce. One or two plants at Sandburn, and also near Strensall.  
**Bellis perennis** L. **Pulicaria dysenterica** C. (= *Inula dysenterica* L.).  
**Tussilago farfara** L.  
**Arctium minus** Schk. **Cirsium** (= *Carduus*) **lanceolatum** L.

- Cirsium palustre** Scp. **C. arvense** Scp.  
**Cirsium anglicum** DC. (= **Carduus pratensis** Huds.). In a lane from Towthorpe to Hazel Bush.  
**Centaurea nigra** L. **Sonchus arvensis** L. **S. asper** All.  
**Sonchus oleraceus** L. p.p. **Taraxacum officinale** Web.  
**Hieracium boreale** Fr. Strensall.  
**Hieracium umbellatum** L. Not uncommon at Strensall, and also near Stockton Forest.  
**Hieracium vulgatum** Fr. In small quantity on Strensall Common and in the lanes leading off the Common.  
**Hieracium pilosella** L. **Crepis virens** L. **Tragopogon minus** Fr.  
**Leontodon autumnalis** L. **Thrinchia hirta** Rth.  
**Hypochæris radicata** L. **Cichorium intybus** L.  
**Lapsana communis** L. **Campanula rotundifolia** L.  
**Jasione montana** L. Rather plentiful in lanes about Strensall Common, and on the paths across it. Scarce elsewhere.  
**Erica cinerea** L. At Sandburn, and also on the Malton Road. I have never seen it on Strensall Common, nor has Mr. Ibbotson.  
**Erica tetralix** L. **Calluna vulgaris** Slsb. **Vaccinium myrtillus** L.  
**Oxycoccus palustris** P. Rather plentiful amongst *Sphagnum* and *Erica tetralix* on the east side of Strensall Common.  
**Andromeda polifolia** L. Found very sparingly some years ago by Mr. Le Tall, amongst *Sphagnum* and *Aulacomnium palustre* on Strensall Common. Not seen since, although repeatedly looked for.  
[**Pyrola media** Sw. 'Crompton's Cover, near Stockton Forest.' *Baines's 'Flora of Yorkshire.'* Mr. Ibbotson has never seen this plant at the above locality, nor have I.]  
**Pyrola minor** L. Rather plentiful at Strensall. 'In July 1883, plenty in a cornfield near the Common. Hardly any to be found in 1884.' *E. Milner.*  
**Ligustrum vulgare** L. (planted).  
**Fraxinus excelsior** L.  
**Vinca minor** L. Several plants in a wood close to Strensall Common.  
**Gentiana pneumonanthe** L. Plentiful on Strensall Common, and on one or two small adjacent Commons.  
**Gentiana amarella** L. At Stockton Forest, in small quantity.  
**Gentiana campestris** L. At Stockton Forest, in small quantity.  
**Erythræa centaurium** P. **Menyanthes trifoliata** L.  
**Calystegia sepium** Br. (= **Convolvulus sepium** L.).  
**Convolvulus arvensis** L. **Cuscuta europæa** L.  
**Cuscuta epithimum** L. Stockton Forest. *Baker's 'North Yorkshire.'*

- Anchusa sempervirens** L. Nearly naturalised in two woods close to the borders of Strensall Common.
- Lycopsis arvensis** L. **Lithospermum officinale** L.
- Lithospermum arvense** L. In cornfields at Strensall.
- Myosotis palustris** Rth. **M. cæspitosa** K. F. Schultz.
- Myosotis collina** Ehrh. **M. versicolor** Sm.
- Myosotis intermedia** Lk. (= **M. arvensis** auct.).
- Solanum dulcamara** L.
- [**Solanum nigrum** L. Probably extinct at Stockton Forest, where it grew some time since.]
- Scrophularia aquatica** L. **S. nodosa** L.
- Digitalis purpurea** L. 'In small quantity near Mr. Wilberforce's farm, close to the Malton Road.' *H. Ibbotson.*
- Linaria vulgaris** Mill.
- Linaria minor** Dsf. Found sparingly in cornfields.
- Veronica officinalis** L. **V. chamædrys** L. **V. beccabunga** L.
- Veronica anagallis** L. **V. serpyllifolia** L. **V. arvensis** L.
- Veronica agrestis** L. **V. polita** Fr. **V. scutellata** L.
- Veronica hederæfolia** L.
- Veronica buxbaumii** Ten. In cultivated fields at Towthorpe. A colonist.
- Odontites serotina** Rchb. (= **O. rubra** P. p.p.).
- Euphrasia officinalis** L.
- Rhinanthus major** Ehrh. Occurs occasionally at Strensall. It is never constant for very long to one locality.
- Rhinanthus minor** Ehrh. **Pedicularis palustris** L. **P. sylvatica** L.
- Melampyrum pratense** L. **Orobanche rapum** Th.
- Verbena officinalis** L. **Teucrium scorodonia** L. **Ajuga reptans** L.
- Scutellaria galericulata** L. Plentiful on Strensall Common.
- Scutellaria minor** L. Abundant amongst dead furze bushes by the road leading across Strensall Common to Flaxton.
- Prunella vulgaris** L. **Lamium album** L.
- Lamium maculatum** L. An escape at Stockton Forest.
- Lamium purpureum** L. **Galeopsis versicolor** Curt. **G. tetrahit** L.
- Betonica officinalis** L. **Stachys sylvatica** L. **S. palustris** L.
- Stachys arvensis** L. **Ballota alba** L. **Marrubium vulgare** L.
- Glechoma hederacea** L.
- Clinopodium vulgare** L. Scarce. In a lane near Strensall Common.
- Origanum vulgare** L. **Thymus serpyllum** L.
- Mentha viridis** L. Not uncommon at Stockton Forest, Strensall, and Hazel Bush.
- Mentha piperita** Huds. On Strensall Common, and also in ditches between the Common and Warthill.

- Mentha aquatica** L. Very common. Var. **sub-glabra** also occurs.  
**Mentha sativa** L.  
**Mentha arvensis** L. Plentiful. Var. **agrestis** is by far the commonest form.  
**Mentha pulegium** L. Very scarce. Only in one place on Strensall Common, and in very small quantity.  
**Lycopus europæus** L. **Pinguicula vulgaris** L.  
**Utricularia vulgaris** L. Plentiful in two ponds west of Strensall.  
 [**Utricularia minor** L. Formerly grew in a pond at Stockton. I think it is now extinct.]  
**Lysimachia nummularia** L.  
**Samolus valerandi** L. In a ditch near Sandburn, and also on Strensall Common.  
**Anagallis arvensis** L. **A. tenella** L.  
**Centunculus minimus** L. Mostly in cart ruts on both sides of the railway across Strensall Common.  
**Hottonia palustris** L. **Primula vulgaris** Huds. **P. officinalis** L.  
**Plantago coronopus** L. Plentiful in a few places on Strensall Common.  
**Plantago lanceolata** L. **P. media** L. **P. major** L.  
**Littorella lacustris** L. **Chenopodium rubrum** L.  
**Chenopodium bonus-henricus** L. **C. album** L.  
**Atriplex angustifolia** Sm.  
**Rumex hydrolapathum** Huds. In the Foss, near Huntington.  
**Rumex crispus** L. **R. obtusifolius** L. **R. conglomeratus** Murr.  
**Rumex acetosa** L. **R. acetosella** L.  
**Polygonum convolvulus** L.  
**Polygonum amphibium** L. In the Foss.  
**Polygonum lapathifolium** L. p.p. **P. persicaria** L. p.p.  
**Polygonum hydropiper** L.  
**Polygonum mite** Schrk. In the Foss.  
**Polygonum minus** Huds. In the Foss.  
**Polygonum aviculare** L.  
**Daphne laureola** L. In hedges on both sides of the railway across Strensall Common.  
 [**Daphne mezereum** L. In a plantation near the Malton Road. Undoubtedly planted.]  
**Mercurialis perennis** L.  
**Euphorbia helioscopia** L. In cultivated fields at Strensall.  
**Euphorbia peplus** L. **E. exigua** L. **Urtica dioica** L. **U. urens** L.  
**Ulmus montana** With. **Fagus sylvatica** L.  
**Quercus pedunculata** Ehrh. **Q. sessiliflora** Slsb.  
**Corylus avellana** L. **Populus tremula** L.

- [*Pinus sylvestris* L. Planted].  
*Anacharis alinastrum* Bab.  
*Butomus umbellatus* L. In the Foss.  
*Alisma plantago aquatica* L. *A. ranunculoides* L.  
*Sagittaria sagittifolia* L. In the Foss.  
*Triglochin palustre* L. *Potamogeton natans* L.  
*Potamogeton lucens* L. Abundant in the Foss.  
*Potamogeton crispus* L. *P. densus* L.  
*Potamogeton pusillus* L. Plentiful in the Foss.  
*Potamogeton pectinatus* L.  
*Potamogeton heterophyllus* Schreb. In the Foss.  
*Epipactis latifolia* All. In a small plantation near the Malton Road.  
*Listera ovata* Br.  
*Listera cordata* Br. Very scarce. At Stockton Forest.  
*Orchis morio* L. *O. latifolia* L. *O. maculata* L. *O. mascula* L.  
*Gymnadenia conopsea* Br. Near Towthorpe Common.  
*Habenaria chlorantha* Bab. On Strensall and Towthorpe Commons.  
*Habenaria bifolia* Bab. On Strensall and Towthorpe Commons.  
 Occurs more frequently than *H. chlorantha*.  
*Habenaria viridis* Br. In a lane leading from Strensall Common to the Malton Road.  
*Iris pseudacorus* L.  
*Endymion nutans* Dmrt. (= *Scilla nutans* Sm.).  
*Narthecium ossifragum* Huds. *Juncus conglomeratus* L.  
*Juncus effusus* L. *J. glaucus* Ehrh.  
*J. sylvaticus* Reich. (= *Juncus acutiflorus* Ehrh.).  
*J. lamprocarpus* Ehrh. *Juncus squamosus* L. *J. bufonius* L.  
 [*Luzula congesta* Lej. Is reported from Sandburn Woods and Strensall. I have not seen it at either locality, nor has Mr. Ibbotson].  
*Luzula campestris* DC.  
*Luzula vernalis* DC. (= *L. pilosa* W.) At Sandburn, and also by ditch sides on Strensall Common, near Hazel Bush.  
*Arum maculatum* L.  
*Lemna polyrhiza* L. At Stockton Forest; in the Foss.  
*Lemna trisulca* L. *L. minor* L.  
*Lemna gibba* L. In the Foss.  
*Typha latifolia* L.  
*Typha angustifolia* L. In some brick ponds at Strensall.  
*Sparganium ramosum* Huds. *S. simplex* Huds.  
*Sparganium minimum* Fr. Very scarce. In a pond at Strensall.

- Rhynchospora alba** Vahl. In small quantity on Strensall Common.  
**Eriophorum angustifolium** Rth. **E. vaginatum** L.  
**Scirpus lacustris** L.  
**Scirpus tabernæmontani** Gm. In brick ponds near Strensall with  
*Typha angustifolia*.  
**Scirpus cæspitosus** L. **S. setaceus** L.  
**Scirpus fluitans** L. Stockton Forest; Strensall Common.  
**Scirpus palustris** L.  
**Scirpus acicularis** L. Stockton Forest; Strensall Common.  
**Carex riparia** Curt.  
**Carex ampullacea** Good. Ponds on Strensall Common.  
**Carex filiformis** L. Scarce. On the eastern part of Strensall  
Common.  
**Carex binervis** Sm. **C. flava** L. and var. **minor** Townsd.  
**Carex pilulifera** L. **C. glauca** Murr. **C. panicea** L.  
**Carex vulgaris** Fr. **C. leporina** L. (= **C. ovalis** Good.).  
**Carex echinata** Murr. (= **C. stellulata** Good.). **C. remota** L.  
**Carex vulpina** L. **C. muricata** L. **C. disticha** Huds.  
**Carex pulicaris** L. **C. dioica** L. **Anthoxanthum odoratum** L.  
**Baldingera arundinacea** Dmrt. (= **Phalaris arundinacea** L.).  
[**Phalaris canariensis** L. Stockton Forest. A casual.]  
**Phleum pratense** L. **Alopecurus pratensis** L. **A. agrestis** L.  
**Alopecurus geniculatus** L. **Cynosurus cristatus** L.  
**Phragmites communis** Trin.  
**Calamagrostis lanceolata** Rth. Stockton Forest.  
**Agrostis alba** L. **A. vulgaris** With. **Aira cæspitosa** L.  
**Aira flexuosa** L.  
**Holcus mollis** L. **H. lanatus** L. **Arrhenatherum avenaceum** PB.  
**Avena fatua** L. **A. pubescens** Huds. **A. flavescens** L.  
**Avena caryophyllea** L.  
**Avena præcox** L. Often found in places where furze bushes have  
been cleared away.  
**Triodia decumbens** PB. **Molinia cærulea** Mch.  
**Dactylis glomerata** L. **Bromus sterilis** L. **B. asper** Murr.  
**Bromus erectus** Huds. By the sides of the railway across Strensall  
Common.  
**Bromus racemosus** L. **B. mollis** L. **Festuca gigantea** Vill.  
**Festuca elatior** L. (= **F. pratensis** Huds.). **F. sciuroides** Rth.  
**Festuca glauca** Lam. **F. ovina** L. **Glyceria aquatica** Wahlb.  
**Glyceria fluitans** Br.  
**Glyceria distans** Wahlb. Near Stockton Forest.  
**Briza media** L. **Poa pratensis** L. **P. trivialis** L. **P. annua** L.

- Catabrosa aquatica** PB. **Triticum repens** L.  
**Triticum caninum** L. Plentiful in several places on Strensall Common.
- Brachypodium sylvaticum** R.S. **Lolium perenne** L.  
**Nardus stricta** L.
- Pteris aquilina** L. 'It has measured 11 ft. 6 in. high at Strensall.'  
*Ferns of York.*
- Blechnum spicant** Rth. Frequent. 'On Strensall Common, 19 inches long, September 14th, 1872.' *B. B. Le Tall.* Bifid and serrate forms also occur.
- Scolopendrium vulgare** Symons.  
**Athyrium filix-fœmina** Bernh. and var. *rhæticum*.  
**Aspidium aculeatum** Sw. Rare. 'Near Strensall.' *R. M. Christy.*  
**Nephrodium filix-mas** Rich.  
**Nephrodium uliginosum**. 'On the edge of Strensall Common.'  
*B. B. Le Tall.* 'In Stockton Woods.' *R. M. Christy.*  
**Nephrodium spinulosum** Desv. **N. dilatatum** Desv.  
**Nephrodium æmulum** Baker. 'Near Strensall.' *Miss Milner.*  
*'Ferns of York.'*  
**Nephrodium oreopteris** Desv. Stockton, Sandburn, and Strensall Common.
- Polypodium vulgare** L. **Ophioglossum vulgatum** L.  
**Botrychium lunaria** Sw. On Strensall Common, plentiful.  
**Lycopodium clavatum** L. Strensall Common, and at Stockton Forest.  
**Lycopodium inundatum** L. With the above.  
**Lycopodium selago** L. On Strensall Common, scarce.  
**Selaginella selaginoides** Gray. On Towthorpe Common.  
**Pilularia globulifera** L. On Strensall Common, and at Stockton Forest.  
**Equisetum arvense** L. **E. palustre** L. and var. *subnudum*.  
**Equisetum limosum** L. and var. *fluviale*.  
**Equisetum hyemale** L. Near Hazel Bush.

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### MAMMALIA.

**Badgers in North Yorkshire.**—Referring to the notices of the occurrence of Badgers in North Yorkshire, *Naturalist*, pp. 36, 67, and 113, it may not be out of place to remark that a few years ago several of these animals were turned out in the woods surrounding Hutton Hall, near Guisbro', the seat of Sir J. W. Pease, Bart., and it is not at all improbable that some of the individuals whose capture is recorded, or their descendants, may have strayed from Hutton and been killed in different parts of the district. One, in the possession of a friend of mine, was found dead on Lord de Lisle's estate at Ingleby about a year ago, and is probably the same as is referred to on pp. 67 and 113.—T. H. NELSON, Bishop Auckland, 8th April, 1886.

May 1886.

## BIBLIOGRAPHY:

Papers and records published with respect to the natural history and physical features of the North of England.

## MOLLUSCA, 1884-5.

THE present instalment covers the molluscan bibliography of two years. An inspection of it will show that the great mass of the work done has reference solely to the land and freshwater species, there being only four titles (those by G. Brook, R. D. Darbishire, G. H. Parke, and G. W. Shrubsole) which refer to marine species.

The most important contribution to the marine molluscan fauna of the North published during the two years is the Rev. W. C. Hey's list of Yorkshire species published in the *Naturalist*. Papers published in this journal are, however, not included in the bibliography, inasmuch as it is devoted entirely to the North of England, and it would be undesirable to occupy space by an enumeration of their titles; and naturalists using these bibliographical papers must do so in conjunction with the index to the *Naturalist*.

## Yorkshire, Notts, Lincolnshire.

ANONYMOUS (no signature) [W. EAGLE CLARKE, W. DENISON ROEBUCK, J. W. TAYLOR, and W. NELSON].

**Conchological Notes from the Neighbourhood of Hatfield Chase** [Field notes of land and freshwater mollusca collected in a couple of days' investigation of the borders of Yorkshire, Lincolnshire, and Nottinghamshire]. *Nat.*, February 1884, ix, 115-116.

ANONYMOUS (no signature).

Yorkshire.

**Achatina acicula** [copied from the *Naturalist*]. *Nat. Hist. Journ.*, September 15th, 1885, p. 122.

ANONYMOUS [The Recorder of the Conchological Society].

All the Counties.

**The Present State of Knowledge of the Distribution of Land and Freshwater Mollusca in Britain** [A list of the counties and vice-counties of the British Isles, showing the number of species authenticated for each by passing under the eyes of the Conchological Society's referees. The total number of species so authenticated for the counties and vice-counties in the North of England are as follows:—No. 53, Lincolnshire South, 1; No. 54, Lincolnshire North, 22; No. 56, Nottinghamshire, 3; No. 57, Derbyshire, 14; No. 58, Cheshire, 14; No. 59, Lancashire South, 14; No. 60, Lancashire West, 19; No. 61, Yorkshire South-East, 63; No. 62, Yorkshire North-East, 65; No. 63, Yorkshire South-West, 78; No. 64, Yorkshire Mid-West, 96; No. 65, Yorkshire North-West, 61; No. 66, Durham, 7; No. 67, Northumberland South, 4; No. 68, Cheviotland, 1; No. 69, Westmoreland, with Lake Lancashire, 20; No. 70, Cumberland, 1; No. 71, Isle of Man, 21]. *Journ. of Conch.*, April 1884, iv, 174-184.

ANONYMOUS [Recorder of the Conchological Society].

Yorkshire.

**Authenticated Materials for a List of the Land and Freshwater Mollusca of Mid-West Yorkshire. Part I: Freshwater Shells** [37 species and several varieties are included in this enumeration]. *Journ. of Conch.*, April and July 1884, iv, 188-194.

## Yorkshire.

ACKWORTH BOYS' ESSAY AND NATURAL HISTORY SOCIETIES' REPORTS.

[Conchological Notes; several shells noted.] Nat. Hist. Journ., September 15th, 1885, pp. 117-118.

CHARLES ASHFORD.

## Yorkshire, Durham.

**The Darts of British Helicidæ** [those of *H. nemoralis* and *H. fusca* (pp. 164-170) and of *H. arbustorum* (p. 195) are figured and described from Scarborough examples, and those of *H. hispida* from Stockton-on-Tees specimens; of the latter Wakefield examples are also referred to]. Journ. of Conch., 1884, April, iv, 164-170, with pl. vii, July, iv., 195-202, with pl. viii, and October, iv, 239-244, with pl. ix.

## Westmoreland, Yorkshire.

BIRMINGHAM MICROSCOPISTS' AND NATURALISTS' UNION.

[Reports of meetings, January 21st (Mr. Madison showed Westmoreland specimens of *Limnaea peregra* v. *albida* and *Ancylus fluviatilis* v. *albida*); and March 10th, 1884 (he showed large *Planorbis corneus* from Strensall Common)]. Midl. Nat., March 1884, vii, 90; and April 1884, vii, 118.

BRADFORD NATURALISTS' SOCIETY.

## Yorkshire.

**Diary of Natural History Observations for 1884**, pp. 28. Numerous notes on mollusca observed in the Bradford district and other parts of West Yorkshire during 1884.

BRADFORD NATURALISTS' SOCIETY.

## Yorkshire.

[Reports of meetings; the occurrence of *Limax cinereo-niger* at Shipley Glen, and of other land and freshwater shells in Yorkshire being referred to]. Nat., January, April, and June, 1884, ix, 106, 154, 196.

GEORGE BROOK.

## Yorkshire.

**Rarities from the Yorkshire Coast.** [*Eolis peachii* A. and H. (one) and *E. exigua* A. and H. (several) found at Redcar in August 1883, are compared with descriptions.] Notes from my Aquarium, 1884, pp. 7-8.

E. I. J. BROWELL.

## Northumberland.

**Address to . . . the Tyneside Naturalists' Field Club . . . May 11th, 1882.** [*Helix lamellosa* [sic] and *Azeca tridens* collected near Bellingham, Northumberland, 'unusual in such high situations.' *Clausilia dubia* very abundant on the Roman Wall at Greathead, Northumberland.] Nat. Hist. Trans. Northumberland, Durham, and Newcastle, viii (1884), p. 164 and 166.

T. D. A. COCKERELL.

## Lincolnshire.

**The Mollusca of Louth, Lincolnshire** [24 land and freshwater species enumerated, with localities]. Nat. World, December 1885, pp. 221-223.

EDWARD COLLIER.

## Cheshire, Isle of Man.

**Specimens exhibited** [to Conchological Society, October 24th, 1883, Cheshire specimens of *Sphaerium rivicola*, *Pisidium annicum* and var. *flavescens*, and *Sphaerium corneum* v. *scaldiana*; Manx examples of *Helix rotundata*, *Zonites cellarius*, *Z. alliaris* and v. *viridula*]. Journ. of Conch., Jan. 1884, iv, 153.

E. COLLIER.

## Lancashire.

**Planorbis dilatatus** Gould [considered to be now naturalised in its Lancashire locality; the disappearance of *Sphaerium ovale* from one of its Lancashire stations is also noted]. Journ. of Conch., July 1884, iv, 217.

## Yorksh., Durham, Lincolnsh., Chesh., Notts, Lancash.

CONCHOLOGICAL SOCIETY.

[Reports of meetings; numerous species of shells exhibited, from Yorkshire, Durham, Lincolnshire, Cheshire, Notts, and Lancashire]. Journ. of Conch., October 1885, iv, 356-365.

JOHN CORDEAUX.

## Northumberland.

**In Upper Coquetdale** [At the Lady's Well, close to Holystone, numerous shells of *Ancylus fluviatilis* and *Physa fontinalis*; specimens of these shells being

afterwards sent to Mr. J. W. Taylor—the latter proved to be *Limnæa peregra* var. *ovata*, and not Physa.—Ed.]. Field, 1884, August 2nd, p. 152.

R. D. DARBISHIRE.

Northumberland.

**Astarte borealis** [at Warkworth]. Sci. Goss., May 1885, p. 115 (from Journ. of Conch., January 1885).

[MISS] J. DONALD.

Cumberland, Westmoreland.

**Some additional notes on Land and Freshwater Shells of Cumberland and Westmoreland** [Notes on 21 forms are given: of these 3 species and 5 varieties are additional to Miss Donald's former list. The list of Cumberland and Westmoreland species now amounts to 78, of which 6 are found in the latter county only]. Trans. Cumb. and Westm. Assoc., 1883-84, ix, 217-218.

GUSTAVE F. DOLLFUSS.

Lincolnshire, Yorkshire.

**Le Terrain quaternaire d'Ostende et le Corbicula fluminalis** [at p. 36 *Cyrena fluminalis* is recorded as occurring in various fluviatile deposits near the Humber estuary, which separates Lincolnshire from Yorkshire]. Annales de la Société Royale Malacologique de Belgique, tome xix, 1884, pp. 28-54.

ERNEST J. DUFTY.

Notts.

**Large Anodonta cygnea** [in Ossington Lake, Notts;  $7\frac{5}{16} \times 3\frac{1}{8} \times 2\frac{7}{16}$  inches; var. *radiata*]. Nat. World, September 1885, p. 180.

W. GAIN.

Notts.

**Large Unios** [At Ossington Lake, Notts., were found a number of fine specimens of *Unio pictorum*, the largest measuring  $4\frac{1}{8}$  inches in length, *i.e.*, width.] Science Gossip, November 1884, p. 261.

**Large Unios and Anodons** [in Ossington Lake]. Sci. Goss., May 1885, p. 118.

S. E. GILL.

Yorkshire.

**N. H. Society, Ackworth** [*Achatina acicula* reported as found in Primrose Vale]. Nat. Hist. Journ., October 15th, 1884, viii, 134.

**Ackworth** [re-discovery of *Achatina acicula* in Primrose Vale]. Nat. Hist. Journ., February 15th, 1885, p. 9.

R. W. GOULDING.

Lincolnshire.

**Freshwater Shells** [*Cyclas lacustris* recorded as plentiful in ponds near Louth; afterwards proved to be *Sphærium corneum*]. Sci. Goss., October 1885, pp. 238-9.

JAMES HARDY.

Northumberland.

**Report of the meetings of the Berwickshire Naturalists' Club for the year 1883.** [List of 8 shells found in an accumulation of marl in Cresswell Moss, North Northumberland.] Proc. Berwickshire Nat. Club, x, 281-282.

W. C. HEY.

Yorkshire.

**The Forms of Pond-Snails in Yorkshire** [deals with the variation of *Limnæa glabra*, *L. palustris*, *L. peregra*, and *L. stagnalis*]. Ann. Rep. Yorkshire Phil. Soc. for MDCCCLXXXIII, 1884, pp. 32-35.

BAKER HUDSON.

Yorkshire, Durham.

**Association of *Helix nemoralis* and *H. hortensis*** [in North-east Yorkshire and Durham]. Sci. Goss., January 1884, p. 18.

BAKER HUDSON.

Durham.

**Specimens exhibited** [to Conchological Society, January 31st, 1884; *H. nemoralis* from Durham; and *H. cantiana* from Billingham, Co. Durham; note on the introduction of the latter in ballast]. Journ. of Conch., April 1884, iv, 171.

B. HUDSON.

Yorkshire.

**Conchological Notes** [on miscellaneous species in North-East Yorkshire]. Sci. Goss., April 1884, p. 91.

BAKER HUDSON.

Yorkshire.

**Bivalves out of their Element** [*Sphærium corneum*, from a pond near Middlesbrough, lived seven weeks out of water]. Sci. Goss., April 1884, p. 91.

Naturalist,

- BAKER HUDSON. Yorkshire, Durham.  
**Land and Freshwater Shells in the Middlesbrough District.** [Supplementary list of 19 species and varieties.] *Sci. Goss.*, April 1884, p. 91.
- BAKER HUDSON. Durham, N.E. Yorkshire.  
**Land and Freshwater Mollusca of the Middlesbrough District** [notes 7 species and numerous varieties, mostly of slugs, additional to former list]. *Sci. Goss.*, March 1885, p. 67.
- PERCY LUND. Yorkshire.  
**Calcareous Jottings** [five species of mollusca mentioned as particularly abundant at Thorpe near Cracoe]. *Nat. World*, January 1885, ii, 8-10.
- [J.] MOORE. Isle of Man.  
**[Pupa umbilicata var. alba and Helix rupestris from the Isle of Man.]** *Midl. Nat.*, October 1885, p. 299.
- C. T. MUSSON. Notts.  
**Subfossil Shell Deposits in Nottinghamshire** [notices—with lists of species found—of deposits at Bingham, Gotham, Scarthingmoor, Fairholm Brook, Egman-ton, and Grassthorpe]. *Journ. of Conch.*, April 1884, iv, 161-163.
- CHAS. T. MUSSON. Notts, Lincolnshire.  
**Carnivorous Water Voles** [*Anodonta cygnea*, *Unio tumidus* and *pictorum*, and *Dreissena*, preyed on near Nottingham, Sutton-in-Ashfield, and Lincoln]. *Sci. Goss.*, March 1885, p. 69.
- WM. NELSON. Yorkshire.  
**Paludina contecta in Yorkshire** [the species is confirmed as a Yorkshire one from specimens found at Wressle, East Riding]. *J. of Conch.*, July 1884, iv, 214.  
**Zonites radiatulus var. viridescenti-alba** [the Yorkshire occurrences are enumerated and Crossgates, near Leeds, added as a new one.] *Journ. of Conch.*, July 1884, iv, 223.
- WILLIAM NELSON and JOHN W. TAYLOR. Yorkshire.  
**Annotated List of the Land and Freshwater Mollusca known to inhabit Yorkshire** [sheet C 3, dealing with *Valvata piscinalis*, *V. cristata*, *Planorbis lineatus*, *Pl. nitidus*, *Pl. nautilicus*, *Pl. albus*, *Pl. parvus*, *Pl. spirorbis*, and *Pl. vortex*; the distribution being treated in a full and exhaustive fashion]. *Trans. Yorksh. Nat. Union*, Part 8, sheet C 3, pp. 33-48.
- A. M. NORMAN. Northumberland.  
**Address to . . . the Tyneside Naturalists' Field Club . . . May 27th, 1881.** [*Vertigo pusilla* found at Corbridge-on-Tyne, June 6th, 1880]. *Nat. Hist. Trans. Northumberland, Durham, and Newcastle*, viii, 68, (1884).
- C. OLDHAM. Cheshire.  
**Paludina vivipara near Manchester** [wrongly named, the species being *P. contecta*; *Planorbis corneus*, *Limnea peregra*, *L. auricularia*, *Bithinia tentaculata*, *Planorbis carinatus*, *Cyclas lacustris*, and *Anodonta cygnea*, also found; all in a pond at Baguley, Cheshire]. *Sci. Goss.*, September 1884, p. 213.
- GEO. H. PARKE. Yorkshire, Isle of Man.  
**Tectura testudinalis, Müller, in Yorkshire** [referring to Mr. Crowther's Whitby records, the writer notes that living specimens are to be found at Flamborough, and in 20 fathoms water off the Isle of Man]. *Nat.*, April 1884, ix, 151-152.
- EDGAR PICKARD. Notts, Derbyshire.  
**Specimens exhibited** [to Conchological Society, January 31st and February 28th, 1884]. [Various species from Notts and Derbyshire.] *Journ. of Conch.*, April 1884, iv, 171-2 and 173.
- GEORGE ROBERTS. Yorkshire, Durham.  
**Conchological Notes** [*Helix lamellata*, southern limit in Yorkshire; *H. rufescens*, northern limit in Durham; *H. cantiana*, northern limit in Yorkshire; habits

of *H. aspersa*; white-lipped *H. nemoralis*; *Sphaerium lacustre* fed on by shrews; *Zua lubrica* and *Helix hispida* by sparrows; *H. caperata* by ringdove; and *H. cantiana* by black ants]. Sci. Goss., January 1884, p. 3.

GEORGE ROBERTS.

Yorkshire.

**Topography and Natural History of Lofthouse and its neighbourhood** [etc.]. Vol. II. Leeds: printed for the author, 1885 [pp. viii, 258]. Lofthouse district compared with others (p. 26); captures at Malham, ten species (p. 99); *Limax agrestis* abundant (p. 113); captures at Arncliffe, ten species (p. 136); at Castleford and Ledsham, ten species (p. 175); at South Milford, eight species (p. 182); at Scarthingwell, three species (p. 183); Molluscan fauna of Lofthouse and District (pp. 236-241, seven species and 62 varieties cited); comparative aggregates for four districts (Wakefield, York, Bradford, and Huddersfield) (p. 242); remarks on the northern distribution of certain [11] species (pp. 242-244).

GEORGE ROBERTS.

S. W. Yorkshire.

**Achatina acicula** [found abundantly in the town of Wakefield]. Sci. Goss., October 1885, p. 239.

GEORGE ROBERTS.

Yorkshire.

**Notes on Land Mollusca occurring in the neighbourhood of Pontefract** [a detailed enumeration of 39 species and numerous varieties]. Zool., November 1885, pp. 423-429.

GEORGE ROBERTS.

Yorkshire.

**Notes on Aquatic Mollusca occurring in the neighbourhood of Pontefract** [detailed enumeration, with localities, of 39 species and numerous varieties]. Zool., December 1885, pp. 470-475.

JOHN E. ROBSON.

Durham.

**Helix cantiana** [abundant on railway banks near Hartlepool; may have been introduced in ballast]. Young Nat., July 1884, v, 192.

W. D. ROEBUCK.

**Conchological Society . . . October 24th, 1883 . . . Specimens exhibited** [*Limax cinereo-niger* (Wolf) found at Shipley Glen]. Journ. of Conch., January 1884, iv, 152.

WM. DENISON ROEBUCK.

Yorkshire.

**Limnaea stagnalis var. fragilis-variegata at Malham Tarn** [very abundant on *Potamogeton lucens* in the Tarn, which is 1,250 feet above sea-level]. Journ. of Conch., January 1884, iv, 149.

W. D. ROEBUCK.

Yorkshire.

**New variety of Arion ater** [var. *plumbea*—founded on a specimen from near Otley, Yorkshire]. Journ. of Conch., January 1884, iv, 146.

W. D. ROEBUCK.

Yorkshire, Westmoreland.

[**Specimens exhibited to Conchological Society**: Yorkshire *Limax maximus*, and 14 Westmoreland species enumerated]. J. of Conch., April 1885, p. 314.

WM. DENISON ROEBUCK.

Notts.

**Specimens exhibited** [to Conchological Society, May 29th, 1884; *Testacella haliotidea* var. *scutulium* from Welbeck Abbey, Notts.]. Journ. of Conch., July 1884, iv, 216.

J. H. SALTER.

Yorkshire.

**Out of its latitude** [a specimen of the Mediterranean *Helix lactea*, with the recently dead animal in it, picked up on Filey sands, August 5th]. Nat. Hist. Journ., December 15th, 1885, p. 187.

GEORGE W. SHRUBSOLE.

Cheshire.

**A list of the Land and Freshwater Shells of the District** [Chester, = the western half of Cheshire, Flintshire and Denbighshire; 93 species and 19 varieties enumerated, with localities and indications of commonness or rarity]. Proc. Chester Soc. Nat. Sci., No. 3, 1885, pp. 101-105.

- GEORGE W. SHRUBSOLE. Cheshire.  
**On the occurrence of *Venus mercenaria* (Lin.) in the Estuary of the Dee** [this North American species, the 'Wampum-Clam,' successfully introduced at Hilbre Island]. Proc. Chester Soc. Nat. Sci., No. 3, 1885, pp. 111-112.
- R. STANDEN. (?) Lancashire.  
**Fresh-water Shells** [*Sphaerium corneum* adhering to toes of newts; *Limnæa peregra* on a toad's back; *Sphaerium corneum* clinging to the foot of a water-beetle]. Sci. Goss., December 1885, pp. 281-282.
- R. STANDEN. Lancashire.  
**Paper-eating Molluscs** [in a sheet of water near Prestwich: five species]. Sci. Goss., October 1885, p. 238.
- A. H. TAYLOR. Yorkshire.  
**Conchological** [Report; describes six-banded examples of *Helix nemoralis* from Settrington Lane, Norton, and of *H. hortensis*, from road between Old and New Malton]. Malton Nat. Society's Annual Report for 1884-5, pp. 36-37.
- J. W. TAYLOR. Derbyshire.  
**Valvata piscinalis monst. sinistrorsum in Derbyshire** [two found amongst a number of more or less scalariform examples at Cresswell Crags, by Mr. Edgar Pickard]. Journ. of Conch., January 1884, iv, 145.
- J. W. TAYLOR. Notts.  
**Valvata piscinalis v. albina in England** [found at Clumber Lake, Notts, by C. T. Musson]. Journ. of Conch., April 1884, iv, 173.
- J. W. TAYLOR. Durham.  
**Specimens exhibited** [to Conchological Society, February 28th, 1884; *Testacella haliotidea* var. *scutulium* from Gateshead, Co. Durham]. Journ. of Conch., April 1884, iv, 173.
- J. W. TAYLOR. Yorkshire.  
**Planorbis contortus v. albida at York** [found in 1865 by W. Whitwell in a ditch near the Ouse; second known Yorkshire station]. Journ. of Conch., July 1884, iv, 224.
- J. W. TAYLOR. Notts.  
**Unusually large *Unio pictorum* (L.)** [found at Ossington, Notts, by W. Gain—and attaining about 124 mm. in length, and 55 mm. in breadth]. Journ. of Conch., July 1884, iv, 224.
- J. W. TAYLOR. Yorkshire.  
**Pupa marginata var. brevis Baudon in Britain** [at Runswick Bay, Yorkshire; new to Britain]. Journ. of Conch., October 1885, iv, 376.
- I. of Man, Cumb., Westm., Northumb., Durh., Yorksh., Lancash., Chesh.,  
 JOHN W. TAYLOR and W. DENISON ROEBUCK. Derbysh., Notts, Lincolnsh.  
**Census of the Authenticated distribution of British Land and Freshwater Mollusca.** Journ. of Conch., April and July 1885, pp. 319-336.

### MOLLUSCA.

***Helix arbustorum* v. *cincta* and *Limnæa glabra* near Lincoln.**—At the side of one particular road near Lincoln, the variety *cincta* of *H. arbustorum* is exceedingly common; this shell is usually somewhat rare, so that its occurrence in large numbers may be worth recording. The only other shell hitherto found near Lincoln that appears worthy of notice is *Limnæa glabra*, of which I have taken several specimens in a pond to the south of the town, which has been recently ruined as a collecting ground by a new railway. [This locality is in 'South Lincolnshire,' and the first-mentioned one is in 'North Lincolnshire,' of the Conchological Society's record-scheme].—W. W. FOWLER, Lincoln, March 10th, 1886.

## ORNITHOLOGY.

**Occurrence of the Hawfinch near Boroughbridge.**—A female Hawfinch (*Coccothraustes vulgaris*) spent a few hours at Staveley on the 10th of March. This is the second recorded occurrence in this district. On the 21st I noticed a Ring Ousel (*Turdus torquatus*) feeding in a meadow. This bird has not been noticed in this neighbourhood before. The first Wheatears occurred here on the 6th of April. On that day I saw a pair; one was a handsome male, but I could not be certain of the sex of the other.—E. P. KNUBLEY, Rector of Staveley, April 7th, 1886.

**Cormorant and Green Woodpecker in Nidderdale.**—On October 17th, 1885, a fine specimen of the Cormorant (*Phalacrocorax carbo*) was shot near Middlesmoor, by Mr. Littlewood, of Huddersfield. This is the first occurrence in Nidderdale, as far as I can glean.

On October 27th, 1885, a Green Woodpecker (*Gecinus viridis*) was caught in a beech tree, asleep in a decayed hole in the trunk of the tree. This specimen was caught by Mr. F. Robinson, of Dougill Hall, near Pateley Bridge.—WM. STOREY, Pateley Bridge, Leeds, December 14th, 1885.

**Solway Bird-notes.**—The following remarks suggest themselves as a corollary to Mr. Armistead's paper. The Short-eared Owl, Crossbill, and Great Black-backed Gull all breed on the English side of the Solway, but the Common Gull does not, and the Pied Flycatcher does not breed within a dozen miles of the Solway. The Lesser Tern ceased to breed on the English side in 1882, though, as some were seen about the old station in 1885, it is possible that they may re-establish their colony. The Lesser Spotted Woodpecker does duty in Mr. Armistead's catalogue for the Greater Spotted. The Tufted Duck is fairly common on the upper parts of the Solway; the Goosander is commoner on the upper parts of the Firth than the Merganser. The Common Sandpiper arrives, not in June, but in April. There are other points which need expansion, but, on the whole, Mr. Armistead's views agree with the conclusions which I have already expressed elsewhere.—H. A. MACPHERSON.

**Flamborough Bird-notes.**—On March 20th I saw the Pied Wagtail and also heard of the Grey Wagtail being seen the same date. March 28th, saw several Hooded Crows taking their departure, steering direct south from the Headland. The other day one of our farmer's sons brought me for preservation a very fine specimen of the Pink-footed Goose, and also a splendid specimen of the Garganey; both males in full plumage. April 2nd, the first Wheatear seen. April 11th, saw the Lesser White-throat. April 13th, more Hooded Crows taking their departure. The Swallows have not arrived yet.—MATTHEW BAILEY, Flamborough, April 16th.

**Discovery of the Nest of Ross's Gull (*Rhodostethia rosea*).**—Slowly but surely the mystery enshrouding the nidification of certain British birds is being solved, and now the nest and eggs of that particularly interesting circumpolar species, Ross's Gull (or Cuneate-tailed Gull), are no longer to be ranked with those of the Knot and the Curlew Sandpiper as things unknown.

In the *Auk* for April (vol. iii, p. 273) Mr. John J. Dalgleish informs us that 'Mr. Paul Müller, son of Herr Sysselmand Müller, the Farøe ornithologist and assistant at the Danish Government establishment of Christianshaab, Greenland, has been fortunate enough to discover a nest of the above rare species. It was found on June 15th last at Ekomiut, in the district of Christianshaab, and was situated in the midst of the nests of a colony of *Sterna macroura* [Arctic Terns]. The female bird was shot off the nest, which, when found, contained two eggs. Of these one was unfortunately broken, and the other, which was also damaged, is now in the possession of Herr Weller of Copenhagen. It is in colour and appearance very similar to the egg of *Larus minutus*, is of a pyriform shape, and measures 44 mm. × 33 mm. This discovery is of some interest, the species, as is well known, having been hitherto of rare occurrence and the breeding habitat unknown.'—W.E.C.

## CONTRIBUTIONS TO PHÆNOLOGY (GIESSEN 1884).

TRANSLATED BY RUDOLPH ROSENSTOCK, B.A. OXON.

UNDER the above title are published two papers by Drs. Ihne and Hoffmann, of Giessen, the former giving a historical review of the progress of vegeto-phænological observation in Europe, the latter a scheme for making and recording such observations, together with a detailed list of results obtained by this method from different localities in Europe.

In Dr. Ihne's paper each country is reviewed separately, and in each case a complete bibliography of the subject is appended. As some account of what has been done in our own country in this branch of plant science, may be of interest to many readers of the *Naturalist*, I have taken leave to make a brief abstract of Dr. Ihne's review.

The earliest observations on record are those carried on by Marsham at Stratton in Norfolk, from 1735 to 1797, some of which were first published in the Transactions of the Royal Society for 1735. They are, however, unimportant. In 1762 Stillingfleet, a direct follower of Linnæus, the founder of phænological science, published in the second edition of his micellaneous tracts a series of valuable observations from the same locality. The observations of Gilbert White, of Selborne fame, extend over 25 years (1768-1793), and were published in 1795, after his death, by Aikin, in the *Naturalist's Calendar*. In the case of some species, average data of the various phases of plant-life are recorded; with others, only extreme data are noticed. They were all republished under the title of *Naturalist's Calendar*, in Markwick's edition of White's works, 1804, in which were also included the editor's own observations at Catsfield. In Bell's edition of the *Natural History and Antiquities of Selborne*, London, 1877, the *Naturalist's Calendar* forms a special section of the first volume.

From 1780 to 1810 T. F. Forster made observations at Walthamstow, near London. These were continued until 1830 by his son, T. Forster. They are referred to by the latter in several of his publications, and were published in a collected form in 1838, under the title of 'Calendrier des Moyens Temps de la Floraison, in Quetelet's *Correspondence Mathématique et Physique de l'Observatoire Royale de Bruxelles*.'

In 1828 the *Magazine of Natural History*, then conducted by Loudon, issued a scheme for taking phænological observations; and to the agency of this journal we owe the institution of regular

phænological observatories. Only ten stations, however, were established, and their activity extended over but five years—1828 to 1833.

In 1845, at the instigation of the British Association for the Advancement of Science, Quetelet's scheme of observation was adopted, and a translation of it distributed throughout the country. No great results, however, accrued from this effort, only a few stations being established, the observations of which are recorded in the reports of the Association until 1856. The general spread of phænological observation in England is of as recent a date as 1875.

In Scotland, on the other hand, observations have been systematically carried out since 1856, and were published annually from 1856 to 1862 in the Report of Scotch Meteorology, and from 1863 to the present time in the Journal of the Scotch Meteorological Society. In the scheme of 1863, five cultivated herbs and fifteen of the most widely distributed trees and shrubs are selected; the first appearance of leaf, flower, and fruit, and the beginning of defoliation being noted in the case of the latter. There are about 100 stations, many of long standing. At Edinburgh observations, almost exclusively on early-blooming herbs, were carried out by M'Nab from 1858 to 1878, and, continued from 1879 to 1882 by Sadler, are published in the Transactions of the Edinburgh Botanical Society. They extend back to 1850.

We must here notice a few other localities from which observations generally comprehensive, and extending over many years, are recorded. Such are those of Jenyns ('Observations in Natural History,' London, 1846) from Swaffham Bulbeck in Cambridgeshire, 1820—1831, and also for 1845. Both average and earliest and latest data of the various phases are noted.

Miss Molesworth's observations at Cobham, 1825 to 1850, and those of Roberts at Lofthouse, from 1862 to 1875, were not published till 1880 and 1882 respectively. A portion of the latter's appeared annually since 1876 in one or more numbers of the *Yorkshire Post*.

A comprehensive series of observations is also contained in the Reports of the Marlborough College Natural History Society. They were commenced in 1865 at the instigation of the Rev. T. A. Preston, the President of the Society, and have been regularly continued since. In 1867 Rugby followed the example of Marlborough, and observations are recorded in the reports of the School Natural History Society till 1872.

What may be termed the Renascence of Vegeto-Phænology in England dates, as already stated, from 1875. In that year the

Meteorological Society of London resolved to include phænological observations in its programme, and a conference of delegates appointed in the same year, chiefly through the agency of the Rev. T. A. Preston, set forth a scheme for the observation of phænological phenomena. This scheme is distinguished from all others in that it limits itself almost exclusively to wild-growing herbs, only six of the twenty-one species comprised being woods, and in the case of these the commencement of inflorescence is almost the only phase recommended for observation. From 1875 to 1880 notes from about 180 localities were forthcoming, and were annually published by Preston in a special report of the Journal of the Meteorological Society. The observations for 1883 are based on another scheme, formulated by Preston in 1883, which, inasmuch as it includes in addition to many herbs at least also the most widely distributed wood-plants, is a decided improvement on the earlier one. The example of the Meteorological Society soon proved a stimulus to other scientific bodies. In 1877 the Natural History Journal published numerous notes from England and Ireland, similar ones from the Midland Counties appeared in the *Midland Naturalist* for 1879, and from Hertfordshire in the Transactions of the Watford and Hertford Natural History Societies since 1875.

All these societies follow explicitly the scheme of the Meteorological Society, or the later one of Preston, so that observations on wood-plants, and of phases other than that of inflorescence, are scanty.

There are at present in Great Britain 315 stations for the observation of phænological phenomena. Unfortunately, the limitation both of species and phases in the English scheme, renders comparison with those of other countries difficult, inasmuch as early-flowering herbs furnish material of little value. It is earnestly to be hoped that a more extended and comprehensive scheme may soon be adopted in this country, and I cannot perhaps here do better than subjoin as a model Hoffmann's scheme, adopted after forty years' continued personal observation in the same locality (Giessen, Hesse). It is specially suitable for international comparative study, inasmuch as the species selected are widely distributed and easily identified, and are moreover for the most part perennial; more especially such the development of which is not, as is the case with annuals and *Taraxacum*, influenced by all sorts of accidental circumstances. Further, the whole period of vegetation is represented, a fact which renders the scheme particularly useful for the consideration of related biological questions, such as the duration of vegetation, time of maturation, etc.

The following abbreviations are adopted :—

- L. i. First leaf surface visible ; first leaves unfolded ; commencement of foliation.  
 Fl. i. Efflorescence ; opening of the first flowers.  
 Fr. i. Ripening of the first fruit ; with (soft) fruits ; a complete and definite change of colour of certain normal fruits—in the case of capsuled fruits, the spontaneous bursting of the capsules.  
 E. General leaf discolouration (etiolation) ; more than half the leaves etiolated.

The numbers preceding the names of the plants are the average dates for Giessen (50°35' N. lat. 26°20' E. long. from Ferro? = about 8°45' E. of Greenwich. 160 metres above sea level. Mean temperature 8·4° C.).

Month.	Day.	Name of Plant.	L.i.	Fl.i.	Fr.i.	E.
February	... 10	<i>Corylus avellana</i> ...	...	Pollen scattered.		
April	... 10	<i>Æsculus hippocastanum</i> ...	... L.	—	—	—
	13	<i>Ribes rubrum</i> ...	...	F.	—	—
	17	<i>Ribes aureum</i> ...	...	F.	—	—
	17	<i>Betula alba</i> ...	...	Pollen scattered.		
	18	<i>Prunus avium</i> ...	...	F.	—	—
	19	<i>Prunus spinosa</i> ...	...	F.	—	—
	19	<i>Betula alba</i> ...	... L.	—	—	—
	22	<i>Prunus cerasus</i> ...	...	F.	—	—
	23	<i>Prunus padus</i> ...	...	F.	—	—
	23	<i>Pyrus communis</i> ...	...	F.	—	—
	25	<i>Fagus sylvatica</i> ...	... L.	—	—	—
	28	<i>Pyrus malus</i> ...	...	F.	—	—
May	... 1	<i>Quercus pedunculata</i> ...	... L.	—	—	—
	3	<i>Lonicera tatarica</i> ...	...	F.	—	—
	4	<i>Syringa vulgaris</i> ...	...	F.	—	—
	4	<i>Fagus sylvatica</i> ...	...	Beech forest green, general foliation.		
	4	<i>Narcissus poeticus</i> ...	...	F.	—	—
	7	<i>Æsculus hippocastanum</i> ...	...	F.	—	—
	9	<i>Cratægus oxyacantha</i> ...	...	F.	—	—
	12	<i>Spartium scoparium</i> ...	...	F.	—	—
	14	<i>Quercus pedunculata</i> ...	...	Oak forest green, general foliation.		
	14	<i>Cytisus laburnum</i> ...	...	F.	—	—
	16	<i>Cydonia vulgaris</i> ...	...	F.	—	—
	16	<i>Sorbus aucuparia</i> ...	...	F.	—	—
	28	<i>Sambucus nigra</i> ...	...	F.	—	—
	28	<i>Secale cereale hibern.</i> ...	...	F.	—	—
	28	<i>Atropa belladonna</i> ...	...	F.	—	—
June	... 1	<i>Symphoricarpos racemosa</i> ...	...	F.	—	—
	2	<i>Rubus idæus</i> ...	...	F.	—	—
	2	<i>Salvia officinalis</i> ...	...	F.	—	—
	5	<i>Cornus sanguinea</i> ...	...	F.	—	—
	14	<i>Vitis vinifera</i> ...	...	F.	—	—
	20	<i>Ribes rubrum</i> ...	...	—	Fr.	—
	21	<i>Ligustrum vulgare</i> ...	...	F.	—	—
	22	<i>Tilia grandifolia</i> ...	...	F.	—	—
	26	<i>Lonicera tatarica</i> ...	...	—	Fr. i	—
	30	<i>Lilium candidum</i> ...	...	F.	—	—
July	... 4	<i>Rubus idæus</i> ...	...	—	Fr. i	—
	5	<i>Ribes aureum</i> ...	...	—	Fr. i	—
	19	<i>Secale cereale hibern.</i> ...	...	Harvest begins.		
	30	<i>Sorbus aucuparia</i> ...	...	—	Fr. i	—
	30	<i>Symphoricarpos racemosa</i> ...	...	—	Fr. i	—

Month.	Day.	Name of Plant.	L.i.	Fl.i.	Fr.i.	E.
August	1	Atropa belladonna ...	—	—	Fr.	—
	11	Sambucus nigra ...	—	—	Fr.	—
	24	Cornus sanguinea ...	—	—	Fr.	—
September	9	Ligustrum vulgare ...	—	—	Fr.	—
	16	Æsculus hippocastanum ...	—	—	Fr.	—
October	10	Æsculus hippocastanum ...	—	—	—	E.
	13	Betula alba ...	—	—	—	E.
	15	Fagus sylvatica ...	—	—	—	E.
	20	Quercus pedunculata ...	—	—	—	E.

Or, in order to see the various phases of a species at a glance, the table may be arranged thus:—

	L.	F.	Fr.	E.
Quercus pedunculata ...	May 1	—	—	Oct. 20
Æsculus hippocastanum	April 10	May 7	Sept. 16	Oct. 18

and so on. The following instructions are added:—

Observations to be confined to freely-exposed specimens; wall-grown (espalier) plants, as well as exceptionally early or late individuals, are inadmissible, since the object in view is to ascertain for any particular station, mean average, and hence climatologically characteristic data. The locality selected for observation must be a normal one, neither exceptionally protected or exposed, and should be visited daily.

In the list of data received from various localities throughout Europe, Dr. Hoffmann adds at the end of each report what he terms the *mean April reduction, i.e.*—he calculates the average number of days by which the April blossoms of a given number of species in a particular locality open sooner or later than those of the same species in a given locality taken as a standard of comparison. The appended table will serve to convey a clear idea of the term and the method, Giessen being taken as the standard locality:—

1881.	MEAN.			DAYS.
	GIESSEN.	S. PAUL (Carinthia)	(lat. 46° 43', long. 15° 12').	
Betula alba	17	18	...	1
Prunus avium	18	19	...	1
Prunus cerasus	22	26	...	4
Prunus padus	23	28	...	5
Prunus spinosa	19	19	...	0
Pyrus communis	23	27	...	4
Pyrus malus	28	2 May	...	4
Ribes aureum	17	—	...	—
Ribes rubrum	13	17	...	4

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3 days later than Giessen.

In another similar table for Berleburg (0° 28' N. 0° 20' W. of Giessen) for 1882, in which the data are much earlier, the average number of days of the April blossoms for the same species is 19 days later than Giessen.

To select a few characteristic localities from the list: thus, at St. Petersburg (lat. 59° 50' N., long. 30° 19' E.) the number is 42 days

later; at Coimbra (lat.  $40^{\circ}13' N.$ , long.  $8^{\circ}25' W.$ ) the number is 21 before Giessen; Edinburgh, 36 days after Giessen; Sparham (Norfolk), 1 day after Giessen; Wisbeach (Cambridge), 6 days before Giessen.

As will be noticed from the table the average number deviates but slightly from that of the individual species, a fact which goes far towards proving the correctness of the method.

### THE YORKSHIRE NATURALISTS' UNION: ANNUAL MEETING AT BEVERLEY.

The twenty-fourth annual meeting of the Y. N. U., which was held at Beverley on Monday the 22nd of March, was in every respect a thorough success. Every attention had been paid by the officers and members of the Beverley Field Naturalists' and Scientific Society to secure the comfort of their visitors, and the exhibition (open for the whole week) which they had organised was a most admirable one, including as it did contributions from the collections of most of the East Yorkshire naturalists. There was a large attendance of members from all parts of Yorkshire, representatives of more than twenty societies being present. The proceedings commenced at 4.15 in the afternoon, when the General Committee of the Union assembled at the Town Hall (kindly lent by the Mayor) to transact the business of the annual meeting. Dr. Dallinger, F.R.S., the president of the Union, presided. The minutes having—from lack of time—been taken as read, Mr. R. C. Chaytor, of Scrafton Lodge, Middleham, and Mrs. L. Gaunt, of Laisterdyke, were elected members. The power which the General Committee possesses of electing additional permanent members of itself was then exercised—Messrs. James Backhouse, F.L.S., York, J. E. Bedford, Leeds, J. W. Dunning, M.A., F.L.S., London, J. Ray Eddy, F.G.S., Skipton, Leonard Gaunt, Laisterdyke, Wilfrid H. Hudleston, F.R.S., Weybridge, Rev. E. P. Knubley, M.A., Staveley, George Roberts, Lofthouse, and Rev. R. A. Summerfield, North Stainley, being chosen. The Annual Report of the Executive was then read. It stated that the Union was in a most satisfactory condition and had enjoyed a year of marked prosperity, as evidenced by the interest which the members and associates displayed in its work and the good attendance at the meetings. The five meetings of the year were then passed in review, special note being taken of the joint meeting with the Nottingham Naturalists' Society at Anston Crag as being a precedent worthy of future repetition, and of the occasion of meeting in Washburndale as the specially invited guests of Lord Walsingham, a much-valued ex-president. The Societies in Union had decreased from 39 to 34. The Huddersfield Naturalists' Society had withdrawn, and four other Societies had become defunct, viz.:—The Doncaster Juvenile Scientific Society, the Holmfirth Botanical Society, the Huddersfield Literary and Scientific Society, and the Ilkley Scientific Club. The names of one of the York and one of the Hull Societies disappeared from the list as the result of amalgamation with other Societies in those places. It is to be regretted that the name of Huddersfield (where the Union originated) now disappears from the list. Two Societies had been admitted during the year—the Scholes Botanical and Naturalists' Society, and the Practical Naturalists' Society (Yorkshire members). Statistics were next given to the effect that the Union included 371 members and 1,939 associates—being 2,310 altogether. Reference having been made to the number of subscribing members and a hope expressed that associates would consider the claims the Union had upon their direct support, the services of the local treasurers were acknowledged as being of much value. The transactions having been referred to, announcement was made of the approaching completion of the MS. of Mr. F. Arnold Lees' 'West Riding Flora.' The library had received considerable accessions during the year, including 63 volumes of the Annals and Magazine of Natural History, and expression was given to a hope that members and others would present useful works. The report announced that an insurance had been effected on the Union's library and stock of unissued publications, and reference was then made to the honour which Dr. Dallinger had conferred upon the Union by his tenure of the presidency. In conclusion the Executive congratulated Yorkshire naturalists generally upon the large amount and sound value of the

natural history work which they have accomplished of late years, and which is in no small degree due to the stimulus given by the regular periodical visits of the Union to all parts of the great county which constitutes the area of their investigations. The Report and Balance-sheet having been adopted by an unanimous vote, the excursion programme for 1886 was arranged as follows:—Askern, Thursday, 20th May; Flamborough, Whit-Monday, 14th June; Pateley Bridge for Upper Nidderdale, Saturday, 10th July; Pickering, Bank-holiday Monday, 2nd August; and a Fungus Foray to finish the season, with the meetings and a Fungus Show at Leeds, the date being left for after-arrangement. For the Annual Meeting of 1887 invitations were presented by deputations from Dewsbury and Driffield, and for 1888 from Malton. Dewsbury was selected for the meeting in March 1887, after which the election of Officers was proceeded with. The retiring Secretaries—Messrs. W. Denison Roebuck, F.L.S., and W. Eagle Clarke, F.L.S., of Leeds, were re-elected. For the Executive Council the Revs. W. Fowler, M.A. (Liversedge), and W. C. Hey, M.A. (York), and Messrs. J. W. Davis, F.S.A. (Halifax), G. C. Dennis (York), John Emmet, F.L.S. (Boston Spa), C. P. Hobkirk, F.L.S. (Dewsbury), B. Holgate, F.G.S. (Leeds), Geo. T. Porritt, F.L.S. (Huddersfield), H. T. Soppitt (Bradford), and J. J. Stead (Liversedge), were chosen. Messrs. Adamson and Bedford were re-appointed auditors. The next business was a recommendation from the Executive that a new section be instituted, whose field should be Micro-zoology and Micro-botany. The adoption of this recommendation was unanimously voted, on the proposition of Dr. H. C. Sorby, F.R.S., and the President pointed out that it was not to be a 'microscopical' section, inasmuch as it was not in any way concerned with the microscope as an instrument, but simply with the investigation of the microscopical fauna and flora of the county, and that it would be a section for which much valuable work could be done. The section was next constituted by a resolution electing Dr. Sorby as its first President, and Messrs. J. M. Kirk, of Doncaster, and W. Barwell Turner, F.C.S., F.R.M.S., of Leeds, as Secretaries. It was resolved that the Union subscribe for the Zoological Record, after which the General Committee adjourned. The various sections then met to elect their officers, the results being as follows:—Section B—Vertebrate Zoology, Sir Ralph Payne-Gallwey, Bt., M.B.O.U., Thirkleby Park, president, and Mr. James Backhouse, jun., M.B.O.U., York, secretary (re-elected); C—Conchology, Rev. W. C. Hey, M.A., York, president, and Messrs. J. Darker Butterell, Beverley, and John Emmet, F.L.S., Boston Spa, secretaries (all three re-elected); D—Entomology, Mr. N. F. Dobrée, Beverley, president, and Messrs. G. C. Dennis, York, and E. B. Wrigglesworth, Wakefield (the latter re-elected); E—Botany, Rev. W. Fowler, M.A., Liversedge, president, and Messrs. P. F. Lee, Dewsbury (re-elected), and M. B. Slater, Malton, secretaries; F—Geology, Rev. E. Maule Cole, M.A., Wetwang, president (re-elected), and Messrs. S. A. Adamson, F.G.S., Leeds (re-elected), and S. Chadwick, Malton, secretaries.

The annual public meeting was held in the evening, in the Assembly Rooms, the Rev. W. H. Dallinger, LL.D., F.R.S., president, in the chair. Time did not permit of the customary re-reading of the annual report and the announcement of the excursion programme, and the chair was taken by the Mayor of Beverley (Mr. Tom Turner, J.P.), and the president then delivered the address which forms the prominent feature of the annual gathering. The subject of the address (which will be printed *in extenso* in the Transactions of the Union) was 'The Infusoria and Allied Organisations on a Field for Research?' It was illustrated by lantern diagrams—and in the course of his discourse Dr. Dallinger described his important experiments upon change of environment. Although space permits not of any reproduction of the address itself, the concluding remarks, in which it was stated that much information is wanting as to distribution, are of great importance. The geographical distribution so far as England is concerned of many leading forms is in a very unsatisfactory state. Locality and habitat are most important factors in our knowledge of the true habits of an organism, and there are few things that would quietly aid some branches of true scientific enquiry so much as an exhaustive study with this end in view of the ponds, ditches, and minor streams of Yorkshire.

After votes of thanks—to the President for his address, and to the Beverley Society for their kind and hospitable reception, and the Mayor for occupying the chair—the remainder of the evening was occupied with the conversazione inaugurative of the exhibition, upon which the local Society are heartily to be congratulated.

## NOTES AND NEWS.

At the March meeting of the Entomological Society of London, Mr. E. B. Poulton, M.A., F.Z.S., read 'Further Notes upon Lepidopterous Larvæ and Pupæ, including an account of the loss of weight in the freshly-formed pupa.' He noted points in the ontogeny of *Smerinthus* larvæ, and gave a description and figure of the bifid and hairy caudal horn in the newly-hatched *Smerinthus populi*. The adult larva of *Acherontia atropos* was compared with that of *Sphinx ligustri*, and the as yet unknown appearance of the former in earlier stages was predicted. Hitherto unnoticed eye-like marks were pointed out in the terrifying attitude of *Chærocampa elpenor*, and the terrifying attitude of *Dicranura vinula* was described, and its defensive fluid shown to be strong formic acid. An eversible gland was described in *Orgyia pudibunda*, and the protection of *Acronycta leporina* was explained by its resemblance to a cocoon, and the darkening of its hairs when full-fed. A valvular aperture in the cocoons of *Chloephora prasinana*, &c., was described, enabling the imagos to emerge. There were also notes upon *Panicus cephalotes* parasitic on the larva of *D. vinula*, and tables showing the immense loss of weight in newly-exposed lepidopterous pupæ, due to evaporation from the moist skin.

At the April meeting of the Entomological Society of London J. W. Ellis, L.R.C.P., was elected Fellow of the Society. Dr. Sharp read a paper 'On some proposed transfers of generic names,' calling attention to a practise advocated by M. Des Gozis, which was apparently extending on the Continent, of transferring the names of some of the commonest genera to other genera. The extreme confusion caused by the practice was pointed out, and the author showed briefly that the theory on which M. Des Gozis's system was based was as unsound as the practice itself was objectionable. Considerable discussion followed, in which the project was unanimously condemned.

The annual meeting of the Manchester Field Naturalists' and Archæologists' Society was held on the 29th January. The report stated that the customary number of ordinary Saturday afternoon trips and summer evening walks had taken place, the arrangements being attended with agreeable success. The soirees during the year had also been successful. There are 188 members now on the books of the Society. The election resulted as follows:—Mr. Leo H. Grindon, president (re-elected); Messrs. John Angell, F.C.S., William Carr, David Fielden, and John Plant, F.G.S., vice-presidents; Mr. Benjamin O'Connor, treasurer; botanical referee, Mr. Grindon; and secretary, Mr. Alfred Griffiths.

The sixth annual soiree of the Manchester Microscopical Society was held on the 30th January and was largely attended. There was a large collection of microscopes; the exhibitors, Messrs. William Blackburn, R. Graham, E. J. Bles, Henry Hyde, H. C. Chadwick, D. Alston, J. B. Pettigrew, G. Burgess, G. H. Fitzbrown, M. Sykes, J. Fleming, John Eastwood, William Stanley, J. L. Fletcher, J. Elliott, F. W. Lean, H. Astley, C. Numeaux, S. Hilton, A. Hay, W. Astley, J. Duncan, E. C. Stirrup, E. W. Napper, and E. Ward. Mr. Ward contributed two cases of collecting and mounting materials and apparatus. Prof. A. M. Marshall, F.R.S., of Owens College, delivered an address on Seaside Animals. A vote of thanks was passed to him. In reply, he said he had not been in Manchester many years, but he had been here long enough to know that a closer bond might exist between societies such as this and Owens College. All naturalists had only a common object to work for, and he told the audience candidly that gentlemen in his position had a great deal to learn from members of such associations. Members took up individual groups of animals, and knew a great deal more about them than he did himself, or, probably, ever hoped to know. Therefore they could be of great use to professors, who in their turn could aid the members. Owens College owed a debt to this neighbourhood, and if it in any way could assist in promoting the efficiency and aid the work of Manchester societies, he was quite sure it would do so.

Can any reader say what has become of the Rev. Leonard Rudd's Yorkshire collections? He flourished during the early years of the present century, and it is believed he resided in the north-east of Yorkshire.

A subscription has been opened in Liverpool for the purpose of doing honour to a fellow townsman, and it is proposed to present a testimonial to the Rev. H. H. Higgins, M.A., as a recognition of his long services in the cause of Literature, Science, and Education in Liverpool, to which he came in 1842. His services in connection with the Free Public Museum, the Naturalists' Field Club, the Microscopical Society, the Literary and Philosophical Society, and other scientific bodies in the city are eminently worthy of recognition.

The annual meeting of the Manchester Microscopical Society was held on February 25th. The sixth annual report congratulated the members on the continued prosperity of the Society. Thirty-four new members have joined during the year, leaving the number now on the books 211. The mounting section continues its prosperous career, and is steadily growing in importance and size. The whole range of practical microscopy is now included in the syllabus of the section. The financial statement showed a balance due to the treasurer of £4 7s. Mr. J. L. W. Miles was appointed president; Messrs. H. C. Chadwick, William Stanley, Dr. Tatham, and T. W. Lofthouse, vice-presidents; Mr. W. W. Dawson, re-appointed treasurer; Mr. Wilks, secretary; and Mr. R. Sowood, librarian and curator.

## In Memoriam.

W. W. NEWBOULD.

AT Montagu House, Kew, on April 16th, at the ripe age of 76, in half-conscious contentedness, there passed to his rest one of the foremost, if not the very first of the older school of British critical botanists—the REV. W. WILLIAMSON NEWBOULD, M.A., F.L.S.

With a decided aversion to figuring in print, the botanical work published over his name is scanty, and reflects very inadequately the breadth and profundity of his botanical knowledge. Those who were privileged to know him as a companion in the field (and at one time or another he has been the mentor—the 'guide, philosopher, and friend' of, probably, three-fourths of the middle-aged men who are now eminent in botanical science) know that his self-deprecating modesty was but the cloak of a quite unrivalled acquaintance with the faces and characters of British Phanerogams. From the rich stores of his knowledge he was ever eager, almost with child-like readiness, to impart the fullest information to all seeking it. In matters botanical—as well as in others of which it is not our province to speak—his powers of apprehension were well nigh as needle-like in their acuteness as they were to the point and sound (almost intuitively as it seemed) in their conclusions.

Space will not serve for even a bare enumeration of the ways in which in matters connected with the literature of botany, the history and distribution of British plants, &c., he was *facile princeps*. No botanist ever had more varied claims to recognition, none ever sought to secure the recognition less. His published writings are confined

to a notice of the reported *Hutchinsia alpina* on Ingleborough, in the first volume of Seemann's *Journal of Botany*, and two or three other bare records in that journal; but he so constantly—ever working *con amore*—gave assistance of the most thorough and pains-taking kind to flora compilers, content with the most meagre acknowledgment, and often disclaiming even so much of thanks, that it would be difficult to over-estimate his share in the advancement of British Botany during the last thirty-five years. His contemporaries, Prof. C. C. Babington, of Cambridge, and the late H. C. Watson, have testified to this; the former, in his Preface to the 'Flora of Cambridgeshire,' wrote (in 1860): 'Mr. Newbould has given me the greatest possible assistance . . . indeed, without his help I could not have ventured to offer this book to botanists. The appearance of his initials upon nearly every page will shew the great extent and value of his contributions.' Mr. Watson, in 'Topographical Botany,' page 530 (1874), wrote: 'In various modes I have been assisted by Mr. Newbould while writing this and former works. Indeed that gentleman's ever-readiness to take trouble on behalf of other botanists is too well known to need eulogy from my pen; though it may be allowable here to record an expression of my own grateful sense of his indefatigable and disinterested zeal in the promotion of botanical knowledge.' At the foot of the Preface to the second edition of 'Topographical Botany' (issued in 1883, after Mr. Watson's death), Mr. Newbould's name appears together with that of Mr. J. G. Baker, as a co-editor of the work; although we believe, with his usual modesty, he disclaimed the honour afterwards.

A native of the Sheffield neighbourhood, the botany of his native county, and especially of the West Riding, was a subject in which he ever took the keenest interest. Removed early from Sheffield, he had not the opportunity of observing and collecting within its limits so much as he would have done; but he added *Epipactis media* (*violacea*) and one or two other species to its flora; and from the moment that a complete historical Flora of the Riding was projected (in 1876) we have reason to know that by researches into old or scarce books at the British Museum, by examination of little-accessible herbaria, and in many other ways, he rendered every assistance in his power to Mr. F. Arnold Lees. The issue has an unusually sad side in connection with that very Flora. A portion of its completed sheets were the last thing his eyes consciously rested upon! He had keenly desired its completion, so many of his own conclusions were embodied in its pages, and he had more than once chafed somewhat at the delayed performance of a work in which he was, in one sense, a collaborateur.

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List of Wensleydale Birds—JOHN PERCIVAL.

A Lincolnshire Coast Ramble—H. WALLIS KEW.

Marfield Pond—THOMAS CARTER.

Flamborough Head—Rev. W. C. HEY, M.A.

Bibliography for 1885.

Natural History of Lincolnshire.—The next instalment of this is to be upon the Mammalia, by JOHN CORDEAUX. Schedules have been prepared for obtaining information: one will be sent to any one willing to furnish notes.

Short Notes.—It is the wish of the Editors to give in each number about a page of short notes in each of the various subjects of which the *Naturalist* takes cognisance. To this end they rely upon their friends keeping them well supplied. At present short notes on Botany, Entomology, Palæontology, Microscopy, Conchology, &c., are particularly desired.

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## FLAMBOROUGH HEAD.

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

*St. Olave's Vicarage, York; President of the Conchological Section of the Yorkshire Naturalists' Union.*

THE Flamborough Head of sunny August is familiar to thousands of visitors. They love to loiter on its breezy cliffs, to peer into the long recesses of its shadowy caves, or simply to sit and gaze on the rich tints of emerald and purple which are so eminently characteristic of these pure waters, where the foam of the breaking waves vies in whiteness with the snowy front of the chalk cliff. On the other hand, the Flamborough Head of the storm is a thing shunned and solitary. The ships that almost grazed the cliff where in summer the water lay calm and deep, are hiding themselves now from their notorious foe in the safe recess of Bridlington Bay. Not a solitary figure walks the cliff, and only in some lonely cove may you perchance descrie a fisherman, watching the waves for wreckage—for this raging sea often casts up strange things upon the beach, like trophies of her victorious prowess.

Let us face the cutting wind and the blinding rain, and descend towards the Great Thornwick, a cove where the north-west gale hurls the sea against the cliffs with terrific violence. Long before we come in view of the waves, foam flakes are blown into our faces, and in some spots the grass is so thickly strewn with them that one might fancy snow lay on the ground. As the bay opens before us, a strange chorus of different sounds bursts upon the ear. We can distinguish a constant sullen roar that never ceases—the perpetual breaking of the waves among the rocks at the foot of the cliff. Frequently, a horrible grating noise is heard, that seems to come from the very bowels of the sea. It is the reflux of the waves carrying back a mass of great rounded stones, and sounds like the death-rattle of some grim sea monster. Now and again, a grand boom appals the ear as some billow of extravagant dimensions has dashed down its whole bulk in one colossal cataract. Anon, we notice strange seething noises in narrow gullies, where the water has been churned and churned till it is simply a mass of creamy foam, while from the network of caves that perforates the cliff, thud and bang and splash, with their echoes, maintain a perpetual and awful concert.

It is under such circumstances that two features of the Head, little observed in fine weather, come into prominence, the “blow-holes” and the “creux.” The blowhole of Kynance Cove, in

Cornwall, is celebrated, and similar phenomena may be observed in rough weather at Flamborough Head, both at Breil Point and Little Thornwick. The water is seen to be violently ejected from crevices in the cliffs by the compression of the air, and flies out in the form of fine spray at right angles to the rock.

A creux is a funnel-shaped hollow near the edge of the cliff. The most celebrated is in the island of Sark. Flamborough Head presents two such creux, both situated in the neighbourhood of the Lighthouse, one of them very large. Their formation is no doubt to be accounted for in this manner. The sea enters the cliff at some weak point and gradually hollows out a cave. The heightening of the cave does not cease at high-water mark, for the rise and fall of the waves create such strong powers of suction in the air that slab after slab is gradually loosened and torn from the roof. The famous Robin Lythe's Hole shows us a cave of extreme loftiness, but I venture to predict that another generation will see Robin Lythe's Hole becoming a creux. The chalk roof must already be very nearly torn away; the coating of boulder clay will then prove but a very insecure ceiling, and soon an opening will be made in the cave where the roof is now loftiest. When this opening has been widened, the cave will have passed into a creux. Such seems to be a common system of cliff destruction at Flamborough. The smaller creux, referred to above, has only assumed that form within late years. To gaze into such a creux in storm-time, with the sea raging in its pot-like hollow, gives one a very graphic idea of a witch's storm-brewing, and may have suggested the idea to a primitive people.

Sometimes it happens that a very heavy sea may be witnessed at Flamborough in fine weather, namely, when a storm which has raged out at sea "comes to shore" (to quote the Flamborough expression), next day, after the weather has cleared and the wind fallen. Then one may select some sunny nook in the cliffs, and watch a storm luxuriously. At such times, particularly in Little Thornwick, the splendour of the scene is intensified by the appearance of rainbows in the spray, and the contrast between the raging waves below and the smiling heavens above is highly impressive and suggestive. I was watching the sea one day under such circumstances, when I saw a wave dash a piece of chalk (weighing apparently some half-a-ton) clean out of the cliff, and bear it off as easily as if it had been a piece of paper. At such times, instead of wondering how the waves have worn the cliffs into such mighty caves and arches, one rather marvels how the cliffs can possibly resist the impact of the sea as successfully as they do.

## NOTES—CONCHOLOGY.

**Lancashire Helices.**—As I am particularly interested in the distribution of the mollusca of the North of England, I wish some one could be induced to give us a more complete account than has yet appeared of the land and freshwater molluscs of Lancashire. Judging from recent notes, shells must be scarce in Lancashire, or otherwise the county has not been well searched. Mr. Cockerell only mentions three species of *Helix*:—*H. rotundata*, *H. hispida*, and *H. concinna*, in the account of his walk in Lancashire in February number of *Naturalist*, and Mr. Standen, a resident in the county, only mentions ten species in March number. The dearth of shells seems to extend also into Cheshire. In Mr. David Dyson's 'Shells of the Manchester District,' published in book form in 1850, a rather fuller list is given, but some that we have common in Yorkshire, on the eastern side of the mountains, are described as rare in Lancashire. No Lancashire localities are given for *Helix ericetorum*, *H. concinna*, *H. lapicida*, *H. virgata*, *H. cantiana*, *H. pulchella*, or *H. rupestris*. These, however, may have been found since. *Helix caperata* is entered for one locality only. The rarer species mentioned by Mr. Dyson for Manchester district, are *Helix aculeata*, *H. pygmæa*, *H. fusca*, and *H. sericea*, with *Zonites fulea*, and *Z. excavatus*. Information respecting the special distribution of species is much wanted, as certain species, supposed to be everywhere common, may be found to be absent from large areas. Especially is information wanted on *Helix virgata*, *H. caperata*, *H. lapicida*, *H. arbutorum*, and *H. cantiana*, shells which are all easy to find if they occur at all. Our various hand-books of British mollusca, copied one from another, are out of date, or too general to be of much use on geographical distribution.—GEO. ROBERTS, Lofthouse, March 3rd, 1886.

**Mollusca from Seaton Carew, Co. Durham.**—The Rev. J. W. Pattin has recently sent me a number of shells collected in the neighbourhood of Seaton Carew for identification. As a contribution to the local fauna it may be well to give the list, which is as follows:—*Pecten pusio*, *P. tigrinus* (a small single valve), *Maetra stultorum* var. *cinerea*, *M. solida* var. *elliptica*, *Cardium echinatum*, *Tellina balthica*, *Solen ensis*, *Lucinopsis undata*, *Mya truncata*, *Saxicava rugosa*, *Tapes pullastra* and var. *perforans*, *Lutraria elliptica*, *Venus lineta*, *Capulus hungaricus*, *Emarginula fissura*, *Patella vulgata*, *Helcion pellucidum* and var. *lævis*, *Littorina rudis*, *L. obtusata* and var. *lutea*, *L. littoralis*, *Lacuna crassior*, *L. divaricata* and var. *canalis*, *Trochus tumidus*, *T. cinerarius*, *Hydrobia ulvæ*, *Natica catena*, *N. alderi*, *Buccinum undatum*, *Purpura lapillus*, *Nassa incrassata*, *Melampus myosotis* var. *ringens*, *Bythinia tentaculata*, *Planorbis spirorbis*, *Limnæa peregra* vars. *ovata* and *intermedia*, *Helix nemoralis* vars. *libellula* 00300 and 1,23(45), and *Helix aspersa*.—T. D. A. COCKERELL, Bedford Park, Chiswick, May 1886.

**Shells in Coverdale and near Markington, N.W. Yorkshire.**

—Mr. R. C. Chaytor, of Scafton Lodge, near Middleham, has, from time to time, sent me boxes of shells collected in Coverdale, from the examination of which I have drawn up the following list of the mollusca of that district:—*Vitrina pellucida*, *Hyalina callaria* (a few of the type, and several of the transparent greenish variety 'albida' of Jeffreys), *H. crystallina*, *H. alliaria* Jeff., *H. radiatula*. *H. pura*, type and var. *margaritacea*, *Helix arbutorum*, type, var. *cincta*, and several var. *alpestris*, *H. concinna*, *H. rupestris*, *H. rufescens* and var. *rubens*, *H. hortensis* var. *lutea* 12345, *H. rotundata*, *Pupa umbilicata*, *Balea perversa*, *Clausilia rugosa*, *C. laminata*, *Bulimus obscurus*, *Cochlicopa lubrica*, and one of var. *ovata*, *C. tridens*, *Carychium minimum*, *Conulus fulvus*, and *Limnæa truncatula*, var. resembling *minor* Jeff., but 6 mm. long. In addition to the above the following were sent from near Markington:—*Anodonta anatina* (a young one), *Sphærium corneum*, *S. lacustre*, *Pisidium pulchellum*, *Bythinia tentaculata*, *Physa hypnorum*, *Limnæa truncatula*, and *Ancylus fluviatilis*. Mr. Chaytor also sent two very large specimens of *Succinea putris*, measuring respectively 22 and 21 mm. in length, but he had not collected them himself, and was uncertain as to the locality, though believing them to be Yorkshire specimens.—T. D. A. COCKERELL, Bedford Park, Chiswick, May 1886.

## COLEOPTERA OF THE LIVERPOOL DISTRICT.

JOHN W. ELLIS, L.R.C.P., L.R.C.S.E., F.E.S.,

*Liverpool; Honorary Secretary, Lancashire and Cheshire Entomological Society.*

### PART VII:—STERNOXI.

(Read before the Lancashire and Cheshire Entomological Society, November 30th, 1885.)

THE British insects comprised in this group of Beetles are few in number (about 75 species), and many of them are very scarce. Of these by far the greater number belong to the family *Elateridæ*, the members of which are known as 'skip-jacks,' from their habit when placed on their backs of throwing themselves into the air by means of a structural arrangement of the pro- and meso-thorax, by which gymnastic exercise they soon recover their natural position. The larvæ of several of the species, the members of the genus *Agriotes* principally, known from their appearance as 'wire-worms,' occasionally prove very destructive to field produce, by devouring the roots of cereal and other plants.

Of the 75 British species I am able to record only about one-fifth as inhabitants of our neighbourhood, though probably, by carefully working such districts as the Simmonswood and Kirby Mosses, this number will be extended.

Fam. *ELATERIDÆ*.

*LACON*, Lap.

**Lacon murinus**, L. A common species under dried patches of dung on the bare sandhills at Wallasey.

*ELATER*, L.

**Elater balteatus**, L. Simmonswood Moss. Common in June and July.

*CRYPTOHYPNUS*, Esch.

**Cryptohypnus riparius**, F. Common throughout the district.

**Cryptohypnus quadri-pustulatus**, F. I captured a single specimen of this species by sweeping the herbage by the canal bank at Maghull, in May.

*MELANOTUS*, Esch.

**Melanotus rufipes**, Herbst. A single specimen of this usually common species taken in Eastham Wood, in February 1884, is all I have seen in the district.

## LIMONIUS, Esch.

**Limonius cylindricus**, Payk. Abundant on the sandhills in early summer.

## ATHOUS, Esch.

**Athous niger**. L. Mr. J. H. Smedley took this species on a single occasion, flying abundantly in the sunshine round an old tree at Tranmere.

**Athous hæmorrhoidalis**, F. Generally distributed throughout the district; very common on oak in Eastham Wood.

## CORYMBITES, Latr.

(**Corymbites pectinicornis**, L., **C. cupreus**, F., and **C. quercus**, Gyll., I have in my collection from Chat Moss, which is outside our district, but I think they will probably be found at Simmonswood, if looked for.)

**Corymbites metallicus**, Payk. I took this species commonly by sweeping at Spital two years ago, in July, but I have not met with it since.

## AGRIOTES, Esch.

**Agriotes sputator**, L. Common, and generally distributed.

**Agriotes lineatus**, L. Tolerably common.

**Agriotes obscurus**, L. Very abundant.

**Agriotes pallidulus**, Ill. Common, especially on nettles.

## DOLOPIUS, Esch.

**Dolopius marginatus**, L. Abundant on oak during the summer in Eastham Wood.

## ADRASTUS, Esch.

**Adrastus limbatus**, F. Tolerably common on low herbage, nettles, &c.

## CAMPYLUS, Fisch.

**Campylus linearis**, L. I have only once met with this species in the district, at Simmonswood Moss, in June of this year, when Mr. Wilding and myself took it in fair numbers.

## PART VIII:—MALACODERMI.

A group of beetles containing about 149 British representatives, which derives its name from the soft leathery texture of the elytra in the typical species. This group includes the only two British insects

known to be luminous, viz., the very scarce *Phosphænus hemipterus*, recently re-discovered at Lewes by Mr. C. H. Morris, and the common Glow-worm (*Lampyris noctiluca*), which, however, so far as my observation goes, is not an inhabitant of our district, though one of the luminous centipedes is sometimes mistaken for it.

## HELODES, Latr.

**Helodes minuta**, L. Common in places where reeds grow, and obtained chiefly by sweeping.

## CYPHON, Payk.

**Cyphon coarctatus**, Pk. Recorded from Rock Ferry in May 1862, by Mr. Archer.

**Cyphon variabilis**, Thunb. A single specimen obtained by beating, at Simmonswood, in June 1885.

## TELEPHORUS, Schöff.

**Telephorus fuscus**, L. Occurs occasionally.

**Telephorus rusticus**, Fall. Common.

**Telephorus lividus**, L. Abundant.

**Telephorus lituratus**, Fall. Tolerably common.

**Telephorus pellucidus**, F. Mr. Wilding has taken this species commonly about West Derby.

**Telephorus nigricans**, Müll. I have only seen this species at Wallasey, and then not commonly.

**Telephorus bicolor**, Fab. Common.

**Telephorus flavilabris**, Fall. I have occasionally seen this species inland, but have taken it most abundantly by sweeping herbage on the banks of the river Alt, near Hightown.

**Telephorus fulvus**, Scop. (*melanurus*, Ol.). Very abundant.

**Telephorus testaceus**, L. Common.

**Telephorus limbatus**, Thunb. Common.

**Telephorus pallidus**, F. Common.

## MALTHODES, Kies.

**Malthodes marginatus**, Latr. I have taken a single specimen in Eastham Wood (June 1885), and Mr. Wilding has also once taken what he believes to be this species in the same locality.

## MALACHIUS, Fabr.

**Malachius bipustulatus**, L. Taken commonly in the flowers of *Cardamine pratensis* at Bromborough, in May, by Mr. Wilding.

## CORYNETES, Herbst. (NECROBIA, Latr.)

**Corynetes rufipes**, F. Common in decaying animal matters.

**Corynetes violaceus**, L. I once took several of this species in a dead gull on the shore at Aigburth.

The following species of the group are frequently separated as distinct, under the title of *Teredilia*—the habits of the members being essentially to bore holes in dead or living wood. Some of them, the ‘death-watch’ (*Anobium domesticum*), for instance, often do great damage to wood-work, the result of their drilling habits causing the well-known ‘worm-eaten’ appearance frequently seen in old articles of furniture. The ticking sound, from which the insect has received its popular name, and which has caused it to be a terror to the midnight watcher by the sick bed, is believed to be a signal or call to its mate, produced by striking the head against the timber floor of its ‘run.’

## PTINUS, L.

**Ptinus fur**, L. I have only once taken this species, among rubbish from a garden, at Wallasey.

## NIPTUS, Boield.

**Niptus hololeucus**, Fald. A common insect in cupboards, where when seen, generally in glass vessels into which it has fallen, it is frequently mistaken for a golden spider.

## PRIOBIUM, Mots.

**Priobium castaneum**, F. Once taken by Mr. Wilding in dead timber in Eastham Wood.

## ANOBIUM, Fab.

**Anobium domesticum**, Four. Common in houses, where it lives in wood-work.

**Anobium paniceum**, L. Common in druggists’ shops in the neighbourhood, where it lives on dried roots, &c. No matter how poisonous to man—belladonna and hellebore, for instance—no root comes amiss to this marauder.

## CIS, Latr.

**Cis boleti**, Scop. Abundant under bark, and in fungi, and often so variable in size and colour as to lead one to believe one has taken several species of the genus.

**Cis villosulus**, Marsh. Taken near Childwall, in November 1862, by Mr. F. Archer (Diary).

## OCTOTEMNUS, Mel.

**Octotemnus glabriculus**, Gyll. I have frequently met with this species, always in abundance where it does occur, in fungi (Boleti).

## PART IX:—HETEROMERA.

A group of Beetles of most variable appearance and habits, but all characterised by having five joints to the anterior and middle tarsi, with only four to the hinder pair. The British species, scattered through about a dozen families, number about 120, and of these I am able to record 27 as having occurred in our district.

## BLAPS, Fab.

**Blaps mucronata**, Latr. Abundant in cellars.

## HELIOPATHES, Muls.

**Heliopathes gibbus**, F. Common on the sandhills on both sides of the Mersey.

## HOPATRUM, Fab.

**Hopatrum sabulosum**, L. Recorded from New Brighton by Mr. F. Archer.

## MICROZOUM, Redt.

**Microzoum tibiale**, F. Frequent on the Crosby and Wallasey sandhills.

## GNATHOCERUS, Thunb.

**Gnathocerus cornutus**, F. The late Mr. F. Kinder used to take this species freely in some of the Liverpool warehouses.

## HYPOPHLÆUS, Hellw.

**Hypophlæus depressus**, F. With the preceding species.

## ALPHITOBIUS, Steph.

**Alphitobius piceus**, Ol. Frequent in bakehouses and cellars.

## TENEBRIO, L.

**Tenebrio obscurus**, F. Frequent, but not nearly so abundant as the following species.

**Tenebrio molitor**, L. A very abundant insect in bakehouses. The larvæ of this and the preceding species are the 'meal-worms' so well known to bird-fanciers.

## HELOPS, Fab.

**Helops pallidus**, Curt. Taken at New Brighton, September 26th, 1858, by the late Mr. Benjamin Cooke.

**Helops striatus**, Fourc. Abundant under loose bark during the winter months, especially around Bidston.

## CISTELA, Fab.

**Cistela murina**, L. Common on the sandhills, especially in the flowers of *Rosa spinosissima*.

## SALPINGUS, Gyll.

**Salpingus ater**, Payk. I took about half-a-dozen specimens of this species by sweeping near Bromborough, in July 1882.

## RHINOSIMUS, Latr.

**Rhinosimus viridipennis**, Steph. Under bark at West Derby (R. Wilding); under bark at Aigburth (J.W.E.).

**Rhinosimus planirostris**, F. Frequent under bark.

## MELANDRYA, Fab.

**Melandrya caraboides**, L. Taken at Crosby by Mr. Archer, in June 1862.

## LAGRIA, Fab.

**Lagria hirta**, L. Sometimes common among the dwarf sallows on the sandhills at Crosby and Wallasey, but very uncertain in its appearance.

## NOTOXUS, Geoff.

**Notoxus monoceros**, L. Common on the coast sandhills.

## ANTHICUS, Payk.

**Anthicus bimaculatus**, Ill. A very scarce British species which has occurred occasionally in our district. Single specimens have occurred to Mr. Kinder, Mr. R. Wilding, and to myself at Crosby; it has also been recorded from near Southport in June 1867, by Mr. Broadhurst (*Ent. Mo. Mag.*, iv, 232), and from New Brighton in 1878, by Mr. J. T. Harris, of Burton-on-Trent (*Ib.* xiv, 238).

**Anthicus floralis**, L. Frequent upon flowers.

## PYROCHROA, Geoff.

**Pyrochroa serraticornis**, Scop. (*rubens*, F.). This species, the commonest of the 'cardinal-beetles,' was bred freely in 1884, by Mr. Smedley, Mr. Wilding, and myself, from larvæ and pupæ dug out of a dead poplar at Wallasey. We also captured the imagines in the same locality.

## MORDELLA, L.

**Mordella fasciata**, F. A specimen of this species, captured at Rainhill by the Rev. H. H. Higgins, is in the Derby Museum, Liverpool.

## ANASPIS, Geoff.

**Anaspis frontalis**, L.

**Anaspis ruficollis**, F.

**Anaspis melanopa**, Forst. All three species are common on hawthorn blossom in May, and on the flowers of the mountain-ash in June.

## MELOE, L.

**Meloe proscarabæus**, L. Very common in spring on dry sandy roadsides, where there are burrows of wild-bees (*Andrenidæ*).

**Meloe violaceus**, Marsh. I have a single specimen taken some years ago, but not recognised as distinct at the time of capture. Probably from Bidston Hill.

## NACERDES, Schmidt.

**Nacerdes melanura**, L. I have twice met with this species, on both occasions in the immediate vicinity of salt water, once at Bromborough Pool and once on the Aigburth shore. About twelve months ago Mr. W. Johnson sent me a large number, which had been obtained from under the floor of a workshop in the south end of Liverpool.

## NOTE—ARACHNIDA.

**Spiders at Louth, Lincolnshire.**—A short time ago I sent Mr. T. D. A. Cockerell four spiders which I caught near Louth in December 1885; he has obtained their names, through the kindness of the Rev. O. P. Cambridge, as follows:—

*Epeira umbratica* Clk. Found under the loose bark of an aspen tree.

*Clubiona brevipes* Bl. About half a dozen found in silken tents under the bark of a dead ash tree.

*Trochosa ruricola* DG. Found in a little cell under the bark of an old stump.

*Amaurobius fenestralis* Stroëm. Caught while running over 'the stump on which the last species was taken. Concerning this species Mr. Cambridge, in his 'Spiders of Dorset,' says:—'Found but rarely at Bloxworth [Dorsetshire], under stones and brickbats. It is much more abundant in the North of England.'—H. WALLIS KEW, Louth, April 1886.

## A HALF-DAY'S RAMBLE ON THE LINCOLNSHIRE COAST.

H. WALLIS KEW,  
*Louth, Lincolnshire.*

AT three o'clock on the afternoon of Saturday, the 3rd of April, a ticket for Mablethorpe was taken at Louth Station, and in the course of half an hour I found myself upon the line where the North Sea meets the eastern border of Lincolnshire, with just three hours to spend in making observations.

First of all the broad sandhills were searched; these hills are covered with strong grasses, particularly the marram-grass (*Amphiphaea arundinacea*), without the widely-creeping roots of which much of the sand would be blown away by the winter gales; and in some places the sallow-thorn or sea-buckthorn (*Hippophaë rhamnoides*) is very abundant, forming tangled thickets which cannot be passed through.

The shells found during the afternoon here were *Helix aspersa* Müll., *H. nemoralis* L., *H. hispida* L., *H. caperata* Mont. and var. *ornata* Pic., *H. pulchella* Müll., *Pupa umbilicata* var. *alba*, *P. marginata* Drap., *Cochlicopa lubrica* Müll. and var. *minor* Fisch.

On the sandhills hard substances on which birds can break shells are often few and far between, and when a stone or piece of broken pot was come across it was sure to be surrounded by large numbers of *Helix aspersa* and *Helix nemoralis*, which had been dragged from their hiding places and preyed upon by the birds. There were literally hundreds of shells round some of the stones noticed. On the hills south of Mablethorpe the most plentiful variety of *Helix nemoralis* was *rubella* ooooo; but on the north side of the village vars. *libellula* and *rubella*, with three to five bands, were most abundant. Six specimens of *libellula* which I took home exhibited the following band-variation:—12345, (12345), (12)3(45) two specimens, 023(45) two specimens. Three examples of var. *castanea* ooooo were noticed.

Only two species of Spiders were observed; one was a dark-brown species, which I failed to capture, and the other was the *Tibellus oblongus* Bl. It was named by the Rev. O. P. Cambridge, who says it is 'an abundant marsh species.'

Of Coleoptera the following were noticed:—

*Dromius melanocephalus* L. At the roots of grass.

*Calathus melanocephalus* Dej. At the roots of *Senecio Jacobæa*.

*Tachyporus solutus* Er. Very common at the roots of grass, &c.

*Cneorhinus geminatus* Fab. One specimen seen endeavouring to ascend a steep slope of loose sand.

*Rhizobius litura* Fab. At the roots of *Senecio Jacobææ*. This beetle was kindly named for me by the Rev. W. W. Fowler.

*Lagria hirta* L. The abdomen of a dead specimen found upon the sand. This beetle was very plentiful on the sandhills during a short stay made at Mablethorpe in August last, swarming on *Galium verum*. *Agelastica halensis* L. was also then very abundant on the stems of grasses; *Coccinella 22-punctata* L. and *Cleonus sulcirostris* L. were taken, and *Hypera punctata* Fab. swarmed on the sands. The willows behind the hills produce *Cryptorhynchus lapathi* L. and the larvæ of the Satin Moth (*Leucoma salicis* L.).

The only insect seen on the wing during the afternoon was an ichneumon (*Ophion luteus* L.). It settled on the leafless twig of a willow-bush, and was captured between the fingers just as it took wing again. Mr. E. A. Fitch named this specimen.

The only flowers which were plentiful on the sandhills were the Bitter-cress (*Cardamine hirsuta*), the Vernal Whitlow-grass (*Erophila vulgaris*) and the Chickweed (*Stellaria media*).

On the beach various 'common objects of the sea-shore,' such as sea urchins, skates' eggs, and the empty egg-clusters of the whelk, were of course abundant. A single sea anemone was picked up at high-water mark. It is a variety of *Tealia crassicornis*, but does not agree with any of the four varieties mentioned by Mr. Gosse. Mr. T. D. A. Cockerell, to whom I submitted the specimen, describes it as follows:—

'*Tealia crassicornis* Müller, colour variety *subobscura*.

Column dull brownish-green, tentacles dull pinkish above and dull greenish below the central band, which is ill marked; disc dull greenish, with a few reddish streaks radiating from the mouth.'

The *Tealia* was attached to a fragment of *Flustra foliacea* L.

The tide being high during the whole of the three hours, I was unable to procure many marine shells. But among the dead shells to be found near high-water mark were *Pholas candida*, *Mya truncata*, *Solen siliqua*, *Mactra stultorum*, *Tellina balthica* and var. *rosea*, *Scrobicularia piperata*, *Cardium edule*, *Mytilus modiolus*, *Pecten opercularis*, *Ostrea edulis*, *Patella vulgata* var. *intermedia*, *Trochus cinerarius*, *Hydrobia ulvæ*, and *Buccinum undatum*. *Tellina balthica* L. is in great favour with children, who make 'neck-laces' by threading large numbers of the shells, passing the string through the holes which the whelks have drilled. Most of the above have been kindly named for me by Mr. T. D. A. Cockerell.

Washed up at high-water mark also were numerous freshwater shells, which are carried down from the ditches which drain the marshes, into the sea, and are then thrown up by the high tides upon the sand. The following freshwater shells were found in this situation :—

*Sphærium corneum* L. One small specimen seen.

*Bythinia tentaculata* L. A few noticed.

*Valvata piscinalis* Müll. Not very plentiful.

*Planorbis spirorbis* Müll. Very plentiful.

*Planorbis vortex* L. Abundant.

*Planorbis carinatus* Müll. Fairly common.

*Planorbis complanatus* L. Large numbers seen.

*Planorbis corneus* L. Six specimens seen.

*Planorbis contortus* L. A few seen.

*Physa fontinalis* L. One specimen observed.

*Limnæa peregrina* var. *ovata* Drap. One noticed.

Of aquatic Beetles, *Helophorus aquaticus* L., *Gyrinus natator* L., and *Ilybius fuliginosus* L. were observed, the *Helophorus* and *Ilybius* being still alive. A case of *Limnephilus flavicornis*, a water-boatman (*Notonecta glauca*), and a Water Scorpion (*Nepa cinerea*) were also found upon the sand.

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#### NOTE—BOTANY.

**Flora of Strensall and District.**—In addition to the plants enumerated by Mr. A. R. Waller, at pp. 133-145 of the *Naturalist*, permit me to record the following (from personal observation) :—

*Thalictrum flavum* L., *Alchemilla vulgaris* L., *Poterium sanguisorba* L. Strensall Village and Common.

*Geranium pyrenaicum* L., *Vicia bobartii* Forst. Near Towthorpe.

*Potamogeton compressus* Sm., *Barbarea stricta* Andr. By the river Foss.

*Salix alba*, *S. caprea* L., *S. aurita* L.

*Rubus idæus* L., *R. affinis*, *R. rhamniifolius*, *R. discolor* (W. and N.).

*Rosa mollis* Sm., *R. tomentosa* Sm. and var. *subglobosa*, *R. rubiginosa* L., *R. arvensis* Huds., and the following forms of *Rosa canina*, *lutetiana*, *dumalis*, *arvatica*, *tomentilla*, *subcristata*, *watsoni*, *blondeana* (Ripart) from Hazel Bush and Malton Road.—H. J. WILKINSON, York, May 13th, 1886.

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#### NOTES—MAMMALIA.

**Noctule in Durham.**—Supplementing the notice in April *Naturalist*, I may mention that Mr. C. E. Morgan, of the Flatts, near Bishop Auckland, shot a Noctule flying over the pond at the Flatts last summer.—T. H. NELSON, Bishop Auckland, April 17th 1886.

**Otters in Durham.**—Several were seen up the Bedburn, a tributary of the Wear, in the spring and summer of 1884, and one was killed near Hamsterley (this probably is the one noticed by Mr. Fawcett, in the *Naturalist* for April). I have occasionally observed the footprints of Otters by the side of the Bedburn during the past two or three years.—T. H. NELSON, Bishop Auckland, 17th April, 1886.

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## BOTANY, 1885.

THE titles relating to Botany are, as usual, separated into two parts, the first of which includes the flowering plants and vascular cryptogams of the 'London Catalogue,' and the second includes the remainder of the cryptogams.

## PHANEROGAMIA AND VASCULAR CRYPTOGRAMIA.

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Derbyshire, S. Lancashire, Cheshire.  
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- G. H. BRYAN. Cumberland, Westmoreland.  
**The Carices of the Lake District** [enumerated, with localities ; 19 species ; also 6 Cyperaceæ]. Nat. World, July 1885, p. 131.
- G. C. DRUCE. Westmoreland, Cumberland, Northumberland.  
**Notes on Scottish Plants.** [*Melampyrum pratense* var. *hians*, found in Westmoreland and Cumberland, and by Rev. H. P. Reader 'this year' in Northumberland.] Scott. Nat., April 1885, viii, 76-77.
- W. DUCKWORTH. Cumberland.  
**Wild Flowers around Carlisle. Part I.** [An enumeration in popular style of the flora ; extending from Ranunculaceæ to Ericaceæ.] Trans. Cumb. & Westm. Assoc., 1884-85, ix, 83-95.
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ALLAN B. HALL.

Yorkshire.

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Yorkshire, Westmoreland.

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W. JESPER.

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## CRYPTOGAMIA.

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**New British Fungi** [*Agaricus (Leptonia) formosus* var. *suavis* Lasch., and *Ag. (Naucoria) myosotis* Fr., from Scarborough]. Grevillea, March 1885, xiii, 57-61.
- M. C. COOKE. Yorkshire.  
**New British Fungi** [*Agaricus (Pluteus) semibulbosus* Fr., Scarborough; *Ag. (Pl.) violarius* Masseur, Scarborough; *Ag. (Pl.) ephebius* Fr., Helmsley; *Ag. (Inocybe) perbrevis* Weinm., Scarborough; and *Ag. (Panæolus) egregius* Masseur, Scarborough]. Grevillea, June 1885, xiii, 89-100.
- M. C. COOKE. Westmoreland, Yorkshire, Cumberland.  
**New British Fungi** [*Æcidium convallarie* Schum., Bowness, Windermere; *Æ. pimpinellæ* var. *apii*, near Hull; *Rhinotrichum decipiens* Cooke, Carlisle]. Grevillea, September 1885, xiv, 1-7.
- M. C. COOKE. Lancashire, Northumberland, Yorkshire.  
**British Sphaeropideæ. Provisional list of Species hitherto found in the British Islands** [*Phoma sorbi* Lasch., Lancashire; *P. longissima* Fries., Berwick; *P. asteriscus* Berk., Thirsk; *P. nebulosa* Pers., Thirsk and Berwick; *P. samarorum* Desm., Thirsk; and *Vernicularia eryngii* Desm., Fleetwood]. Grevillea, September 1885, xiv, 25-36.
- M. C. COOKE. Yorkshire.  
**New British Fungi** [*Agaricus (Pluteus) pellitus* Pers., *Ag. (Flammula) ochrochlorus* Fr., *Ag. (Stropharia) hypsipus* Fr., all from Scarborough]. Grevillea, December 1885, xiv, 37-41.
- [M. C. COOKE.] Yorkshire.  
**New British Fresh-water Algæ** [*Palmodictyon subramosum* Nag. = a condition of *Hydrurus penicellatus*, Yorkshire, Hebden]. Grevillea, December 1885, xiv, 57.
- W. B. GROVE. Yorkshire, Westmoreland.  
**New or Noteworthy Fungi:—Part II.** [*Æcidium grevillei* Grove, Grassington (H. T. Soppitt); *Æcidium taraxaci* K. and Schm., on *Taraxacum officinale*, Grange (H. T. Soppitt); *Æ. prenanthis* Pers., on *Lactuca muralis*, Malham (H. T. Soppitt), are cited among others. Equivalent to stages of *Puccinia variabilis* Grev., *P. sylvatica* Schröt., and *P. chondrilla* Corda]. Journ. of Bot., May 1885, xxiii, 129 to 134.
- W. B. GROVE. Northumberland.  
**[*Rhabdospora pleosporoides* (new to Great Britain) on stems of Sorrel, taken from a nest of the Common Tern, from the West Wide Opens, one of the Farne Islands]. Midl. Nat., October 1885, p. 298.**

- E. M. HOLMES. Northumberland.  
**Algæ britannicæ rariores exsiccatae** [*Calothrix crustacea* Thur., *Cladophora arctiuscula* Crn., *Codiolum longipes* Foslie, *Euthora cristata* J. Ag., *Phyllitis fasciata* Kütz., and *Sphacelaria caespitula* Lyngb., all from Berwick-on-Tweed, are cited, with details]. Greville, June 1885, xiii, 109-110.
- [HENRY HYDE.] Cheshire.  
**[Excursion-notes for 1884]**; notes on cryptogams observed at meeting at Ros-therne, May 3rd]. Rep. Manch. Sci. Stud. Assoc., for 1884 [publ. January 1885], p. 20.
- G. MASSEE. Yorkshire.  
**New British micro-fungi** [*Didymium hypnophilum* sp. nov., *Stilbum flexuosum* sp. nov., *Helminthosporium pumilum* sp. nov., *H. stemphylioides* Corda, *Arthrobotrys rosea* sp. nov., *Gonatobotrys simplex* Corda, *Corephoris paradoxa* Corda, *Ascobolus saccharinus* B. & C., *Corephoris epimyces* sp. nov., *Agaricus (Mycena) purus* P., and *Mucor fusiger* Link, all from Scarborough]. Journ. R. Micr. Soc., October 1885, v, 757-760.
- W. PHILLIPS and CHARLES B. PLOWRIGHT. Yorkshire.  
**New and Rare British Fungi** [*Peziza (Dasyscypha) scrupulosa* Karst., Scarborough]. Greville, March 1885, xiii, 73-74.
- CHARLES B. PLOWRIGHT. Lincolnshire.  
**On the Life-History of certain British Heteræcismal Uredines** (the *Ranunculi Æcidia* and *Puccinia Schœleriana*). [*Puccinia Schœleriana* n. sp., is recorded as occurring as *Æcidium jacobææ* on *Senecio jacobææ* at Skegness, in the spring of 1882, and in the *Puccinia* stage on *Carex arenaria* L.] Quart. Journ. of Micr. Sci., January 1885, xxv, 151-172.
- GEORGE ROBERTS. Yorkshire.  
**Topography and Natural History of Lofthouse and its neighbourhood** [etc.]. Vol. II. Leeds: printed for the Author. 1885 [pp. viii+258]. [*Russula virescens* (p. 109); *Boletus edulis* and *Helvella crispa* (p. 138)].
- [THOMAS] ROGERS. S. Lancashire.  
**[Moss new to Lancashire]**; *Amblystegium porphyrrhizum* L., collected on the sandhills at Southport in 1875, its first occurrence in England]. Proc. Manch. Lit. and Phil. Soc., February 11th, 1884, xxiii, 76.
- H. STOLTERFOTH. Cheshire.  
**Surface Dredging on the Dee** [notes on numerous species of diatoms obtained in three dredgings]. Proc. Chester Soc. Nat. Sci., No. 3, 1885, pp. 93-97.
- W. BARWELL TURNER. Yorkshire, Westmoreland, &c.  
**On some new and rare Desmids** [*Onychonema nordstedtiana* sp. nov., Strensall Common, N.E. Yorks.; *Micrasterias crux-melitensis* Ralfs, var. nov. *superflua*, near Bowness, Windermere; and *M. brachyptera* Lundell, var. nov. *bispinata*, same place]. Journ. R. Micr. Soc., December 1885, v, 933-940; and plates xv and xvi.

### NOTES—ORNITHOLOGY.

**Hawks mobbed by small birds.**—I have noticed that Sparrow Hawks are more subject to being mobbed by small birds than Kestrels. This, no doubt, is partly owing to the fact that Sparrow Hawks fly nearer to the ground than Kestrels, but may also be accounted by the fact Kestrels do not prey on small birds as Sparrow Hawks do. Water Wagtails seem to have an especial antipathy to Hawks. One day last year I flew a Merlin at a Wagtail, and in a moment the 'pursuer' became the 'pursued,' for, from all sides, Wagtails congregated and chased the Merlin backwards and forwards, much to the amusement of myself and some friends. My Merlin at length took refuge in a tree, and, I think, was well pleased when I called it down to lure. Last Saturday I saw a Sparrow Hawk mobbed by Wagtails in the most persistent manner; they flew close to its head, and seemed not to have the least fear of it.—H. T. ARCHER, Newcastle-on-Tyne, 11th December, 1885.

June 1886.

**The Weather and the Swallows.**—The weather during the first week in May was much as we usually experience. On the 8th a sudden change set in, the wind veering into the N.E., and it grew colder and wilder until the 12th, when a perfect gale blew, accompanied with heavy driving rain and sleet in the valleys, and dry drifting snow on the moors. It was easy to foretell what would be the effect upon the Swallows and other migrants if such wintry blasts continued. On the willow bushes by the river side Swallows and Sand Martins perched and fluttered in a most helpless way, and any number could have been knocked down with a stick or caught in the hand. On the 13th—when the weather was, if anything, worse, the thermometer standing only at 38° F. in the open at noon—Swallows and Sand Martins were laid dead in hundreds over the country. One could not walk far before finding victims to our treacherous climate. In one small paddock thirteen were picked up, and altogether, hundreds of thousands must have perished. All this tribe were unusually numerous before this dreadful storm, but when the sun shone again a little on the 16th we noticed the destruction that had been wrought among them. Now, in the course of a morning's walk, half-a-dozen will be as many as will be seen. House Martins, too, have almost quite disappeared, though very few of this species were picked up. Swifts did not suffer nearly so much, but still felt the cold and want of food very much, as was evident from their tameness and weak mode of flying. Many of the other migrants suffered very severely. Since last week I have not seen or heard either Wood Wren or Spotted Flycatcher; and Willow Wrens are decidedly less in number. The downfall was very heavy, being greatest on the 12th, for which day my gauge showed a fall of 1.50 in. The snow on the moors was six inches in depth above the heather, and for three days extended low down in the valleys. Farmers generally agree that more sheep were drifted over than was the case in the late tremendous snows in the earlier part of the year. As far as I can learn from the keepers, the Grouse will not have suffered much, as the hens were all sitting closely, and only a brood or two of young birds had been seen. A large tract of marshy ground near here called Snape Mires, on which in wet seasons is formed an extensive sheet of water, filled to a great size in one day; and I was told by farmers residing there that on the 14th considerable numbers of ducks and sea-birds were seen. There were different sorts and sizes of Gulls; as far as I could learn from my informant, the Black-headed being there in some numbers. As I write the weather is more genial, but very unsettled. Unless fresh flocks of the Swallow tribe come over (which is scarcely probable now) we shall sadly miss their pleasant company this summer.—T. CARTER, Masham, May 17th, 1886.

During the past week we have had a sharp reminder that

Winter, lingering, chills the lap of May.

On Wednesday and Thursday, the 12th and 13th last, a strong N.E. gale was blowing, accompanied on the first-named day with a drenching rain. In the western part of the county there was a heavy downfall of snow, the hills in Wear-dale being covered to a depth of several inches. As a consequence of this severe weather, the summer migrants, and especially the Swallow tribe, have suffered greatly. At Flatts Farm, near Bishop Auckland, twelve Swallows and two Sand Martins were picked up dead on Friday last; several others were found in a half starved state, and were taken into the house, but died in the course of the day. All these birds were in plump condition, so that it is evident they had succumbed to the severe cold. In the streets of Durham many Swallows were found dead on Friday; and I notice, by the daily papers, that in other parts of the north country, and particularly in the lake district, hundreds of Swallows have been found lying dead in the fields and on the roads.—T. H. NELSON, Bishop Auckland, 17.v.86.

From many districts around Leeds we have heard of Martins and Swallows being found dead 'in hundreds' on the 13th and 14th of May; and there can be no doubt in Yorkshire alone *many thousands* have perished, resulting in a marked diminution in their numbers. The House Martins seems to have succumbed in much the greatest numbers, and then the Swallows, while only a few Sand Martins and Swifts have been picked up. We are of opinion, so far as this district is concerned, that death has been caused by want of sufficient food to enable the birds to withstand the prolonged inclemency of the weather. There would be no insects on the wing for the greater part of the period between the 8th and 13th. But on no occasion did the thermometer register a remarkably low degree of temperature, the lowest, 37°, being registered early on the 13th.—EDS.

Naturalist,

**LIST OF WENSLEYDALE BIRDS.**

E. CHAPMAN.

*Carperby, Wensleydale, North Yorkshire.*

THE following is a list of birds I have personally observed in Wensleydale, or that have been shot in the dale, and passed through my hands for preservation, within the last thirty years.

**Buzzard.** Casual; was common about forty years ago; rarely seen now.

**Rough-legged Buzzard.** Casual, though not unfrequently met with. Three shot in 1883.

**Peregrine.** Casual; very rare. A male shot on Dod Fell, above Hawes, in 1873.

**Merlin.** Resident; frequent on the moors.

**Kestrel.** Resident; common.

**Sparrowhawk.** Resident; frequent.

**Hen Harrier.** Casual. One shot in Bolton Gill, 1870, by Captain Other, Elm House, Redmire; another in Howdah Wood, Bainbridge, about the same time. Both were females.

**Short-eared Owl.** Casual; frequent among the heather in the breeding season, but I have never seen a nest.

**Long-eared Owl.** Casual; rare.

**Tawny Owl.** Resident; common in the woods in the lower part of the valley.

**Barn Owl.** Resident. This bird is becoming rare; ten years ago it was abundant.

**Great Grey Shrike.** Casual. One shot in Freeholders' Wood, Carperby, 1865; another on Woodhall Scar in 1866; one shot by the Hon. W. T. O. Powlett, Wensley Hall, in Bolton Hall Wood, 1883.

**Red-backed Shrike.** Casual; very rare. A pair seen near Eastholme Bridge, 1882, and a male shot near Carperby in 1872.

**Great Titmouse.** Resident; common.

**Cole Titmouse.** Resident; not common.

**Blue Titmouse.** Resident; common.

**Marsh Titmouse.** Resident; common.

**Long-tailed Titmouse.** Resident; pretty abundant in the lower part of the dale.

**Pied Flycatcher.** Summer resident; comparatively rare. A pair usually breed about Bear Park.

**Spotted Flycatcher.** Summer resident; common.

**Kingfisher.** Resident; frequent.

- Raven.** Resident; breeds at Raven Scar, Walden Head, and occasionally at Ellerkin, near Askrigg.
- Carrion Crow.** Resident; common on the moors.
- Hooded Crow.** Occasional visitor.
- Rook.** Resident; abundant.
- Jackdaw.** Resident; abundant.
- Magpie.** Resident; common. Last year a curious albino was shot near West Burton—the parts which are normally black were of a faint rusty-brown colour.
- Jay.** Very rare. One seen in Freeholders' Wood about 1865. Not known to breed in the dale.
- Waxwing.** Rare visitor. In the winter of 1869 they were tolerably common.
- Creepers.** Resident; pretty abundant in the woods of the lower part of the valley.
- Green Woodpecker.** Not unfrequent; breeds. Two shot last year in Woodhall Scar Wood.
- Great Spotted Woodpecker.** Occasionally seen in Pass Wood, near Redmire, and in Bear Park Wood, Carperby; one shot in Rabbit Warren plantation, by Mr. John Waller, in 1878.
- Cuckoo.** Summer resident; common.
- Night-jar.** Resident; frequently seen about Freeholders' and Hawbank Woods, Carperby, and Leyburn Shawl Wood.
- Swift.** Summer visitant; common; breeds at Bolton and Middleham Castles.
- Swallow.** Summer visitant; common.
- House Martin.** Summer visitant; common.
- Sand Martin.** Summer visitant; common.
- Pied Wagtail.** Summer visitant; common.
- Grey Wagtail.** Summer visitant; common.
- Yellow Wagtail.** Summer visitant; common.
- Meadow Pipit.** Summer visitant; abundant.
- Tree Pipit.** Summer visitant; common.
- Skylark.** Resident; abundant.
- Snow Bunting.** Winter visitant; sometimes plentiful, though very irregular in its appearance.
- Common Bunting.** Resident; common.
- Black-headed Bunting.** Summer visitant; not common, but breeds every year near Carperby.
- Yellow Bunting.** Resident; common.
- Chaffinch.** Resident; abundant.
- Mountain Finch.** Frequent in autumn in the larch plantations.

- Cirl Bunting.** Rare visitant. I saw two in 1883 in Mr. R. Willis' farmyard, Carperby, and another about in the same place in 1870. They were in company with Chaffinches and Yellow Buntings.
- Greenfinch.** Resident; abundant.
- Goldfinch.** Twenty years ago were pretty abundant, but now rare. This disappearance is puzzling, as we have no bird-catchers in the neighbourhood.
- Siskin.** Frequent in winter.
- Linnet.** Rare.
- Lesser Redpoll.** Resident; common.
- Mountain Linnet.** Resident; pretty common, and breeds among the heather on the moors.
- Bullfinch.** Resident; common.
- Crossbill.** Winter visitant. In 1867 were very abundant in all parts of the valley. Thirty were killed at one shot by Mr. J. Cockburn, near Thornton Rust.
- Starling.** Resident; common.
- Dipper.** Resident; common.
- Missel Thrush.** Resident; common.
- Fieldfare.** Winter visitant.
- Redwing.** Winter visitant.
- Thrush.** Resident; common.
- Blackbird.** Resident; common.
- Ring Ouzel.** Summer visitant; common on the moors.
- Hedge Sparrow.** Resident; common.
- Redbreast.** Resident; common.
- Redstart.** Summer visitant; common.
- Stonechat.** Visitant; comparatively rare. I have known but one nest.
- Whinchat.** Summer visitant; common.
- Wheatear.** Summer visitant; common.
- Grasshopper Warbler.** Summer visitant; breeds in the heather about Locker Tarn, near Carperby. Rarely met with in any other part of the district.
- Sedge Warbler.** Summer resident; common.
- Reed Warbler.** Summer visitant; rare. Occasionally met with in Freeholders' Wood, Carperby, and at the Woodhall Pond.
- Blackcap Warbler.** Summer visitant; not unfrequent a few years ago, but rarely met with now.
- Garden Warbler.** Summer resident; breeds frequently, but is very uncertain in its appearance.

- Whitethroat.** Summer resident; common.
- Lesser Whitethroat.** Summer resident, but rather rare; breeds occasionally in Freeholders' Wood, Carperby.
- Wood Warbler.** Summer resident; frequent.
- Willow Warbler.** Summer resident; common.
- Chiffchaff.** Summer resident, but rather rare and uncertain in its appearance.
- Wren.** Resident.
- Goldcrest.** Resident; frequent, breeding in many larch plantations, especially in the upper part of the dale.
- Ringdove.** Resident; common.
- Stockdove.** Resident; frequent; breeding in the scars of Ox-close, Carperby.
- Pheasant.** Resident; common.
- Black Grouse.** Rare. A female shot in High Gill, near Aysgarth, by W. H. Tomlinson, Esq., in 1880. Occasionally seen on the Greets Moor, above Woodhall. Not known to breed in the district.
- Red Grouse.** Resident; common.
- Partridge.** Resident; common.
- Quail.** One obtained in 1884, on a nest of ten eggs, in a meadow field near Carperby.
- Golden Plover.** Resident; common.
- Dotterel.** Now rare, but fifteen or twenty years ago used to breed on High Stake. I have never seen the eggs myself, but I am told by Mr. Arthur Sayer, who was shepherd seventeen years on the moor, that he used to search for them in company with the keepers, who sold the eggs to collectors. The last he saw was about fourteen years ago. Mr. H. Hopper, of Raydaleside, went every year to shoot these birds for their feathers, which are highly prized by anglers. I shot a young one in 1865, on Scarrowfells, Carperby; it was among a flock of Golden Plovers.
- Lapwing.** Summer resident; common.
- Oystercatcher.** Casual. One shot in Bishopdale in 1881. Seen nearly every year by the river, above Carperby, and about Middleham.
- Heron.** Frequently visit Locker Tarn, Carperby, and Semerwater, and various parts of the Yore.
- Bittern.** Very rare. One shot at Semerwater in 1869, by Mr. P. Beresford, and another shot on Preston Moor, by Lord Bolton about 1879.
- Curlew.** Resident; common on the moors.

- Whimbrel.** One shot on Stake Moor, by Mr. F. Chapman, Thornton Rust, about 1874.
- Sandpiper.** Summer resident; common, ascending the small streams to over 1,500 feet on Carperby Moor.
- Green Sandpiper.** Casual. One shot about Preston by one of Lord Bolton's keepers in 1883.
- Bar-tailed Godwit.** Casual. Three shot out of a flock on Scarrow-fell Moor, Carperby, in 1872.
- Ruff.** Female shot at pond, Carperby, in 1873. I saw the male at the same time, but did not obtain it.
- Woodcock.** Winter visitant; not known to breed.
- Snipe.** Resident; common.
- Jack Snipe.** Winter visitant; not common.
- Little Stint.** Casual. Several have been met with at various times on Thornton Rust Moor.
- Schinz's Sandpiper.** One obtained at Wensley, by the Hon. T. O. Powlett, in 1883, and now in the collection of the Hon. W. T. O. Powlett, Wensley Hall. [Schinz's Sandpiper is only a small Dunlin to which this name was given by Brelun.—Ed.]
- Dunlin.** Rare. Used to visit the pond (now drained) at Carperby in spring. Breeds about Summer Lodge Tarn, Askrigg Moor.
- Corncrake.** Summer resident; common, especially in the lower part of the dale.
- Spotted Crane.** One shot near Hawes, 1868, by Captain Metcalfe, Ings House, Hawes; two shot on Thornton Moor, by Mr. F. Chapman, about 1873.
- Water Rail.** Not unfrequent in winter in Freeholder's Wood, Carperby.
- Moorhen.** Resident; common.
- Coot.** Resident; breeds at Locker Tarn, Carperby, and at Semerwater.
- Bean Goose.** Winter visitant.
- Swans.** Visit Semerwater occasionally, and various parts of the Yore. I am unable to say to which species they belong.
- Shieldrake.** Visits Semerwater occasionally.
- Shoveller.** Casual. A pair were shot by Mr. J. Lodge, the Rookery, Bishopdale, and are now in his possession.
- Wild Duck.** Resident; frequent.
- Teal.** Resident; breeds near Locker Tarn, Carperby.
- Widgeon.** Rare winter visitant.
- Scoter.** Casual. Visits Semerwater occasionally; one shot there by Mr. P. Beresford in 1868.
- Pochard.** Occasional winter visitant.

- Tufted Duck.** Rare. One shot in 1878 on the river, above Yore Mills, Aysgarth.
- Golden-eye.** Occasionally visits Semerwater.
- Goosander.** Casual at Semerwater.
- Red-throated Diver.** Rare. One was shot on Semerwater in 1869, by Mr. P. Beresford.
- Gannet.** A young one in first year's plumage was caught in Bishopdale, in 1873.
- Common Tern** Casual.
- Black-headed Gull.** Occasional visitor. One shot at Woodhall, 1879.
- Common Gull.** Occasional visitor.
- Lesser Black-backed Gull.** Casual.
- Kittiwake.** Casual.
- Storm Petrel.** One was picked up alive in Leyburn Railway Station, by Mr. F. Chapman, Thornton Rust, and is now in his possession.

### NOTES—ORNITHOLOGY.

**Arrival of Summer Birds at Flamborough.**—April 24th, three Swallows seen. April 26th, several Redstarts and Pied Flycatchers. May 11th, Turtle Dove seen. May 13th, 14th, and 15th, great arrivals of the above, with the wind north-east; never saw more.—MATTHEW BAILEY, Flamborough.

**Woodcock, Wryneck, and Hawfinch in Nidderdale.**—I have just had brought me a nest of Woodcock's (*Scolopax rusticola*) eggs taken near Pateley by a friend, who also saw a brood of young ones near the same place on May 7th. I have also seen a Wryneck (*Yunx torquilla*), which was caught at Fellbeck on May 3rd. It is the only one I ever saw in Nidderdale.

There has been for several days past [April 15th] now, a Hawfinch [*Coccothraustes vulgaris*] flying about Harefield. Several persons have seen it. I have never seen one here before.—WM. STOREY, Pateley Bridge, May 13th, 1886.

**How to form a Rookery.**—Wishing to form a rookery in a plantation of poplars and Spanish chestnuts which joins my garden, I had some baskets of the shape of nests put at the top of the chestnuts. The rooks came and looked at these, and sat upon them every spring, but never seemed inclined to stay and nest. Two years ago, knowing rooks were very fond of the yellow grease used on railways, I had the basket nests filled with it. It soon attracted them in great numbers, and as they consumed the grease, I replenished the nests, taking care they were never without. The result was, sixteen pairs nested, choosing, however, what is rather odd, the tall poplars, which are very difficult for them to build in, owing to the branches being so open, in preference to the chestnuts.—H. G. TOMLINSON, The Woodlands, Burton-on-Trent, March 8th, 1886.

**Notes on the Birds of the Derbyshire Peak.**—I can confirm Mr. Whitlock, in his Birds of the Derbyshire Peak, as to the Peregrine Falcon being found there. A few years ago, when shooting on Kinder Scout, I saw five Grouse fly from the end of the Scout, when a Peregrine came out from the middle of the rocks, and fastened itself on one of the Grouse, and the two birds came tumbling down one over the other into the hollow below. I made all speed possible with the man who was with me, but the Falcon was away before I could get within 100 yards of them, although they fell in deep bracken. I was about to gather the Grouse when away it flew, but fortunately I stopped it, and on close examination the only mark I could find was the flesh on the right leg considerably torn.—JOHNSON WILKINSON, Huddersfield, May 3rd, 1886.

## THE YORKSHIRE NATURALISTS' UNION AT ASKERN.

The opening meeting of the Yorkshire Naturalists' Union for the season was again held in the Doncaster district, Askern Spa being the rendezvous, on Thursday, the 20th May. Meteorological conditions were not very propitious, much of the country proposed for investigation being flooded, a consequence of the excessive rainfall of the previous week or two; and rain falling at times on the day itself. Notwithstanding this, fifteen societies were represented, the Union being especially well supported by its South Yorkshire constituents. Permission had been kindly granted by the landowners of the district, including Captain Anne, Burghwallis Hall, Messrs. F. Bacon Frank, Campsall Hall, G. B. C. Yarborough, Camps Mount, P. S. Neville, Skelbrooke Park, and E. Ripley, Owston Hall, for members to visit their estates. It had been intended to investigate two lines of route, but the members, on assembling at 10 a.m. at Askern Station, finding that one of them was almost entirely submerged, united upon the one which included the higher ground—viz., by way of Campsall Park, Camps Mount, and Burghwallis, and thence to Askern. In this they had the benefit of the guidance of the Rev. F. H. Allen, Vicar of Moss, himself an accomplished microscopist. Mr. F. Bacon Frank did the members the honour to show a personal interest in their investigations in his park at Campsall, and Captain Anne in his at Burghwallis.

The tea and meetings were held at the Swan Hotel, Askern, at an earlier hour than that mentioned in the circular, to enable members to leave by the earlier trains. The chair of the general meeting was occupied by the Rev. Wm. Fowler, M.A., of Liversedge, an ex-president, in the absence of the president, Dr. Dallinger, whose health did not permit him to face the inclemency of the weather. The minutes having been taken as read, the list of societies was read over, when it was found that the following were represented:—Barnsley, Dewsbury, Doncaster, Elland-cum-Greetland, Leeds (3), Liversedge, Malton, Rotherham, Scarborough, Sheffield, Wakefield, York, and the Practical Naturalists' Society, the individual attendance being about thirty or forty. The following new members were then elected:—Rev. E. H. Smart, Kirby-in-Cleveland, and Captain Anne, Burghwallis Hall, Doncaster. A vote of thanks to the gentlemen who had given permission for the Union to visit their estates, and to Rev. F. H. Allen for acting as guide, was then adopted, on the motion of Messrs. Turner and Emmet. The Sectional Reports were then taken.

In the absence of the officers of the Vertebrate section, Mr. Leonard Gaunt, of Farsley, reported that but very few observations had been made, and these not of great moment, he being the only member of the section present. As regards the mammalia, the only species noted was the Mole, although it was reported that the Water Shrew had again occurred after an absence of eight or nine years. Of birds 31 species were noted, 12 summer visitants and 19 residents. The former were the Willow Wren, Redstart, Tree Pipit, Swallow, House and Sand Martins, Swift, Chiffchaff, Sedge Warbler, Whitethroat, Spotted Flycatcher, and Whinchat. The residents were the Rook (breeding, young fledged), Carrion Crow, Starling (nesting), Blackbird (nesting), Song Thrush (nesting), Missel Thrush, Great and Blue Tits, Wren, Hedge Sparrow (nesting), Redbreast (nesting), Goldfinch (nesting), Chaffinch, Yellowhammer, House Sparrow, Skylark, Meadow Pipit, and Pied Wagtail. A Gull was observed, mobbed by Rooks. Of amphibians and fishes were noted two each—the Frog, Toad, Pike, and Eel. Mr. Gaunt added that he had been informed that the Little Grebe had been caught this year, and the Rev. W. Fowler that the nest of the Song Thrush had been noticed on the ground in Campsall Park during the day.

For the Conchological section Mr. John Emmet, F.L.S., one of its secretaries, reported that the section had done fairly well, although the season was early and the weather not very agreeable. In all, 35 species and one good variety had been collected. The 13 water shells, most of which were obtained by searching the heaps of debris by the ditch-sides, were *Spharium corneum*, *Bythinia tentaculata*, *Planorbis complanatus*, *P. carinatus*, *Limnæa peregra* var. *ovata*, *L. auricularia*, all plentiful in ditches about Campsall, a few each of *Valvata piscinalis* and *Limnæa truncatula* and one of *Planorbis albus* with them; *Unio tumidus* and

*Anodonta cygnea*, numerous in Campsall Lake; and numerous examples of *Limnaea stagnalis* and *Planorbis corneus*, collected by Mr. S. H. Bennett, of Rotherham. The 6 slugs were *Arion ater*, scarce, a few at Burghwallis; *A. hortensis* and *A. bourguignati*, a few at Burghwallis and Campsall; *Limax maximus*, one at Burghwallis; *L. levis*, one on the edge of Campsall Lake; and *L. agrestis*, common everywhere. Of the 16 land shells there were a few examples of *Succinea putris* in Burghwallis Woods and a few of *S. elegans* at Campsall Park; a few *Vitrina pellucida* at Burghwallis, &c.; a few *Zonites cellarius* and *Z. nitidulus* in Campsall Park, and one *Z. crystallinus* in Burghwallis Wood; one *Helix aspersa* at Campsall Village; several *H. nemoralis* at Campsall and Burghwallis; two or three *H. cantiana* collected by Mr. Rushforth, of Horbury; plenty of *H. hispida* and *H. rotundata* in Campsall and Burghwallis Woods, and a single example of the var. *alba* of the latter; a single *Bulimus obscurus* in Campsall Park; a single *Lupa umbilicata* found by Mr. Rushforth; numerous specimens of *Clausilia rugosa* and a few of *Cochlicopa lubrica* at both Campsall and Burghwallis; and a single example of *Carychium minimum* in Burghwallis Woods.

The Entomological section was represented by its secretaries, Mr. G. C. Dennis, York, and Mr. E. B. Wigglesworth, Wakefield, who reported one larva which Mr. Dennis recognised as *Leucania impura*. The almost too-abundant rainfall had prevented this section from carrying out its work. The season had opened with a fair prospect, but this day the members of the section were compelled in consequence of the excessive moisture to abandon the woods altogether, and their limited examination of the immediate locality of Askern between the showers was almost *nil*.

For the Botanical section its president, the Rev. Wm. Fowler, M.A., reported that owing to the unfavourable state of the weather and the lateness of the season comparatively few plants were observed (only 89 in all, and of these nearly all were common ones). The best, perhaps, were *Geum intermedium* and *Veronica montana*. A few Morells (*Morchella esculenta*) were found, but no Truffles, though the latter are known to occur both at Owston and Burghwallis. In a wood at the last-named place *Pluteus chrysopheus* and other more common Fungi were observed. The report on mosses was given by Mr. M. B. Slater, of Malton, Cryptogamic secretary to the section, and will be printed next month.

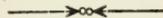
For the Geological section Mr. S. A. Adamson, F.G.S., Leeds, one of its secretaries, reported that from the inclement weather, and perhaps still more from an unaccountable reluctance on the part of many geologists to investigate the Permian strata, there was but a meagre attendance of the knights of the hammer. The ground was traversed from Askern to Campsall without any object of geological interest being noted, when on arrival at the Hall, Mr. Bacon Frank most kindly gave minute particulars where several quarries might be visited. The way was now taken in the direction of Barnsdale, where on the roadside two quarries excavated in the Lower Magnesian Limestone were visited. These unfortunately were not newly made nor in work, therefore the sections were much weathered and in many parts overgrown by vegetation. Enough could be seen, however, of the variable character and stratification of the limestone, flaggy in some places, thick and irregularly bedded in others. The characteristic cavities in this limestone, so beautifully lined with calc-spar were often seen, but no fossils were obtained, time not permitting of a lengthened search. Taking the road from Barnsdale to Skelbrooke a detour was made to Burghwallis, where an opportunity was given of noticing the extreme durability of this limestone for building purposes when favourable circumstances offer. In the outer walls of this venerable church good specimens of herring-bone masonry are seen, which indicate a very high antiquity, still the angles of the magnesian limestone are comparatively sharp after the lapse of so many centuries. Near Sutton a quarry in the Upper Magnesian Limestone was visited, but this, too, from being long out of use, proved unproductive of practical results.

For the newly-formed section for Micro-Zoology and Botany both its secretaries, Mr. W. Barwell Turner, F.C.S., F.R.M.S., Leeds, and Mr. J. M. Kirk, Doncaster, spoke, but, as might well be anticipated, it was not possible for them to give any idea of the results achieved in their department, inasmuch as this could not be done till after careful study of their gatherings at home. A vote of thanks to the chairman concluded the business.—W.D.R.

## BOOK NOTICES.

**Geology of the Hull, Barnsley, and West Riding Junction Railway and Dock.**—By the Rev. Edward Maule Cole, M.A., Vicar of Wetwang, York. Privately printed by Peck & Son, Hull; pp. 60, with index, frontispiece, plates of sections, and geological map.

The construction of a new railway is a rare opportunity for geologists to increase their practical knowledge by careful examination of the various sections revealed, and one, too, which is ever eagerly grasped. As the Hull and Barnsley line cuts across, almost at right angles, the series of beds from the Coal Measures to the Post-Tertiary Boulder Clays, the engineer of the line, Mr. George Bohn, rightly considered that the opportunity of a careful record was in this case too good a one to be lost, and he accordingly obtained the services of the able geologist above named, the President of the Geological Section of the Yorkshire Naturalists' Union. To Mr. Cole this was indeed a labour of love, and the result is the present volume, which is indispensable to all students of Yorkshire geology. The many readers of Mr. Cole's scientific works will remember how he can clothe the driest geological facts in charming language, and still retain that accuracy of detail so necessary in works of this character. In this new work the author has adhered to his happy style, and sections are described, theories examined, hypotheses started, and suggestions offered in a manner which will not only secure the close attention of the scientific reader, but also attract the notice of those whose reading is more general. The work is divided into six chapters or divisions, the first giving a brief résumé of the geology of the Millstone Grit and Lower Coal Measures of North-West and Central Yorkshire. Coming to the Middle Coal Measures, Mr. Cole commences his real work, and reviews the various beds met with on the line, giving in this part a good section well shown in a cutting at Upton, where the Magnesian Limestone is seen resting unconformably on the Coal Measures. Chapter II is devoted to the Permian and Triassic formations; a plate is here given of the stratification in South Kirkby Tunnel, where the Lower Magnesian Limestone has been cut through. From Great to Little Heck the Bunter of the Trias shows a good section, as is seen in the third plate. In Chapter III we come to the Lias; the Lower Lias is not touched by the railway, which passes through a depression or synclinal taken advantage of by the engineer, but the foundations of the occupation bridge to the west of the signal cabin of North Cave Station were excavated in the Ammonites Bucklandi beds; a plate in this division shows the railway cutting through a series of minor escarpments belonging to the Liassic and Oolitic series, till it reaches the loftier escarpment of the Chalk. In Chapter IV we pass to the Oolites, in which Mr. Cole is specially at home; after mentioning an excavation in the Millepore beds of the Lower Oolites, we come to the splendid section at Drewton, of which a plate is given, exposing finely the Kellaways Rock and Oxford Clay, capped by recent Boulder Clay and Chalk Gravel. Chapter V is devoted to the Upper Oolites and Chalk; in this part is described the celebrated St. Austin's Stone (the subject of the frontispiece), a mass of Flint breccia, left standing out by atmospheric denudation. Chapter VI commences with a description of Drewton Tunnel, a mile and a quarter long and entirely excavated in the lower beds of the White Chalk; on reaching Anlaby the chalk dips under the Hessele Boulder Clay, which forms the surface of a great part of Holderness. Several good tables of borings are given, so necessary to geologists, amongst which may be noted those at Barmby-on-the-Marsh and in the construction of the Alexander Dock at Hull. A geological sketch map of East Yorkshire in colours, with the route of the line marked upon it, enables the reader at a glance to note the formations met with and materially adds to the value of the volume. We certainly must congratulate Mr. Cole on his valuable contribution to the geological literature of Yorkshire, and upon the ability and care bestowed upon the production of the volume. Sections made in the cutting of railways are often imperfectly studied and seldom accurately recorded, and in this case the thanks of all geologists are due also to Mr. Bohn for his forethought in thus securing a permanent record of these interesting and valuable sections.



Under the title 'A Tourist's View of Ireland, by Johnnie Gray'—one of our Yorkshire Naturalists, Mr. H. Speight, of Bradford, has published a readable and interesting account of a tour in that island, referring in one or two places to the botany of the western districts.

**The Birds of Cumberland critically studied, including some Notes on the Birds of Westmoreland.**—By the Rev. H. A. Macpherson, M.A., and William Duckworth. Carlisle: Chas. Thurman & Sons, 1886.

It is again a pleasant duty to bring under the notice of our readers another important faunal work, relating not only to the region in which we are specially interested, but to the north-western portion, which, strange to say, has so long wanted a monographer or monographers. We cannot fail to notice at the outset, that our authors have had a district to deal with which has claims beyond even residents in the British Isles. Indeed, we take it, there are few spots more cherished than our lovely lake-country. As we should naturally expect, the avi-fauna of Cumberland is a rich one, its strength lying mainly in the number of breeding species, for which its diversified surface affords suitable habitats; the lowlands, mountains, moors, woodlands, lakes, and coast affording a nursery for no less than 116 species, as against 120 for Yorkshire and 114 for Lancashire respectively. The total avi-fauna of the county is given at 250 species, of which 84 are residents, 81 periodic visitants, and 85 casual visitants. The weakness of the list, so to speak, is to be found in the small numbers of the casual and accidental visitants from the European continent, which are such an important feature in all east-coast lists. Indeed not only are the interesting eastern forms, such as White's Thrush, &c., absent, but such comparatively familiar species as the Shore Lark, Mealy Redpoll, Hooded Crow, and others of frequent occurrence on the other side of England, are more or less rare or uncommon visitants. It is to be regretted that the authors have given such prominence to Westmoreland in their title, since the information relating to that county is meagre, and not only so, but when given is unfortunately mixed up with the matter relating to their premier county, without that ready distinction which is so very desirable. The treatment of the information given is somewhat uneven as regards the space devoted to the different species, some being treated of at length, while others of equal interest are somewhat briefly discussed. In this work, as in Mr. Mitchell's Birds of Lancashire, it has been thought well to make the initial letter of all specific names a capital. On this departure we would remark that such a proceeding is against all the recognised canons relating to zoological nomenclature, and hence the practice lacks that scientific precision which all modern naturalists aim at maintaining. These are however small, very small, defects, and happy are the authors against whom greater faults cannot be urged. Indeed we regard the book as a valuable contribution to the geographical distribution of our British birds, carried out on the lines on which a modern faunal work should be shaped; and the authors are to be congratulated upon, and may take justifiable pride in, their work, which bears evidence of being the production of painstaking and conscientious naturalists. The book is well got up, and is embellished with a coloured map and an admirable coloured plate by Mr. Keulemans, of that interesting bird the Dotterel, and we gladly recommend it to our readers as in every way a creditable and satisfactory production.

*NOTES AND NEWS.*

The name of Prof. A. H. Green, M.A., is in this year's list of fifteen selected candidates for the Fellowship of the Royal Society, as also are those of P. H. Pye-Smith, M.D., of Sheffield, and Henry Wilde, the electrician, of Manchester.

All our readers will hear with regret that the cause of the discontinuance of the page of meteorological information which it was our custom to give, is that Mr. George Paul, F.G.S., who has so ably and kindly edited it, is leaving Shadwell, which of necessity terminates the series of records which he has kept at that place.

Members of the Yorkshire Naturalists' Union who had the pleasure of the acquaintance of Mr. S. D. Bairstow, F.L.S., formerly of Huddersfield, will be pleased to learn that he has this year been chosen President of the Eastern Province Naturalists' Society at Port Elizabeth, Cape Colony, a society which he founded and acted as secretary to during the past few years. It is gratifying to find—from a perusal of the annual report—how vigorously natural science is being prosecuted in that part of the Colony against numerous adverse circumstances with which home naturalists have not to contend.



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*The Editors hope to publish the following papers within the next few months:—*

Hymenoptera near York in 1885—THOS. WILSON.

Liverpool Coleoptera (Part 10)—J. W. ELLIS, L.R.C.P., &c.

Marfield Pond—THOMAS CARTER.

Bibliography for 1885.

Natural History of Lincolnshire.—The next instalment of this is to be upon the Mammalia, by JOHN CORDEAUX. Schedules have been prepared for obtaining information: one will be sent to any one willing to furnish notes.

Short Notes.—It is the wish of the Editors to give in each number about a page of short notes in each of the various subjects of which the *Naturalist* takes cognisance. To this end they rely upon their friends keeping them well supplied. At present short notes on Botany, Entomology, Palæontology, Microscopy, Conchology, &c., are particularly desired.

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## BOOKS RECEIVED.

- Midland *Naturalist* for June 1886. [The Editors.  
The Young *Naturalist* for June 1886. [J. E. Robson, Editor.  
The *Naturalist's World* for June 1886. [P. Lund, Editor.  
Illustrated *Science Monthly* for June 1886. [Bogue, Publisher.  
*Science Gossip* for June 1886. [Chatto and Windus, Publishers.  
*Natural History Journal* for June 1886. [J. E. Clarke, Editor.  
New York Microscopical Society—*Journal* for March 1886. [From the Society.  
Royal Dublin Society.—*Scientific Proceedings*, vol. 4, parts 7, 8, 9; vol. 5, parts 1 and 2. [Society.  
*Notes on the Aspect of the Planet Mars in 1884*—Otto Boeddicker. [Royal Dublin Society.  
*Geological Age of North Atlantic Ocean*—Edwd. Hull. [Royal Dublin Society.  
*Fossil Mammalia of Ireland*—Valentine Ball. [Royal Dublin Society.  
*Changes of Radiation of Heat from the Moon*—Otto Boeddicker. [Royal Dublin Society.  
*Revue Bryologique*, 13e Année, 1886, No. 3. [Mons. T. Husnot, Redacteur.  
The late Mr. William Wilson.—James Cash. 8vo, 22 pages. [Warrington Field Club.  
*Grevillea*, a quarterly record of Cryptogamic Botany—Vol. 14, No. 72, June 1886. [Dr. Cooke, Editor.  
*Nottingham Naturalists' Society*—*Transactions and 33rd Report*, 1885. [The Society.  
Lord Lilford's *Coloured Figures of British Birds*—Part 2. [Lord Lilford.

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In view of the forthcoming visit of the Yorkshire Naturalists' Union to Upper Nidderdale, the following account of it from a zoological point of view will not be without interest.

UPPER NIDDERDALE shares with Upper Swaledale the character of being the most unsophisticated, the most secluded and sequestered of the Yorkshire dales, and in each case the cause is the same. Closed in at the dale-head by a long and semicircular sweep of mountain wall which for nearly forty miles attains a continuous and unbroken elevation of more than a thousand feet, and on Great Whernside reaches its maximum altitude of 2,310 feet, the dale is clearly and sharply cut off from the neighbouring areas by a physical barrier which, far from easy to traverse in summer, becomes practically impassable in the winter. As a natural consequence of their isolation from this cause, the people of the dale retain to a greater extent than elsewhere their primitive manners and customs, their vernacular speech, and their old-world superstitions. The fauna and flora of the dale, too, are more secure here than elsewhere from the inroads of the vandals and philistines at whose hands the districts which are more easily reached by railway have suffered to so large—not to say alarming—an extent, and consequently retain their native luxuriance and variety to an unusual degree.

The total drainage area or catchment basin of the river Nidd, from its origin on the flank of Great Whernside to its junction with the Ouse at Nun Monkton, is given at 260 square miles. Of this, however, what is called 'Nidderdale' covers only about a hundred square miles, and may be said to terminate at about Ripley, where the hills rapidly decline and the basin of Nidd becomes merged in that of its main stream. Eastward of Ripley the many windings of the river, whether it flows beneath the historic castle of Knaresborough or meanders lazily through the pleasant meadows of Ribston, past the gigantic old oak of Cowthorpe and by the once blood-stained field of Marston Moor, are through the level alluvial flats of the great central plain or vale of York.

The physical configuration of the dale shares the general uniformity of its geological structure, which is for the most part millstone grit, except for the very limited tracts where the most easterly outcrops of

the mountain limestones occur. At the dale-head the mountain pastures sweep down in broad grassy declivities or slopes from the summit ridge to the river banks, and some portion of the watershed is capped by undulating plateaux of heatherland much broken up by peat-ravines. Down the mountain pastures trickle the innumerable rills which by their union form the head-waters of Nidd and its tributaries. The river, which rapidly acquires force and volume from the numerous tributary streams which feed it, runs a course due east for about six miles before turning southward. About Angram it is margined by numerous escarpments of shale of considerable height, and fringed by a slight growth of wood and coppice. The outcrop of mountain limestone above Lofthouse is the cause of beauty and picturesqueness in the scenery of the dale and of its chief tributary, the How Stean Beck, the lower part of whose course lies through a deep and imposing gorge in the limestone, the remarkable scenery of which can hardly be excelled for grandeur and interest. Two miles above Lofthouse the river Nidd disappears entirely, precipitating itself into the pot-holes called Manchester Hole and Goyden Pot, to reappear in volume below Lofthouse after a subterranean course of a couple of miles in extent. Not that the visible bed of the stream is dry throughout, for the feeders from the mountain slopes are sufficient to keep the stream running above ground as well as below. At its reappearance the Nidd enters upon the more sober formation of the millstone grit, and, leaving behind it the tinge of romance which attends its disappearance in the permeable limestones, from henceforth pursues the even tenor of its way in the full light of day. Below Lofthouse the dale becomes irregular in surface, and it is moderately well wooded about and below Pateley Bridge, while at Brimham rocks and Guyscliffe the skyline is diversified by crags of the most extraordinary conformation.

Concerning the geology of the district it is not our province to speak; and as to its botany, we must refer to the various floras and other works which include Nidderdale in their scope.

Nor in respect of zoology does this paper profess to embody more than the original and unpublished observations made by ourselves and a few others during the past few years. Had we taken cognizance of the whole bibliography of the subject, the present paper might have grown to the dimensions of a volume, and we will therefore here content ourselves by merely referring to Mr. Joseph Lucas' 'Studies in Nidderdale' as containing much information on the natural history of the whole district, which, when added to our own, will make a tolerably complete account of what is at present known on the subject.

## MAMMALS.

The mammalian fauna has been well worked out, and there are not many local catalogues which can show a better list of bats, one of which—the Lesser Horse-shoe Bat—here reaches its northernmost limit in Britain. It would be of interest to confirm or disprove the existence of the Harvest-mouse, and to study the specific distinctions of the Shrews. The following notes refer to 30 species, of which about 25 may be taken as constituting the present fauna.

**Lesser Horse-shoe Bat.** *Rhinolophus hipposideros*. Two specimens were at different times within three days taken in Smelthouse Wood, near Pateley.

**Long-eared Bat.** *Plecotus auritus*. A common species, occurring throughout the district, from Darley to as high up the dale as Lofthouse Common. Storey has found it under stones in the quarries, and it is found beneath ivy in trees and old buildings; 15 at one time at Dowgill. This species is a familiar one, and regarded not only as a hybrid between a mouse and a bird, but also as an omen of ill luck.

**Noctule.** *Vesperugo noctula*. Occasionally about Bewerley Hall and at Glasshouses, where a dozen were observed on one summer evening in 1885. Has been taken hibernating in winter.

**Pipistrelle.** *Vesperugo pipistrellus*. Very common. In ivy, in roofs; many a score found at a time at Glasshouses.

**Natterer's Bat.** *Vespertilio nattereri*. Occasionally found near Pateley Bridge, Glasshouses, Gowthwaite Hall, &c.

**Whiskered Bat.** *Vespertilio mystacinus*. Nearly as common as the Pipistrelle, and occurs as high up the dale as Lofthouse.

**Hedgehog.** *Erinaceus europæus*. Called 'Otchon' about Pateley, pronounced 'urthen' lower down the dale. Common everywhere, and found as high as Angram and Greenhow Hill. As elsewhere, this animal is vulgarly accused of sucking cows. A friend of Storey's, upon whom reliance can be placed, took a light one summer's night in a lane near Pateley, thought he saw a rabbit, but found it was a Hedgehog, which was in a humble-bee's nest, the bees buzzing about.

**Mole.** *Talpa europæa*. Local names: 'Mowdy,' 'Mowdywarp.' Very common in the dale, and on Pateley Moor and Greenhow Hill. White examples have already been recorded in the *Naturalist*.

**Shrew.** *Sorex tetragonurus*. Local name: 'The Little Shrew Mouse.' Common.

- Water Shrew.** *Crossopus fodiens*. Rather common in the little streams in Smelthouse Wood.
- Fox.** *Canis vulpes*. Local names: 'Renny' or 'Fox.' Its favourite haunts are Brimham and Guyscliffe, particularly the latter.
- Marten.** *Martes sylvestris*. Local name: 'Sweet Mart.' This rare animal has occurred at Ripley and other places.
- Weasel.** *Mustela vulgaris*. Local names: 'Mouse-hunter,' 'Mouse-Weasel.' Common.
- Stoat.** *Mustela erminea*. Local name: 'Powcat.' Not so common as the Weasel.
- Polecat.** *Mustela putorius*. Local name: 'Powcat.' Formerly common. Probably still lingers in Guyscliffe, Helksgill, and Ramsgill, but none have been noticed of late years.
- Otter.** *Lutra vulgaris*. Extremely rare in Nidderdale. Has occurred as high up as Ramsgill, but most of the occurrences have been about Pateley.
- Badger.** *Meles taxus*. Local name: 'Pate' [hence Pateley = the badgers' field]. Used within living memory to be rather common, but recent occurrences are only few in number.
- Red Deer.** *Cervus elaphus*. A note on the occurrence of escaped deer from Studley appeared in the present volume of the *Naturalist*, p. 36.
- Fallow Deer.** *Cervus dama*. One was killed in How Stean several years ago, having probably escaped from Bolton or Studley Park.
- Squirrel.** *Sciurus vulgaris*. Common, but not so much so as before the very hard winters of five or six years ago, when great numbers perished.
- Dormouse.** *Muscardinus avellanarius*. Not common, but occurs sparingly in most of the woods.
- Harvest Mouse.** *Mus minutus*. George Charlton describes his having seen this species nesting in a corn-field. We have not, however, seen specimens, and cannot vouch for this species being a member of the Nidderdale fauna.
- Long-tailed Field Mouse.** *Mus sylvaticus*. Not so common as the Field Vole.
- House Mouse.** *Mus musculus*. Common in all houses.
- Brown Rat.** *Mus decumanus*. Local name: 'Ratten.' A great pest.
- Water Vole.** *Arvicola amphibia*. Local name: 'Water Ratten.' Common in the streams.
- Field Vole.** *Arvicola agrestis*. Locally called 'Short-tailed Field Mouse.' Common; may be easily caught in hedge-bottoms.

- Red Field Vole.** *Arvicola glareolus*. Common. Usually looked upon not as a mouse, but a small rat.
- Hare.** *Lepus europæus*. Common; occurs on the moors right up to Great and Little Whernside.
- Rabbit.** *Lepus cuniculus*. Abundant. Silver-grey rabbits have been turned down by Messrs. Yorke and Harker.

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#### BIRDS.

The avifauna of Upper Nidderdale is singularly rich in residents and summer visitants, no less than 90 species breeding annually within its limits—a census which it would be perhaps difficult to surpass in any similar area in the county. This special feature of true ornithic wealth is no doubt due to the great diversity of habitat afforded. The river Nidd furnishes and traverses a variety of haunts, from alpine moorlands, shaley bluffs, many of them clothed with hanging vegetation, and is margined with a luxurious growth of timber, brake, and pasture, while its many feeders flow down deep, rocky, picturesque, and secluded dells. The woodlands and coppices are numerous, and but seldom trodden. The grasslands are extensive and varied. The moorlands encircle the entire district, while at Guyscliffe and Brimham are to be found bold cliffs. We must remember, too, since it is an important item, the secluded nature of the entire district, which has already been mentioned. But while the region thus affords such an extensive range of physical feature, yet it lacks the lake and the tarn, and thus it is not visited by some of the numerous species of migratory waders during the spring and autumn movements, nor by the many members of the Duck family, which in winter are so numerous on such waters.

The total avifauna of Upper Nidderdale, so far as it is known at present, comprises 123 species. Of these 62 are Residents, 28 are Summer Visitants, 11 Winter Visitants, and 23 are Casual or Periodic Visitants and more or less rare. It is amongst this latter division that the future additions to the list will, we venture to say, be made.

Among the Resident species the most interesting are—Goldfinch, a very local Yorkshire bird; the Hawfinch, which has only recently extended its range hither; the Crossbill, also only recently detected; the Lesser Spotted Woodpecker, another uncommon county species; the Heron, which nests singly in the woods; the Teal, nesting on the moorlands; the Woodcock, whose eggs and chicks have more than once been found; while the Dipper, the Grey Wagtail, and the Grouse are characteristic of the subalpine nature of the district.

Among the Summer Visitants may be mentioned the local Black-cap; the Wood Wren, becoming common; the pretty and erratically distributed Pied Flycatcher; that most local of Yorkshire birds, the Wryneck, which there is reason to think is, perhaps, an annual visitor; the Dunlin, which breeds annually on some of the moorlands; while the Ring Ouzel, the Wheatear, and the Sandpiper are typical.

The Winter and the Casual and Periodic Visitants do not demand special notice, and they are treated of sufficiently in the subjoined annotated list; but, nevertheless, the occurrence of the Skua (*Stercorarius catarrhactes*) is somewhat remarkable.

Of the former bird-life of the Upper Nidd but little can be gleaned, and nothing concerning it appears to have been placed on record. It is, however, within the memory of natives now living when the Raven and the Buzzard were to be classed among the indigenous species; and when the Starling, now to be voted a nuisance by the ornithologist, since it ousts better things, was a very uncommon bird indeed.

The heights to which some of the species are stated to ascend apply in all cases, except in those of the Golden Plover and the Grouse, to observations taken *in the valley by the river-side*, and above and about Angram, where the river runs through a particularly wild country, destitute of all cover save of the most stunted description, and have been determined by the aneroid. It would be interesting to ascertain to what height in the valley other species ascend, and we hope to devote further attention to this phase in the ornithology of Upper Nidderdale.

**Missel Thrush.** *Turdus viscivorus*. Resident, and common throughout the dale below Lofthouse.

**Song Thrush.** *Turdus musicus*. Common, but not so numerous as it was a few years ago.

**Redwing.** *Turdus iliacus*. A common winter visitant; often confounded with the Fieldfare by the natives.

**Fieldfare.** *Turdus pilaris*. A common winter visitant. Local names: 'chocker,' 'felfer.'

**Blackbird.** *Turdus merula*. Common resident up to Whernside.

**Ring Ouzel.** *Turdus torquatus*. A common summer visitant to the dale above Brimham, nesting on the moorlands and the margins of the Nidd above 'Goydon Pot.'

**Dipper.** *Cinclus aquaticus*. A fairly common resident; observed to be more numerous below Pateley.

**Wheatear.** *Saxicola oenanthe*. A summer visitor, common, and generally distributed up to, and perhaps above, 1,200 feet. Locally known as the 'Stonechat.'

- Whinchat.** *Pratincola rubetra*. A common summer visitant, occurring in the valley up to 1,000 feet.
- Stonechat.** *Pratincola rubicola*. Rare; nested at Guyscliffe in 1884, and at Fellbeck in 1885.
- Redstart.** *Ruticilla phœnicurus*. A fairly common summer visitant, occurring as high up the dale as Lofthouse. Local names: 'wrenny,' 'wrenny redtail.'
- Redbreast.** *Erithacus rubecula*. A common resident.
- Whitethroat.** *Sylvia cinerea*. A summer visitant, and common. Locally called 'big peggy,' and 'big peggy whitethroat.'
- Lesser Whitethroat.** *Sylvia curruca*. A summer visitant; not so common as the last named.
- Blackcap.** *Sylvia atricapilla*. A summer visitant, occurring sparingly in the wooded portions of the dale.
- Garden Warbler.** *Sylvia hortensis*. A common summer visitant. Locally known as the 'hairtail.'
- Golderest.** *Regulus cristatus*. A resident, breeding sparingly; more numerous in winter.
- Chiffchaff.** *Phylloscopus rufus*. A summer visitor to the woodlands.
- Willow Wren.** *Phylloscopus trochilus*. A common summer visitant; and, along with the last, confounded with the Lesser Whitethroat.
- Wood Wren.** *Phylloscopus sibilatrix*. A summer visitant, not uncommon in the woodlands below Ramsgill.
- Sedge Warbler.** *Acrocephalus phragmitis*. A pretty generally distributed summer visitant.
- Grasshopper Warbler.** *Locustella nævia*. A summer visitant, occurring sparingly as high as Lofthouse.
- Hedge Accentor.** *Accentor modularis*. A common resident.
- Long-tailed Titmouse.** *Acredula rosea*. A common resident in the wooded portions of the dale.
- Great Titmouse.** *Parus major*. A common resident, locally called 'great billy bluecap.'
- Coal Titmouse.** *Parus britannicus*. A fairly common resident.
- Marsh Titmouse.** *Parus palustris*. A fairly common resident.
- Blue Titmouse.** *Parus cæruleus*. A common resident, and locally known as 'billy blue-cap.'
- Creeper.** *Certhia familiaris*. A resident; fairly common.
- Wren.** *Troglodytes parvulus*. A common resident, occurring in the valley as high as 1,100 feet. Local names: 'tommy tit,' 'jenny wren.'
- Pied Wagtail.** *Motacilla lugubris*. A common resident, and locally known as the 'water wagtail,' and 'waggy.'

- Grey Wagtail.** *Motacilla melanope.* Fairly common in summer, much less so in winter.
- Yellow Wagtail.** *Motacilla raii.* A summer visitant, but not common.
- Meadow Pipit.** *Anthus pratensis.* A common resident, occurring to a great elevation on the grassy hills. Local names: 'titling,' 'moor pout.'
- Tree Pipit.** *Anthus trivialis.* A fairly common summer visitant.
- Great Grey Shrike.** *Lanius excubitor.* An occasional winter visitant. One shot at Wilsill in 1884, another in 1885.
- Waxwing.** *Ampelis garrulus.* An irregular winter visitant. A pair in Mr. Yorke's collection were shot in the Beverley Woods.
- Spotted Flycatcher.** *Muscicapa grisola.* A common summer visitant.
- Pied Flycatcher.** *Muscicapa atricapilla.* A local and not numerous summer visitant, breeding at Brimham, Guyscliffe, Pateley, Wath, Ramsgill, and as high as Lofthouse.
- Swallow.** *Hirundo rustica.* A common summer visitant, observed above Angram, and as high up the dale as 1,100 feet.
- Martin.** *Chelidon urbica.* A common summer visitant, observed above Angram, and up to 1,150 feet.
- Sand Martin.** *Cotile riparia.* A common summer visitant, occurring to 1,100 feet above Angram, and on Greenhow Hill, 1,400 feet.
- Goldfinch.** *Carduelis elegans.* Not very uncommon in winter; has twice nested in the dale. Locally called 'redcap.'
- Siskin.** *Chrysomitris spinus.* A winter visitant. During the winter of 1885-6 a large flock frequented the alders bordering the Nidd, near Pateley.
- Greenfinch.** *Ligurinus chloris.* A common resident.
- Hawfinch.** *Coccothraustes vulgaris.* An uncommon resident. Only lately detected in the dale.
- Sparrow.** *Passer domesticus.* An abundant resident up to Angram.
- Tree Sparrow.** *Passer montanus.* A resident, but not common, and much overlooked.
- Chaffinch.** *Fringilla cœlebs.* A common resident. Locally known as the 'bullspink.' Observed above Angram, at 1,050 feet.
- Brambling.** *Fringilla montifringilla.* A winter visitant, noted in small flocks during the seasons of 1884 and 1885.
- Linnet.** *Linota cannabina.* A resident, but not so common as formerly, owing to the numbers captured for sale. Local names: 'robin linnet,' 'grey linnet.'

- Lesser Redpoll.** *Linota rufescens*. A resident, breeding sparingly at Brimham and Guyscliffe. Common in winter, when large flocks may be seen feeding on the alders fringing the Nidd. Local name: 'chevy linnet.'
- Twite.** *Linota flavirostris*. A resident, breeding sparingly on the moorlands. Large flocks visit the lower lands in the autumn and winter.
- Bullfinch.** *Pyrrhula europæa*. A resident, but not common.
- Crossbill.** *Loxia curvirostra*. Probably a resident. A few have been noted in recent years in the fir woods near Pateley; several observed there during the winter of 1885, again in January 1886.
- Common Bunting.** *Emberiza miliaria*. A common resident.
- Yellow Bunting.** *Emberiza citrinella*. A very common resident.
- Reed Bunting.** *Emberiza schœnielus*. Resident, but not common.
- Snow Bunting.** *Plectrophanes nivalis*. A common winter visitant, chiefly to the moorlands, where large flocks, composed mostly of young birds, are observed.
- Skylark.** *Alauda arvensis*. A common resident; observed at Angram, at 1,000 feet, and on Greenhow, 1,400 feet.
- Starling.** *Sturnus vulgaris*. A common resident. John Sinclair, aged 76, remembers when there were only one or two pairs of this now most numerous species in and around Pateley. Local name: 'sheep starling.'
- Jay.** *Garrulus glandarius*. Resident, but in limited numbers, and fast becoming rarer, owing to persecution by the gamekeepers. Its haunts are chiefly the woods at Brimham and Guyscliffe. Not known to nest above Ramsgill. Local name: 'jenny jay.'
- Magpie.** *Pica caudata*. Resident, and subject to the same remarks as the Jay. Local name: 'nanpie.'
- Jackdaw.** *Corvus monedula*. Resident and common, especially at Guyscliffe.
- Carrion Crow.** *Corvus corone*. Resident in limited numbers throughout the dale. Locally known as the 'ket crow.'
- Hooded Crow.** *Corvus cornix*. A common winter visitant, locally known as the 'Norway crow.'
- Rook.** *Corvus frugilegus*. A very common resident, known as the 'crow.'
- Raven.** *Corvus corax*. A rare visitor. Formerly resident, and breeding. A pied specimen, in the collection at Bewerley Hall, was shot in the dale several years ago.
- Swift.** *Cypselus apus*. A common summer visitant, but not occurring above Ramsgill. Local name: 'devil screamer.'

- Night-jar.** *Caprimulgus europæus*. A common summer visitant.  
Local names: 'night crow,' 'night hawk.'
- Great Spotted Woodpecker.** *Dendrocopus major*. A resident, breeding sparingly at Guyscliffe and Brimham.
- Lesser Spotted Woodpecker.** *Dendrocopus minor*. An uncommon resident. Several pairs nesting in the dale.
- Green Woodpecker.** *Gecinus viridis*. Resident and fairly common; breeding in most of the woods.
- Wryneck.** *Yunx torquilla*. An uncommon summer visitant. One caught on the 3rd of May, 1886, at Fell Beck.
- Kingfisher.** *Alcedo ispida*. A resident in limited and decreasing numbers, nesting up to Lofthouse.
- Cuckoo.** *Cuculus canorus*. A common summer visitant. Storey has only found the eggs in the Meadow Pipit's nest. Observed as high as 1,150 feet above Angram.
- White Owl.** *Strix flammea*. A very uncommon resident, locally known as 'ullat.'
- Long-eared Owl.** *Asio otus*. A not uncommon resident, locally known as the 'long-horned ullat.'
- Short-eared Owl.** *Asio accipitrinus*. A winter visitant. Abundant in 1883-4. Local name: 'short-horned ullat.'
- Tawny Owl.** *Syrnium aluco*. A common resident, locally known as the 'wood ullat.'
- Common Buzzard.** *Buteo vulgaris*. Doubtless once common; now seldom seen. One in the collection at Bewerley Hall was obtained in the dale several years ago, by Mr. T. E. Yorke.
- Rough-legged Buzzard.** *Archibuteo lagopus*. One trapped near Ramsgill, in the winter of 1883.
- Sparrowhawk.** *Accipiter nisus*. Common resident.
- Peregrine Falcon.** *Falco peregrinus*. A pair shot in the dale in 1846, by Mr. Christopher Woodhead.
- Merlin.** *Falco æsalon*. A resident in limited numbers, nesting on the moorlands.
- Kestrel.** *Tinnunculus alaudarius*. A common resident.
- Osprey.** *Pandion haliaëtus*. One shot by Mr. Thomas Joy, on Whernside, several years ago.
- Cormorant.** *Phalacrocorax carbo*. One shot at Middlesmoor, in the autumn of 1885.
- Common Heron.** *Ardea cinerea*. A resident, nests being noted every year in Ruddingsgill and other suitable places. There are small Heronries at Ripley Park and Bishop Thornton. Local name: 'heronsew.'
- Wild Goose.** Flocks noted every winter. Species not ascertained.

- Sheldrake.** *Tadorna vulpanser*. A male shot, out of a party of four, on Hayshaw Moor, near Pateley, on the 6th December, 1884.
- Mallard.** *Anas boscas*. Resident in limited numbers; common in winter.
- Teal.** *Querquedula crecca*. Resident; breeding on the moors, and in 1885 on the lakes at Eagle Hall, the residence of the Hon. H. E. Butler.
- Wigeon.** *Mareca penelope*. A common winter visitant.
- Pochard.** *Fuligula ferina*. Several have been shot in the dale, one of which is in the Bewerley collection.
- Scaup.** *Fuligula marila*. A male caught on the Nidd at Pateley, on the 30th of January, 1885, is now in the possession of Mr. I. Sinclair.
- Common Scoter.** *Edemia nigra*. A casual visitant on migration. Several specimens have been obtained.
- Ring Dove.** *Columba palumbus*. A common resident, locally known as the 'cooshat.'
- Stock Dove.** *Columba oenas*. Resident, and rather common at Guyscliffe. Often called the 'rock dove.'
- Pheasant.** *Phasianus colchicus*. Common resident.
- Partridge.** *Perdix cinerea*. A resident, common in the lowlands and occurring sparingly on the moors.
- Common Quail.** *Coturnix communis*. Mr. Smith Metcalf found a nest in a field at Fellbeck, in the summer of 1870. One shot at North Oaks, on the 7th of September, 1885, by Mr. C. T. Naylor.
- Red Grouse.** *Lagopus scoticus*. A common resident on the moorlands. A cream-coloured variety shot in the dale, is described in the *Naturalist* for January 1886.
- Black Grouse.** *Tetrao tetrix*. Many were turned down a few years ago by the late Mr. John Yorke, but soon disappeared, though several have been shot during recent years.
- Water Rail.** *Rallus aquaticus*. Three specimens have been obtained, one on October 30th, 1884, on Hardcastle Moor, and the last was shot on the 21st of October, 1885, at Wilsill, near Pateley.
- Land Rail.** *Crex pratensis*. A common summer visitant, locally known as the 'daker hen.' Has nested on Greenhow Hill (1,400 feet).
- Moorhen.** *Gallinula chloropus*. A rather common resident, and known here, as elsewhere in Yorkshire, as the 'water-hen.'
- Coot.** *Fulica atra*. A casual visitant, only once known to have occurred, at Middlesmoor, where one was captured in autumn of 1884.

- Golden Plover.** *Charadrius pluvialis*. A summer visitant, breeding on the moors up to 2,500 feet. Occasionally seen in winter.
- Ringed Plover.** *Ægialitis hiaticula*. One shot on the Nidd at Pateley several years ago, by Mr. Horner.
- Dotterel.** *Eudromias morinellus*. One shot on Pateley Moor several years ago, by Mr. Wm. Thorpe, and another by Mr. C. Beck, on Pateley Moor, in the autumn of 1884.
- Lapwing.** *Vanellus vulgaris*. A common resident, locally known as the 'tewitt,' 'pewitt,' 'teafitt' (pronounced 'tearfit').
- Oystercatcher.** *Hæmatopus ostralegus*. A pair observed on Greenhow Hill, in May 1880.
- Woodcock.** *Scolopax rusticula*. A resident, breeding in very limited numbers. Not uncommon in winter.
- Common Snipe.** *Gallinago cœlestis*. A common resident.
- Jack Snipe.** *Lymnocyptes gallinula*. A common winter visitant.
- Dunlin.** *Tringa alpina*. A summer visitant; a few pairs nesting annually on the moorlands.
- Common Sandpiper.** *Tringoides hypoleucus*. A common summer visitant, occurring up to the source of the Nidd.
- Green Sandpiper.** *Helodromas ochropus*. One shot in September 1885, on Heathfield Moor, near Pateley, by Mr. E. Yorke.
- Curlew.** *Numenius arquata*. A common summer visitant to the moorlands.
- Common Gull.** *Larus canus*. A spring and autumn visitant to the dale.
- Lesser Black-backed Gull.** *Larus fuscus*. Like the last, a spring and autumn visitant.
- Skua.** *Stercorarius catarrhactes*. Caught near Pateley in 1864, and now in the Bewerley Hall collection.
- Storm Petrel.** *Procellaria pelagica*. One found dead at Dacre Banks, by Mr. J. W. Whitley, in the winter of 1865.
- Little Grebe.** *Tachybaptus fluviatilis*. Resident; breeding at Fellback; often seen in winter.

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#### REPTILES AND AMPHIBIANS.

The list of reptiles and amphibians is somewhat meagre, and when further attention is paid to these animals we may expect to include the Great Warty Newt, which has never yet been reported.

- Viper.** *Vipera berus*. Local name: 'hag-worm.' Common on the moors.
- Common Lizard.** *Lacerta vivipara*. Local names: 'askerd,' 'asker,' 'āask.' Common in old stone heaps, old walls, in woods, and wherever a lot of rubbish has accumulated.

- Slow-worm.** *Anguis fragilis*. Local name: 'sleerworm.' Common in hedge-bottoms and woods.
- Smooth Newt.** *Triton tæniatus*. Local names: 'watter-askerd,' 'watter-asker,' 'watter-ääsk.' Common in stagnant waters.
- Toad.** *Bufo vulgaris*. Local name: 'të-ad.' Common.
- Frog.** *Rana temporaria*. Common.

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#### FISHES.

The ichthyology of Nidderdale is not very rich. The physical character of the district precludes the occurrence of many kinds of fish, and consequently we have but seven to record. Fish have been introduced into the Nidd at various times. Mr. Yorke, some six or seven years ago, introduced some thousands of the Neuchatel trout, both above and below Ramsgill. None appear to have been taken by anglers since, so that the introduction appears not to have increased the fish found in the river. Storey has never met with any fish but trout in the river or streams above Lofthouse, and it becomes a question for consideration whether the two-mile subterranean course of the river is a bar to the ascent of fish.

**River Bullhead.** *Cottus gobio*. Local name: 'bullhead.' Very numerous in the Nidd, somewhat less so in the streamlets.

**Minnow.** *Leuciscus phoxinus*. Local name: 'minnerd.' Occurs in little shoals, common in the Nidd below Lofthouse, but not so in the tributaries.

**Loach.** *Nemachilus barbatulus*. Local name: 'pottle.' Common in places where the lampern is found; very numerous in the Nidd, somewhat less so in the streamlets.

**Trout.** *Salmo fario*. Very numerous, particularly near the source of the river. They are, however, here much smaller and much darker in colour than in the lower and more open parts of the stream. In some of the deeper chasms of How Stean Beck, into which the sun's rays never penetrate, the trout are extremely dark, almost black.

**Grayling.** *Thymallus vulgaris*. By no means numerous, and occurs almost entirely in the Nidd itself, being more frequently met with near Pateley than elsewhere.

**Eel.** *Anguilla vulgaris*. Comparatively numerous, especially where there are sandbanks or congenial mud. Seldom found in any of the tributaries.

**Lampern.** *Petromyzon fluviatilis*. Local name: 'little lamp eel.' Met with very commonly in shallow places, where considerable deposits of sand and shingle have been left by the river.

## MOLLUSCA.

The most striking characteristic of the molluscan fauna of Nidderdale, imperfectly studied as it has been, is the almost total absence from it of freshwater species, the ubiquitous *Limnaea peregra* being the only one as yet recorded for the dale. Nor can we expect more than, say, half a dozen species to be found, for the Nidderdale area is one of rapid and impetuous streams, and hardly offers scope anywhere for standing waters of sufficient permanence to attract many species. Of land shells 32 species, and of slugs seven species have been noted, and there are doubtless various forms still to reward further investigation. Not that much variety of station is afforded by the district generally, the almost uniform geological structure of which does not tend to the nourishment of molluscan life, save where the limited outcrops of mountain limestone at How Stean and on Greenhow Hill impart a new element to the district, the effect of which is seen in the presence of such species as *Helix lapicida*, *H. rupestris*, *Balea*, and *Clausilia laminata*, all of which, as well as other species, are in Nidderdale confined to the calcareous element in the soil. The observations embodied in the list which follows are mainly the result of the investigations of Mr. Storey, about Pateley, and of Mr. F. T. Walker, about Birstwith, and also include scattered observations made by other naturalists. For the determination of all Mr. Storey's and many of Mr. Walker's specimens we have been indebted to Mr. J. W. Taylor. It may be added that the list should include another species of slug, which, however, has not yet been formally proclaimed as a member of the British fauna, and is, therefore, for the present omitted.

**Arion ater.** Abundant throughout the dale, from 1,500 feet elevation on the slopes of Great Whernside downwards.

**Arion hortensis.** Birstwith, Ramsgill, Pateley, etc. Common in cultivated tracts.

**Amalia marginata.** Has been reported as occurring at Pateley Bridge, but the record is open to grave doubt.

**Limax maximus.** Near Pateley Bridge and Goydon Pot; very common at Birstwith.

**Limax arborum.** An abundant species in the dale; has been noted at Pateley Bridge, near Gouthwaite, at Glasshouses, and near Ripley.

**Limax flavus.** Rennie Crag, near Birstwith (F. T. Walker).

**Limax agrestis** and vars. **sylvatica** and **tristis**. Very abundant throughout the dale, from 1,200 feet elevation downwards.

**Vitriina pellucida.** Very common in damp woods; Birstwith, Ripley, Pateley Bridge, Ramsgill, etc.

- Zonites cellarius.** Common ; Birstwith, Ripley, Dacre Banks, Ramsgill, Greenhow Hill, Lofthouse, How Stean, Goydon Pot, etc.
- Zonites alliarius.** Harefield and Guyscliffe Woods, Pateley Bridge, Ripley, Hartwith, etc.
- Zonites nitidulus.** Very common at Ripley and Birstwith.  
var. **nitens.** Birstwith.
- Zonites purus.** Pateley Bridge and Birstwith, in limited numbers.  
var. **margaritacea.** Plentiful on a bank near Nidd Bridge.
- Zonites radiatulus.** Common at Birstwith.
- Zonites excavatus.** Guyscliffe Wood, Pateley.
- Zonites crystallinus.** Greenhow Hill, Ripley, marshy field near Darley, and very common at Birstwith.
- Zonites fulvus.** Birstwith, found in a damp beech wood, under decayed leaves.
- Helix nemoralis.** How Stean, Pateley, etc., but does not appear to be plentiful.
- Helix hortensis.** Near Pateley Bridge, Goydon Pot, Harefield Wood, Glasshouses, How Stean, Lofthouse, Ramsgill, etc., very numerous. The var. *lutea* ooooo appears to be a prevalent one, and roseolabiate forms have occurred..
- Helix arbustorum.** Pateley Bridge, How Stean, etc. The only Birstwith example was a broken one found by Mr. Walker on a stone heap, where it had been dropped by a bird.
- Helix rufescens.** A very abundant species about Pateley, Middlesmoor, Ramsgill, Gouthwaite, Harefield Wood, Bewerley Park, Glasshouses, Birstwith, Ripley, and near Hartwith Dam.
- Helix concinna.** Birstwith, very common.
- Helix hispida.** How Stean, Lofthouse, Goydon Pot, Greenhow Hill, Ripley, Birstwith, etc., common.  
var. **subrufa.** Near Ripley Station.
- Helix sericea.** Near Hartwith Dam, August 4th, 1883, on nettles and ivy (F. T. Walker).
- Helix virgata.** A single example sent from Glasshouses in 1882, by W. Storey.
- Helix lactea.** A living example of this Mediterranean species occurred on the railway at Pateley Bridge.
- Helix caperata.** Very common at Birstwith.
- Helix ericetorum** and var. **instabilis.** Found near Birstwith, but rare.
- Helix rotundata.** Very abundant throughout the dale, occurring on the top of Greenhow Hill, and as far as Goydon Pot.
- Helix rupestris.** Very abundant on Greenhow Hill.
- Helix pygmæa.** Nidd Bridge.

**Helix pulchella.** Nidd Bridge.

**Helix lapicida.** Abundant on a wall near How Stean, and found amongst some nettles at Birstwith.

**Bulimus obscurus.** Near How Stean.

**Pupa umbilicata.** Plentiful on Greenhow Hill, and near How Stean; found on a wall near Hartwith Dam.

var. **alba.** Several examples found near Pateley Bridge, by Mr. Lister Peace. Probably the precise locality was Greenhow Hill.

**Balea perversa.** Pateley Bridge, May 1874, Lister Peace.

**Clausilia rugosa.** A common species at How Stean, Lofthouse, Greenhow Hill, Ramsgill, Pateley, near Ripley Station, and Hartwith Dam.

var. **albida.** Two found in 1874, near Pateley Bridge (Lister Peace).

**Clausilia laminata.** How Stean.

**Cochlicopa tridens.** Plentiful on a bank between Ripley and Nidd Bridge.

**Cochlicopa lubrica.** A widely distributed and common species, occurring at Goydon Pot, How Stean, Ramsgill, Pateley, Harefield Wood, and near Ripley, Hartwith, and Birstwith.

**Limnæa peregra.** Plentiful at Shaw Mill, Ripley. Has not been reported higher up the dale.

#### LEPIDOPTERA.

Nidderdale still awaits its entomological investigator, who, when forthcoming, will doubtless find a good field for investigation in the woods and on the moors, and certainly has full scope for increasing the meagre list of 169 species we are able to cite. Such as we are able to cite are those which have been collected about Pateley by Mr. Storey, or about Birstwith by Mr. F. T. Walker. Those which have occurred about Pateley are:—

*Pieris brassicæ.*

*Pieris rapæ.*

*Pieris napi.*

*Anthocharis cardamines.*

*Vanessa urticæ.*

*Vanessa cardui.*

*Satyrus janira.*

\**Chortobius davus* (on the moors).

*Chortobius pamphilus.*

\**Lycæna argiolus* (one at Guyscliffe, May 17th, 1884).

\**Acherontia atropos* (several instances).

\**Hepialus sylvinus.*

*Hepialus velleda.*

*Hepialus humuli.*

*Chelonia caja.*

*Arctia lubricipeda.*

*Arctia menthastri.*

*Pœcilocampa populi.*

*Bombyx rubi* (very common on the moors).

*Bombyx callunæ* (on the moors).

*Saturnia carpini* (common on Heathfield, Pateley, and Brimham Moors).

- |   |  |
|---|--|
| Rumia cratægata.                                    | Tanagra chærophyllata.                   |
| Metrocampa margaritata.                             | *Acronycta rumicis.                      |
| Amphidasis betularia.                               | Xylophasia rurea.                        |
| *Fidonia atomaria (abundant on the moors).          | Xylophasia polyodon.                     |
| *Himera pennaria.                                   | Charæas graminis.                        |
| Abraxas grossulariata.                              | Mamestra brassicæ.                       |
| Hybernia progemmaria.                               | Caradrina cubicularis.                   |
| *Hybernia aurantiaria (Guyscliffe Wood).            | Triphæna pronuba.                        |
| *Hybernia defoliaria.                               | Noctua brunnea (Guyscliffe).             |
| Cheimatobia brumata.                                | Noctua xanthographa.                     |
| *Cheimatobia boreata.                               | Polia chi.                               |
| Oporabia dilutata.                                  | Phlogophora meticulosa.                  |
| Larentia didymata.                                  | Anarta myrtilli (abundant on the moors). |
| Larentia cæsiata (Pateley Moors and Brimham Rocks). | Abrostola urticæ.                        |
| *Emmelesia decolorata.                              | Plusia iota.                             |
| Melanippe montanata.                                | Plusia gamma.                            |
| Cidaria populata.                                   | Mania typica.                            |
|   | *Hypena proboscidalis.                   |

Of these, all have been found by Mr. Walker about Birstwith, except the few marked with the asterisk. Of these it would be interesting to confirm the reported occurrence of *Chortobius davus* on the moors.

Other insects whose capture would repay the investigator are the very scarce *Gastropacha ilicifolia*, which once occurred on the Dallowgill Moors, part of the Nidderdale watershed, and *Dasypolia templi*, which it is surmised from circumstantial evidence has occurred, or may occur, in the Scotgate Ash or other quarries in the neighbourhood of Pateley.

In addition to the species starred above, Mr. F. T. Walker has found the following species near Birstwith:—

- |   |                                   |
|---|-----------------------------------|
| Colias edusa (has occurred at Ripley).              | Selenia lunaria.                  |
| Vanessa io.   | Odontopera bidentata.             |
| Vanessa atalanta.                                   | Crocallis elinguaris.             |
| Polyommatus phlæas.                                 | Boarmia rhomboidaria.             |
| Lycæna alexis.                                      | Tephrosia punctulata.             |
| Macroglossa stellatarum.                            | Iodis vernaria.                   |
| Sesia bembeciformis (reported as S. apiformis).     | Asthenia candidata.               |
| Hepialus hectus (in a larch wood).                  | Venusia cambricaria.              |
| Hepialus lupulinus (rarer than the other 'Swifts'). | Acidalia aversata.                |
| Nudaria mundana.                                    | Cabera pusaria.                   |
| Lithosia griseola.                                  | Macaria liturata.                 |
| Chelonia plantaginis (Wilson's Wood).               | Halia wavaria.                    |
| Odonestis potatoria.                                | Panagra petraris.                 |
| Lasiocampa quercifolia.                             | Fidonia piniaria (Wilson's Wood). |
| Ourapteryx sambucata.                               | Abraxas ulmata.                   |
| Ellopiæ fasciaria.                                  | Hybernia rupicapraris.            |
|   | Larentia salicata.                |
|   | Larentia olivata.                 |

Larentia pectinaria.	Acronycta psi.
Eupithecia pygmæata.	Leucania comma.
Eupithecia castigata.	Leucania pallens.
Eupithecia vulgata.	Nonagria fulva (Reynard Crags).
Eupithecia abbreviata.	Hydræcia nictitans.
Eupithecia exigua.	Axylia putris.
Eupithecia rectangulara.	Xylophasia lithoxylea.
Thera juniperata.	Mamestra persicariæ.
Thera firmata (Wilson's Wood).	Apamea oculea.
Ypsipetes elutata.	Agrotis segetum.
Melanthia rubiginata.	Agrotis porphyrea.
Melanthia ocellata.	Triphæna janthina.
Melanthia albicillata.	Triphæna orbona.
Melanippe sociata.	Noctua augur.
Melanippe galiata.	Noctua plecta.
Melanippe fluctuata.	Noctua festiva.
Anticlea badiata.	Noctua umbrosa (Ripley).
Coremia propugnata.	Tæniocampa gothica.
Campptogramma bilineata.	Orthosia lota.
Phibalapteryx lignata.	Orthosia macilentia.
Cidaria miata.	Xanthia ferruginea.
Cidaria immanata.	Tethea subtusa.
Cidaria silacea.	Tethea retusa.
Cidaria prunata.	Cosmia trapezina.
Cidaria testata (Reynard Crags).	Dianthæcia cucubali.
Cidaria fulvata.	Miselia oxyacanthæ.
Cidaria pyrاليا.	Agriopsis aprilina.
Cidaria dotata.	Euplexia lucipara.
Eubolia cervinaria.	Aplecta herbida.
Eubolia mensuraria.	Hadena adusta.
Eubolia palumbaria.	Hadena thalassina.
Anaitis plagiata.	Cucullia umbratica.
Cilix spinula.	Abrostola triplasia.
Pygæra bucephala.	Plusia chrysis.
Diloba cæruleocephala, larvæ com-	Plusia v-aureum.
mon on laurels, doing great	Gonoptera libatrix.
damage (F. T. Walker, 1881).	Amphipyra tragopogonis.
Thyatira batis.	Mania maura.
Bryophila perla.	Phytometra ænea.

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#### HYMENOPTERA.

- Vespa vulgaris.** 'Common Wasp.' Pateley Bridge, Dacre Banks, Birstwith, &c.
- Vespa germanica.** Pateley Bridge.
- Vespa rufa.** Guyscliffe Wood.
- Vespa sylvestris.** A nest noted on the moors near Pateley Bridge, in 1864 (E. Foxton Firby, Nat., 1866, iii, 81).

**Andrena fulva.** Pateley Bridge.

**Bombus lapponicus.** This scarce species occurs on the Pateley and  
Brimham Moors.

**Bombus lapidarius.** Pateley Bridge.

**Bombus lucorum.** Pateley Bridge.

**Bombus virginalis.** Pateley Bridge.

**Apis mellifica.** Hive-bee.

**Sirex gigas.** Pateley Bridge.

#### DIPTERA.

**Hæmatopota pluvialis.** 'Cleg.' Pateley Bridge.

#### ORTHOPTERA.

**Forficula auricularia.** Earwigs are locally known as 'twitchbell' at  
Harefield, near Pateley.

#### COLEOPTERA.

**Cicindela campestris.** 'Tiger beetle.' Brimham Rocks, Pateley  
Moors, &c. Common.

**Carabus violaceus.** Pateley Bridge.

**Ocyopus olens.** 'Devil's coach-horse.' Pateley Bridge.

**Aphodius fimetarius.** Pateley Moor.

**Melolontha vulgaris.** 'Cockchafer.' Pateley Bridge.

#### CRUSTACEA.

**Crayfish. Astacus fluviatilis.** Local name: 'Crawfish.' Found  
only in Fell Beck, where it is common, and into which it was  
accidentally introduced between forty and fifty years ago, by a  
person named Swales, who, having some in his care when stay-  
ing over night at Fell Beck, deposited the vessel containing them  
in the stream. Some escaped, established themselves in the  
beck, and propagated their species.

No attention has been paid to any of the other orders of insects,  
nor to any of the more obscure groups of animal life, so that the  
investigators of them will find in the dale ample scope for their  
researches.

## NOTES—BOTANY.

**Flora of Strensall and District.**—Permit me to add the following three plants, as well as an extra locality for another, to my friend A. R. Waller's list at pp. 133—145, and to H. J. Wilkinson's supplementary one at p. 173 of the *Naturalist*:—*Polygala serpyllacea* Weihe, *Carex fulva* Good., *Agrostis canina* L., Strensall Common. *Cirsium anglicum* Lamk, on the Common. I observed these at the excursion of the Yorkshire Naturalists' Union to Strensall Common, on July 14th, 1883. I also noted *Rubus carpinifolius* W. and N. in a hedgerow near the Common, which might be added to Mr. Wilkinson's list of Rubi previously referred to. In fairness to Mr. Waller it should be stated, as he himself says at the commencement of his paper—'I have not yet sufficiently examined the Rubi, Rosæ, and Salices of the district to enable me to give a satisfactory list of these genera.' These can hardly be given as 'additions' to a section of the Phanerogams he leaves for future consideration.—P. F. LEE, Dewsbury, June 5th, 1886.

**Manchester Cryptogamic Society, February 15th, 1886.**—Mr. Pearson read a translation from Limpricht's *Deutschlands Kryptogamen-flora* of the description therein given of *Andreaea huntii*—previously described under the name of *A. commutata*. This *Andreaea* was first gathered by the late Mr. G. E. Hunt, of Manchester, near Braemar, and (the name *commutata* being pre-occupied) Herr Limpricht had dedicated it to the memory of Mr. Hunt, 'whose too early death,' he wrote, 'is deeply lamented by all bryologists.' Mr. John Whitehead, of Ashton, was unanimously elected an honorary member of the Society.

**Manchester Cryptogamic Society, April 19th, 1886.**—Mr. G. A. Holt exhibited *Thuidium recognitum* and *Trichostomum crispulum* var. *nigroviride*, from Monk's Dale, Derbyshire, the latter moss being new to the county. *Barbula hornschiichiana* was also one of his interesting finds in the neighbourhood of Miller's Dale. He read a paper on the three closely allied mosses *Thuidium tamariscifolium*, *T. recognitum*, and *T. delicatulum*, explaining the critical characters of each species. His paper was illustrated with drawings of the dissections of their essential characters. He also showed British specimens of *Thuidium delicatulum*, which he had recently discovered in the neighbourhood of Dolgelly. The moss hitherto collected in Britain as *T. delicatulum* proves to belong to *T. recognitum*. Hence Mr. Holt's discovery now establishes the fact that *T. delicatulum* is a truly British species.

**Mosses and Hepatics gathered on the Asken Excursion, May 20th, 1886.**—I beg to hand you the list of mosses, &c., gathered on the Asken excursion, so far as made out. Upon the whole an interesting gathering. At this season the genus *Amblystegium* was in the best condition, and I got two or three very interesting forms. The *Amblystegium radicale* was a very good find, and one I have not previously gathered. **MOSSSES:** *Barbula muralis* L. var. *incana*, in dry situations, on walls, &c. *Barbula ambigua* B. & S., on mortar crevices of an old wall, in old fruit. *Funaria hygrometrica* L., got in fine fruit; a common and widely distributed moss. *Webera nutans* Schreb., on stones in an old quarry, sterile. *Mnium rostratum* Schrad., *Mnium punctatum*, Hedw., both without fruit, on stones in old quarry. *Homalothecium sericeum* L., *Campthothecium lutescens* Huds., *Eurhynchium prælongum* Dill. The above three all being autumn fruiting species, were found only without fruit. *Rhyncostegium murale* Hedw., got with old fruit. *Amblystegium serpens* L. vars. *tenue*, *majus*, and *pinnatum* were all got in fruit. *Amblystegium radicale* P. Beauv., was perhaps the rarest moss gathered, and a small patch of it was got in fine fruit in a very characteristic condition. *Campylium chrysophyllum* Brid., only in sterile state. *Cratoneuron filicinum* L., also sterile. **HEPATICS:** *Lunularia vulgaris* Mich. This plant is commonly found growing on pots in greenhouses, often covering the pots to the detriment of their other occupants, and rarely found truly wild. A small patch of it was gathered off a gravel walk with its distinctive gemmæ. *Lophocolea heterophylla* Schrad., *Lophocolea bidentata* L. These two plants are common and widely distributed.—M. B. SLATER, Malton, May 28th, 1886.

## NOTE—MOLLUSCA.

**Paludina contecta in Nottinghamshire.**—During a conchological ramble with my friend Mr. Musson, of Nottingham, this species was found in tolerable abundance in a dyke on the Nottingham side of the river Idle, near Bawtry. On the Yorkshire side we found several shells among the rejectamenta of a small stream. On a previous excursion we collected a number of *Balia perversa* beneath the loose bark of willow trees growing near the junction and within each of the parishes of Darlton, East Markham, and East Drayton.—W. A. GAIN, Tuxford.

## NOTE—MICRO-ZOOLOGY AND BOTANY.

**Microscopic life at Askern, May 20th, 1886.**—I forward a list of the organisms found in the waters about Askern during the Yorkshire Naturalists' Union excursion, as determined after careful examination. Most of the species are common, but of course the state of the water prevented any better kinds being found. ROTATORIA: *Hydatina senta*, *Lepadella emarginata*, *Lindia torulosa*, *Rotifer vulgaris*. RHIZOPODA: *Amæba diffluens*. ENTOMOSTRACA: *Branchipus stagnalis*, *Canthocamptus minutus*, *Cyclops quadricornis*, *Daphnia pulex*. ARACHNIDA: *Milnesium tardigrada*. HYDRA: *Hydra fusca*. DIATOMACEÆ: *Frustulia saxonica*, *Diademsis confervacea*, *Diatoma vulgare*, *Nitzschia sigmoidea*, *Cymatopleura solea*, *Cocconema lanceolatum*, *Fragilaria capucina*, *Gomphonema acuminatum*. DESMIDS: Varieties of *Closterium*, *Cosmarium*, and *Pediastrum*. INFUSORIA: *Aspidisca lynceus*, *Amphileptus fasciolus*, *Coleps hirtus*, *Dileptus folium*, *Himantophorus charon*, *Kerona mylitis*, *Loxodes bursaria*, *Paramecium aurelia*, *Stentor mulleri*, *Trachelocera viridis*, *Urostyla grandis*, *Vorticella nebulifera*.—J. M. KIRK, Doncaster, May 29th, 1886.

## NOTE—LEPIDOPTERA.

**Variation in the Genus Cidaria.**—At the meeting of the Entomological Society of London, on May 5th, 1886, Mr. Howard Vaughan exhibited a long series of *Cidaria immanata* from Kent, Surrey, and other southern counties, Perthshire, Isle of Man, Isle of Arran, the Orkneys, and Shetlands. He also exhibited *C. rursata* from various localities in the South of England, and from Perthshire, Argyllshire, and the Islands of Arran, Lewis, and Hoy. Mr. Vaughan further exhibited varieties of *C. suffumata* from Dover and Darlington. Prof. Westwood commented on the interesting nature of the exhibition of *C. immanata*, and stated that he had never before seen such a wonderful collection of varieties of a single species.—HERBERT GOSS.

## NOTE—HYMENOPTERA.

**Pteromalus puparum near Louth.**—In December last I found a chrysalis of *Vanessa atalanta* on a dead stem of *Ballota nigra*, by the side of the road at Cawthorpe, near Louth, the inside of which was full of the larvæ of a small parasite. These larvæ were placed in a chip-box, and on looking at them on 22nd May I found that a large number had become imagines, some of which I sent to Mr. E. A. Fitch, who identified them as *Pteromalus puparum*. The larvæ, which were very inactive, were about  $\frac{1}{2}$  of an inch in length and of a dirty white or grey colour. The pupæ were about the same length as the larvæ, and pale yellowish-brown in colour. Under a low power of the microscope the various parts of the future fly, including the legs, antennæ, and wings, could be made out, the segments of the abdomen being marked by lines of a darker colour. One larva, which was kept in a box by itself, pupated on 9th June and remained in that state about 12 days.—H. WALLIS KEW, Louth, June 22nd, 1886.

July 1886.

## NOTES—ORNITHOLOGY.

**Swallows and the late Storm.**—The awful weather of the middle of May—the gales, the rain, and the disastrous, unprecedented floods played havoc amongst the newly-arrived and beautiful summer visitants—the Swallows—in some parts of Yorkshire and other counties. Mr. Slater, of Malton, tells me that a score flew into his warehouse completely exhausted and allowed themselves to be handled; others were found dead. The Swifts (*Cypselus apus*) had arrived only a few days before the storm occurred. I have heard of several House Martins (*Chelidon urbica*) and Chimney Swallows (*Hirundo rustica*) being picked up dead at this place, also at Newton Kyme, and no doubt other records will show the same fatality elsewhere. The *Standard* of May 15th says that a very remarkable effect of the recent gale is the wholesale destruction of Swallows and other small birds in the northern counties. In Cumberland and Westmoreland the slaughter was terrible. In the gravels of Bassenthwaite station, says the same authority, 200 Swallows and Sand Martins (*Cotile riparia*) have been picked up dead, and at Appleby, Windermere, and other places in the Lake District Swallows have been found dead in scores. A Sheffield paper, describing the floods about Mexborough, states that Swallows in hundreds have been picked up starved to death by the severe weather. What with the rain, the inclement, unseasonable cold, the icy wind and the want of insect food, which could not be got at, the poor birds have almost been decimated, being starved to death, almost frozen, and pitilessly drowned into the bargain. Anyone looking over the fields covered with water to the tops of the hedges in the neighbourhood of Arksey, and Doncaster, and Askern, at our excursion on May 20th, will form some idea of the destruction to bird-life which must have taken place; not only swallows, but all others that build their nests in hedgerows and ditches and fields must have suffered in immense numbers, as will probably be found when the water subsides. Perhaps such a case in May has not been known within living memory, and it is worth while making a note of it.—JOHN EMMET, Boston Spa, May 28th, 1886.

A fortnight ago we had a sad week ornithologically in this neighbourhood. Owing to the unusual cold which prevailed, the insects upon which the Swallows and Martins are accustomed to feed were unable to come out, and in consequence these little spring visitors died by scores and hundreds, only the strongest and possibly oldest birds being able to survive; and even these might be seen sitting helplessly in rows—a hundred or more together upon window-sills or the ironwork beneath bridges, and I noticed some myself (I think Martins), which could fly a little, sitting by the river-side upon the ground, every now and then making a feeble attempt to seize some stray fly or gnat, but apparently quite unable to fly more than a yard or two at a time. Great quantities were picked up in a dead or dying condition both in fields, in gardens, and by the river-side near to the city, whilst numbers of carcasses were to be seen floating down the river Ouse, plainly indicating that elsewhere also the destruction had been severe. Many other birds have, I believe, been considerably affected by the cold and nidification is in consequence much retarded. Numbers of eggs were laid early in May and afterwards deserted, the parent birds being unable to sit upon them during the cold, rainy weather.—J. BACKHOUSE, junr., West Bank, York, May 27th, 1886.

From a nesting-hole in the bank of the Mersey I have just taken the remains of fifteen Sand Martins; there may possibly have been more, but that was the number of skulls I counted in the putrefying mass. The bodies of the birds were huddled together with some broken egg-shells on a nest about 3 feet from the mouth of the hole. From the highly decomposed state of the birds, I am inclined to think that they perished during the severe weather we experienced about the middle of May, but they may possibly have been drowned by the flooded river, which rose considerably above the nesting-hole about a fortnight ago. In either case, is it not a curious fact for so many birds to resort for shelter to a hole in which a pair of their own species was nesting? (The broken egg-shells show that nesting operations were going on). On the 16th of May I had two Swallows brought to me. They were picked up on the 13th, in a stable, where they had retreated with several others, and subsequently died from cold and hunger.—CHAS. OLDHAM, Sale, Cheshire, June 14th, 1886.

**Jackdaw and Young Birds.**—I witnessed a freak this evening which, though perhaps usual enough, may not be known to many of your readers. On returning home I saw a Jackdaw (*Corvus monedula*) on the roof of a friend's house, peering down into the ivy in a somewhat suspicious manner. A number of Sparrows were on a tree close by, making a most vociferous outcry. Presently the Jackdaw dropped down into the ivy, put his head into a sparrow's nest, pulled out a half-fledged young one, flew back on to the roof, and there and then calmly 'ate it.'—H. T. ARCHER, Newcastle-on-Tyne.

**Birds deserting their Nests.**—A neighbour tells me that in his garden some of the Blackbirds (*Turdus merula*), Thrushes (*T. musicus*), a Hedge Accentor (*Accentor modularis*), and a Robin (*Erythacus rubecula*) have deserted their nests—the latter all containing eggs. At Easter I stayed with a friend on one of our Northumbrian moors for a week's fishing. In our evening rambles after the day's fishing was over we found many nests of the Missel Thrush (*Turdus viscivorus*), Song Thrush (*T. musicus*), Blackbird (*T. merula*), Water Ouzel (*Cinclus aquaticus*), Red Grouse (*Lagopus scoticus*), Curlew (*Numenius arquata*), Snipe (*Gallinago caelestis*), Green Plover (*Vanellus vulgaris*), &c. Nearly all of these contained eggs.

My friend was back at the moor again last week and reports that many of the nests of the Thrushes and Blackbirds have been deserted, some of them even containing young. As there is no one within many miles to meddle with them I think the desertion must have been caused by the heavy rains which have occurred, especially as at Easter, when there were eggs in most of the nests, there was very little foliage to shelter them.

The Carrion Crows (*Corvus corone*) and Lesser Black-backed Gulls (*Larus fuscus*) rob the nests of the ground-building birds unmercifully. The shepherd found a Snipe's nest with four eggs, but the next day they had a hole pecked through them and the contents sucked out. I brought nest and the remains of the eggs away as they were, and while doing so came across a pair of Black-backed Gulls quartering the moor like pointers.—H. T. ARCHER, Newcastle-on-Tyne, June 9th.

**Thrush laying in a Blackbird's nest. Late stay of the Redwing.**—Early this spring a Blackbird (*Turdus merula*) built its nest in a stunted bush of the famous North American 'Red Wood' (*Taxodium sempervirens*) in one of our plantations and subsequently laid in it the full complement of eggs, which, however, were soon stolen by one of the ubiquitous birds-nesting boys and for a while the nest remained empty; not for long, however, for on May 4th I happened to pass the bush and, out of mere curiosity, looked into the nest, when I was a little astonished to find that a Thrush (*T. musicus*) had taken possession, and after plastering the inside with mud had laid her four eggs, being too lazy, one might suppose, to construct a nest for herself.

On the same date (May 4th) a Redwing (*T. iliacus*) was seen here. The individual who observed it knows the species well and reports that he had been very close to the bird in question and had specially noticed its well-marked eye-stripe.—JAMES BACKHOUSE, junr., West Bank, York, May 27th, 1886.

**Dunlins and Black Tern near Nottingham.**—On April 4th and again on 25th I had glimpses of small parties of Sandpipers with dark underparts which I was unable to identify. On May 9th, however, I had a better opportunity. A friend called to tell me that a flock of about 30 Sandpipers were flying up and down the river about a mile away. I was fortunate enough to catch up a straggler from the flock which was obligingly tame. I found it to be a Dunlin (*Tringa alpina*) in full breeding plumage. To-day, May 11th, a Black Tern (*Hydrochelidon nigra*) passed and re-passed me several times whilst rowing in a boat on the Trent. I finally saw it within a few feet of me perched on a stone in the river.—F. B. WHITLOCK, Nottingham, May 11th, 1886.

**Pied Flycatcher in North Lincolnshire.**—Yesterday a strange bird was reported to me as frequenting a garden in Bourne Road, Alford. To-day I have seen it. It is a male Pied Flycatcher (*Muscicapa atricapilla*) without doubt. I had not time to wait to see if a female be also in company. I have, from reports in previous years, suspected it in the Alford district; it is now a certainty. The occupier has been requested to protect it, and I hope it may nest.—JAS. EARDLEY MASON, The Sycamores, Alford, 16th May, 1886.

## THE YORKSHIRE NATURALISTS' UNION AT FLAMBOROUGH HEAD.

Those members of the Yorkshire Naturalists' Union who travelled from Leeds to Hull by the 2.14 a.m. mail train on Whit-Monday, the 14th of June, judging from the sunrise which they witnessed, anticipated a fine, not to say broiling day. Their expectations were not, however, realized, and about mid-day and throughout the afternoon storms of wind and rain marred to some extent the success of the excursion, so far as its thorough and complete enjoyment was concerned. The Union were particularly fortunate in the kindness which they experienced at the hands of the resident land-owners, Mrs. Cottrell-Dormer and the Rev. Yarburgh Lloyd Greame, who granted full leave to members to visit every part of their extensive properties, and added the offer of further hospitalities which the day's arrangements prevented the acceptance of. Three main lines of routes were planned, and duly carried out. A couple of waggonettes conveyed members to the lighthouses, where Mr. William Crowe, junr., of Flamborough, had made preparations to enable them to witness the cliff-climbing, having had ropes fixed along the cliffs to enable visitors to station themselves at the very cliff edge, and so better observe the climbers. Facilities, of which one member availed himself several times, were given for practical experience of the cliff-climbing. Thanks to Mr. Crowe's kindness the members of this party passed an enjoyable morning. Others of a different turn of mind devoted the day to a minute and leisurely investigation of the Dane's Dyke, and the geologists, more prone to active and prolonged exertions, 'braced themselves up for a quiet, gentle amble' which extended to fourteen miles, finishing up with a run to catch the 3.15 train at Bempton station. All parties converged by four o'clock on the North Shore Refreshment Pavilion, where an admirably provided tea awaited them, and where the meetings were afterwards held.

The chair of the general meeting was occupied—in the absence of the president—by the Rev. W. C. Hey, M.A., of York, a vice-president. There were about sixty or seventy members present, representing thirteen societies, viz.:—Beverley, Bradford (2), Dewsbury, Doncaster, Driffield, Hull, Leeds (3), Malton, Rotherham, and York. The minutes having been taken as read, Messrs. Chas. Brownridge, F.G.S., Horsforth, Jesse Oliver, Leeds, —. Thirkettle, Leeds, and the Rev. W. Thompson, M.A., J.P., Guldrey Lodge, Sedbergh, were elected members. The Cleveland Naturalists' Field Club (Middlesbrough, 62 members), of which several members were present, and whose accession will prove a source of increased strength to the Union, was unanimously admitted into union. Thanks were then voted to Mrs. Dormer and the Rev. Y. L. Greame, to the Rev. E. M. Cole and Messrs. G. W. Lamplugh and W. Crowe, for the benefits received at their hands, after which the sectional reports were given.

For the Vertebrate section its secretary, Mr. James Backhouse, junr., M.B.O.U., York, reported that 25 residents and 12 summer visitants among the birds had been noted, as follows:—*Residents*: Thrush, Blackbird, Missel Thrush (nesting), Robin, Rook, House Sparrow (nesting), Skylark, Greenfinch, Yellow Bunting, Jackdaw, Common Bunting, Meadow Pipit, Starling, Hedge Sparrow, Wren, Rock Pipit, Rock Dove (nesting), Herring Gull, Kittiwake (nesting), Puffin (nesting), Razorbill (nesting), Guillemot (nesting), Hooded Crow, Common Gull, Pied Wagtail (nesting). *Migrants*: Willow Wren, Chiffchaff, Blackcap, Swallow, Martin, Swift, Sand Martin, Spotted Flycatcher, Sedge Warbler, Tree Pipit, Cuckoo, Corncrake. In other departments the only species reported were the Smooth Newt and the Great Warty Newt, both at Dane's Dyke.

For the Conchological section, its president, Rev. W. C. Hey, M.A., of York, reported. He and the senior secretary of the section, Mr. J. D. Butterell, with Mr. H. T. Soppitt, of Bradford, and others had investigated the neighbourhood of Bridlington and Dane's Dyke. The total number of species observed was 31, including ten water shells, six slugs, and fifteen land shells. The list is as follows:—*Spherium lacustre* (a remarkable variety), *Pisidium pusillum*, *P. nitidum*, *P. fontinale*, *Limnæa peregra*, *L. palustris*, *L. truncatulus*, and *Planorbis nautilus* from a pond near Dane's Dyke House; *P. complanatus* and *Physa fontinalis* from a pond by the railway at Bridlington; *Arion ater* and v. *albolateralis*, *A. hortensis*

and another species, *Limax agrestis*, *L. levis*, *L. maximus*, *Succinea putris*, *Zonites cellarius*, *Z. nitidulus*, *Z. crystallinus*, *Z. fulvus*, all from Dane's Dyke; *Helix aspersa* and v. *exalbida* from the old locality at Bridlington; *H. nemoralis* in various interesting varieties, including *albolabiata*, and *H. cantiana* from the same place; *H. rufescens*, *H. hispida* and var. *subrufa*, Dane's Dyke; *H. virgata* and *H. caevata*; Bridlington Cliffs; *Clausilia rugosa*, *Zua lubrica*, and *Carychium minimum*, Dane's Dyke.

For the Entomological section Mr. G. C. Dennis, York, secretary of the section, stated that *Eupithecia lariciata* was the only lepidopteron of note that had been reported, the rain having put a stop to entomological work.

For the Botanical section its secretary, Mr. M. B. Slater, stated that the district around Bridlington and the promontory of Flamborough is geologically on the chalk, having on its surface a covering of boulder drift clay, the soil of which is generally fertile, and around Bridlington well cultivated, the corn growing luxuriantly in some places almost to the extreme edge of the sea cliff. Under such circumstances it is fair to assume that many of the indigenous plants of the district have been eradicated by cultivation. The wild ravine of Dane's Dyke affords, however, a locality where the native plants may still be found, and the sea cliffs also have their wild denizens—only such, however, as can bear the exposure to the salt spray during the driving storms which occur at times on this coast. The botanists confined their explorations mainly to Dane's Dyke and the coast cliffs. A ramble, however, of four or five hours is quite inadequate to give more than a general glance at the vegetation then growing, and a more detailed list of the flora of the district would require to be done by more permanently resident botanists. During the few hours of the ramble 163 flowering plants were noted, including 6 Ferns and 3 Equisetums. The general character of the flora is similar to that of limestone and chalk districts, with the addition of some few maritime plants not often met with in more inland places. Vegetation is unusually late, the fact of the common Hawthorn (*Cratægus oxyacantha*) being only in young bloom well indicating the general lateness of the season. The plants seen in flower were mostly late spring flowering kinds, very few of the summer flowering plants were met with. The following list comprises a few of the most interesting of our native plants which were seen:—*Aquilegia vulgaris* L., *Cochlearia officinalis* L., *Spiræa filipendula* L., *Campanula glomerata* L., *Myosotis sylvatica* Ehrh., *Plantago maritima* L., *P. coronopus* L., *Armeria maritima* Willd., the normal red-flowered form and also a white-flowered form, *Orchis morio* L., *O. mascula* L., *O. maculata* L., *Fritillaria meleagris* L. The Rev. E. M. Cole noted a plant of *Saxifraga granulata* which had been found at Towthorpe-on-the-Wolds, about 20 miles north-west of Bridlington; this locality is on the same chalk formation which extends to Flamborough Head.

For the Geological section, all the officers of which were present, its president, Rev. E. M. Cole, M.A. (Wetwang), and its senior secretary, Mr. S. A. Adamson, F.G.S. (Leeds), reported. The geological party had been during the day in charge of Mr. Cole and of Mr. G. W. Lamplugh, who is so well known on account of his researches in Yorkshire coast geology. The programme set out was ambitious, extending from Bridlington along the coast to Flamborough Head, then along the cliffs to Bempton, and inland to Bempton station, a total distance of about fourteen miles, faithfully carried out, despite the heavy rain which fell at intervals. The boulder clay of Holderness has long been minutely studied by Mr. Lamplugh, and his discoveries, particularly in the neighbourhood of Bridlington, have been so valuable, that no work upon geology is complete without an account of them. It has now been classified in four divisions, the top being, at present, correlated with the Hesse clay, succeeded by the upper and lower purple clays, these overlying the basement clay. In the last-named division occur those transported masses of sand and clay full of mollusca, so well known to geologists as the 'Bridlington Crag.' There are also beds of gravel, sand, or clay, parting the four divisions named, which, no doubt, represent inter-glacial periods. A short distance along the beach at Bridlington, Mr. Lamplugh pointed out in the cliffs a fine section showing the upper and lower purple and basement clays; here and there, in the latter, occurred those fossiliferous patches already named. Proceeding farther, a bed of inter-glacial clay on the beach was noted. Mr. Lamplugh also directed

attention to those beds of sand and gravel and laminated clay which rest upon the upper purple clay, more particularly in the cliffs opposite Sewerby, and known as the 'Sewerby Gravels.' Proceeding, the ancient chalk cliff which runs inland was seen, evidence that previous to the great ice age the sea covered Holderness, the line of coast being in the direction of Burton Agnes, Craike Hill, and Hessle. Some pre-glacial beds of sand and chalk débris were noted. Then evidence of the great pre-glacial valley was seen, filled up during the glacial period and since, at Dane's Dyke, partially re-excavated by denudation. The fine cliffs of the upper chalk were now passed, exhibiting in some places fine examples of contortion, the result of lateral pressure. At South Landing the cliffs were ascended, and the way taken across the fields to the lighthouses and to that beautiful bay known as Selwick's Bay, although on the Ordnance map it is erroneously named Silex Bay. Here were some special matters of interest; in the centre of the bay a fault occurs, the strata being much bent and broken, and from this cause the sea has been enabled to make an inroad and form Selwick's Bay. The fissures of the broken chalk have since been beautifully filled by calc spar. It might have been stated that on nearing the extreme corner of Flamborough Head on the south side, flints, both nodular and tabular, begin to appear, and on the south side of Selwick's Bay they were seen in vast numbers. Mr. Lamplugh proved the existence of this fault by showing that the chalk on the north side of the slip contains no flints whatever, and they do not re-appear till a little distance to the north. A very curious matter was pointed out here—a mass of blue Speeton clay, stranded on the top of the chalk, which contains many of the characteristic Neocomian fossils. Here, too, were a couple of isolated pinnacles of white chalk standing out like sentinels. They have not yet been named, and it was humorously suggested that in honour of the leaders of the party, they should henceforward be known as the 'Cole and Lamplugh Rocks.' Keeping the edge of the cliff, splendid opportunities were afforded of observing the beautiful effects of the erosion of the chalk cliffs by the waves. Here were arches, caves, and miniature bays in abundance; pillars and pinnacles in other places, as in the case of the King and Queen Rocks. The latter were formerly the supports of gigantic sea caves, but since the falling in of the roof they stand out in melancholy isolation, destined in their turn, before the ceaseless attacks of the waves, to finally disappear. At Breil Point was noticed a 'blow-hole,' where the water is violently ejected from the force of the compressed air, and flies in fine spray at right angles to the rock. These 'blow-holes' will eventually become caves—thus the work of denudation actively goes on. The cliffs are here capped with boulder clay, which weathers most curiously, as in Filey Bay, into knife-shaped edges. The party now arrived at Thornwick Bay, where, after a short stay, the way was taken along the cliffs once more—arriving at length at the wonderful earthwork known as Dane's Dyke. This great defensive work runs north and south, a distance of two and a half miles from cliff to cliff, and is of nearly uniform height all along, being about 18 feet above the level of the ground, and having a ditch 60 feet wide on the outside. Although the name 'Dane's Dyke' is used when speaking of this earthwork, it is evidently a misnomer, as excavations carried on systematically by competent archæologists, have discovered weapons and other relics of a higher antiquity than the Danish invasions of England. When standing upon the summit of this mighty rampart, one could not but muse and conjecture who were its builders, and who were the fierce invaders who rushed up its slopes engaged in deadly combat with its defenders. The page of history is silent as to those tremendous Yorkshire battles; tradition is very obscure; but it must be admitted that the people who constructed this rampart must have been well advanced in their ideas of military defence, and they must have had also great method and discipline in constructing it. This was, most certainly, a very impressive sight. Farther on, near Scale Nab, were seen some extraordinary contortions in the chalk cliffs, the strata being bent and folded most remarkably. The explanation for this must be the same as accounts for the contorted limestone at Draughton, that is, immense lateral pressure long after the strata were deposited, and when they were covered by an immense thickness of over-lying rocks. The train was now taken at Bempton for Bridlington. Other members of the section had worked independently. Mr. S. Chadwick (Malton), junior secretary of the section, had worked assiduously for fossils near the south

end of Dane's Dyke, and found, in addition to some shells (e.g., *Cyprina islandica* and *Tellina balthica*), the following fossils:—*Pachastrella convoluta*, *Seliscothos planus*, *S. capitata*, *Thecosiphonia turbusata*, *Verruculina pustulosa*, *V. cribrata*, *V. miliaria*, *V. radiata*, *V. plicata*, *V. papillata*, *Scytalia fastigiata*, *Phymatella reticulata*, *Siphonia*, *Bolaspongia globata*, *Ventriculites infundibuliformis*, *V. cribratus*, *V. angustatus*, *V. radiatus*, *V. striatus*, *Pachimon scriptum*, *Coscinopora*, *Spongia plana*, *S. paradoxica*, *S. convoluta*, *Belemnites mucronata*, *Terebratula biplicata*, *Ananchytes ovatus*, *Marsupites ornatus*, *Inocerami*, and *Rhynchonellæ*. Mr. C. Brownridge, F.G.S., examined the boulder clay for travelled rocks, finding grits and sandstones, mountain limestone, mica schist, conglomerate, quartzite, granites, &c.

For the section for Micro-Zoology and Botany Mr. J. M. Kirk, one of its secretaries, gave a negative report, the nature of the ground not being such as to repay investigation. A vote of thanks to the chair concluded the meeting.

### BOOK NOTICES.

**The London Catalogue of British Plants. Part I. 3th Edition.**  
40 pp., 8vo, 6d. Geo. Bell & Sons.

The appearance of a new edition of this time-honoured catalogue has always been an event of the first interest to British botanists, inasmuch as it is a sort of botanical milestone, by which our progress in the local insular relations of the science can be roughly registered. The first edition with which, alas! the name of the great master, H. C. Watson, is unassociated, marking as it does a new and significant departure from that master's uniform and consistent method, is trebly eventful.

It is easy to predict the public verdict, that of the rank and file of botanists who seek to see their way through its bewildering erudition; unprepared as it will find them, and assuredly without the means—in the shape of descriptive manuals conforming to its nomenclature—of educating themselves up to its standard: that verdict will be shown in an aversion from making use of it which will result in something akin to 'boycotting;' but it is not so easy to criticise it in detail, to point out its many minor errors, its few but undoubted merits, and its great amazing inconsistency, without conveying a false impression. As usual, a conflict of the claims of Authority, Utility, Expediency, has resulted in a somewhat lame compromise.

The catalogue proper now covers thirty-three and a half pages, affixing a number to 1,858 species, and a letter to some 700 varieties, 'authorities' being affixed to all these names, but none to the genera—which, numbered consecutively also, reach 542. A lengthy apologetic Preface, acknowledging assistance from, and giving somewhat fulsome praise to, certain botanists; whilst (according to a review in the *Journal of Botany*, which we note) making no mention of indebtedness to the researches of others—e.g., J. Britten and the late R. A. Pryor, without whose work in the direction of a correct nomenclature, the catalogue could not 'have assumed its present appearance'—is signed by the editor, Mr. F. J. Hanbury. In this preface we are told that the great aim of the catalogue has been '*utility* rather than *authority*'—an aim that, we are sorry to say, falls woefully short of the mark in the matter of attainment. It will puzzle most people to say how a catalogue *can* be useful (except to a dozen or so of our best critical botanists, who work by continental authors) in which the school of botanical body-snatchers have disinterred so very many of truly earliest, but none the less unfamiliar, *corpora vili*, reinstating them without (in numerous instances) giving as synonyms the better known names, and which do not agree altogether either with those of Babington's or Hooker's well-known floras. The catalogue, as it stands, apart from all its errors of detail, is either too much or too little; and, seeing that a catalogue is an ever-pressing want, if the present one does not speedily see a second amended issue, the wants of the great bulk of collectors will assuredly be supplied from a source more conservative and less subversive of accepted nomenclature.

So much for the main feature of the catalogue; as to details, it is of course a point capable of argument, that since every name (aliens mainly) in the 'excluded' lists of the old editions could not be inserted, some latitude for various experience

must be allowed as to the species now left out of the catalogue altogether. *We* missed at the first glance the increasingly common aliens of our cornfields and wastes near mills—*Silene dichotoma*, *Amsinckia lycopsoides*, *Luzula albidula*, and others; but, broadly speaking, the comparative fulness of the lists is one of the catalogue's not too numerous merits.

The sequence of the orders and genera is that of the 'Genera Plantarum'—a noble work but inaccessible to ninety-nine out of a hundred botanists. The 'authorities' attached to the specific names are in many instances incorrect, 'Linn.' standing in place of Hudson, in the cases of *Trifolium medium*, *T. ochroleucum*, *Mentha rotundifolia*, *M. hirsuta*, and *Scutellaria minor*; whilst 'Gouan' (1765) wrongly appears for 'Huds.' under *Alopecurus bulbosus*. On the other hand, *Hypericum elodes* quoted as of 'Huds.' should be of Grufberg (following Pryor's researches as found in the Journal of Botany, p. 75, N. S., vol. 10, 1881), and *Mentha longifolia* Huds. must replace *M. sylvestris* L.; and *Agrostis palustris* Huds. stand as the type of the Marsh Fiorin, instead of *A. alba* Linn. Were it not that Hudson himself withdrew (in his 2nd Ed.) several of the names he had given in the first edition, upon ascertaining their identity with others previously given, *Geranium perenne* Huds. would have to be retained in place of *G. pyrenaicum* (rightly quoted in the catalogue as of 'Burm. fil,' N. L. Burman, whose 4to 'Spec. Bot. de Ger.' was issued in 1759); and *Alopecurus myosuroides* be read instead of the familiar *A. agrestis* L. The catalogue before us appears to have adopted some of Hudson's earlier names, though evidently not directly from Pryor's paper, for we have *Sium erectum* taking the place of the Linnean *S. angustifolium*, *Avena pubescens* Huds., etc.; although, whilst we are glad to see under *Epipactis* an indication of the specific distinctness of '*E. media* Fr.,' as regards two other forms with which it has been confused—we are surprised that such a grave error should have been committed as to sink the name *violacea* Boreau. in '*purpurata* Smith.' Pryor pointed out that Smith's plant had nothing to do with it, as it was founded 'on a deformation in an immature state.'

Again, if strict 'observance of the law of priority, as the only possible way of obtaining finality' lead, as in this catalogue, to replacing *Ranunculus hirsutus* by *R. sardous* Cr. (spelled without a capital in the original); *Ficaria verna* Huds. by *Ran. ficaria* L.; *Sinapis arvensis* L. by '*Brassica sinapis* Visiani'; *Helianthemum vulgare* Gaert. by *H. Chamæcistus* Mill.; *Arenaria rubella* Hook. by *A. sulcata* Schlect.; *Tilia grandifolia* Ehrh. by *T. platyphyllos* Scop.; *T. parvifolia* Ehrh. by *T. cordata* Mill.; *Lotus uliginosus* Schkuhr by *L. pilosus* Beeke; *Physospermum cornubiense* DC. by *P. commutatum* Spreng.; *Pimpinella magna* L. by *P. major* Huds.; *Torilis infesta* Spreng. by *Caucalis arvensis* Huds.; *Calluna vulgaris* Hull. by *C. Erica* DC.; *Statice bahusiensis* Fr. by *S. rariflora* Drej.; *Linaria minor* Desf. by *L. viscida* Moench.; *Calamintha Acinos* Clairv. by *C. arvensis* Lam.; *Polygonum Raii* Bab. by *P. Roberti* Lois.; *Rumex pratensis* by *R. acutus* Linn.; *Smilacina bifolia* by *Maianthemum Convallaria* Web.; *Gagea lutea* Ker. by *G. fascicularis* Salisb.; *Cladium Mariscus* by *C. germanicum* Schrad.; *Blysmus compressus* by *Scirpus Caricis* Retz.; *Carex ampullacea* by *C. rostrata* Stokes.; *Phleum Boehmeri* by *P. phalaroides* Koeler.; *Digitaria humifusa* Pers. by *Panicum glabrum* Gaud.; *Knapia agrostidea* by *Mibora verna* Adanson; *Calamagrostis stricta* Nutt. by *Deyeuxia neglecta* Kunth.; *Cynodon Dactylon* Pers. by *Fibichia umbellata* Koch.; *Festuca pratensis* by '*F. fallax* Th.' with a species '*F. dumetorum* Linn.' of which we are not ashamed to confess we do not know the familiar British counterpart or synonym—if there is one; *Polypodium Phegopteris* by *Phegopteris polypodioides* Fee., which are the most prominent and likely to prove (to average intellects) the most puzzling of the alterations in this new edition; if, we repeat, priority warrants the changes mentioned, consistency also calls for others which are not made. *Arabis sagittata* DC. (No. 88) should be *A. hirsuta* Scopoli (A.D. 1760) as in Nyman's *Conspectus*; and *Oxyccoccus palustris* Pers. must stand in the place of *Vaccinium oxycoccus* L.; *Statice reticulata* Sm. should be *S. bellidifolia* Gouan (1765), but even if *reticulata* were retained, Linnaeus, not Smith, is the authority; and we think *Hypericum dubium* Leers. is preferable to the old aggregate Linnean term *quadrangulum*, which only represented it inclusively. *H. quadratum* Stokes rightly takes precedence of the Friesian *tetrapterum*. *Salix holosericea* Willd., again, should replace (1292) *S. ferruginea* Anders. Stokes, too, should be the

authority for *Ulmus montana*, not Smith; and Stokes's name *sirculosa* supersede *U. campestris* as Smith defined it. It is not necessary, however, to here point out all of them, the numerous examples of the alterations made we have given, advisedly, in order that local users of the catalogue may correlate them to the names in the floras they make use of. But we may point out in passing, that to reduce the large *Thalictrum* well enough known as *majus* Sm., our commonest inland species, to a variety of *T. minus* as 'c. flexuosum (Reichb.)' seems to us an unwarranted proceeding. As Pryor said, there is little doubt that it is identical with *T. jacquinianum* Koch, which name it should bear: to tear the Friesian *Kochii* away from it and give that as a var. of the De Candollean *saxatile*, which (if distinct) it is extremely doubtful whether it occurs in Britain at all, is quite inadmissible. And what, pray, can be said for the cool suppression of the universally-adopted *Habenaria chlorantha* Bab. in favour of *Habenaria chloroleuca* Ridley? The *Platanthera chlorantha* Cust. of Nyman, etc., Babington adopted the specific title more than 30 years ago in re-defining it, sub *Habenaria*, as distinct from *bifolia*, and we fail to see the reason why it should be superseded now. Neither is it legitimate procedure on the part of an editor of a bare non-descriptive catalogue in which several men have collaborated, to enter *Aira setacea* Huds. (*A. uliginosa* Weihe), because (following 'Genera Plantarum') ranging under the genus *Deschampia*, as '1675 setacea, Mihi.' Who is the *me*, meant? It may be Mr. Hanbury, or it may be Dr. Boswell, for anything stated to the contrary, seeing that his 'own corrected copy of the seventh edition' forming the basis of the new catalogue was 'largely used.'

The 'pater' of *Stellaria palustris* (*glauca*, With.) should have Retz. appended. We suppose that '523 *sempervirens* L.' under *Rosa* refers to the non-indigenous stray Mr. Towndrow christened *Melvini*. *Enanthe* '*peucedanifolia*, "Pole" may be the English plant with oblong tubers we have known so long as *Æ. silaifolia*, but its resuscitation is likely to prove confusing, the plant under that name in our older floras being almost universally *Æ. lachenalii*. Should not *Valeriana* '*mikanii* (Wats.)' be *procurrens*, Wallr.? We note the insertion of a var. *flosculosus* Jord. of the common Ragwort, but find no recognition of the fact (although in other genera great prominence is given to the result of like intercourse) that the Senecios hybridize freely, *S. vulgaris* with *S. squalidus*, and *S. erucifolius* with *S. jacobaea* especially. The genus *Rubus*, 'revised carefully' by Prof. Babington, presents the unfortunate student with quite a host of new names, intelligible doubtless to one or two botanists, but to everyone else quite unusable unless the Professor gives us a revised edition of his 'British Rubi.' We fear, however, the mere sight of the list of 61 in some cases quite crack-jaw names (*e.g.*, Schlickumi, etc.) will more than ever deter many from tackling the race. How is it that the genus *Rosa*, monographed by Baker as *Rubus* has been by Babington, has undergone no such startling transformation—were its forms marshalled so much more thoroughly at the outset? Neither have the *Hieracia* nor the *Salices* undergone much change from the seventh edition; the latter too little, if anything, seeing that to approximate uniformity and truth, many more of the names than the solitary one (*cuspidata*) indicated, should have been marked as hybrids. We have it on high authority that in a multitude of counsellors there is wisdom, but to our mind this catalogue offers a much better example of the slang phrase 'too many cooks spoil the broth;' the coadjutors in the task of remoulding this simulacrum of our British flora were doubtless able individually, but a real or supposed necessity for respecting their differing botanical idiosyncrasies and methods, has deprived the result of consistency and due proportion.

Some species names in the list are quite new to us: 1002 *Myosotis Balbisiana* Jord., and the hybrid Irish fern, 1774 *Asplenium clermontae* Syme, have surely no right to figure as ver-species, whilst what is meant by '1810 (lanceolatum Angström)?' we cannot make out clearly. The Characeæ (the work of Messrs. Groves) are, as was to be expected, well and carefully arranged; we are glad to note that *Chara papillosa* Kuetz, and *Nitella capitata* Agardh, are decisively entered as integers of our flora.

As for minor errors: the orthography of several names with a Greek origin is inexcusably faulty. When under *Ajuga* the word *Chamæpitys* (ground-pine, from *πυρ* a pine tree) can be rightly spelled, it is ridiculous to insert the second

h in 'Hypopithys' where no h ever was—surely the misprint in Hooker's Student's Flora was not slavishly, deliberately copied?—and inconsistent indeed to omit the like letter, and write 'omiophyllus' (sub *Ranunculus hederaceus*, 22b) in place of *homioophyllus*. *Lapsana* may pass, although *Lampsana* is the more classically correct; but 'Læstid.' for Laestad. is wrong. It is mystifying, too, to find, instead of the usual contracted indication of the authority for the name, such a negative barbarity as 'Agropyron acutum, non R. and S.',—meant, we presume, to give the direct denial to Hooker (Stud. Flo., p. 504), albeit unable to set him right by stating who is the authority. 'Rumex hybridi, teste Trimen' is another funny appellation for a group of species! Stranger still is *Silene gallica* L. variety 'C. anglico × quinquevulnera, Melvill'—a hybrid admittedly, yet not accorded the same express treatment as other hybrids in the catalogue. Some few names have no paternity indicated at all; and the several variations in the citation of authorities are not precisely defined. In the next edition it is to be hoped the genera will be followed by the names of those who erected them. Although technically admissible (owing to a *lapsus calami*, or inadvertent omission of Salisbury's), *Calluna Erica* DC. will puzzle not a few; and all the more those who know Salisbury defined the genus, and must therefore have had at least one plant on which to found it. *Ranunculus 'pseudo-fluitans* Bab.' (No. 14) is the same thing as *R. peltatus* var. 'penicillatus Hiern,' (No. 18d)—a state merely without floating leaves, yet it is lined as a species, presumably quite another thing. This *Batrachium* section of the genus is very indifferently catalogued, without any evidence of an attempt to educe method out of chaos, in accordance with the natural facts.

The county census numbers after most of the species-names are said to have been taken from a posted-up copy of the second edition of *Topographical Botany*; and it is claimed as a merit that their being so taken 'alone rendered it possible' for this 8th Ed. 'to be ahead of any work yet published' on the subject. Now it seems to us to be a vicious precedent to seek to establish the private working-copy of any individual, and that individual himself, as a responsible authority, accredited with later or fuller information than anyone else. If the being thus ahead were a fact—which we doubt—it is no distinct advantage, since there is nothing to compensate for the arbitrary indefiniteness, the numbers may be in some cases ahead (or they may not), but how far and in respect to what species no one has the means of ascertaining. It must all be taken on trust, the numbers cannot be verified, nor can those who wish ascertain (since the posted-up copy is private and so far inaccessible) what counties are meant in any case. Take, for example, the seven divisions in which *Rynchospora fusca* is stated to have occurred, as an instance capable of brief analysis, and therefore, by so much, not likely to bear unfairly on the census compiler. The 2nd Ed. of *Topographical Botany* gives 'Cornw. e.? Som. n., Dorset, Hants s., and Glamorgan,' with 'S. Wales Henslow sp.,' and '[42, 62, both errors?]' Surrey has been published since that work was issued, and its occurrence in Cardigan (Co. 46) by the Dyfi estuary; but one is left to guess whether the seven areas actually refer to Cornwall, Somerset, Hants, Surrey, Glamorgan, and Cardigan, or to Brecon *vice* the queried E. Cornwall. The census numbers, too, are in many instances omitted; none at all are affixed to the species of *Adonis*, *Ræmeria*, to *Orobanche minor*, to any of the species of *Ajuga*, nor yet to *Atriplices patula*, *hastata*, and *deltoidea*, nor to *Ulmus campestris*, nor to *Ceratophyllum* either as aggregate or segregates; nor to *Thalictrum flexuosum*, *Lathyrus tuberosus*; *Agrimonia* (both species), *Ribes petraeum*, *Epilobium lanceolatum*, *Glaux maritima*, *Corylus avellana*, *Bromus racemosus*, *Lastrea remota*, or *Equisetum trachyodon*; whilst *Asplenium Clermontæ* and *Equisetum moorei* should have 'I' for Ireland only, affixed.

The census-number (one) given for *Arenaria uliginosa*, *Sisymbrium irio*, *Sium repens*, and *Allium sibiricum* is in every case too low. The first named has been published for two, the second in several (but, perhaps, usually as a casual), the third in four, and the *Allium* in two divisions at least. On the other hand the numbers affixed to *Campanula Rapunculus*, *Pyrola rotundifolia*, *Epipactis 'purpurata* Sm.'—if meaning *violacea*—and *Scirpus rufus* are all too high.

We notice some other strange errors, but they are possibly inadvertencies: *Prunus avium* is given (without any \*) as a true native in 90 divisions, which is

absurd; *Linaria supina* Desf. likewise appears as a true wilding, unasterisked, but uncensused. It should have been in italic type. *Campanula Rapunculus*, too, has no asterisk.

The catalogue is nicely printed, with few typographical errors, but on the whole must be pronounced eminently unsatisfactory.

### Second Annual Report of the Watson Botanical Exchange Club, 1885-6.—8vo., pp. 16. For private distribution.

We are glad to note an improvement in this latest medium of exchange. It will doubtless do something toward furthering that critical study of genera which is the outcome of the growing tendency to correlate British with Continental forms, and subordinate our island flora to the larger one of Western Europe. In the present report, however, some rather useless particulars are given concerning a Dumfriesshire waterlily, and an evergreen cluster-styled Worcestershire rose, the fault of which is that they state nothing definite, and do not, therefore, settle anything. Mr. A. Bennett furnishes the sole (two) paragraphs that really inform or explain. A good many new vice-county records are registered, though what these have to do with the purposes for which the club exists is not very clear. So far the report trenches upon the ground (of adding to our knowledge of distribution by means of voucher-specimens deposited at South Kensington) occupied by the *Botanical Record Club* since 1873.

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## NOTES AND NEWS.

Amongst recent elections to the Fellowship of the Geological Society of London, occur the names of Messrs. Matthew Heckels (Walker-on-Tyne, near Newcastle), R. Mountford Deeley (Derby), Samuel Learoyd (Huddersfield), M. H. Mills (Chesterfield), James Radcliffe (Dukinfield), Robert Law (Walsden, Todmorden), Edward J. Silcock (Leeds), H. M. Platnauer (York), Henry Fisher (Blackpool), and Charles Brownridge (Horsforth).

Many readers will learn with regret that another famous collection has gone to the hammer, and will wonder what has induced the Jardine family to dispose of the well-known collection made by their distinguished ancestor. The sale of it took place at Messrs. Puttick and Simpson's gallery on June 17th, but owing to the date being known to few, there was a very meagre attendance of ornithologists. Considerable interest attached to many specimens as the types described, notably the early ones of Dr. Smith, the African collector. With the exception of the Anatidæ, the specimens were in fair preservation, but the lots were too large for ornithologists, and the prices consequently poor. Of European forms, the Madeiran variety of the Blackcap Warbler, with black cap extended to the throat (the Heineken var.), attracted interest, and the lot, No. 154, which contained some thirty other Warblers of no particular value, sold for £7. Among the Fringillidæ, lot 247, containing 43 birds, and including some Algerian Chaffinches, sold for £3 17s. 6d.; lot 251 composed of Buntings, sold for £3; lot 253, containing Crossbills and a fine Madeiran skin of the Wild Canary, fetched 11s. Among the more interesting British forms should be mentioned Pomatorhine and Richardson's Skuas and Little Auk, all from the Forth; a Dotterel killed in Dumfriesshire in the early month of March; and a fine adult Ivory Gull, obtained by Mr. Shearer in Caithness. A Red-breasted Snipe from 'Fifeshire' appears in the catalogue, but was not apparently in the sale. The type specimen of Bulwer's Petrel was overlooked until the end of the sale. Lot 305 contained a Pallas' Sandgrouse from Berwick. Lot 303 contained an exceptionally perfect specimen of the female Pheasant, ring-necked, in nearly complete male plumage, though devoid of spurs. Very few British specimens appeared in the sale, and those were generally common birds, obtained near Jardine Hall. Lot 303 fetched 13s.; the female Pheasant just alluded to is labelled 'Jardine Hall, 1858.' Among the few Mammalia offered were a fine *Felis catus* (no locality); and several examples of the Red Bank Vole, one of these bearing a locality in Dumfriesshire on its label.

We are pleased to learn that Lincolnshire can now boast of a third Naturalists' Society, one having been founded at Great Grimsby, under the presidency of our old friend Mr. John Cordeaux.

At a meeting held at Thirsk, on the 5th April, it was resolved to re-establish the Naturalists' Club which existed in the town several years ago. The Rev. Canon Camidge was unanimously elected president for the ensuing year; Mr. J. B. Foggitt was elected secretary and treasurer.

The annual meeting of the Ripon Naturalists' Club was held on February 9th, 1886, a satisfactory report being presented by the secretary (Mr. B. M. Smith). The Marquis of Ripon was re-elected president; the Rev. A. B. Haslam and Dr. Crow, vice-presidents; treasurer, Mr. W. S. Snow; secretary, Mr. B. M. Smith. Curators were also appointed.

A meeting was held at Harrogate on the 25th February at which it was resolved that a Naturalists' Society be formed for Harrogate and District. After the rules had been drawn up, the following officers were elected:—President, Mr. W. Story (Pateley Bridge); Vice-president, Mr. R. Fortune (Harrogate); Hon. Secretary and Treasurer, Mr. F. R. Fitzgerald (Harrogate); Committee, Messrs. W. H. Turner, J. Lund, and R. Barber.

The vacant curatorship of the Nottingham Natural History Museum has been filled up by the appointment of Mr. J. W. Carr, from the Woodwardian Museum, at Cambridge.

We note among the recent elections to the Fellowship of the Entomological Society of London, the names of Mr. H. Wallis Kew, of Louth, and Mr. William Warren, formerly of Doncaster.

We have received the prospectus of the new and important work on the Coleoptera of the British Islands, which it is known that the Rev. W. W. Fowler, M.A., F.L.S., has for some time had in preparation. This work is intended to supply a want that is much felt by British Coleopterists, and will include a descriptive account of the families, genera, and species indigenous to Great Britain and Ireland, with notes as to localities, habitats, etc., and in some cases will give brief life-histories of the species, especially of those that in the larval or perfect state are in any way injurious. Mr. Fowler has undertaken the work with the sanction and assistance of the leading British Coleopterists. Dr. Sharp, Dr. Power, Mr. Champion, and Mr. Mason (owner of Mr. Rye's collection) have allowed the use of their collections, and given very valuable assistance as regards localities and other information. It is intended to issue the work in five, or at most, six sections, which will, as far as possible, be complete in themselves. Section I is already in the press: this contains the Adephaga (Cicindelidæ, Carabidæ, and Dytiscidæ) and the Hydrophilidæ. Section II will contain the Staphylinidæ. The first section will contain two or three structural plates, and, if sufficient support is accorded to the work, it is hoped that one or two more may be added in each of the succeeding sections. As the sections will probably vary in extent, it is impossible to fix a price, but the work will form, when complete, two vols. 8vo, of about 600 pages each. It is further proposed, if adequate support can be obtained, to issue simultaneously with the above, a large paper edition, super-royal 8vo, with a series of new and original plates carefully coloured by hand: in monthly parts, each containing 4 coloured plates, figuring from 50 to 70 species, and 32 pages of descriptive letterpress; price to subscribers only 5s. each part, or 54s. for 12 parts, if paid in advance. This edition may possibly extend to 30 or 36 parts, according to the number of species that may be considered worth figuring. No effort or expense is to be spared to render the work, in completeness and execution, far in advance of any existing work on the subject. Messrs. L. Reeve & Co. are the publishers.

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The Anthropology of Yorkshire—C. STANILAND WAKE, M.A.I.

Bibliography for 1885.

Natural History of Lincolnshire.—The next instalment of this is to be upon the Mammalia, by JOHN CORDEAUX. Schedules have been prepared for obtaining information: one will be sent to any one willing to furnish notes.

Short Notes.—It is the wish of the Editors to give in each number about a page of short notes in each of the various subjects of which the *Naturalist* takes cognisance. To this end they rely upon their friends keeping them well supplied. At present short notes on Botany, Entomology, Palæontology, Microscopy, Conchology, &c., are particularly desired.

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AND

WM. EAGLE CLARKE, F.L.S.,

MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION.



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The *Naturalist's* World for July 1886. [P. Lund, Editor.  
Illustrated Science Monthly for July 1886. [Bogue, Publisher.  
Science Gossip for July 1886. [Chatto and Windus, Publishers.  
Natural History Journal for July 1886. [J. E. Clarke, Editor.  
New York Microscopical Society—Journal for April 1886. [From the Society.  
Manchester Microscopical Society—Annual Report, 1885, etc., 32 pages, 8vo. [The Society.  
The Journal of Conchology. [Mr. John W. Taylor, Editor.  
Journal of Microscopy and Natural Science—July 1886. [Mr. A. Allen, Editor.  
The Zoologist, 1843—1868; set of the first 26 vols. [Mr. Basil T. Woodd.  
Report on the Actinaria of the L.M.B.C. District—By John W. Ellis. L.R.C.P., F.E.S., 8vo, 8 pp. and plate. [The Author.  
Smithsonian Institution—Annual Report for 1884. [The Institution.  
The *Naturalist's* Diary: a day-book of Meteorology, Phenology, and Rural Biology. By Chas. Roberts. [Swan Sonnenschein & Co.  
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## THE ANTHROPOLOGY OF YORKSHIRE.

C. STANILAND WAKE, M.A.L.,

*Welton, near Brough, East Yorkshire.*

In a work dedicated to Rudolf Virchow and Paul Topinard, two living masters in Anthropology, and to the memory of the late Paul Broca and Joseph Barnard Davis, Dr. John Beddoe has recently published the results of upwards of thirty years' laborious leisure devoted to the 'application of the numerical and inductive method to the ethnology of Britain and of Western Europe.' The work in question ('The Races of Britain: a Contribution to the Anthropology of Western Europe.' By John Beddoe, M.D., F.R.S., &c. 1885. Trübner & Co.) is to a great extent, as the author informs us, an extension of a manuscript essay which, in 1868, carried off the great prize of the Welsh National Eisteddfod. The observations on which the conclusions of that essay were based have, however, since been largely added to, and those relating purely to stature and bulk formed a valuable contribution to the third volume of the *Memoirs of the Anthropological Society of London*, published in 1870. The method of investigation pursued by Dr. Beddoe is now universally recognised as one which gives most important results, and as he states that his observations are not likely to be increased, I propose to embody the conclusions arrived at, so far as they relate to Yorkshire, in the present paper, for the information of the members of the Yorkshire Naturalists' Union.

First, as to Dr. Beddoe's method. The uncertainty which existed as to the external physical characters of the British and other European peoples having forcibly struck him, Dr. Beddoe determined to begin 'systematic numerical observations' on the colours of hair and eyes. The first step was to establish a scale of colour which would be generally applicable, and finally he arranged all eyes into three classes, distinguished by shade as much as by colour, *light*, intermediate or *neutral*, and *dark*. To the first class were assigned all blue, bluish-gray, and light-gray eyes; to the third class, the so-called black eyes, and those usually described as brown and dark hazel. In the second or neutral division, Dr. Beddoe included dark grey, brownish gray, very light hazel, or yellow-hazel gray, formed by streaks of orange radiating into a bluish-gray field, and most shades of green, together with all the eyes of whose colour he remained uncertain after an ordinarily close inspection. Each class of eyes was sub-divided into five, in accordance with the arrangement of hair-colour. Thus, Class R includes hair of all shades which

approach more nearly to red than to brown, yellow or flaxen; Class F (fair) includes flaxen, yellow, and golden, with some of the light shades of brown, and of the pale auburns; Class B includes numerous shades of brown; Class D the remaining shades of brown up to Class N (niger), 'which includes not only the jet black, which has retained the same colour from childhood, and is generally very coarse and hard, but also that very intense brown which occurs in people who in childhood have had dark brown (or in some cases deep red) hair, but which in the adult cannot be distinguished from coal-black, except in a very good light.'

The possession of a scale of colour is indispensable, but it is hardly less important to know how best to make the desired observations. On this point it will be well to let Dr. Beddoe speak for himself. He says: 'When engaged on this work I set down in his proper place on my card of observations every person (with the exceptions to be mentioned presently) whom I meet, or who passes me within a short distance, say from one to three yards. As a rule, I take no note of persons who apparently belong to the upper classes, as these are more migratory, and more often mixed in blood. I neglect those whom I suppose to be under age—fixing the point roughly at 18 or 20 for men, 17 or 18 for women—as well as all those whose hair has begun to grizzle. Thus I get a fairly uniform material to work upon, though doubtless the hair of most people does darken considerably between 20 and 40 or 50. In order to preserve perfect fairness, I always examine first, out of any group of persons, the one who is nearest, rather than the one to whom my attention is most drawn. Certain colours of the hair—such as red—certain shades of the eye—such as light gray—can be discerned at a very considerable distance; but I take no note of anyone who does not approach me so nearly that I cannot recognise the more obscure colours. Much allowance needs to be made for the varying effects of light. Direct sunlight is better avoided when possible; I always choose the shady side of a street on a sunny day.'

The colours of the hair and eyes were not the only data collected by Dr. Beddoe for the purpose of ascertaining the types to which the races of Britain are referable. He found that little was known as to the form and size of the skull of the modern Briton, and it was necessary to make his own observations, which he did by measuring a considerable number of living heads. In order to avoid fatiguing or irritating the subjects, Dr. Beddoe restricted himself to the use of the index callipers and graduated tape. A description of the kind of measurements taken by him need not be given here, but an anecdote may be related to show how head-measurements may sometimes be

obtained, although probably not in Yorkshire. Dr. Beddoe was travelling in Kerry with Dr. Barnard Davis and two archaeological friends, and relates that 'whenever a likely little squad of natives was encountered, the two archæologists got up a dispute about the relative size and shape of their own heads,' which he was called in to settle with the callipers. The unsuspecting Irishmen 'usually entered keenly into the debate, and before the little drama had been finished were eagerly betting on the size of their own heads, and begging to have their wagers determined in the same manner.' The valuable aid of photography has not been neglected by Dr. Beddoe. Among the cleverly-drawn heads depicted in his work, however, the only Yorkshire types given are two found in the West Riding; although he figures a Scandinavian type from the Hebrides which resembles, as we shall find, the North Riding type of which Captain Cook was a representative.

Let us now see what Dr. Beddoe's statistics show to be the prevailing type, judging from the colour of the hair and of the eyes, in certain parts of Yorkshire. The following results are extracted from Dr. Beddoe's Table of Colour of Hair and Eyes from Personal Observation.

	Eyes Light.	Eyes	Eyes Dark.	Hair.
	Per Cent.	Intermediate or Neuter.	Per Cent.	Index of Nigrescence.
		Per Cent.		Per Cent.
WEST RIDING —				
Settle ... ..	53·4	21·7	24·8	16
Skipton-in-Craven	57	16·8	26·1	13·2
Haworth ... ..	48·6	26·6	24·7	1·4
Keighley ... ..	56·5	17·5	26	3·2
Farnley Ironworks	52·6	17·3	30	2·6
Bradford ... ..	56·1	16·5	27·4	10·5
Leeds ... ..	52·8	15·6	31·5	8·5
Ripon ... ..	55·8	11·6	32·5	2·5
NORTH RIDING —				
Thirsk ... ..	56·9	14·6	28·4	7·7
Whitby ... ..	65·7	9·4	24·9	12
Malton ... ..	60	18*	22	20
York City ... ..	51	19·1	29·7	8·6
EAST RIDING —				
Bridlington Quay	60	18	22	13
Bridlington Town	70	12	18	3·5
Beverley ... ..	65	10·2	24·7	12
Hull ... ..	58	12	30	20·2

It is necessary to explain what is meant by the Index of Nigrescence. The gross index is obtained by subtracting the number of red and fair-haired persons from that of the dark-haired, together with twice

\* I have added one-third to Dr. Beddoe's figure to make up the full number of observations.

the black-haired. The black is doubled 'to give its proper value to the greater tendency to melanosity shown thereby'; while brown (chestnut) hair is regarded as neutral, although most of the persons placed in Dr. Beddoe's Class B are fair-skinned. From the gross index the percentage index is readily obtained.

Dr. Beddoe judges from the above statistics that the fair type largely predominates throughout Yorkshire, and that it is more pronounced in the Eastern districts than in the Western districts. As to the Yorkshire skull-form, it need be said only that while the East of England heads are short but not narrow, Dr. Beddoe infers from the proportion borne by this circumference to the other dimensions that the Yorkshire heads are more inclined to be oblong.

The conclusions arrived at by Dr. Beddoe as to the races represented in Yorkshire agree with the teachings of history. He says, the North and East Ridings 'have an Anglo-Danish population, in which there are probably but scanty remains of the primitive races. It is likely enough, however, that the descendants of the citizens of York and Catterick survived to amalgamate with the earlier swarm of conquerors; and that a considerable number of Norman invaders—rather Norman in this case than French—settled here after the ravages of the great Bastard. The prevailing types are certainly Anglian and Danish; the chief one is thus described by the late Professor Phillips, than whom no man knew the county better:—'Tall, large-boned, muscular persons; visage long, angular; complexion fair or florid; eyes blue or gray; hair light brown or reddish.' The local variations are considerable, and some of them may date from the Conquest. The features of the famous Captain Cook, who was a Whitby man, are frequently reproduced; they resemble those of a Scandinavian type, found in the Lewis. . . . The average stature and weight are apparently the largest in England;' the Anthropometric Committee of the British Association give the height as 5 feet 9 inches, and the weight 164 lbs. The inhabitants of Flamborough are said to differ remarkably from the general population of the East Riding. According to General Pitt-Rivers, they have either dark or red hair, and they exceed in size the natives of the neighbouring district, although the men have actually the same average stature as that just mentioned for Yorkshiremen in general. In the level lands south of York, and in the Vale of the Derwent, there is a race of small, round-faced, brown, dark-haired men, with almond-shaped eyes, which Professor Phillips thought to be of a Romano-British or Iberian origin, but which Dr. Beddoe thinks may be partly at least of French extraction. He supposes them to be descended from the immigrants who settled in the North and East of Yorkshire

after the devastation of the region by the Conqueror. The new comers doubtless resembled the majority of the modern inhabitants of the north of France, that is, 'in the main a mixture of the square-browed, long-faced type which the French ethnologists call Kimric, with the short, swarthy, round-headed type of Broca's Kelts or Kelti-Ligurian.'

Professor Phillips found in the elevated districts of the West Riding another type, which he considered Norwegian. It is described as 'person robust, visage oval, full, and rounded; nose often slightly aquiline; complexion somewhat embrowned, florid; eyes brown or gray; hair brown or reddish.' On the other hand, Dr. Beddoe believes this type to be a variety of the Anglian, as it abounds in Staffordshire, a very Anglian county, and has eyes of a neutral tint, between light and dark green, brown, and gray, known as the 'Wiltshire eye.' He adds that in Craven the Brigantian or Romano-Briton survives in some force; the hair is often dark, and the features high. Moreover, in the ancient kingdom of Loidis and Elmet, from Tadcaster and Leeds westward, up Airedale and the Worth Valley, to the Lancastrian frontier, the fair race 'predominates to a remarkable degree.' This, Dr. Beddoe thinks, may be accounted for on the supposition that when Edwin of Deira conquered that British Kingdom, he drove its inhabitants across the mountains, and that the Angles of the plain of York took refuge there from the subsequent invasion of the Danes. Still another type occurs, especially in the South-Western part of the West Riding, which Dr. Beddoe believes to be descended from an ancient race.

Dr. Beddoe remarks that in few parts of Britain does there exist a more clearly-marked moral type than in Yorkshire. He says:— 'To that of the Irish it has no affinity; but the Scotchman and the Southern Englishman alike recognise the differences which distinguish the Yorkshire character from their own, but are not so apt to apprehend the numerous respective points of resemblance. The character is essentially Teutonic, including the shrewdness, the truthfulness without candour, the perseverance, energy, and industry of the Lowland Scotch, but little of their frugality, or of the theological instinct common to the Welsh and Scotch, or of the imaginative genius, or the more brilliant qualities which sometimes light up the Scottish character. The sound judgment, the spirit of fair-play, the love of comfort, order, and cleanliness, and the fondness for heavy feeding, are shared with the Saxon Englishman; but some of them are still more strongly marked in the Yorkshireman, as is also the bluff independence—a very fine quality when it does not degenerate into selfish rudeness. The aptitude for music was remarked by Giraldus

Cambrensis seven centuries ago, and the taste for horseflesh seems to have descended from the old Northmen, though it may have been fostered by local circumstances. The mind, like the body, is generally very vigorous and energetic, and extremely well adapted to commercial and industrial pursuits, as well as to the cultivation of the exact sciences; but a certain defect in imaginative power must be admitted, and is probably one reason, though obviously not the only one, why Yorkshire, until quite modern times, was generally behind-hand in politics and religion.'

It would be almost impertinent in me to criticise Dr. Beddoe's conclusions, but I would point out that they are necessarily based on a comparatively small number of observations. Bradford forms an exception, as 1,400 persons were there observed. I do not wish it to be inferred, however, that therefore the conclusions are not reliable. My object in bringing them before the members of the Yorkshire Naturalists' Union is to lead some of them to follow in the path Dr. Beddoe has marked out, and to supplement his observations by others which will be equally valuable, if made according to his method, whether they support his views or require them to be in any way modified.

### NOTES—BOTANY.

**Botanical Notes from the Solway.**—During the season of 1885 and the spring of the present year, I have been fortunate enough to discover a number of plants not generally reckoned as indigenous to the neighbourhood of Maryport and Workington, on the Cumberland shore of the Solway Firth. The majority of them were found growing upon heaps of household refuse 'shot' upon the beach, apparently from the workmen's cottages connected with the iron furnaces immediately to the south of Maryport Harbour. From the constant occurrence of hemp and canary grass upon these mounds, I infer that the exotic plants have found their way to their present stations among impure or mixed samples of the seeds in use by bird fanciers. Among other and better-known plants I have found the following, viz:—*Adonis autumnalis*, *Fumaria confusa*, *Raphanus maritimus*, *Sinapis alba*, *Rapistrum rugosum*, *Sisymbrium Sophia*, *S. panonicum*, *Camelina sativa*, *Thlaspi arvense*, *Lepidium draba*, *Senebiera Coronopus*, *Saponaria Vaccaria*, *Chrysanthemum coronaria*, *Anthemis cotula*, *Echium vulgare*, *Echinosperrnum lappula*, *Asperugo procumbens*, *Anagallis cœrulea*, *Cannabis sativa*, *Phalaris canariensis*, *Triticum acutum*, *Lolium perenne* v. *ramosum* (a splendid example) *Hordeum maritimum*, and *Avena fatua*. In addition to these are two or three other plants whose growth is hardly sufficiently matured for correct identification, but which may be treated of hereafter. I may add that I have been indebted to Mr. J. G. Baker, of the Herbarium, Kew, for the diagnosis of some of the above-mentioned exotics that were entirely new to me, and acknowledge gratefully his courteous help.—W. HODGSON, A.L.S., Flimby, July 5th, 1886.

**Impatiens noli-me-tangere at Stock Ghyll Force.**—In September 1883, I found *Impatiens noli-me-tangere* growing in some profusion up the side of the stream which forms Stock Ghyll Force, near Ambleside, Westmoreland. Withering's Botany (1796) says: 'Near the footpath going from the Inn at Ambleside up the brook, towards the cascade, Mrs. Watt.' I suppose it has grown there ever since. *Parnassia palustris*—as might be expected—is found in profusion in the Lake district.—GEO. W. OLDFIELD, London.

## MARFIELD POND, MASHAM, AND ITS BIRD-LIFE.

THOMAS CARTER,

*Burton House, Masham, Yorkshire.*

MARFIELD POND is, or rather was, for unfortunately there is no longer such a place, a natural sheet of water of several acres in extent, situated one mile north of Masham, in a large open piece of land to which it has evidently given the name of Marfield (Merefield). It was 300 feet above sea-level and within 300 yards of the River Yore. Round the margin, in an average dry season, was open water for several yards, where sprung up in summer masses of *Persicaria*, *Ranunculus*, and Water Plantain; beyond this grew a mass of thick reeds occupying all the centre of the pond, and within which any ordinary number of birds could be perfectly concealed. Being the only natural sheet of water of any size in the neighbourhood, the nearest lakes being Semerwater, 30 miles up the dale, and Gormire, nearly 20 miles east, and being in a somewhat exposed situation, it was the constant haunt of wild-fowl; but the Swinton estate having recently changed hands, and the present owner being very partial to coursing, has caused it to be drained this summer, in order to give him greater facilities for his favourite amusement. For the same reason the beautiful wild bog occupying the lower part of Marfield, where the Shoveller Duck reared a brood of young in 1869, has been carefully drained and fenced round to form a sort of hare warren, and in course of time all or most of the interesting flowers growing there will gradually disappear. The single patches of Great Sundew and of Great Meadow Rue (the only habitat in the neighbourhood) are already things of the past, by reason of being directly in the way of main trenches; and so, I fear, will soon be the Marsh Cinquefoil, Bog Asphodel and Pimpernel, Marsh Pennywort, Grass of Parnassus, Marsh and White Helleborine, Globe Flower, Bird's-eye Primrose, Butterwort, and other flowers which grew there in abundance. A list of the birds which have come under my observation during the last few years may not be uninteresting. Doubtless wild-fowl which have been in the habit of visiting Marfield will continue to come for a few years, but finding their old retreat miserably dry, and the abode of hares, they will gradually cease coming, and as they are killed or die from natural causes, the next generation of birds will never know what a charming spot their ancestors used to visit here, and will not come this way. Only last July 29th a flock of 25 Geese came crying out from the north-east and went straight to the pond, but finding it

occupied by a gang of drainers they alighted in confusion within a couple of hundred yards, and soon after took their departure with loud cries. This is a most unusual date for Geese, and last week a flock of ten flew over, and another was seen on the river. Moorhens and Dabchicks were to be found on the pond all the year round, unless frozen hard in winter, when they took up temporary quarters on the river. Coots were regular spring visitors, arriving usually in February and leaving in October. In very mild seasons an odd one or two might be seen at intervals throughout the winter. Although great numbers of these birds were hatched and reared in safety every year, still only a limited number came to breed the following season, generally seven pairs. Reckoning each pair to rear six young every year, which is a low average, this gives 56 birds in all; but the next year only seven pairs or so were to be seen. I presume, being such quarrelsome birds, a greater number could not live together on it; perhaps, also, the food supply was not sufficient for more. In my earlier nesting days I used to walk round and round the pond vainly trying to find a Coot's or Dabchick's nest which I could reach, but the bottom was so soft and the reeds so thick that both wading and swimming were out of the question, and if a too-confiding bird did chance to make a nest on the margin, somehow the boys from Masham generally found the eggs first, and, of course, took them. After trying sundry barrels and washing-tubs in the river (which only separates Marfield from Burton House), for I was determined not to be beaten, I hit on the plan of turning a kitchen table of fair size upside down, and, with a little putty in the cracks, I had a very serviceable punt, though somewhat difficult to push through the reeds on account of its square end. In this improvised craft my younger brother and myself used to visit all the nests two or three times a season, for three years, and mark the progress of the eggs and young, until, after standing a great deal of banter from friends, we built a small punt—which served our purpose until recently, when we attained the dignity of a canoe, but fear we have made our last voyages in the reedy recesses. In wet or snowy winters the ordinary outlet was insufficient to run off the accumulating waters, and the pond would increase largely in size, backing underground through rabbit holes and drain pipes (for an attempt has been made a great while since to drain it, but fortunately unsuccessfully) and forming two or more adjacent sheets of water, one as large or larger than itself. When keeping full, late in spring, the Coots, &c., would not build until most of the rushes had grown through the greater depth of water, and consequently they had much later broods. There might be a nest or two made in the bushes on the margin, but the

majority of the birds waited for the rushes appearing. I have known Coots' and Waterhens' eggs laid in the same nest in one of these late seasons. One year an impatient pair of birds, or perhaps more than one pair, built a nest on the bare grassy bank of the largest overflow, under the shade of a large oak tree. It was a ridiculously exposed situation, and, as I expected, the eggs were very soon taken. It was this overflow which attracted a pair of Redshanks in 1883. They were first seen on April 8th, and fed on the margin and at the pond itself until the water had partially subsided, when they laid their eggs in a tussock in the marshy ground. A pair of Dunlins, sometimes more, usually rested a day or two in spring when migrating to the higher grounds to breed, and in autumn Green Sandpipers (*T. ochropus*) frequently stayed some time when migrating southwards. A Stormy Petrel, blown inland during severe weather, may be included in the list of visitors, as may also Herons, Curlews, Golden Plover, Black-headed, Herring, and Lesser Black-backed Gulls, Jack Snipe, and Woodcock. The Common Snipe nested in some numbers in the bog, and in 1879 I saw a Woodcock there as late as May 6th. The severe winter of 1879-80 was a great season for Woodcock. Numbers came to this bog to feed, as it abounds in fine warm springs which do not freeze in the hardest weather. Water Rails were often seen in the winter months, but have never been known to breed in this locality.

On the 14th January, 1869, two Brent Geese were seen on the pond. One was shot by the Swinton keeper and is now in my father's collection.

February 7th, 1876. One Black-tufted Duck on the pond.

February 12th, 1879. One Bewick's Swan on the river by the edge of the bog. This bird stayed some days and finally took its departure without being shot.

January 22nd, 1881. A pair of Red-breasted Mergansers, one of which was shot.

April 5th, 1882. A Pochard appeared on the pond, where it stayed some days. This species must build somewhere in the neighbourhood, as on the 1st March, 1884, a female Pochard was on the pond, and on November 25th, 1884, I noted a pair. I have seen one bird or a pair on the pond on several occasions in spring, but have not always made a note of the date.

April 22nd, 1882. A male and female Shoveller took up their quarters on the pond, and would, I think, have bred, for they stayed ten days, but the water being unusually high there was no cover for them, and attracting the attention of all passers-by they were at length frightened away. In 1869 a brood was reared in the bog, as

already mentioned, and in August 1881 an immature bird was shot a few miles further up the river, by S. T. Scrope, Esq., of Danby-on-Yore.

January 13th, 1883. Eight Wild Swans circled round the pond and the overflow, but seeing someone there they went away without alighting.

February 5th, 1883. A female Red-breasted Merganser, which had been staying on the river near the bog at least a fortnight, was shot by my father.

August 4th, 1883. A brood of Wild Ducks hatched out in the bog. This is a late date.

August 27th, 1883. A Scoter was seen.

August 30th, 1883. A Kittiwake fed about the bog all day. It was either remarkably tame or stupid.

February 2nd, 1883. After a heavy gale from the north-east a pair of Oyster Catchers alighted on the edge of the bog near the river and fed there for some days.

October 10th, 1884. A flock of 18 Tufted Duck seen.

The above are only birds which I have myself noted. Many more would visit the pond or bog and escape notice. Of course the common ducks, Widgeon, Mallard, Teal, and Golden-eye, were frequently seen, and occasionally Scaup; their frequent occurrences do not need particulars. Among other visitors I may mention that a pair of Nightjars on three occasions stayed at the pond on their arrival in spring, and before going to the moors fed a few evenings about the pond. They flew close above the water, beating from end to end of the surface in search of insects with quite a slow, flapping flight. The occurrence of a Chough in such an inland locality is worth recording. In the winter of 1876 one of these birds was seen by Mr. Wm. Todd, our local taxidermist, feeding in the Marfield in company with some Rooks. There being a deep cover of snow at the time, its red legs and beak showed very plainly against the white surface.

P.S. (May 15th, 1886).—Since the above was written (October 1885) the pond has again filled to its old size, owing to the feeding springs being so large with the melting of the late heavy snows that the drain pipes cannot take all the water. This, however, will be only temporary; as soon as drier weather comes the springs will get lower. Anyway the pond is doomed, as the lord of the manor has stated his intention of putting in larger pipes if the present ones prove of insufficient size.

## NESTING OF THE SHOVELLER IN CUMBERLAND.

REV. H. A. MACPHERSON, M.A., AND WM. DUCKWORTH,  
*Authors of 'The Birds of Cumberland.'*

WHEN drawing up his standard paper on the Distribution of Birds in Great Britain during the nesting season (Ibis. 1865), Mr. A. G. More recorded the Shoveller (*Spatula clypeata*) as having nested in seven English counties—viz., Dorset, Kent, Staffs., Norfolk, Yorks., Durham, and Northumberland. In his recently published History of British Birds, Mr. Seebohm states (vol. iii, p. 554), that the Shoveller now nests in Herts., Cambs., and Huntingdonshire, as also in the counties enumerated by Mr. More. Mr. H. Saunders, in his text of Yarrell (4th ed.), refers to two more counties, Lincolnshire and Notts, on the respective authority of Mr. J. Cordeaux and Mr. J. Whitaker. In Messrs. Sterland and Whitaker's descriptive list of the Birds of Notts. (1879), the authors record that a pair of Shovellers bred at Rainworth in 1874; Mr. Whitaker and Mr. Aplin inform the writers that, on a recent occasion, they observed no less than fourteen pairs of breeding Shovellers in the same locality. Neither Mr. Saunders nor Mr. Seebohm record the Shoveller as nesting in Suffolk, but Mr. Rope attests to its breeding at Leiston (Zool. 1883, p. 496); it nests also in the neighbourhood of Aldeburgh.

The thirteen counties thus recorded as holding breeding Shovellers vary widely in character, the localities favoured being in some cases the meres of inland counties, in others semi-tidal waters, such as the 'fleets' of Romney Marsh. They include most of the maritime counties on the south and east of England, but bear no reference to the north-west portion of 'Southern Britain.' In 'The Birds of Lancashire,' Mr. Mitchell states that Shovellers of both sexes have been shot in Lancashire in the breeding season (p. 146); and the present writers point to the Shoveller probably nesting in Cumberland on similar grounds (their views being *tersely* stated at p. 105 of 'The Birds of Cumberland').

Thanks to the observations of one of those working-men naturalists who have done so much to investigate the zoology of the northern counties, all doubt as to the Shoveller nesting in Cumberland has now been dispelled.

On May 8th, 1886, a Shoveller's nest, containing nine eggs, was found in a tussock of rushes upon one of the salt marshes of the Solway, on the English side of the estuary. Mr. Smith, the finder, forwarded to the writers a portion of the down, which Mr. Seebohm kindly pronounced to be identical with the down of the Shoveller.

The eggs were placed under a hen. Two of them proved to be unfertile; a third contained a dead chick, but the other six eggs hatched out on May 26th; the first chick to hatch breaking the shell *in the presence* of Mr. W. Duckworth. Considering the inclement character of the spring of 1886, the date of May 8th may be considered early for the north of England. Mr. Seebohm states that 'eggs are seldom found in this country before the middle of May' (B.B. iii, 556). Dr. Sclater gives the dates of *June 2nd, 9th, 24th, 30th; July 4th, 5th, 8th, 9th, 10th, 11th, and 20th*, for Shovellers hatching out in the Zoological Gardens (P.Z.S., 1880, p. 523). It may be interesting to remark in passing, that a female Shoveller in *that* collection began to sit upon seven eggs on June 4th of the present year (1886); the nest being partially concealed by brushwood, and in close contiguity to the water, as also to a much frequented footpath. The pinioned Shoveller drakes of this collection begin to show the first signs of 'eclipse,' at the beginning of June, the crown of the head assuming the brown female feathers. In his recent list of Irish Birds, Mr. More refers to a male Shoveller shot on July 24th 'in the brown summer plumage'; but in this species, as in the Mallard, it is probable that the date of the assumption of eclipse plumage varies somewhat in individual males.

The young Shoveller in down does not differ widely in appearance from other Anatidæ at the same stage, the upper parts being dark brown with a white spot behind each pinion, and another on each flank. The lower parts vary from buffish on the throat to white on the abdomen. An eye stripe is also present. As some difference of opinion exists, or has existed, *as to the development of the bill* in the young of *S. clypeata*, it may be well to remark that of two *young* a week old (hatched out, as related, on May 28th), the one possesses a *narrow* bill, such as Mr. Yarrell described as characteristic of young Shovellers bred at the Zoological Gardens; the bill of the second nestling is proportionately *shorter* and *broader* than that of its fellow, and suggests an early *lateral expansion* of its surface.

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**Preservation of Native Plants.**—This subject was carefully discussed by the committee of section D (Biology) at the Aberdeen Meeting of the British Association, and by them referred to the Conference of Delegates to be reported on at the Birmingham Meeting. In furtherance of these views it is desirable that answers to the following questions should be given by as many members as can report thereon. The answers may be sent, before Mid-August if possible, either to the undersigned or to Prof. W. Hillhouse, Mason Science College, Birmingham.

QUERIES.—1. Have any plants of comparative rarity or otherwise disappeared from your local flora in recent years? if so, kindly enumerate them, specifying the original habitat of each and giving the cause or probable cause of extirpation, so far as known to you. 2. To what extent do you think such disappearance was subject to public control? If you have any suggestions to offer under this head be so good as to name them. 3. If you know personally of any cases of extirpation in localities other than your own, please furnish particulars as above.—CHAS. P. HOBKIRK, Dewsbury.

## NOTES ON THE CUCKOO.

ALFRED CRAWHALL CHAPMAN.

As information is still required concerning some of the habits of the Cuckoo (*Cuculus canorus*), perhaps the following particulars may be of interest:—In the year 1874, I used often to explore the reed-beds on the side of the river Avon, in Warwickshire, where Reed Warblers bred in considerable numbers. The patches of reeds were only of limited area, and it was not difficult to find the Warbler's nest. One day we found a Cuckoo's egg in one of the nests, and the next day we found another. These two eggs were precisely alike, both in size, outline, and colour. We took them both. When passing the place about a week after, we again looked into the reed-beds and found a third Cuckoo's egg, an exact *fac-simile* of the two already obtained. We took this egg, and in another nest of the Reed Warbler, containing only one of its own eggs, we substituted an egg of the Sedge Warbler, taking that of the Reed Warbler away with us. The next morning I went to see if the bird had forsaken, and was astonished to find a fourth egg of the Cuckoo placed alongside the single Sedge Warbler's egg in the Reed Warbler's nest. This egg also exactly resembled the three already obtained, and it should be mentioned that all these four eggs of the Cuckoo were deposited within a space of about 200 yards.

Without rushing to any conclusions, I think we have here pretty strong, though purely circumstantial, evidence that the Cuckoo lays more than one egg during the season, and it would also appear, unless evidence to the contrary is forthcoming, that the eggs forming the Cuckoo's clutch resemble each other, as is generally the case in most clutches of other birds' eggs. It is well known that Reed Warblers lay two distinct types of egg, a dark variety and a light variety; the former by far the most common, being thickly blotched with a dull green on a white ground, the latter, which I think is rare, having very pale purple blotches on the white ground. I have only seen two nests of the Reed Warbler containing the latter type of egg, and, strange to say, two out of the four Cuckoo's eggs obtained were deposited alongside these pale varieties. From this, it might appear that the Cuckoo selected these nests purposely, in order to assimilate as much as possible her egg with those already in the nest. I might mention that the four Cuckoo's eggs were all very light coloured, not unlike those of the Pied Wagtail, but essentially differing from the first mentioned dark variety of the Reed Warbler.

With regard to the time when the young Cuckoo moults: on August 6th, 1885, I got a young bird in the usual dull-red and barred plumage. It had flown against the light at the Souter Point (Electric) Lighthouse, at 2 a.m. that morning, and had killed itself. What was it doing there at that time of the day, if not migrating? The man at the Lighthouse said it was a Sparrow Hawk.

### NOTES—MAMMALIA.

**Badger in North Lancashire.**—Some years ago it was said that a badger was run over by a train on the Furness Railway between Broughton-in-Furness and Foxfield. I do not recall any other instance in this part of North Lancashire.—EDWARD T. BALDWIN, Woodcroft, Ulverston, April 5th, 1886.

**Badgers in North Yorkshire.**—Four Badgers, an old female and three young ones, were captured at Ingleby, in Cleveland, last month. See my note on 'Badgers in North Yorkshire,' in the *Naturalist* for May, p. 143.—T. H. NELSON, 190, High Street, Redcar, June 11th, 1886.

**Captures of the Badger (*Meles taxus*) in Yorkshire.**—Mr. F. Bartlett, of the Kennels, Wentworth, has kindly favoured me with the following additional records:—

One captured at the Mausoleum, while drawing for a fox, Nov. 19th, 1884.

One dug out in Rainborough Park, Nov. 19th, 1884.

One caught by the hounds at the Mausoleum, Dec. 19th, 1884.

One in Cartworth Planting, Sept. 25th, 1885.

The above are all on Earl Fitzwilliam's estate.—T. W. BREWIS, June 2nd, 1885.

**The Marten in Northumberland.**—A beautiful example of the Yellow-breasted Marten (*Mustela martes*) was captured by Mr. Tait, coachman to Mr. J. Hedley, in that gentleman's grounds at West Chirten House, near North Shields, on May 23rd, 1883, and came into my possession within a few days of its capture. At first it was very fierce and intractable, burying itself among the hay of its bed and refusing any food if looked at. It would generally lie curled up in a corner of the cage during the day, but would become very active and restless at night. However, after a few weeks' confinement it became more reconciled to its captivity. Having kept this animal a while, I sent it to Mr. Bostock (Bostock and Wombwell's menagerie) where it would be better taken care of than with me, with the proviso that if it should die it was to be forwarded to me. After living in the collection about a year and a half, its body was sent me the day after its death. It is now stuffed and forms part of my small mammalian collection. This animal was caught on May 23rd, 1883. The *Alnwick Mercury* of June 9th the same year (or a fortnight later) contained the following:—'A fine specimen of the Yellow-breasted Marten, measuring 30 inches from nose to tail end, was captured at Harehope, Alnwick, last week. This species has not been seen or heard of in this district for at least 50 years. It is now in the possession of Mr. A. Hall, Percy Cross, for preservation.' These two animals, which were caught in Northumberland within a week of each other, must have strayed away from their native haunts, for, as far as I can learn, this species has not been seen in the county for 60 years at least, when a specimen had been killed in the neighbourhood of Rothbury. A few still linger among the wild and mountainous parts of Cumberland, and a chance pair or two may still exist among the rocky wilds of the Cheviot range, but in these places the Marten is on the verge of extinction. They are yet to be met with in the wilder districts of Ross, Sutherland, Inverness, and other parts of the North-west Highlands, and also in Carmarthen, Merioneth, and other counties of Wales; and, according to Mr. John Cordeaux, in Lincolnshire, but now in greatly reduced numbers.'—WM. YELLOWLEY, South Shields, May 25th, 1886.

## BIBLIOGRAPHY:

Papers and records published with respect to the natural history and physical features of the North of England.

## MAMMALIA, 1885.

THE present instalment includes a few notes for 1884 which were accidentally overlooked when the bibliography for that year was published. The numerous references to sporting matters, fox-hunting, etc., which appear in 'The Field,' 'Land and Water,' etc., do not find a place in these papers.

VARIOUS WRITERS.

Lancashire, Cumberland, Westmoreland.

[Records of Otters—*Lutra vulgaris*—and accounts of Otter-hunting; Otters seen in the Wyre—Field, August 8th, 1885, p. 215. Hunting records for Cumberland, Lancashire, and Westmoreland, Field, July 11th, p. 61; August 15th, p. 267; August 22nd, p. 314; August 29th, p. 349; and Land and Water, July 25th, p. 88; August 22nd, p. 178; September 5th, p. 226; and October 3rd, 1885, p. 322].

ANON. [no signature].

Lancashire.

[Otters—*Lutra vulgaris*—catching Eels in the river Lune]. Nat. World, Nov. 1885, p. 211.

ANON. [no signature].

Yorkshire, Lincolnshire.

Exportation of Vermin to the Colonies. [Discusses the exportation of Lincolnshire Stoats and Weasels to New Zealand, and states that 'in the parish of Bolton Percy, Yorkshire, the churchwardens' book which commences in 1788 contains between that date and 1830 such entries as the following:—In 1788 "four foxes and a foulmart, 4s. 2d."; 1789, "four foulmarts, 8d."; "paid for a fox's head, 1s.; for a bever ditto, 2d." For "bever" we should probably read "otter," since the parish is near the river Wharfe, and an otter's head is entered further on. Payments for foxes and foulmarts occur annually till 1798, when two foulmarts cost "4d. each; three foxes, 3s.; one otter, 1s.—total, 4s. 8d." Field, April 4th, 1885, p. 454.

ANON. [no signature].

Yorkshire.

Gisburne Park [giving the old particulars as to the herd of wild cattle and their extinction in 1859]. Land and Water, January 17th, 1885, p. 64.

ANON. [no signature].

Westmoreland.

Interesting discovery in Westmoreland [a bone-cave at Hellsfell near Kendal: list of species given]. Land and Water, October 31st, 1885, p. 413.

OLIVER V. APLIN.

Notts.

Period of Activity of the Noctule [*Vesperugo noctula*; giving dimensions and weight of two Nottinghamshire specimens]. . . . Zool., September 1885, p. 344.

BRADFORD NATURALISTS' SOCIETY.

Yorkshire.

Diary of Natural History Observations for 1884, pp. 28 [includes various observations on mammals about Bradford, and in other parts of the West Riding].

JOHN CORDEAUX.

Northumberland.

'Cheviot's Mountains Lone' [and their Mammalia; the Badger (*Meles taxus*), Otter (*Lutra vulgaris*), Polecat (*Mustela putoria*) and others referred to]. Field, October 3rd, 1885, p. 499.

Aug, 1886.

- JOHN CORDEAUX. Northumberland.  
**Place Names in Coquetdale having reference to Animals** [includes extracts from Rothbury Church Registers, 1677—for killing Foxes (*Vulpes vulgaris*)]. Field, October 24th, 1885, p. 607.
- W. H. FLOWER. Yorkshire, Lincolnshire.  
**On a specimen of a Whale (Rudolphi's Rorqual (*Balenoptera borealis* Lesson, *Sibbaldius laticeps* Gray) lately taken in the river Crouch, Essex** [refers in postscript to the example of the same species taken near Goole, and now in the British Museum]. Trans. Essex Field Club, June 1885, iv, 111-115.
- W. GAIN. Notts.  
**Rats [(*Mus decumanus*) instances of ferocity at Tuxford].** Nat. World, June 1885, p. 120.
- H. WALLIS KEW. Lincolnshire.  
**Louth Naturalists' Society.** [Hedgehog (*Erinaceus europæus*) noted May 25th in Muckton, Burwell, and Haugham Woods.] Nat. World, August 1885, p. 154.
- THOMAS LISTER. Yorkshire.  
**The Vertebrate Animals of the Mammalian Families in the Barnsley District** [A list, with notes, of 25 species known for the district, and mentioning 5 species of extinct mammals]. Quart. Trans. Barnsley Nat. Soc., 1884, iv, 17-18.
- R. LOFTHOUSE. Durham, Yorkshire.  
**Notes from the Tees [young female Seal (*Phoca vitulina*) caught—and another seen—near Eston Jetty, October 25th].** Field, October 31st, 1885, p. 640.
- H. A. MACPHERSON. Cumberland.  
**Dormouse [*Muscardinus avellanarius*] in Cumberland** [citing several additional instances, old and new]. Zool., July 1885, p. 257.
- T. H. MILLER. Lancashire.  
**A White Weasel [(*Mustela vulgaris*) shot 'last week' at Singleton Park, Poulton-le-Fylde].** Field, October 31st, 1885, p. 640.
- CHAS. T. MUSSON. Notts., Lincolnshire.  
**Carnivorous Water Voles [(*Arvicola amphibia*) preying upon bivalve shells, at Nottingham, Sutton-in-Ashfield, and Lincoln].** Sci. Goss., March 1885, p. 69.
- J. PARKER.  
**Strength of the Mole [(*Talpa europæa*); in the writer's house cellar 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, December 6, 1884, p. 771.
- GEORGE ROBERTS. Yorkshire, Lincolnshire.  
**Topography and Natural History of Lofthouse and its neighbourhood** [etc.], vol. ii. Leeds: printed for the author. 1885 [pp. viii + 258].  
 Remarks on the quadrupeds (p. 14); list of 29 species with details concerning 8 of them (pp. 16-18); churchwarden's accounts (pp. 18-19); Otters—*Lutra vulgaris* (p. 94); Badger—*Meles taxus* (p. 96); Bats (p. 100); Water Rats—*Arvicola amphibia* (p. 101); Shrew—*Sorex remifer* (p. 101); Fox—*Vulpes vulgaris* (p. 104); Fin-whale at Grimsby (p. 110); Shrew (p. 131); Water Shrew—*Crossopus fodiens* (p. 132); Rat—*Mus decumanus* (p. 138); Short-tailed Vole—*Arvicola agrestis* (p. 149); Stoat (p. 150); Badger (p. 159); Mole (p. 161); Seal (p. 161); Oared Shrew (p. 161); Water Voles and Water Shrews (p. 174); Squirrel (p. 176-178); Deer (p. 176).
- WILLIAM DENISON ROEBUCK. Yorkshire.  
**The Greater Horse-shoe Bat not a Yorkshire species.** [The Carperby specimen recorded as this being a Noctule (*Vesperugo noctula*)]. Zool., January 1885, p. 24.

- Lincolnshire, Yorkshire, Notts., Cheshire,  
Lancashire, Durham, Westmoreland, Cumberland.**
- G. T. ROPE. Yorkshire.  
**On the Range of the Dormouse** [*Myoxus avellanarius*] in England and Wales. [This article contains numerous and detailed notes for most of the northern counties, Derbyshire and Northumberland being mentioned negatively.] Zool., June 1885, pp. 201-213.
- J. H. SALTER. Yorkshire.  
**Audacity of the Stoat** [*Mustela erminea*—stalking Herons near Scarborough, close to low tide mark]. Nat. Hist. Journ., December 1885, p. 188.
- J. H. SALTER. Yorkshire.  
**Census of a Gamekeeper's Museum** [at Irton, near Scarborough; Stoats (*Mustela erminea*), Weasels (*M. vulgaris*), Hedgehog (*Erinaceus europæus*), Domestic Cats (*Felis domestica*), and Rats (*Mus decumanus*)]. Nat. Hist. Journ., December 15th, 1885, p. 187.
- THOMAS SOUTHWELL. Yorkshire, Lancashire, Durham.  
**British Animals** [a criticism of a paper by the Rev. F. O. Morris; includes mentions of the Hairy-armed Bat (*Vespertilio leisleri*), Bechstein's Bat (*V. bechsteini*), Serotine (*V. serotinus*), Noctule (*V. noctula*), and Whiskered Bat (*V. mystacinus*), in the North of England]. Land and Water, January 3rd, 1885, p. 12.
- THOMAS SOUTHWELL. Lincolnshire; Lancashire or Westmoreland.  
**Notes on British Mammals** [continuation of his former notes. Refers to the Lincolnshire Wild Cat (*Felis catus*): and to the Greenland or Harp Seal (*Phoca grænlandica*), to which Prof. Turner in 1874 referred a specimen taken in 1868 near the viaduct of the Lancashire and Ulverstone Railway; the only instance in Britain of the actual capture of a specimen]. Land and Water, March 7th, 1885, p. 224-5.
- M. G. WATKINS. Lincolnshire.  
**The Keeper's Gibbet** [refers to a Lincolnshire wood which was one of the last English resorts of the Wild Boar (*Sus scrofa*), and gives particulars of it; also refers to the last Wild Cat (*Felis catus*) killed in Lincolnshire]. Longman's Mag., February 1885, vii, 430-438.

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#### REPTILES AND AMPHIBIANS, 1885.

- ANON. [no signature]. Yorkshire.  
**Ackworth Boys' Essay and Natural History Societies' Reports.** [Viper (*Pelias berus*), Ringed Snake (*Tropidonotus natrix*), and Slow-worm (*Anguis fragilis*) noted at Brockerdale.] Nat. Hist. Journ., September 15, 1885, p. 118.
- G. A. BOULENGER. Notts  
**On the occurrence of the Palmated Newt** [*Moige palmata*] in Oxfordshire. [An error of locality corrected; Nottingham having been given in the British Museum catalogues for specimens which really came from Bridgewater and Scotland.] Zool., July 1885, p. 266.
- LINNÆUS GREENING. Cheshire, Lancashire.  
**British Lizards:** a paper read before the Warrington Field Club, 30th October, 1885 [including notes on the species found in the district]. 8vo, 1885, 20 pages.
- LINNÆUS GREENING. Lancashire, Cheshire.  
**British Snakes:** a paper read at a meeting of the Warrington Field Club [including notes on the species of the Warrington district]. 8vo, 1885, 19 pages.
- GEO. A. HARKER. Lancashire or Cheshire.  
**Lizard** [*Zootoca vivipara*] with two tails [near Liverpool]. Young Nat., April 1885, vi, 87.

- J. E. KELSALL. Yorkshire.  
**The distribution of British Batrachians.** [The Palmate Newt—*Molge palmata*—is 'reported from Yorkshire.'] Zool., September 1885, p. 351.
- H. WALLIS KEW. Lincolnshire.  
**The Sea Banks of the Lincolnshire Coast.** [The Natterjack (*Bufo calamita*) cited as being tolerably common at Mablethorpe.] Nat. World, January 1885, ii, 10.
- R. MORTON MIDDLETON, Junr. Yorkshire.  
**The Viper** (*Vipera berus* L.), [at Howlsike, near Lealholm, North Yorkshire; anecdote of young Vipers gliding into the mother's mouth]. Nature, December 24th, 1885, xxxiii, 176.
- F. M. NORMAN. Northumberland, Durham.  
**Embedded Reptiles**, with special reference to the discovery of a Live Frog in the Carboniferous Limestone at Scremerstone [and notes on the famed Chillingham Toad; and other similar records from both Durham and Northumberland]. Proc. Berw. Nat. Club, vol. x, pt. ii (1885), pp. 491-505.
- F. N. PIERCE. Cheshire, &c.  
**Natter Jack** [*Bufo calamita*: occurs very freely on the Wallasey Sandhills; also reported for Cumberland and Lincolnshire, but no particulars given]. Nat. World, July 1885, p. 138.
- GEORGE ROBERTS. Yorkshire.  
**Topography and Natural History of Lofthouse and its neighbourhood** [etc.]. Vol. ii. Leeds: printed for the author, 1885 [pp. viii + 258]. [Notes on the Adder (*Pelias berus*), and Blindworm (*Anguis fragilis*), (p. 27); Toad (*Bufo vulgaris*) (p. 150)].
- CHARLES ROBSON. Northumberland.  
**Natural History Jottings. A Lizard** [*Zootoca vivipara*] **throws off its Tail**; . . . Sci. Goss., October 1885, pp. 230-231.
- J. H. SALTER. Yorkshire.  
**An Adder's** [*Pelias berus*] **Bath** [at Goathland]. Nat. Hist. Journ., December 15th, 1885, p. 187.
- The late GEORGE TATE. Northumberland.  
**On a Toad** [*Bufo vulgaris*] **in a Limestone Rock at Whittle** [parish of Shilbottle]. Proc. Berw. Nat. Club, vol. x, pt. ii (1885), pp. 505-6.
- W. E. WARD. Yorkshire.  
**The Natter Jack** [*Bufo calamita*—in Yorkshire; copied from the Handbook of Yorkshire Vertebrata]. Nat. World, August 1885, p. 159.

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#### FISHES, 1885.

A few of the more important only have been here noticed of the multitudinous notes on angling which have appeared regularly throughout the year in the columns of 'Land and Water' and 'The Field'; to which reference should be made for any desired information on that head.

- ANON. [no signature]. Isle of Man.  
**Loss of the Herring Fleet, 1787** [mentions the great take of Herrings (*Clupea harengus*) in September, upwards of 7,000 mace being brought into Douglas in one morning]. Manx Note Book, July 1885, i, 116.
- ANON. [BLACK GNAT].  
**Salmon** [*Salmo salar*] **in Lake Windermere.** [It was long a question whether Salmon were ever found in Windermere; of late years they have been frequently taken]. Field, September 12th, 1885, p. 399.

- ANON. [TEESIDE]. Durham, Yorkshire.  
**Extraordinary Run of Salmon** [*Salmo salar*] in the Tees. [The river was swarming with fish near Dimsdale about a fortnight ago; 65 were counted getting over the Dam in 15 minutes.] Field, October 3rd, 1885, p. 485.
- ANON. [W. (Whalley)]. Lancashire.  
**The Ribble and Hodder** [one of the fishermen got a 40-lb. Salmon—the heaviest thus far reported]. Field, July 4th, 1885, p. 21.
- ANON. [Your Derwent Correspondent]. Cumberland.  
**Large Salmon** [*Salmo salar*] captured by Rod and Line [comments upon the Cumberland Derwent records of large fish, and gives instances]. Field, December 5th, 1885, p. 799.
- ANON. [‘XINGU’]. Lancashire, Westmoreland.  
**The Pike** [*Esox lucius*] and **Perch** [*Perca fluviatilis*] of Windermere [on their habits and their seeking deeper water in autumn]. Field, January 3rd, 1885, pp. 20-21.
- GEORGE BOLAM. Northumberland.  
**Variation in Colour in the Common Dab** [*Pleuronectes limanda*]. One captured in the salmon nets at the mouth of the Tweed on the 3rd instant was of the same colour (brown) on both sides. Field, March 7th, 1885, p. 307.
- JOHN CORDEAUX. Northumberland.  
**‘Cheviot’s Mountains Lone’** [and their Natural History; brief passing references to the fish]. Field, October 3rd, 1885, p. 499.
- F. DAY. Cumberland.  
**[Vendace (*Coregonus vandesius*) and Gwiniad (*C. coregonoides*) in the English Lakes]**. Proc. Zool. Soc., May 19th, 1885, p. 483.
- FRANCIS DAY. Isle of Man.  
**Flat Fishes.—The Gar and the Basking Shark**. [Patterson alludes to a story which passes current . . . in the Isle of Man, and is supposed to account for how it was that the mouths of flat fishes became twisted to one side, etc.]. Land and Water, May 23rd, 1885, p. 526.
- FRANCIS DAY. Yorkshire.  
**The Ancestry of our Salmonidæ** [incidentally quotes Meynell’s success in retaining Smelts (*Osmerus eperlanus*) in a fresh-water pond at Yarm]. Field, July 4th, 1885, p. 33.
- FRANCIS DAY. Cumberland.  
**The Whiting, Whiting, Herling, or Phinock of the [Cumberland] Esk**. [Remarks upon a disputed form of the Salmonidæ, 8 specimens of which captured at Carlisle were sent to Dr. Day, and considered by him as ‘undoubtedly belonging to the Sea Trout race’ and ‘in their second or third year.’ ‘All would probably have bred during 1885.’] Field, August 8th, 1885, p. 214.
- FRANCIS DAY. Durham, Yorkshire.  
**The ‘Scurf’ of the Tees, or the Salmon Trout** [remarks on a specimen of the Salmon Trout (*Salmo trutta*) captured at Darlington and locally known as a ‘Scurf’]. Field, September 5th, 1885, p. 369.
- FRANCIS DAY. Durham, Yorkshire.  
**The ‘Scurf’ Trout of the Tees** [‘a short history of the names which have at various times been bestowed on the “Scurf,”’ as well as a brief allusion ‘to the two races of Sea Trout which appear to frequent our coasts’]. Field, October 17th, 1885, p. 558.
- FRANCIS DAY. Cumberland.  
**Is there an autumn migration of Smolts?** [gives an extract showing the capture of Salmon Smolts (*Salmo salar*) in the Cumberland Esk in August]. Field, November 14th, 1885, p. 688.

- FRANCIS DAY. Westmoreland, Cumberland.  
**Fish and Fisheries of 1885: a Retrospect** [refers to the Vendace (*Coregonus vandesius*) and Gwiniad (*C. coregonoides*) and their distribution in the Lake district]. Field, December 26th, 1885, p. 896.
- HENRY FFENNELL. Northumberland? Cumberland.  
**Large Salmon** [*Salmo salar*] captured by rod and line [one of 53½ lbs. in the Tweed in 1874; one of 51 lbs. in 1872, and one of 55½ lbs. in 1884, both in the Cumberland Derwent; are cited]. Field, November 28th, 1885, p. 765.
- THOMAS FORD. Yorkshire.  
**The Fell Becks of the Swale.** [Two columns, in which the fish are dealt with at length, but mostly from an angling point of view.] Field, January 10th, 1885, pp. 48-49.
- T. E. GUNN. Northumberland.  
**Ray's Sea Bream** [*Brama raii*] on the Norfolk Coast. [Refers incidentally to the weight of the Alnwick example received by Buckland.] Zool., December 1885, p. 484.
- H. HOLDEN. Yorkshire.  
**Grayling** [*Thymallus vulgaris*] wounded by pea rifle. [One caught with fly in April 1885 which had been wounded by shot fired at it from a pea rifle in August 1884, in the Wharfe.] Field, April 18th, 1885, p. 495.
- E. W. JESPER. Yorkshire.  
**A Stranded Salmon** [*Salmo salar*; Clifton Ings, York, January 31st]. Nat. Hist. Journ., February 15th, 1885, p. 13.
- R. LOFTHOUSE. Durham, Yorkshire.  
**Notes from the Tees** [Ray's Bream (*Brama raii*) taken at Redcar, October 6th. Extreme length 23 in., breadth 8¼ in., over dorsal fin 10 in., of a bluish silvery colour]. Field, October 31st, 1885, p. 640.
- J. J. M. Nottingham.  
**Trent and Thames: a comparison** [Recapitulates Drayton's list of 30 fish found in Trent, in his spelling, and compares present state of the fauna]. Field, December 25th, 1885, p. 894.
- J. OSBORNE. Durham, Yorkshire.  
**The Herring** [*Clupea harengus*): refers incidentally to its time of appearance off the North-east coast]. Young Nat., March 1885, pp. 65-69.
- GEORGE ROBERTS. Yorkshire.  
**Topography and Natural History of Lofthouse and its neighbourhood** [etc.]. Vol. ii. Leeds: printed for the author. 1885 [pp. viii + 258]. [Goldfish (*Cyprinus auratus*) in engine-ponds (p. 27); Viviparous Blenny—*Zoarces viviparus* (p. 161).]
- JOHN SIM. Northumberland.  
**Objects of interest in our pit district** [of Northumberland: Anecdote of a Stickleback]. Sci. Goss., February 1885, p. 31-32.
- SCOTT SURTEES. Durham, Yorkshire.  
**Scurf on the Tees** [Frank Buckland's opinions stated]. Field, September 19th, 1885, p. 437.
- C. J. T. Isle of Man.  
**Spearing a Large Sole** [*Solea vulgaris*] speared in Peel Bay, Isle of Man; it measured 21½ in. long × 8½ in. broad; an Eel (*Anguilla vulgaris*) was caught same day in a neighbouring glen]. Field, August 8th, 1885, p. 216.

## COLEOPTERA OF THE LIVERPOOL DISTRICT.

JOHN W. ELLIS, L.R.C.P., L.R.C.S.E., F.E.S.,

*Liverpool; Honorary Secretary, Lancashire and Cheshire Entomological Society.*

### PART X:—RHYNCHOPHORA.

(Read before the Lancashire and Cheshire Entomological Society, November 30th, 1885.)

THE group of Beetles, the individual members of which are known commonly as 'weevils,' to which the term Rhynchophora is applied, are distinguished by the prolongation of the head into a distinct, and often long and slender, snout or *rostrum*. Next to the Brachelytra and Clavicornia, this is the largest group of British Beetles, the species known to inhabit our islands being about 530 in number. Owing to the paucity of workers at these insects in our district, partly perhaps due to the difficulty in many cases of discriminating between allied species, I am only able to record about 100 species as inhabitants of our own neighbourhood. I feel confident that careful work at the group—sweeping and beating—will speedily cause an increase in this number.

Fam. *CURCULIONIDÆ*.

OTIORHYNCHUS, Germ.

**Otiorhynchus scabrosus**, Marsh. Wallasey (R. Wilding); Aigburth (J.W.E.).

**Otiorhynchus ligneus**, Ol. Occasionally at Leasowe, Wallasey, and Bidston.

**Otiorhynchus picipes**, F. Abundant in hawthorn hedges throughout the district.

**Otiorhynchus sulcatus**, F. Common around West Derby (R. Wilding); Wavertree (J.W.E.).

**Otiorhynchus ovatus**, L. Common on the coast sandhills, and occasionally inland.

PLATYTARSUS, Schon.

**Platytarsus echinatus**, Bons. An interesting little hedgehog-like species, of which I took a single specimen at Aigburth, in May 1883, by sweeping.

PHYLLOBIUS, Schon.

**Phyllobius alneti**, F. Abundant among nettles in early summer.

**Phyllobius pyri**, L. Common in July, on oak, in Eastham Wood.

**Phyllobius argentatus**, L. Abundant on hedges.

**Phyllobius oblongus**, L. Common on dwarf sallows on the sandhills.

**Phyllobius pomonæ**, Ol. Abundant on the coast sandhills during the summer.

**Phyllobius uniformis**, Marsh. I have taken this species freely in the neighbourhood of Spital, in July.

TROPIPHORUS, Schon.

**Tropiphorus mercurialis**, F. The late Mr. Kinder used to take this species freely on the wall surrounding the Anfield Cemetery.

CNEORHINUS, Schon.

**Cneorhinus geminatus**, F. Very abundant in spring and summer on the bare sandhills.

BARYNOTUS, Germ.

**Barynotus obscurus**, F. Frequently taken by sweeping, and sometimes found beneath stones in spring.

STROPHOSOMUS, Bill.

**Strophosomus coryli**, F. Common where hazel grows, as about Raby Mere and Dibbin's Dale.

**Strophosomus limbatus**, F. Frequent about Bidston Hill on furze, and among the dead leaves of heather.

SITONES, Schon.

**Sitones griseus**, F. Abundant on the Wallasey sandhills.

**Sitones flavescens**, Marsh. Frequent on marshy ground. The var. (by some authors considered a distinct species) *longicollis*, F., I have taken at Spital, in May 1883.

**Sitones sulcifrons**, Thunb. Common.

**Sitones regensteinensis**, Herbst. Abundant on furze on Bidston Hill, and at Prenton in spring.

**Sitones puncticollis**, Steph. I have a specimen of this species which I recently captured by the sweeping-net, near Formby.

**Sitones lineatus**, L. Abundant.

**Sitones hispidulus**, F. Frequent.

POLYDRUSUS, Germ.

**Polydrusus cervinus**, L. Abundant during summer on the dwarf willows, on the coast sandhills.

**Polydrusus confluens**, Steph. I have swept a few of this species from heather on Bidston Hill, in July.

## SCIAPHILUS, Schon.

**Sciaphilus muricatus**, F. Rock Ferry (F. Archer); Aigburth and Raby Mere, not common (J.W.E.).

## LIOSOMUS, Steph.

**Liosomus ovatulus**, Clair. Frequently taken by nocturnal sweeping.

## ALOPHUS, Schon.

**Alophus triguttatus**, F. Mr. Wilding has captured a single specimen of this species at Heswall.

## HYPERA, Germ.

**Hypera punctata**, F. Occasionally occurs both on the coast sandhills and inland.

**Hypera plantaginis**, De G. Common on the Wallasey sandhills.

**Hypera variabilis**, Herbst. Common on the Wallasey sandhills.

**Hypera polygona**, L. A handsome species which does not occur freely in this district. Mr. Wilding has taken it at Wallasey, and I have met with it on the Aigburth shore and at Formby.

**Hypera meleæ**, F. I have a single specimen which I obtained at Wallasey, in March 1883.

**Hypera nigrirostris**, F. Abundant on the Wallasey sandhills.

**Hypera trilineata**, Marsh. I have a pair which I captured at Wallasey among *H. plantaginis*.

## CLEONUS, Schon.

**Cleonus sulcirostris**, L. Abundant on the Hightown and Crosby sandhills.

## HYLOBIUS, Schon.

**Hylobius abietis**, L. Abundant on firs at Bidston Hill.

## GRYPIDIUS, Schon.

**Grypidius equiseti**, F. Common on the Wallasey sandhills.

## ERIRHINUS, Schon.

**Erirhinus bimaculatus**, F. Occasionally found among rubbish washed down by the river Alt, at Hightown.

**Erirhinus acridulus**, L. Frequent in the same situation as the last species.

## MECINUS, Germ.

**Mecinus pyraister**, Herbst. Occurs sparingly. New Brighton (B. Cooke); Aigburth and Wallasey (J.W.E.).

## HYDRONOMUS, Schon.

**Hydronomus alismatis**, Marsh. Mr. F. Kinder used to take this species freely in pits in the neighbourhood of Kirkdale.

## BALANINUS, Germ.

**Balaninus glandium**, Marsh. Frequent in the neighbourhood of Eastham Wood, where the larva feeds on acorns, and is frequently mistaken for that of the lepidopterous *Carpocapsa splendana* by collectors.

## ANTHONOMUS, Germ.

**Anthonomus ulmi**, De G. I have a specimen of this species, which I captured at Wavertree some years ago.

**Anthonomus pomorum**, L. Frequent on hawthorn blossom at Bromborough, in May.

**Anthonomus rubi**, Herbst. Common on the sandhills on ragwort, and occasionally inland.

## ORCHESTES, Ill.

**Orchestes stigma**, Germ. I took a single specimen at Simmonswood, last June.

**Orchestes salicis**, L. Frequent on willows on the coast, as well as inland.

## RHAMPUS, Clair.

**Rhampus flavicornis**, Clair. Common on the sandhills in spring, but much easier to see in the sweeping net than to bottle.

## OROBITIS, Mann.

**Orobitis cyaneus**, L. Mr. Wilding took this species on the Southport sandhills, on violets, and I have swept the species on the Hightown sandhills.

## CELIODES, Schon.

**Celiodes quadrimaculatus**, L. Abundant on nettles.

## CEUTHORHYNCHUS, Germ.

**Ceuthorhynchus assimilis**, Payk. Common.

**Ceuthorhynchus erysimi**, F. Common.

**Ceuthorhynchus contractus**, Marsh. Common.

**Ceuthorhynchus cochleariæ**, Gyll. I took this species on the Aigburth shore, in May 1883.

**Ceuthorhynchus ericæ**, Gyll. Frequent on heather on Bidston Hill and Simmonswood Moss.

**Ceuthorhynchus litura**, F. I took a specimen of this species among my earliest captures, in 1874, at Wavertree.

**Ceuthorhynchus asperifoliarum**, Gyll. Southport, May 3rd, 1858 (B. Cooke).

**Ceuthorhynchus pollinarius**, Forst. Abundant on nettles.

**Ceuthorhynchus sulcicollis**, Gyll. Southport, Sept. 1864 (B. Cooke).

#### CEUTHORHYNCHIDEUS, Duval.

**Ceuthorhynchideus floralis**, Pk. Common.

**Ceuthorhynchideus pyrrorhynchus**, Marsh. I took this species for the first time about a month ago, but then freely, by beating the nearly bare stalks of *Sisymbrium officinale*, near Leasowe.

**Ceuthorhynchideus troglodytes**, F. Common, by sweeping, at Aigburth, in May 1883. I have since taken a single specimen at Formby.

#### PHYTOBIUS, Schon.

**Phytobius leucogaster**, Marsh. Bidston Marsh, May 1862 (F. Archer).

**Phytobius quadri-tuberculatus**, F. Occasionally on the Hightown sandhills.

**Phytobius comari**, Herbst. A specimen captured at Hale by Mr. J. Kidson Taylor is recorded (Ent. Mo. Mag., v, 201).

#### RHINONCHUS, Schon.

**Rhinonchus pericarpus**, F. Frequent at Wallasey and Spital.

**Rhinonchus subfasciatus**, Gyll. Generally distributed.

**Rhinonchus castor**, F. Occasionally at Crosby and Hightown. Southport (B. Cooke).

#### BARIS, Germ.

**Baris chlorizans**, Germ. Bidston Marsh, a single specimen in March 1883.

#### CALANDRA, Clair.

**Calandra granaria**, L. Common in corn warehouses in the city (R. Wilding).

**Calandra orizæ**, L. Common in rice warehouses in the city (R. Wilding).

#### APION, Herbst.

**Apion carduorum**, Kirby. Common at Wallasey.

**Apion ulicis**, Forst. Abundant on furze on Bidston Hill, and at Prenton.

**Apion striatum**, Kirby. Common.

**Apion immune**, Kirby. Wallasey, frequent.

- Apion seniculum**, Kirby. A single specimen taken at Wallasey last September.
- Apion ononidis**, Germ. Generally distributed; abundant on the sandhills.
- Apion trifolii**, L. Two specimens from Bidston Hill, in August 1883.
- Apion flavipes**, F. Spital, May 1885.
- Apion nigritarse**, Kirby. Generally distributed, but apparently not common.
- Apion virens**, Herbst. Abundant at Spital, in July.
- Apion ervi**, Kirby. Several specimens taken in the neighbourhood of Spital, in July.
- Apion ononis**, Kirby. Common at Wallasey.
- Apion pisi**, Fab. Common.
- Apion loti**, Kirby. Wallasey, in September 1885 (three specimens).
- Apion vorax**, Herbst. Common.
- Apion livescerum**, Gyll. Occasionally at Bidston, in July, on heather.
- Apion miniatum**, Germ. Generally distributed, sometimes common.
- Apion cruentatum**, Walt. One at Wavertree, in 1874.
- Apion frumentarium**, L. Occasional.
- Apion violaceum**, Kirby. Abundant.
- Apion marchicum**, Herbst. Frequent at Bidston.
- Apion humile**, Germ. Abundant.

RHYNCHITES, Herbst.

- Rhynchites germanicus**, Herbst. Frequently taken by beating and sweeping.
- Rhynchites nanus**, Payk. Recorded from Southport, in July 1864, by B. Cooke.
- Rhynchites uncinatus**, Thoms. I took a pair of this species at Hightown, in July 1883.

Fam. *SCOLYTIDÆ*.

PHLÆOPHTHORUS, Woll.

- Phlæopthorus rhododactylus**, Marsh. Bidston Marsh, April 1862, (F. Archer). I took several specimens of this species a few years ago, by beating dead furze at Bidston.

HYLESINUS, Fab.

- Hylesinus ater**, Payk. Rock Ferry, May 1862 (F. Archer).

## SCOLYTUS, Geoff.

**Scolytus destructor**, Ol. I once found an elm mined by this beetle at Wavertree Nook, the species of bark-miner being verified by a dead specimen found in one of the burrows.

## DRYOCÆTES, Eich.

**Dryocætes villosus**, F. I have taken this species very freely in the bark on the roots of a tree (species?) at Spital.

## TOMICUS, Latr.

**Tomicus laricis**, F. My wife found a specimen of this species blowing about on the Hightown sandhills, last September.

## NOTES—ENTOMOLOGY.

**Scoria dealbata** at Whitby.—Both Mr. Lister (Whitby) and myself have taken the Black-veined Moth (*Scoria dealbata*) here. This does not appear in the list of Yorkshire Lepidoptera as being found in the county. I think we shall have at least two other fresh county species not there recorded.—JOSEPH T. SEWELL, Whitby, June 30th, 1886.

**Trieophora vulnerata** in Edlington Wood, Yorkshire.—On the 12th June of this year I took a homopterous insect in abundance in the lane adjoining Edlington Wood, Doncaster. I sent some to Mr. J. E. Mason, who obtained the name for me from Mr. J. W. Douglas, who states that the species is somewhat local, but gregarious and common where it occurs.—GEO. T. PORRITT, Greenfield House, Huddersfield, June 25th, 1886.

**Megachile ligniseca** and **Halictus rubicundus** at Mablethorpe, Lincolnshire.—In June I took the rather local insect *Megachile ligniseca* on the coast sand-hills at Mablethorpe. Seven specimens were found clustered together in the corner of a box which happened to be lying on the sand-hills; others were also seen in a chink of an old post. *Halictus rubicundus* was flying about plentifully near a sandy bank by the side of the road at Mablethorpe, in which were large numbers of its burrows. It may, perhaps, be well to state that my specimens of the above were identified at the British Museum by Mr. Cockerell, with the kind help of Mr. Kirby.—H. WALLIS KEW, Louth, July 1886.

## NOTES—CONCHOLOGY.

**Helix cantiana** in Notts.—I succeeded in adding this species to our local list on June 3rd, found plentiful on herbage by road side (Lias Clay) at Staunton, S.E. Notts., all immature, but fine, white colour predominating.—C. T. MUSSON, Nottingham, June 5th, 1886.

**Helix lactea** in Yorkshire.—At the beginning of August 1884, Mr. W. Storey, of Pateley Bridge, sent to Leeds a specimen of this fine Mediterranean shell, which had been found *alive* in a field near the railway at Pateley, some time before, by Mr. O. Kinson. No doubt it had been conveyed with the shingle which is brought to Pateley by rail from the coast.—JOHN W. TAYLOR, Horsforth.

**Estuarine shells at Saltfleet, Lincolnshire.**—On 16th June I visited the saltmarsh near Saltfleet Haven, and found *Melampus myosotis* (Drap.) plentiful in the higher parts of the marsh where *Juncus* was growing plentifully. *Hydrobia ulva* (Penn.) positively swarmed in all parts of the saltmarsh, not only in the pools and runs of water, but also on the mud, and on stems and blades of grass. A single specimen of *Littorina littorea* (L.) was taken. *Littorina rudis* vars. *tenebrosa* (Mont.) and *similis* (Jeff.) were very plentiful in the muddy pools.—H. WALLIS KEW, Louth.

Aug. 1886.

## NOTES—PALÆONTOLOGY.

**Remarkable Geological Discovery at Clayton.**—Yorkshire has long been well known to geologists to present, for its area, a most remarkable opportunity to prosecute the study of geology, from the completeness of its structure and the variety of its physical features. Accordingly, from the richness of the geological field, and the assiduity and watchfulness of its many devoted students, added to a general sympathy from many not strictly scientific, many notable discoveries of fossil flora and fauna have been made, advancing materially our knowledge of the former conditions of life on our earth. Thus, a little while ago, was discovered at Idle a magnificent specimen of a large ganoid fish in the lower coal measures; and now at Clayton, near Bradford, has been found one of the grandest examples yet seen of a fossil tree. Messrs. John Murgatroyd and Sons, of Fall Top Quarry, Clayton, are deserving of thanks for the care they have shown in baring this remarkable fossil, and allowing it to be inspected. The quarry is not far from the edge of a bold escarpment overlooking the Thornton Valley, and the well-known Elland flagstone is worked here for landings, flags, &c. A fault cuts off the flagstone in a very marked manner, but it reappears in the bottom of the valley. Between the better-bed coal and the flagstone there is a great thickness of shales, sandstones, &c., of various characters and thickness, and it was in these measures that the fossil tree was discovered about 20 feet below the surface. The marketable flagstone is at a considerable depth, hence the overlying strata must be first removed. It was during the process of this excavation that the fossil was bared. Ever since the researches of the late Mr. Binney in the flora of the carboniferous period, great attention has been paid to this branch of geological study. He first discovered the trunk of a fossil tree known by the name of *Sigillaria*, standing erect as it grew, and still connected with its roots, named *Stigmara*. Here, at Clayton, we have a splendid example of a similar nature. A stump of *Sigillaria* is seen sending out its forked Stigmarian roots. Six of the roots are quite undisturbed, the remaining two being accidentally broken, but as the fragments have been carefully preserved, it can soon be restored to its original state. In *Stigmara* are placed the roots of *Sigillaria* and *Lepidodendron* and perhaps other plants; but an examination of the markings on the surface of the present example proved it to be a *Sigillaria*. The Stigmarian roots presented very finely the characteristic pits or scars from which the rootlets or filaments formerly ran out in all directions. Some idea of the magnitude of this fossil may be gathered from the following dimensions: the diameter of the trunk is 3 ft. 9 in.; the circumference of the largest root near the trunk 6 ft. 6 in., others being from 6 ft. down to 4 ft. 6 in.; the longest root extends about 15 ft., the others varying from 2 ft. to 3 ft. shorter, whilst the ramifications of the roots extend over an area of from 80 ft. to 90 ft. These roots can be seen from the trunk to their extremities in all their windings and sharp outline, and certainly constitute a most impressive sight. The trunk of the tree was in a bed of soft, sandy shale, called locally 'yellow loam,' the roots resting on a bed of soft blue shale, which they penetrate. So remarkable a fossil as this should be procured at once for one of our museums; it would be an unrivalled example for geological students, and a splendid demonstration in the study of fossil botany. To allow it to meet the too common fate of many fine fossils—namely, that of being broken up for rockeries or gardens, would be an act of inexcusable and gross scientific vandalism. Mr. E. Wormald, of Great George Street, Leeds, has obtained a fine photograph of the fossil.—S. A. ADAMSON, Leeds, July 24th, 1886.

## NOTES—FISHES.

**Occurrence of the Sting-Ray at Redcar.**—A Skate, about twice as thick as the ordinary kind, was caught at Redcar on the 5th September, 1885, and was exhibited in a fishmonger's shop. It is a dirty, sandy colour, but the peculiarity is in the tail—it is about 15 inches long and branches off into two whip-like forks, one longer than the other, each running to a fine point. This animal, which puzzles the fishermen, turned out to be the Sting-Ray (*Trygon pastinaca*).—T. H. NELSON.

## THE YORKSHIRE NATURALISTS' UNION IN UPPER NIDDERDALE.

The sixty-third meeting was planned for the investigation of the upper part of the lovely valley of the Nidd, including the uniquely picturesque and interesting scenery of the How Stean Beck. Every facility was afforded by Mr. George Metcalfe, Mr. T. E. Yorke, and Mr. W. Harker for members to visit their estates, and the first-named gentleman and a number of other Pateley Bridge friends favoured the Union with their presence and co-operation during the day. The scene of the excursion being eight miles from Pateley Bridge, the nearest railway station, waggonettes were engaged to convey the party, which was about fifty in number. The weather was fine throughout the day, and the excursion most enjoyable. The main body of the members explored the valleys of How Stean and the Blayshaw Beck, while a small party, ignoring the latter, passed through How Stean and went forward to Goydon Pot and Manchester Hole, and found that the latter was capacious enough to swallow up the whole of the waters of Nidd, leaving none to go down Goydon Pot, which could in consequence be entered for some distance. All the parties returned to Pateley Bridge in the afternoon for the tea and meetings, which were held at the King's Arms Inn. Full justice was done to a most excellently provided meal, after which the sections dispatched their business.

The general meeting was held at 5.15 p.m. In the absence of the president, who had fully intended being present, the Rev. William Fowler, M.A., an ex-president, occupied the chair. The minutes having been accepted as read, several new members were elected, viz:—Mr. George Metcalfe, J.P., Castlestead, Mr. W. C. Clarkson, Pateley Bridge, Mr. R. Whincup, Pateley Bridge, Mr. John Trickett, Dacre Banks, and Mr. Naughton, Harrogate. The Harrogate and District Naturalists' Society was then admitted into the Union, after which the roll-call showed that nine societies were represented, viz:—Bradford (Nat. Soc.), Dewsbury, Leeds (3), Liversedge, Ripon, Harrogate, and the Practical Naturalists' Society. The election of a delegate to the British Association meeting was then made: it was resolved to elect Mr. C. P. Hobkirk, F.L.S., and in the event of his inability to attend, that the Rev. E. P. Knubley, M.A., be appointed. Thanks were then voted unanimously to the gentlemen of the district who had so generously co-operated in the excursion, on the motion of the Rev. R. A. Summerfield, seconded by Mr. A. Craig-Christie, F.L.S., of Edinburgh, secretary to the Scottish Natural History Club, by whose presence during the day the Botanical section had greatly profited. Mr. Metcalfe responded to the vote. The sectional reports were then taken.

In the absence of the secretary (Mr. J. Backhouse) the Rev. E. P. Knubley, M.A., presented the report of the Vertebrate section. During the afternoon 4 mammals were observed, including the Long-tailed Field Mouse and the Red Field Vole. The members of this section had no opportunity of observing the various species of Bats in which the valley is so rich. Of the 90 species of birds which breed annually within its limits no less than 56 were observed by different members of the section. Of these, 32 were residents, and included the Goldcrest, Long-tailed Tit, Creeper, Grey Wagtail, Lesser Redpoll, and Kingfisher; and 24 were summer visitants, among which were the Ring Ousel, Dipper, Wheatear, Redstart (common), Chiffchaff, Willow Wren, Wood Wren, Grasshopper Warbler, Yellow Wagtail, Pied Flycatcher, Sand Martin (in far greater abundance than either the Swallow or Martin), Swift, Land Rail (nesting near Pateley Bridge), Golden Plover, Common Sandpiper, and Curlew. Of reptiles only the Slow-worm was noted; and 5 of the 7 species of fish known to occur in Nidderdale were added to the list. These together made a total of 66 vertebrate animals observed during the day, not including *Homo sapiens*, who seemed to have enjoyed himself very much. Mr. Knubley added that so admirably complete a list had been framed from the researches of Mr. Storey, that the section entirely failed to add any species to it, in pursuance of what is always their laudable endeavour.

For the Conchological section its secretary, Mr. John Emmet, F.L.S., reported that only about a dozen species had been found during the day, owing to the dryness of the season. One of these was, however, a very good addition to the published list, *Azeca tridens*, a species which is partial to limestone soils. This

had been found on the limestone slopes near Manchester Hole, along with *Zonites radiatulus* (also an addition to the list for Upper Nidderdale), *Z. crystallinus*, *Z. cellarius*, *Z. nitidulus*, *Clausilia rugosa*, *Helix hispida*, *H. rotundata*, *Arion ater*, and *Limax agrestis*, the var. *nigra* of the latter being noted.

For the Entomological section its secretary, Mr. G. C. Dennis, of York, reported. Only ten species of Lepidoptera, viz.:—*Acidalia remutata*, *Cabera pusaria*, *Emmelesia alchemillata*, *E. albulata*, *Eupithecia minutata*, *Melanippe montanata*, *Tanaora chærophyllata*, *Epunda viminalis*, *Anarta myrtilli*, and *Tortrix viburnana*, and a few insects of other orders, had been observed.

For the Botanical section its president, the Rev. William Fowler, M.A., reported that of flowering plants and ferns 146 were noted, the most interesting being *Stellaria nemorum*, *Carduus heterophyllus*, *Habenaria chlorantha*, and *Stachys ambigua*, a hybrid between *S. sylvatica* and *S. palustris*. It approaches the former in its reddish-purple flowers, and the latter in its hollow stem, the shortly-stalked leaves being intermediate between the two.

The Geological section report was submitted by its secretary, Mr. S. A. Adamson, F.G.S. There was a large attendance of geologists, who were guided by Mr. Storey, and Mr. Whincup, of the Scotgate Ash Quarries. In addition, Professor A. H. Green, M.A., F.R.S., was present. On the journey many hummocks or mounds in the valley were noted, probably being composed of drift or morainic matter left by the glaciers as they receded at the close of the glacial period. No sections were, however, observed to render this conclusive. A short distance before entering the village of Lofthouse a halt was made to note the phenomenon of the Nidd issuing from its underground course, into which it enters about two miles higher up, at Goydon Pot Hole. Of course, the visible bed of the stream is not dry throughout, for it receives the drainage of the mountain sides; and again, after heavy rainfalls, when the underground channel cannot carry off the water, then the surplus rushes down the old river bed on the surface. Alighting from the waggonettes at Lofthouse, the way was taken up the Blayshaw Gill or Beck among exquisite scenery. Passing up the bed of the stream, the members had an opportunity of seeing one of the finest examples of a fault possible to be seen. By a throw to the south the gritstone is brought against the limestone, and the beck for some distance runs along the line of fault. Some fine specimens of encrinal limestone were here obtained, the weathering having brought the fossil encrinites into sharp relief in every variety of position. Some black shales were examined, which were thought to belong to the Yoredale series. It will be remembered that at Hawes, in Wensleydale, the shales, sandstones, and limestones named by Phillips the Yoredale series attain a thickness of nearly 800 feet; coming to the south and south-east they gradually diminish at Great Wherside to 150 feet, until above Lofthouse there are only about 20 feet of shales and dark-coloured limestone between the lower scar limestone and the millstone grit. This brings out forcibly the different circumstances under which these strata were deposited, the thick limestone being an oceanic deposit, the shales and sandstones being littoral in their character. Still the beds are very irregular, some going out and others coming in, so that any definite classification is very difficult; and, indeed, in this district, no absolute horizon can be defined at present, or any arbitrary rule laid down. Mr. Storey pointed out on the bank of the stream the entrance to a cave which he had discovered and had for some distance explored. It may be mentioned that the encrinal limestone in the bed of the beck was intensely hard. A little distance from the beck a quarry of very fossiliferous limestone was examined. This will take a polish, and is sawn into slabs for mantels and other purposes. At a quarry a little farther on, the limestone was of a different character—black, compact, and very hard. This is used for roadstone, indeed it most closely resembles the Harrogate roadstone. How Stean Beck, thrown unreservedly open to the visitors by the kindness of Mr. G. Metcalfe, was next visited. Here the beck rushes impetuously through a ravine with vertical walls rising to the height of 70 feet or more, whilst the foliage on all sides is superb. This is a very good example of the manner in which a stream running through the limestone and forming in some places waterfalls or rapids, is a more powerful agent in denudation than the ordinary action of weathering. Professor Green drew special attention to this, and said that as an example of a cañon or ravine, excavated by the grinding

action of running water, it was not equalled in England. The Professor also said the cañon of How Stean might owe its initial character to a natural crack or joint in the strata; but may not the How Stean Beck have once pursued an underground course as the Nidd does at present, and the roof of the excavation by gradual wear have since fallen in? There were here some caves, varying in size, the largest, known as Eglin's Hole, being explored by the bulk of the party. Time had been so well and fully spent in observations that it was impossible on the present occasion to visit Goydon Pot Hole, and the direction was therefore taken towards Lofthouse. Under the bridge the river bed was examined, and some intensely hard black limestone, full of producti, noted. Professor Green stated that the wonderful scenery around Pateley which had been just visited was due, in the opinions of some, to some great convulsion of nature. This was not the case, much of it being owing to the action of water, twofold in its nature, mechanical in carrying away obstacles which impeded its progress, and chemical in dissolving the carbonate of lime contained in the limestone. Referring to the ravine at How Stean, he said all present had heard of the wonderful cañons of Colorado, in some parts over a mile in depth, and yet all cut out by the action of running water; well, here we have an example of precisely the same character, arising from the same cause, and although, of course, on a much smaller scale, yet as perfect in its way. He had had much pleasure in visiting this neighbourhood, not only from the beautiful scenery he had beheld, but also from the variety of the physical geology of the district, so unique in its character. He also suggested that a special study should be made of these curious mounds or hummocks in the valley, which might either be composed of morainic matter or torrential river gravels; by observation of sections, their true composition and origin might be ascertained.

None of the officers of the section for Micro-Zoology and Botany were present, and therefore no report could be submitted, and the meeting concluded with a vote of thanks to the chairman.

### BOOK NOTICES.

**A Dictionary of the names of British Plants**, for the use of amateurs and beginners as a help to the knowledge of the meaning and pronunciation of the scientific names of British wild flowers, by H. Purefoy Fitzgerald. London: Baillière, Tindall & Cox., sm. 8vo, pp. 96. No date on title. Price, 2s. 6d.

We regret to have vainly sought anything to praise, except it be the laudable aim of the author, in this little work, issued in the early autumn of 1885. In spite of the modest deprecatory appeal against 'harsh criticism' in the preface, a work of this sort must always stand or fall upon its actual merits, and if the 'help' it offers is a delusion and a snare (through inaccuracy), nothing but disparagement is possible. To begin with, the work supplies no want, a cheap and much ampler book (Alcock's *Botanical Names for English Readers*; Reeve, 1876) covering the same ground is already in existence, and Mr. Fitzgerald's seeming ignorance of the fact is the sole *raison d'être* his later work can lay claim to. Apart from very doubtful, if not absolutely false statements as regards names and derivations, affording incontestible internal evidence of imperfect knowledge of botanists and botanical literature, this petite book is well enough so far as it goes, and where it deals with such simple words as *acris*, *apifera*, *Linnaea*, *lutea*, etc., may safely be accepted as reliable, if in places amusingly simple; but outside very narrow limits the information it affords is so meagre, not to say embryonic, as to leave quite unsatisfied all save the humblest and most superficial aspirations after 'light, more light.' For example, to put off the mass of the amateur botanists of 1886—to whom the bewildering erudition of the recent 8th Ed. of the *London Catalogue of Plants* is seriously offered as none too strong meat—with the statement that a species or variety is named *Bakeri* 'after Mr. Baker, a botanist,' 'Briggsi' (it should be *Briggsii*) 'after a Mr. Briggs,' *Gibsoni* 'after a Mr. Gibson,' 'Hailstoni' after a Mr. Hailston' (whose name had an e at the end), is worse than puerile in its affected, witless brevity. One is thankful, after the foregoing, that the great Hooker, and the equally great Watson (although their names have been commemorated in species and varieties as well) have been mercifully omitted altogether—*Watsoni* 'after a Mr. Watson would have been the acme of mockery.

Our author is even more unfortunate with the less evident etymologies. On the first page under *Acanthium* we read, 'Lat., *acanthus*, the name of a thorny Egyptian plant. *Onoperdon acanthium* is probably named after it, on account of the prickles on the leaves.' In which three lines we have three distinct errors, and the meaning or derivation of *Acanthium* (from *acus*, a needle) is not even attempted! The same, on page 6, with regard to *Aconitum*—we are told it is from the 'Greek *akoniton*, a ranunculaceous plant, greatly used in medical practice, and very poisonous,' without any indication of the probable etymology, which is classical, according to Pliny deduced from *Acone*, a district in Pontus famous for poisonous herbs—'loco ubi nascitur'; whilst other old writers have suggested that it is essentially the same word as *Conium*, a variant of it preceded by the alpha. Again, on page 7, we have the painful shuffle-off instead of an explanation—'*Aizoides* (*i-zoi-dees*)—*oides* in all words = like; resembling *aiz*,' i.e., resembling 'always'—a muddle for which 'amateurs' would be no better even if they looked for the meaning of an '*aiz*' in their Greek dictionary! Will it be news useful for a 2nd edition (?) if we point out that the specific name *aizoides* is that of a *DRABA* as well as a Saxifrage, and was bestowed upon the former because of its compactly rosetted tufts of ciliated hard-margined leaves, resembling those of *Saxifraga Aizoon*; whilst both it and the Saxifrage with the same specific name derive that appellation—essentially a contracted form of *aizoon-oides*—from *Aizoon*, the Greek term for the evergreen Houseleek (a genus of the *Ficoideæ* has the same name, and is also evergreen), the word being compounded of *æi.*, always, and *ζωον* alive, such as we have it in *zoology*, the rosette even of the *Draba*, along with the leaves of both Saxifrages, persisting throughout the winter. Again, to tell us that *Lemna*—the Duckweed inseparably associated with ponds, is 'probably connected with the island Lemnos,' when on the opposite page the Greek *linne*—of which it is a variant, the substitution of 'e' for 'i' occurring in many other words of old Greek—is correctly given as meaning a *pond* (as in *Limnea* a pond-snail) is wild work indeed; but to pass over the very curious and interesting derivation of *Lapsana*, or more correctly *Lampsana*, the Nipplewort, as if the fact of its being 'of Grecian origin' was quite enough to know, is inexcusable except on one not very flattering supposition.

The method tried of expressing pronunciation is, perhaps, less faulty, although somewhat grotesque, and in a few instances either insufficient or wrong. We have examples of both mistakes in the direction to pronounce *Rhynchospora*, 'rhine-coppor-rah'; *Ranunculus*, 'ray-nun-q-lus'; *Serotina*, 'së-ro-ti-nah' (not, by-the-bye, from 'sero, I scatter,' as we are actually told, but simply the Latin word for *late*—i.e., late-blooming, as in *Bartsia serotina*, the autumn-flowering form); *ustulati*, 'us-teu-lay-ti' (should be *ustulata*); truly, from Latin *ustulatus*, burnt—e.g., *Carex ustulata*, the glumes of which are of a burnt-brown hue, and *Orchis ustulata*, the perianth of which has a similarly brown colour as if scorched, but not at all, as we are informed, on account of 'having a hot, burning taste'! Nor are the names *Aquilina*, *Aster*, *Aristolochia*, *Bufonius*, *Ochroleucum*, *Rosa*, *Trollius* (fancifully named by Linnæus after the wicked yellow-haired Scanian trolls or gnomes, supposed to haunt the water-sides and cascades by which it loves to grow) pronounced 'aquel-ly-nah,' 'astir,' 'a-riste-loc-ke-ah,' 'bōō-foe-ne-us,' 'ok-crow-lew-cum,' 'roe-sah,' 'trole-le-us,' respectively! More than all, we are told that the specific name *torminalis* of an austere-fruited, wild sort of Pear (*Pyrus*) derives its name from '*tormina*, dysentery, for which illness' the tree 'was thought to be a remedy,' whereas the meaning of *torminalis* given in our Latin dictionaries as 'causing the gripes,' points at once to the origin of the application to the colic producing fruit, without the necessity for any fanciful or false supposition at all. A still more ridiculous theory is under *Centunculus*—a name anciently connected with the Cudweeds, *Gnaphalium* (*vide* Turner, etc., 1548)—twisted into having an applicability to the minute Primulaceous Chaffweed whose inconspicuous 'crimson blossoms' are declared to make 'the little plant look like a piece of patch-work': fancy could no further go, but a poet, whatever the strength of his imagination, clearly misses his vocation in the scientific rôle of an expounder of etymology.

The foregoing samples are not odd errors picked out of this little book for the purpose of conveying an unwarrantable impression—they are but selections at random almost from many dozens that could be cited; indeed we do not remember having ever seen in a work of its size so many astounding postulates so confidently advanced as ascertained truths.

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Notes on Birds of Cumberland, Westmoreland, and Furness.—JOHN WATSON.  
Bibliography for 1885.

Natural History of Lincolnshire.—The next instalment of this is to be upon the Mammalia, by JOHN CORDEAUX. Schedules have been prepared for obtaining information: one will be sent to any one willing to furnish notes.

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The Young *Naturalist* for August 1886. [J. E. Robson, Editor.]  
The *Naturalist's* World for August 1886. [P. Lund, Editor.]  
Illustrated Science Monthly for August 1886. [Bogue, Publisher.]  
Science Gossip for August 1886. [Chatto and Windus, Publishers.]  
Scottish *Naturalist* for Jan., April, and July 1886. [Prof. J. W. H. Trail, Editor.]  
Notarisia, commentarium phycologicum—N. 3—Luglio 1886. [G. B. de Toni e David Levi, Redattori.]  
Revue Bryologique, 13e Année, No. 4, 1886. [Mons. T. Husnot, Redacteur.]  
Northamptonshire Natural History Society.—Journal, Nos. 24, 25, 26, November 1885, March and June 1886. [The Society.]  
Penzance Natural History and Antiquarian Society—Report and Transactions, 1885-86. [The Society.]  
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Notes on the Sub-genus Cylinder (Montfort) of Conus.—8vo reprint, 1886, 16 pp. and plate. [J. C. Melvill, Author.]  
Liverpool Naturalists' Field Club—Proceedings, 1885-86. [The Club.]  
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New York Microscopical Society—Journal for May 1886. [The Society.]  
The Manx Note Book, No. 7, July 1886. [A. W. Moore, Editor.]  
The Book of Duck Decoys.—By Sir Ralph Payne-Gallwey, Bart. [The Author.]  
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TENTHREDINIDES.

\***Tenthredopsis cordata.** A species new to Yorkshire. I have taken two examples (females) amongst oak. It is not in Mr. Cameron's 1878 catalogue, and as I have not seen his monograph of these insects, I am not certain whether it has been taken before or not in England.

The following is a description of the perfect insect:—Head and ocellus black; eyes black, surrounded with a white ring; antennæ black, with nine joints; clypeus and labrum white; mandibles red, with the tips black. Meta- and mesothorax black; scutellum white, heart-shaped. Abdomen: four first segments black, the remainder bright red. Ventral surface black to the third segment of the abdomen, the fourth having the centre red, the remaining segments being entirely red. Legs: coxæ and trochanters black; front legs—the base of the femora black, the posterior portion red; the central and hind legs have the femora black, of which colour also are the tibiæ; the tarsi in the front and central legs are pale brown, and those of the hind ones black. Wings: costal nervure pale brown as far as the stigma; the stigma black; the other nervures dark brown.

I should say that the colour of the legs is liable to vary, as in the other example I have they are all alike.

At first sight this insect much resembles *T. dimidiata*, which has the penultimate joints of the antennæ white. It has also two white basal abdominal spots, and black scutellum.

\***Athalia lugens** Klug. Taken in Askham Bogs, 1884.

EMPHYTIDES.

\***Emphytus serotinus** Klug. One example found in the Nurseries, York, 1884.

SELANDRIADES.

\***Blennocampa fuliginosa** Schr. This species was found by me flying amongst smooth-leaved willows, evidently a willow-feeder, although I have not been able to find the larva as yet. The Nurseries, York.

## NEMATIDES.

\***Hemichroa rufa** Pz. I found the larvæ of this insect on *Alnus glutinosa* var. *laciniata*, in September 1883. The female lays her eggs on the underside of the leaves, along the midrib and lateral ribs. They are oval in shape, though somewhat pointed, and are placed end to end, thus resembling a miniature watch chain. There are fifteen or twenty placed on each leaf, in strings of four or five on the lateral and eight or ten on the midrib. When the eggs are hatched the little larvæ move restlessly about for some time, and then proceed to the edges of the leaves and commence the business of life. Feeding gregariously, they soon demolish the leaves, leaving nothing but the ribs. In this way whole branches are stripped. The sides of a tree then present a very naked appearance. However, the sight of such as this is very pleasing to an entomologist, whose delight is in finding something fresh or rare. The colour of the adult larvæ is greyish green, with a double row of dark spots on each side of the dorsal line. There are also some dark spots along the spiracles. Like many more species of Sawflies, they have the peculiarity of taking fast hold with their prolegs, and coiling up the anal segments. When full fed they enter the earth to undergo their transformations.

The perfect insect I will thus describe:—Head and face pale red; eyes and ocellus black; mandibles black tipped; the other parts of the mouth red, with slight touches of black on them; antennæ black, nine-jointed; mesothorax and scutellum red; the first segments of the abdomen suffused with black, the remaining ones pale red. Front wings: costal nervure, the anterior half pale red, becoming darker towards the stigma; stigma reddish, suffused with black; the basal half of the wings clouded with grey. Legs: coxæ and trochanters black, the joints showing paler; femora black; tibiæ and tarsi, the anterior parts pale red, the posterior dark grey.

\***Cladius eradiatus** Htg. Examples found in this neighbourhood, 1884.

\***Nematus croceus** Fall. Captured at Holgate, on the wing, 1884.

\***Nematus cæruleocarpus** Htg. I met with larvæ of this species in the autumn of 1883, upon smooth-leaved willows, and reared three examples. The larvæ are dark green, like the leaves on which they feed, and are scarcely to be distinguished from them without spots or lines, their distinctness from most other Sawfly larvæ being in their manner of carriage during feeding. They lie along the edges of the leaves in a very straight manner, clasping

them with all their feet excepting the last pair, the last segment being pointed and raised. Imago: head, antennæ, and the whole upper surface of the body black; the legs uniformly pale red, except the bases of the coxæ, and the two hind legs having the posterior portion of the tibïæ and tarsi black. Wings: costal nervure to the stigma pale red; the other basal nervures to the centre of each wing are pale red; stigma black; the marginal nervures from the centre black.

## CIMBICIDES.

**Cimbex sylvarum** Fab. I had the pleasure of beating a larva of this insect from birch in the autumn of 1884. It fed up, and then made itself a leathery cocoon amongst dead leaves at the bottom of the jar in which I had placed it, and went snugly into its winter quarters. It remained there until the following June. I was then expecting it coming out a fine imago, when lo! out of the leathery case emerged some ten or a dozen small Ichneumons belonging to the Cryptidiæ group, the name of which I have not yet made out. These were not to be despised, though I should have preferred the former. I went again this autumn, my object being to secure more larvæ, and, I am glad to say, was successful. This time I beat five nearly full-fed ones, after four hours' beating, which shows that they are not very plentiful. They are beautiful fellows, an inch and a half long, with smooth white heads, and small black eyes placed low down near the mouth, and a beautiful blue line running down the centre of the back. This line begins about the end of the second segment, and ends on the beginning of the eleventh. Alongside this is another of a pale yellow colour, which merges into the greener portion of the larvæ. The sides above the spiracles are studded over irregularly with white spines or raised spots, the spiracles themselves being black.

**Trichiosoma lucorum** L. The larvæ of this insect I found in some numbers in Askham Bogs, on birches. It differs from *T. sylvarum* in not having a blue dorsal line. In place of this a dark line shows through the skin in some examples; others are a regular dark green, the upper surface of the head being brown.

[Those species hitherto unrecorded for the Yorkshire fauna are—as in former lists—marked with the asterisk (\*). The list of Yorkshire Sawflies, inclusive of the additions given above, now amounts to 119 species.—W.D.R.]

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THE scientific names inserted are in accordance with the B.O.U. List of British Birds. The present bibliography is for 1885, although a few titles accidentally omitted for 1884 are given.

Reference should be made to the columns of 'The Field,' 'Land and Water,' and to sporting papers generally, for information as to the shooting of grouse and of other game-birds, but it is not thought desirable to occupy space with it here.

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ANON. ['B. A. Oxon']. **Yorkshire.**

**A Cream-coloured Robin** [*Erythacus rubecula*: one creamy-white, with breast red, shot in the East Riding, near Malton, January 5th]. *Field*, January 17th, 1885, p. 65.

ANON. [no signature]. **Lincolnshire.**

**Nightingale** [*Daulias luscinia*] near Grimsby [at Cleethorpes, quite close to the sea]. *Land and Water*, May 30th, 1885, p. 552.

ANON. [no signature]. **Lancashire.**

**The 'Birds of Lancashire'** [reviewed; with copious quotations]. *Nature*, July 16th, 1885, xxxii, 241-242.

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**Great Grey Shrike** [*Lanius excubitor*, near Leeds]; **Little Auk** [*Mergulus alle*, found near Tadcaster in July: both copied from the *Naturalist*]. *Sci. Goss.*, September 1885, p. 215.

ANON. [no signature]. **Yorkshire.**

**The Yorkshire Naturalists' Union** [at Blubberhouses; during the ramble such birds as the Goldeneye (*Clangula glaucion*), the Greenshank (*Totanus glottis*), and the Ring Dotterel (*Aegialitis hiaticula*) were noted]. *Land and Water*, October 3rd, 1885, p. 315.

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**A Peregrine Falcon** [*Falco peregrinus*] shot in Cumberland [near Dalstone]. *Land and Water*, December 26th, 1885, p. 606.

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[**Bird-notes**]. N. H. Journ., September 15th, 1885, pp. 117-118.
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**Common Bittern, *Botaurus stellaris*, shot near Leeds**, Yorkshire [this is no doubt Mr. J. W. Addyman's Knaresborough specimen]. Proc. N. H. Soc. Glasgow, March 25th, 1884 [pub. 1885], vol. i, p. xxvi.
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**Ring Ouzel [*Turdus torquatus*] feeding on Cherries** [at Danby-in-Cleveland]. Zool., October 1885, p. 387.
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**Nature near Louth, North Lincolnshire** [The Bittern, or 'Mire-drum' (*Botaurus stellaris*) once common, now scarce]. Nat. World, February 1885, ii, 24-25.
- H. WALLIS KEW. Lincolnshire.  
**Nightingale** (*Danlias luscinia*) [at Maltby Woods, near Louth]. Nat. World, July 1885, p. 138.
- H. WALLIS KEW. Lincolnshire.  
**Mablethorpe** [Ornithology: Stonechats (*Pratincola rubicola*), abundant on sand-hills, June 6th, 1885]. Nat. World, July 1885, p. 137.
- H. WALLIS KEW. Lincolnshire.  
**Herony at Muckton Wood**, Lincolnshire [particulars given]. Nat. World, July 1885, p. 129.
- H. WALLIS KEW. Lincolnshire.  
**Louth Naturalists' Society** [The Herony at Muckton Wood]. Nat. World, August 1885, pp. 154-5.
- H. WALLIS KEW. Lincolnshire.  
**Heron** [*Ardea cinerea*]'s Nest. Nat. World, September 1885, p. 177.
- H. WALLIS KEW. Lincolnshire.  
**Rambles near the Coast** [at Theddlethorpe, Lincolnshire; nest of Sand-martin —*Cotile riparia*]. Nat. World, October 1885, p. 189.
- F. KIRTON. N. E. Yorkshire.  
**Thirsk** [Bird-notes; notes on eight species]. Nat. Hist. Journ., April 15th, 1885, ix, 59-60.
- F. KIRTON. Yorkshire.  
**Thirsk** [nidification of Long-eared Owl (*Asio otus*) and variety of Rook (*Corvus frugilegus*)]. N. H. Journ., May 15th, 1885, p. 79.
- R. B. L. Westmoreland.  
**Hérons** [*Ardea cinerea*] and **Rooks** [*Corvus frugilegus*] [At Dallam Tower, Westmoreland, a very large rookery and perhaps the most extensive herony in the North of England flourish side by side. At one time fights took place, but now they have for many years lived peaceably together]. Field, January 17th, 1885, p. 65.
- H. LAMB. Yorkshire.  
**Unrecognised Birds** [on a Yorkshire moor; suggested to be Stone-chats (*Saxicola rubicola*)]. Sci. Goss., April 1885, p. 90.
- L. LEE. Notts.  
**Sand-Martins** [*Cotile riparia*] and their Nests [instance of persistent building in one place in Nottingham Park, regardless of disturbance by workman cutting a road]. Sci. Goss., September 1885, p. 214.
- THOMAS LISTER. Yorkshire.  
**South Yorkshire** [Bird-notes, October 1st, 1884, to February 1st, 1885: numerous species recorded]. Nat. Hist. Journ., March 15th, 1885, ix, 36.
- T. LISTER. Yorkshire.  
**Natural History Notes from** [South Yorkshire] [Birds observed about Barnsley in the autumn 1884, and winter of 1884-5]. Zool., May 1885, p. 184.

- R. LOFTHOUSE. Durham, Yorkshire.  
**Notes from the Tees** [referring to the autumnal migration of birds]. Field, October 31st, 1885, p. 640.
- J. L[OVELL]. Yorkshire.  
**Starlings** [*Sturnus vulgaris*; quitting an old roosting-place at Driffield]. Nat. Hist. Journ., May 15th, 1885, p. 78.
- H. A. MACPHERSON. Cumberland.  
**The Long-tailed Duck** [*Harelda glacialis*; at Monkhill Lough, January to March 1884]. Trans. Cumb. and Westm. Assoc., 1883-84, pp. 211-12.
- H. A. MACPHERSON. Cumberland.  
**Wild Fowl near Carlisle** [The notes refer to numerous species noted in autumn 1883 and spring 1884]. Trans. Cumb. and Westm. Assoc., 1883-84, ix, 211.
- H. A. MACPHERSON. Cumberland.  
**Shrikes** [Red-backed Shrike (*Lanius collurio*), Woodchat Shrike (*Lanius pomarinus*), Great Grey Shrike (*Lanius excubitor*), Pallas's Grey Shrike (*Lanius major*). Notes on these species as Cumberland birds; also general notes on their habits in the field, and on some species in confinement]. Trans. Cumb. and Westm. Assoc., 1884-85, pp. 97-107, with plate of Pallas's Shrike.
- H. A. MACPHERSON. Cumberland.  
**Green Sandpiper** [*Helodromas ochropus*] in Cumberland in Winter [One shot near Carlisle, January 3rd]. Field, January 10th, 1885, p. 61.
- H. A. MACPHERSON. Cumberland.  
**Occurrence of the Puffin** [*Fratercula arctica*] in Winter [They are obtained all the winter through on the Cumberland coast]. Field, January 17th, 1885, p. 65.
- H. A. MACPHERSON. Cumberland.  
**Woodpeckers and Nuthatch in Cumberland** [Enquiry whether the Nuthatch (*Sitta europæa*) has occurred in Cumberland during the present century; and whether it or the Green (*Gecinus viridis*) or Greater Spotted Woodpecker (*Picus major*) have nested during a similar period]. Field, January 17th, 1885, p. 65.
- H. A. MACPHERSON. Cumberland.  
**Scarcity of Greenfinches** [*Ligurinus chloris*] in Cumberland. Zool., May 1885, ii, 188.
- H. A. MACPHERSON. Westmoreland.  
**The Hawfinch** [*Coccothraustes vulgaris*] in Westmoreland [The Ibis list states that this has occurred in winter in every county but Westmoreland. One was, however, shot at Kirkby Lonsdale by I. Hindson, as long ago as December 1841. A winter visitant, though irregular, to Cumberland]. Field, May 2nd, 1885, p. 581.
- H. A. MACPHERSON. Cumberland.  
**Occurrence of Buffon's Skua** [*Stercorarius parasiticus*] in June [near Carlisle]. Zool., July 1885, p. 259.
- H. A. MACPHERSON. Cumberland.  
**Black-chinned Bramblings** [*Fringilla montifringilla*; 'not melanism,' but due to an extension of the black face over the surface of the throat]. Zool., October 1885, p. 389.
- L. D. MARSDEN. Lincolnshire.  
**Late Nesting of Quail** [*Coturnix communis*]; nest with 10 eggs found August 20th in a field of tares at Girsby, Lincolnshire]. Field, September 19th, 1885, p. 423.
- L. D. MARSDEN. Lincolnshire.  
**Pied Woodcock** [*Scelopax rusticula*] in Lincolnshire [One shot in Maltby Wood, Louth, November 20th, had the flight feathers pure white]. Field, December 5th, 1885, p. 785.

REGINALD D. MARSHALL.

**Grey Phalarope** [*Phalaropus fulicarius*] in **Cumberland** [a young one shot September 23rd, on Derwentwater]. Field, October 24th, 1885, p. 607.

J. F. MASHAM [misprinted Musham].

Lincolnshire.

**Albino Rooks** [*Corvus frugilegus*; three Albinos with pink eyes in a nest at Wellingthorpe]. Zool., July 1885, p. 259.

J. E. MASON.

Lincolnshire.

**Curious Nest of a House Martin** [(*Chelidon urbica*) at Alford]. Nat. World, December 1885, p. 233.

S. L. MOSLEY.

Yorkshire, Notts.

**British Birds: their Nests and Eggs** [Cirl Bunting (*Emberiza cirulus*) occasionally in Yorkshire]. Young Nat., August 1885, pp. 186-188.

[Albino Chaffinch (*Fringilla caelebs*) near Huddersfield; varieties of eggs at Rainworth.] Young Nat., September 1885, pp. 197-201.

S. L. MOSLEY.

Yorkshire.

**Varieties of Wood Pigeon** [*Columba palumbus*] and **Magpie** [*Pica caudata*]. [A variety of the Wood Pigeon, mottled drab, believed to have been killed in Lancashire.] Zool., November 1885, p. 437.

T. H. NELSON.

Yorkshire.

**Domestication of the Partridge** [*Perdix cinerea*; at Easby Hall, Cleveland]. Zool., January 1885, p. 29.

T. H. NELSON.

Yorkshire.

**Reported occurrence of the Blue-winged Teal** [*Querquedula discors*] near Redcar. [The bird shot at Cowpen on September 3rd, 1882, and recorded as an American Blue-winged Teal, proved to be a young male Garganey (*Querquedula ciria*).] Zool., March 1885, p. 113.

ALFRED NEWTON.

Durham.

**Mr. Grieve on the Garefowl** [review, making reference to the Durham fragment]. Nature, October 8th, 1885, xxxii, 545-6.

FRANCIS NICHOLSON.

Cheshire, S. Lancashire.

**On the breeding of the Reed Warbler**, *Acrocephalus streperus* in Cheshire. [This note appeared in the Naturalist for March 1885, p. 182. Author adds that he is satisfied that its ally the Marsh Warbler, *A. palustris*, does not occur in Cheshire.] Proc. Manch. Lit. and Phil. Soc., March 16th, 1885, xxiv., 54-55.

[FRANCIS MARTIN NORMAN.]

Northumberland.

**Report of meetings of the Berwickshire Naturalists' Club for the year 1884** [note of the Black-headed Gulls (*Larus ridibundus*) breeding at Pallinsburn (p. 445); and the birds noted at the Farne Islands, June 25th]. Proc. Berw. Nat. Club, vol. x, No. ii (1885), pp. 439-460.

W. PEILE.

Cumberland.

**Cockermouth [Bird-notes: Buzzard** (*Buteo vulgaris*), Dipper (*Cinclus aquaticus*), Long-tailed Tit (*Acredula rosea*), Long-eared Owl (*Asio otus*), Brown Owl (*Syrnium aluco*), Crow (*Corvus corone*), Wheatear (*Saxicola ananthe*), and Hooded Crow (*Corvus cornix*) referred to]. N. H. Journ., May 15th, 1885, p. 79.

E. A. PIM.

Yorkshire.

**Sea-Gull in York** [February 13th, 1885]. N. H. Journ., April 15th, 1885, ix, 60.

G. T. PORRITT.

Yorkshire.

**Curious nest of the Song Thrush** [*Turdus musicus*; at Copgrove, near Borough-bridge. Nest placed among a number of young shoots covered with green leaves springing from the bole of a tree and formed outwardly entirely of fresh green shoots]. Zool., August 1885, p. 311.

- T. N. POSTLETHWAITE. Cumberland.  
**Late nesting** [September 10th, 1884] of the **Yellowhammer** [*Emberiza citrinella*].  
 Zool., January 1885, p. 30.
- J. A. R. Westmoreland.  
**Breeding of Woodcock** [*Scolopax rusticula*] at Windermere [May 4th]. N. H.  
 Journ., June 15th, 1886, p. 99.
- J. E. R. Durham.  
**Solitary Snipe** [*Scolopax major*] in Co. Durham. [Shot 'last week' at Burn-  
 ledge-in-Weardale. Another shot about 'a fortnight ago.'] Field, October  
 10th, 1885, p. 533.
- THOS. RAINE. Yorkshire.  
**Occurrence of the Great Grey Shrike** [*Lanius excubitor*] near Leeds. [The  
 same record as appeared in the Naturalist for August 1885, p. 298.] Nat.  
 World, September 1885, p. 178.
- T. G. REEVE. Lincolnshire.  
**Ring Ouzel** [*Turdus torquatus*] feeding on cherries [in Lincolnshire]. Zool.,  
 September 1885, p. 346.
- GEORGE ROBERTS. Yorkshire.  
**Topography and Natural History of Lofthouse** and its neighbourhood [etc.].  
 Vol. II. Leeds: printed for the Author. 1885 [pp. viii + 258].  
 [Remarks on the avi-fauna (pp. 19-25), synopsis of species specially subject  
 to persecution (p. 25), miscellaneous notes (pp. 27, 87 to 193); tables of  
 arrivals of migrants (pp. 92, 97, 105, 111, 126, 127, 144, 157, 169); rare birds  
 captured during storms (p. 104); birds at Ledsham (p. 174, 176-178); at  
 Jackdaw Crag (p. 184); at Cowthorpe (p. 186); on the limestone (p. 188);  
 observations on domed nests (pp. 189-193).]
- JOHN E. ROBSON. Durham.  
**The Fulmar** [*Fulmarus glacialis*] at Hartlepool [found on the beach, October 12th;  
 another a few days later, not far from the coast; and a third near mouth of  
 Hezleden Dene]. Young Nat., November 1885, p. 263.
- WILLIAM ROSE. Lancashire.  
**A Suspended Nest of the Swallow** [(*Hirundo rustica*) between two pieces of  
 iron hanging about 3 feet from a beam, Shaw Hill, near Chorley, Lancashire].  
 Field, August 29th, 1885, p. 322.
- J. H. SALTER. Yorkshire.  
**Yorkshire Coast Bird-notes** [various species referred to]. Nat. Hist. Journ.,  
 February 15th, 1885, pp. 14-15.
- J. H. SALTER. Yorkshire.  
**Scarboro'** [Bird-notes, numerous species referred to]. N. H. Journ., May 15th,  
 1885, p. 79.
- J. H. SALTER. Yorkshire.  
**East Yorkshire Notes.**—Birds [numerous species referred to, the notes extending  
 from May 9th to August 31st, 1885]. Nat. Hist. Journ., December 15th,  
 1885, pp. 187-188.
- J. H. SALTER. Yorkshire, Lake District.  
**The Pied Flycatcher** [*Muscicapa atricapilla*, near Scarborough; detailed  
 observations; other birds mentioned]. Nat. Hist. Journ., December 15th,  
 1885, p. 188.
- HOWARD SAUNDERS. All the Counties.  
**A History of British Birds** (by the late Mr. Yarrell, fourth edition—edited, in  
 part, by Howard Saunders). Parts xxvii-xxx, concluding the work, and com-  
 prising the Anseres with numerous allusions to the North of England.

- [P. L. SCLATER. Yorkshire.  
**[Curious Duck shot in Yorkshire]**; Mr. Sclater exhibited and made remarks on a curious Duck shot on Lord Bolton's estate in Yorkshire, in January 1885, which was apparently referable to the Common Scaup (*Fuligula marila*), but was remarkable for having the broad and clean white front of the female, and the black head of the ordinary male of this species]. P.Z.S., March 17th, 1885, p. 246; and Zool., May 1885, p. 193.
- HENRY SEEBOHM. All the Counties.  
**A History of British Birds**, with Coloured Illustrations of their Eggs.  
 Parts v and vi, concluding the work, dealing with the Orders *Limicola*, *Gavia*, *Tubinares*, *Pygopodes*, *Anseres*, and *Steganopodes*. Many references to North of England.
- [H. SEEBOHM.] Lancashire or Westmoreland.  
**[Curious pale-buff variety of the Red Grouse (*Tetrao scoticus*)]**; shot on a moor near Morecambe Bay, October 16th, 1884, by Mr. Gray Grayrigge. Had been seen for three seasons on the moor.] P.Z.S., February 3rd, 1885, p. 66.
- HENRY SEEBOHM. Derbyshire, Northumberland.  
**The Nests and Eggs of Birds** [including notes from the Derbyshire Grouse Moors and the Farne Islands]. Trans. Herts. N. H. Soc., December 1885, iii, 255-260.
- JOHN SIM. Northumberland.  
**Objects of interest in our Pit District [of Northumberland]**; several birds mentioned casually]. Sci. Goss., February 1885, pp. 31-32.
- [H. H. SLATER.] Yorkshire.  
**[Barred Warbler—*Sylvia nisoria*—on the Yorkshire Coast**, August 28th, 1884.] P.Z.S., November 4th, 1884, p. 477.
- C. C. SMITH. Yorkshire.  
**[Birds] at Skipton-in-Craven** [Popularly written notes]. Nat. World, August 1885, pp. 149-151.
- THOMAS SOUTHWELL. Yorkshire.  
**Unrecorded Occurrence of the Whiskered . . . Terns [*Hydrochelidon hybrida*]**, shot on the Swale at Hornby Castle in 1842]. Zool., December 1885, p. 481.
- R. STANDEN. Lancashire.  
**[Black-headed] Gulls [*Larus ridibundus*]** feeding on Moths [near Preston; gullery at Winmarleigh Moss]. Nat. World, October 1885, p. 198.
- HENRY STEVENSON. Northumberland, Durham.  
**Ornithological Notes from Norfolk** [Refers to the breeding of the true Rock Dove (*Columba livia*) in Durham and Northumberland]. Zool., September 1885, p. 323.
- J. A. ERSKINE-STUART. Yorkshire, Lancashire.  
**Hérons and Heronries** [mentions five of the Yorkshire Heronries, also the one at Rawcliffe Hall, Lancashire, with 20 nests]. Nat. World, November 1885, pp. 204-5.
- B. B. L. T[ALL]., Secretary. Yorkshire.  
**Bootham Natural History Club, York**, [Kingfisher—*Alcedo ispida*—reported as seen on the Foss]. Nat. Hist. Journ., December 15th, 1885, p. 182.
- C. DONALD THOMPSON. Durham.  
**White Grouse [*Lagopus scoticus*]**. An albino was shot on the Edmondbyers Moor, near Stanhope, co. Durham, on the 7th December, 1884. A few feathers sent to the Editor are pronounced by him as scarcely to be termed white, being smoke-coloured]. Field, January 31st, 1885, p. 134.

- THOMAS THOMPSON. Northumberland, Durham.  
**Birds nesting in September** [Hedge Sparrow (*Accentor modularis*) near Ponteland; Green Linnet (*Ligurinus chloris*) at Winlaton; Quail (*Coturnix communis*), nest of 13 eggs, near Ryton-on-Tyne, August 22nd, 1882]. Field, October 31st, 1885, p. 499.
- WALTER M. TOMLINSON. Yorkshire.  
**Yellowhammer** [*Emberiza citrinella*] **sitting in July** [near Pontefract]. Field, September 5th, 1885, p. 359.
- W. M. TOMLINSON. Yorkshire.  
**Yellowhammer nesting in September** [corrects error in previous note—"July" was printed for 'September;'] Editor adds that this bird often rears second brood in August]. Field, September 12th, 1885, p. 391.
- JULIAN G. TUCK. Yorkshire.  
**Lesser Black-backed Gull** [*Larus fuscus*] **breeding** on the Yorkshire Coast. [Quite satisfied from Carter's evidence that this species breeds on Yorkshire coast.] Zool., October 1885, p. 388-9.
- P. VERVAET. Northumberland.  
**Bittern** [*Botaurus stellaris*] **in Northumberland**. [One shot by Sir John Haggerston, Bart., on his Ellingham property, January 19th.] Field, January 24th, 1885, p. 110.
- LORD WALSINGHAM. Yorkshire.  
**On some probable causes of a tendency to melanic variation** in Lepidoptera of high latitudes [refers incidentally (p. 137) to the change in the habits of Yorkshire Grouse]. Trans. Yorksh. Nat. Union, part 8 [publ. 1885], sheet D 9, p. 137.
- H. SNOWDEN WARD. Yorkshire.  
**Hooded Crow** [*Corvus cornix*: seen near Scarborough, August 2nd]. Nat. World, September 1885, p. 179.
- W. E. WARD. Yorkshire.  
**Migration of Wagtails** [*Motacilla*, species not stated]. Nat. World, May 1885, p. 99.
- W. E. WARD (Ilkley). Yorkshire.  
**Cuckoos** [*Cuculus canorus*] **in Pairs**. Cuckoo like a Hawk. Nat. World, September 1885, p. 175.
- JOHN WATSON. Westmoreland, Cumberland.  
**Eagles' Haunts in the North of England** [Long and interesting summary of information as to the Eagles and Eagle-haunts in the Lake District]. Field, January 24th, 1885, p. 110.
- Cumberland, Westmoreland, Yorkshire, Lincolnshire,  
Lancashire, Durham, Northumberland.
- JOHN WATSON.  
**The Dotterel** [*Eudromias morinellus*] **and its Migrations** [a long and interesting article, alluding to most of the counties of the North of England]. Field, November 14th, 1885, p. 708.
- THOS. WATSON. Yorkshire.  
**Thirsk** [Bird-notes; nesting of several species]. N. H. Journ., June 15th, 1885, p. 99.
- WM. WATTS (Rochdale). Lancashire.  
**Swallows** [Hirundinidæ, species not stated; and their Parasites]. Nature, July 9th, 1885, xxxii, 223.
- F. WELLS and A. COLLINSON. Yorkshire.  
**Ackworth** [notes concerning Sea-gulls, Wild Geese, and Ducks, Kingfisher (*Alcedo ispida*), and Snipe (*Gallinago caelestis*)]. N. H. Journ., February 15th, 1885, p. 15.

- J. WHITAKER. Notts.  
**Puffin** [*Fratercula arctica*] in Nottinghamshire [Same record as in the Naturalist].  
 Zool., February 1885, p. 68.
- J. WHITAKER. Notts.  
**An unobserved Habit in Long-tailed Tit** [(*Acredula rosea*); picking food off  
 surface of water, and plunging in to bathe]. Zool., March 1885, p. 113.
- J. WHITAKER. Notts.  
**Hybrid between a Stock Dove** [*Columba oenas*] and **Tame Pigeon**. Zool.,  
 April 1885, p. 150.
- J. WHITAKER. Notts.  
**Variety of Jackdaw** [*Corvus monedula*, dark stone colour, outer edges of flight  
 feathers white]; and **Chaffinch** [*Fringilla caelebs*, several shades lighter than  
 normal plumage]. Zool., May 1885, p. 184.
- J. WHITAKER. Notts.  
**Grey Lag Goose** [*Anser cinereus*] in Nottinghamshire [at Papplewick Hall, on  
 16th February, 1885]. Zool., May 1885, p. 185.
- J. WHITAKER. Notts.  
**Sparrow** [*Passer domesticus*] **attacking a Willow Wren** [*Phylloscopus trochilus*]  
 [at Rainworth Lodge, near Mansfield.] Zool., July 1885, p. 263.
- J. WHITAKER. Notts.  
**Swans' Nests** [*Cygnus olor*; nesting habits at Rainworth]. Zool., July 1885,  
 p. 263.
- J. WHITAKER. Notts.  
**Wrens'** [*Troglodytes parvulus*] **Nests** [use nearest available material for nests.  
 Instances quoted]. Zool., July 1885, p. 265.
- J. WHITAKER. Notts.  
**'Humming' of the Snipe** [*Gallinago caelestis*; the sound peculiar owing to two  
 or three feathers of one wing wanting. From comparison at time with hum-  
 ming of another bird with full wings, convinced that humming produced by  
 wings]. Zool., August 1885, p. 306.
- J. WHITAKER. Yorkshire.  
**Little Owl** [*Athene noctua*] in Yorkshire. [One captured on a fishing boat just  
 off Scarborough in November 1884. Another taken in a trap at Seamore,  
 near Scarborough, six weeks later.] Zool., September 1885, p. 349.
- J. WHITAKER. Notts.  
**Purple Sandpiper** [*Tringa striata*] in Nottinghamshire. [One near Rainworth,  
 picked up dead under telegraph wires, on September 25th, 1885.] Zool.,  
 December 1885, p. 480.
- J. WHITAKER. Notts.  
**Grey Phalarope** [*Phalaropus fulicarius*] at Mansfield. [One shot October 17th,  
 1885.] Zool., December 1885, p. 481.
- J. WHITAKER. Notts.  
**Redshanks** [*Totanus calidris*] **nesting in Notts.** [Five or six pairs nested in  
 North Notts. in the spring of 1885.] Zool., December 1885, p. 482.
- J. E. WILSON. Yorkshire.  
**Rooks** [*Corvus frugilegus*] **casting up pellets** [at Lightcliffe, near Bradford.]  
 Field, October 31st, 1885, p. 640.
- FREDERIC A. WRATHALL. Yorkshire.  
**Dippers** [*Cinclus aquaticus*; their habits as observed near Ayton]. Nat. Hist.  
 Journ., September 15th, 1885, pp. 123-4.
- C. G. YOUNG and LL. S. BAXENDALE. Northumberland.  
**Partridge** [*Perdix cinerea*] with **White Horse-shoe**. [Northumberland instances  
 given by each writer.] Field, December 12th, 1885, p. 824.

## THE YORKSHIRE NATURALISTS' UNION AT PICKERING.

The sixty-fourth meeting was planned for the investigation of that small section of the beautiful and charmingly picturesquely-wooded ravine known as Newtondale, which extends from Levisham to Pickering, with a field of somewhat more general scope for the geologists, who extended their peregrinations to the Hole of Horcum. Nearly all the members having reached Pickering about 11.0 a.m., the bulk at once proceeded to Levisham, which was the starting point for both the lines of routes which had been planned. One of them was geological, in charge of the Rev. E. Maule Cole, M.A., who conducted his party to the Hole of Horcum. The other party was smaller in number, and its members satisfied themselves with working leisurely down the valley to Pickering. At the stated time all had reached the Black Swan Hotel in that town. After tea and sectional meetings, the evening was so pleasant and the time before the departure of trains so ample, that the general meeting, albeit held at the hour stated in the programme, was shortened by its being restricted to the necessary routine business and the taking as read of the usual reports of sections.

The chair at the general meeting was occupied by the Rev. E. Maule Cole, M.A., one of the vice-presidents. The minutes having as usual been taken as read, the Rev. G. H. Lightfoot, Vicar of Pickering, and Mr. Robert Clark, of that place, were duly elected members. The roll-call showed that the 50 or 60 persons who were present were representative of 13 societies, viz.:—Beverley, Bradford (3), Driffield, Hull (Field Naturalists' Society), Leeds (3), Malton, Scarborough, Cleveland (Middlesbrough), and Harrogate. The thanks of the Union to the Rev. E. M. Cole, Mr. John Braim, and Mr. Robert Clark, for their efficient guidance during the day, were proposed by Mr. W. Hodgson, of Malton, seconded by Mr. J. T. Milow, of Scarborough, and unanimously voted. Mr. Cole replied, after which it was resolved to take the Sectional Reports as read, on the motion of Mr. J. E. Bedford, Leeds, seconded by Mr. W. West, Bradford, and the rest of the evening was profitably employed in continuing and adding to the day's records.

The work of the Vertebrate section had been mainly done by two energetic Leeds ornithologists, Mr. W. Cecil Scott and Mr. Walter Booth, and, in the absence of the sectional officers, the report was prepared by them. In all 53 species of birds were noted, 37 residents and 16 summer visitants. The list was as follows:—Kestrel, Sparrowhawk, Spotted Flycatcher, Dipper, Missel Thrush, Song Thrush, Blackbird, Hedge Sparrow, Robin, Redstart, Stonechat (reported by Mr. R. Clark, not seen by the reporters), Whinchat, Sedge Warbler, Whitethroat, Lesser Whitethroat, Wood and Willow Warblers, Chiffchaff, Wren, Great Blue, and Longtailed Tits, Pied and Grey Wagtails, Tree and Meadow Pipits, Skylark, Common and Yellow Buntings, Chaffinch, House Sparrow, Greenfinch, Linnet, Bullfinch, Starling, Carrion Crow, Rook, Jackdaw, Magpie, Jay, Swallow, Martin, Sand Martin, Swift, Ringdove, Pheasant, Red Grouse, Partridge, Golden Plover, Lapwing, Common Snipe, Landrail, and Moorhen. Of these the Yellow-hammer (with three eggs), House Martin, and Wren were found breeding. No observations appear to have been made on the mammals, reptiles, or fishes, beyond the occurrence of the Frog, Toad, tadpoles of Newts, and Trout.

Although none of the officers of the Conchological section were present, it was nevertheless strongly represented, and the results of the day's work were very satisfactory, three forms of unusual rarity being turned up, and a fair total list placed on record for a district hitherto quite neglected. The collectors on the ground included Messrs. Baker Hudson and Wm. Coates, of Middlesbrough, Wm. Denison Roebuck, F.L.S., of Leeds, and H. T. Soppitt, of Bradford. The day's search was directed to Newtondale, from Levisham to a point called Farwath Bridge, and the evening's work to Pickering Castle Hill. The total list included 8 slugs, 21 land shells, and 6 water shells, altogether 35 species, in addition to which were noted 8 named varieties. It is as follows:—*Pisidium pusillum* (F.), *Planorbis spirorbis* (F.), and monst. *scalaris* (a very good specimen, found by Mr. B. Hudson in a ditch near Farwath Bridge), *Limnaea peregra* v. *ovata* (Pickering Beck at

Pickering), *L. palustris* (F.), *L. glabra* (F., one specimen), *Ancylus fluviatilis* (Pickering Beck at Levisham), *Arion ater* and vars. *plumbea* (F.) and *succinea* (F.), *A. hortensis* (F.), another species of *Arion*, *Limax maximus* and var. *cellaria* (F.), *L. cinereo-niger* (of this extremely rare species, of which not more than a score British examples are on record, Mr. Coates found a half-grown characteristic specimen at the gravel-pit at Farwath Bridge), *L. agrestis* and vars. *sylvatica* (F.) and *albida* (F.), *L. lævis* (very abundant along the beck-side near Levisham), *L. arborum* (P., a few), *Succinea putris*, *Zonites cellarius*, *Z. alliaris* (P., abundant), *Z. nitidulus*, *Z. purus* var. *margaritacea* (P.), *Z. radiatulus* (P.), and var. *albinus* (F.), *Z. crystallinus*, *Z. fulvus* (P.), *Helix aspersa* (P.), *H. nemoralis* in variety, *H. arbustorum* (F.) and var. *marmorata* (F.), *H. concinna*, *H. hispida*, *H. virgata* (P.), *H. caperata* (P.), *H. rotundata*, *Bulinus obscurus* (F., one), *Pupa umbilicata* (P.), *Clausilia rugosa*, *Cl. laminata* (F.), and *Zua lubrica*. The species found in the gravel-pit at Farwath Bridge only and not at Pickering are marked F., and those found only at Pickering Castle Hill are marked P., while those met with at both places are left unmarked.

For the Entomological section its president, Mr. N. F. Dobrée, reported that the party who took the high ground saw absolutely nothing. There were three entomologists, but owing to cloudy weather no Butterflies were on the wing, and a specimen or two of the Small Heath (*Cænonympha pamphilus*) were all that was taken. A few larvæ were found in the flowers of the Foxglove, from which it is probable they were those of *Eupithecia pulchellata*.

For the Botanical section the report was furnished by Mr. M. B. Slater, of Malton, secretary, as follows:—The fine district of Newtondale, near Pickering, with the open moorlands beyond, was good ground for the botanists, the total number of plants recorded as seen by the explorers during their ramble being 293, which was by far the greatest number recorded during any previous excursion this season. The members of the party made Levisham Station their starting point, some few of the botanists joining the geological party on their ramble across the moorlands to the Hole of Horcum, and others taking the route down the dale to Pickering, exploring on their way the banks of the stream. On each side are moist meadows and copses, in which grow a great variety of our native wild plants. The wooded hill slopes near Kingthorpe were also searched, and many interesting plants seen; probably a greater variety of plants could not be gathered in so short an excursion in hardly any other part of the county. North Yorkshire has been well explored by good botanists for many years, and a very large list of the plants it produces is recorded in Baker's 'North Yorkshire,' and although no new plant was found which has not been previously recorded, many of the party had the pleasure of seeing some of our rarer wildings growing in their native haunts. The following list comprises some of the most uncommon plants seen:—*Cornus suecica*, in its old habitat, but not in flower; and on the adjacent moorlands—*Erica tetralix*, *E. cinerea*, *Calluna vulgaris*, *Vaccinium oxycoccos*, *V. vitis-idaea*, *V. myrtilus*, *Empetrum nigrum*, *Myrica gale*, *Drosera rotundifolia*, *Genista anglica*, *Pinguicula vulgaris*. In Newtondale and the adjoining woodlands the following were seen:—*Thalictrum flavum*, *Aquilegia vulgaris*, *Arabis hirsuta*, *Reseda luteola*, *Hypericum pulchrum*, *H. humifusum*, *H. hirsutum*, *Ononis arvensis*, *Lotus major*, *L. tenuis*, *Prunus padus*, *Agrimonia eupatoria*, *Lythrum salicaria*, *Epilobium angustifolium*, *Hydrocotyle vulgaris*, *Conium maculatum*, *Carduus nutans*, *C. palustris*, *C. eriophorus*, *Serratula tinctoria*, *Achillea ptarmica*, *Gnaphalium sylvaticum*, *Senecio aquaticus*, *Inula conyza*, *Tragopogon pratensis*, *Lactuca muralis*, *Crepis paludosa*, *Campanula latifolia*, *Linaria minor*, *Veronica buxbaumii*, *Scutellaria galericulata*, *Echium vulgare*, *Lithospermum officinale*, *Myosotis sylvatica*, *Lysimachia vulgaris*, *L. nummularia*, *Anagallis tenella*, *Triglochin palustre*, *Orchis pyramidalis*, *Gymnadenia conopsea*, *Listera ovata*, *Epipactis latifolia*. Some few species of *Carex*; also upwards of 30 species of the native Grasses and 9 species of Ferns were seen during the ramble, mostly, however, kinds of wide distribution.

Of the Geological section all the officers were present, and the report is furnished by its senior secretary, Mr. S. A. Adamson, F.G.S., Leeds. There was a very large attendance of geologists—probably the largest gathering the Union has witnessed. Prof. Miall, F.L.S., &c., Mr. J. W. Davis, F.G.S., &c., Mr. J. R. Mortimer, F.G.S., and other geologists, were in the party. On the route from Pickering to Levisham,

Mr. Cole pointed out that, whereas at the former place the Lower Calcareous Grit was resting on the Oxford Clay of the valley bottom, yet on ascending Newtondale it has risen at Levisham station to the tops of the hills on either side. On alighting a gradual ascent was made from Levisham to the striking moorland terrace formed by the Kellaways Rock, which, viewed from the railway, shows such a bold and precipitous front. On passing over this moor it was observed how much it resembled the appearance of our millstone grit moors nearer home. At one point a disused engine-house was noted, and on inquiry it was found that the thin and uncertain seams of coal to be found in the estuarine beds of the lower oolites had aroused at one time a spirit of speculation, doomed, however, to a disastrous close. During this moorland walk continual opportunities presented of grasping the physical structure of the district, and the changes effected by denudation. As Mr. Cole pointed out, the bold escarpment of the tabular hills just above us must at one time have extended northwards to the anticlinal, and is now gradually receding, entirely from the effects of sub-aërial denudation. As regards the valleys of the district, they nearly all coincide in their direction with the dip of the strata, showing that the latter was the cause of their initial course, and further, as all those valleys running south cross the tabular hills, the courses of the streams must have been determined before the formation of the escarpment. Making a further ascent up the slopes of the Oxford clay, the extremely isolated, yet romantically situated, inn at Saltersgate was reached, some 950 feet above the sea-level, after which, in a few minutes' walk, Mr. Cole effected somewhat of a surprise, by suddenly disclosing the main object of the day, the Hole of Horcum. The party was now on the summit of the tabular hills, and standing on the lower calcareous grit, by which they are capped, and before them lay stretched a gigantic natural amphitheatre, half a mile across in some places. Here, again, was a magnificent example of erosion arising from the drainage of its slopes and the small springs issuing from the Oxford clay. The Hole of Horcum forms what is geologically known as an 'inlier,' which one geologist defines as 'the isolated exposure of an underlying bed amidst others which are geologically above it,' or, more briefly, is an area of older strata surrounded by one of younger. Thus, at the Hole of Horcum the bottom is composed of the Kellaways rock, the sloping sides of the Oxford clay, and the rugged edges at the top of the lower calcareous grit. At this point Mr. Cole drew special attention to the narrow ridge which encloses the Hole of Horcum on the north, destined to break down before the slow but sure process of denudation. Mr. Cole now led the way across the moor to a higher elevation called Winny Neb, and right in front rose the weird and conical summit of Blakey Topping, so closely connected with the mysterious worship and sacrifices of the Druids. This peculiarly-shaped hill is about 140 yards in length, narrow on the top, and perhaps elevated about 200 feet above the moor on which it stands. Blakey Topping is, geologically speaking, an outlier, also the result of denudation, the summit being of lower calcareous grit, and the sides of Oxford clay. The reverse of the description of an inlier must be applied here, the younger strata being surrounded by the older. From this point there was, too, a magnificent view. A few miles away stretched that remarkable ridge called Langdale Rigg, which, as Mr. Cole said, although nearly two miles in length, is on its summit extremely narrow, in some places not above fifty yards wide. On the right was the grand sweep of escarpment known as Cross Cliff, and far away in the distance could be seen Oliver's Mount at Scarborough. The view of these flat-topped and numerous nabs or escarpments over such a wide area presented a striking appearance. Time now necessitated a vigorous and health-inspiring walk over the moors back to Levisham, thence by rail to Pickering. After tea the evening was too fine for the transaction of any but strictly necessary business, and accordingly the enthusiasm of the geologists led them to those fine sections in the middle oolites near Pickering Castle. The clink of the hammers was soon heard, and many fine specimens speedily extracted, among which may be mentioned *Phasianella striata*, *Cerithium muricatum*, *Chemnitzia heddingtonensis*, *Belemnites abbreviatus*, *Ammonites cordatus*, *A. plicatilis*, *Cucullea corallina*, *Trigonia*, *Nerinea*, *Ostræa*, *Pecten*, *Gervillia*, &c. Also some fine typical specimens of the rock were obtained, showing well both the characteristic oolitic and pisolitic structure. A bed of a peculiar stone, of an argillo-calcareous character, locally termed 'throstler,' and used in the manufacture of cement, was noted.

## NOTES—ENTOMOLOGY.

**Diptera near Louth, Lincolnshire.**—It may be well to record the following species of Diptera which have been taken near Louth. The specimens have been identified, by very careful comparison with those in the British Museum collection, by Mr. T. D. A. Cockerell.

While dragging by the stream (river Lud) in Hubbard's Valley, on 16th July, I took *Dolichopus unguilatus* Fab., *Pallopthera trimaculata* Meig., *Scatophaga stercoraria* L., *S. meridiana* Fab., *Empis lutea* Meig., *Psilopus platypterus* Fab., *Tetanocera elata* Fab., *Sapromyza præusta* Meig., *Anthomyia marshami* Steph., *Sepsis punctum* Fab., and *Pegomyia quadrum* Fab.

The following species were taken in the drag-net on 20th July, from amongst the herbage by the sides of two occupation roads near Louth, known respectively as Mill Lane and Bishop's-brig Lane:—*Syrirta pipiens* L., *Musca vomitoria* L., *M. casar* L., *Tipula histrio*, *T. lunata* L., *Dolichopus brevipedis* Meig., *Tetanocera ferruginea* Fall., *T. cucullaria* L., *Heteromyza buccata* Fall., *Cænosia intermedia* Fall., and *Empis livida* L.

I took *Thereva annulata* Fab. and *Asilus trigonus* Meig., in June, on the coast sandhills at Mablethorpe, where the latter might be seen preying upon other Dipterous insects.

*Actora æstuum* Meig. was common on the beach at Mablethorpe.

*Hæmatopota pluvialis* L., *Volucella pellucens* L., *V. bombylans* L., and *V. bombylans* var. *plumata* DG., were taken during a ramble through the woods near Louth, on 6th July, when, as is too often the case, *H. pluvialis* was felt as well as seen.—H. WALLIS KEW, Lee Street, Louth, 24th July, 1886.

**Hymenoptera near Louth, Lincolnshire.**—The following species of Hymenoptera from the neighbourhood of Louth have been named, by careful comparison with the specimens in the British Museum, by Mr. T. D. A. Cockerell.

*Abia sericea*. Taken on the flowers of Cow-parsnip (*Heracleum sphondylium*) at Kenwick, near Louth, 6th July.

*Dolerus gonager*. Louth streets.

*Tenthredo aucupariae*. Common on herbage of hedge-banks in Mill Lane, near Louth.

*Pimpla oculatoria*.—Common on leaves of laurel in the Louth Cemetery, 27th April.

*Ichneumon rufidens*.—Under a prostrate log in Haugham Wood, near Louth, 23rd April.

*Mesoleptus testaceus*.—Maltby Wood, near Louth.

*Ichneumon celerator*.—Authorpe, near Louth, 15th April.

*Crabro cribrarius*.—Taken while at rest on flowers of *Heracleum sphondylium*, at Donington-on-Bain, near Louth, 7th July.

*Sphécodes gibbus*.—This insect was common on 7th July at Donington-on-Bain, where the railway cuts deeply into the upper green sand. I noticed one specimen dragging away a juvenile grasshopper, which was much larger than itself.

*Megachile circumcincta*.—Very common on the green sand at Donington-on-Bain; many of them were bringing home cuttings of the leaves of Dog-rose. One burrow which I opened contained five cells, each made of about thirteen pieces of leaf.—H. WALLIS KEW, Louth, 24th July, 1886.

**Spilodes palealis near Whitby.**—The insect which I reported in last month's number as *Scoria dealbata* turns out not to be that species, but, as Mr. G. T. Porritt, F.L.S., informs me, *Spilodes palealis*, to which it has a very superficial resemblance. It is an addition to the Yorkshire list of Lepidoptera.—JOSEPH T. SEWELL, Whitby, August 14th, 1886.

## NOTE—ZOOPHYTE.

**Plumatella repens near Leeds.**—Whilst collecting microscopic material on the afternoon of the 17th of July, I found a small colony of this exquisitely beautiful Zoophyte. I am not aware that it has hitherto been recorded for this district.—WM. CHAPMAN, Leeds, July 27th, 1886.

## NOTES—ORNITHOLOGY.

**Reed Warbler Nesting near Ripon.**—I have this year taken eggs from a nest of the Reed Warbler (*Acrocephalus streperus*) near this village. This is worthy of note, as it is, I believe, the furthest locality northwards in which the nest has as yet been found.—R. A. SUMMERFIELD, North Stainley Vicarage, Ripon.

[We believe our correspondent is right in his surmise that this is the most northerly locality for this species as a summer resident, though it formerly nested on the mere at Scarborough, which is about 6 miles further north in latitude.—EDS.]

**The Hawfinch Nesting at Boston Spa.**—A pair of Hawfinches (*Coccothraustes vulgaris*) have nested and bred this season in Padman's Nursery, Boston Spa. The young birds, along with their parents and the nest, were removed into an aviary. The young ones died, probably on account of the old birds not being able to find their proper food in their new quarters, where the latter still are very lively, but looking not at all domesticated, and very anxious to get out of their prison-house.—JOHN EMMET, Boston Spa, August, 1886.

**Departure of Hooded Crows from England.**—On March 29th Hooded Crows (*Corvus cornix*) and Rooks (*C. frugilegus*) were passing along the Norfolk coast, and going in a southerly direction. No doubt they were a part of the same band which the day before were seen at Flamborough by Mr. Bailey, 'steering direct south from the headland' (*Naturalist*, p. 150). I believe their point of departure is between Yarmouth and Lowestoft, because that is the eastermost part of Great Britain; and because on one occasion a number were seen from the Corton Floating Lightship (which lies between those towns) flying over the sea, having come from the land (Rep. on Migration, 1882, p. 40). Their object must be to get the shortest sea passage, for their destination is north.—J. H. GURNEY, Jun., Northrepps, Norwich, July 23rd, 1886.

**Quail Nesting in Lincolnshire.**—On the 6th July last a nest containing 12 eggs was discovered by Charles Walter Chapman, on his father's farm at Maltby-le-Marsh, near Alford. The eggs were addled, having been covered with clover in the course of mowing for five days before being found. The parent birds had been noticed some time previously about the field. The Quail (*Coturnix communis*) is an occasional visitor in this district, but this is the first case of its nesting brought to my notice.—JAS. EARDLEY MASON, Alford, 4th August, 1886.

**Little Grebe in Wensleydale.**—Through some oversight the Dabchick (*Podiceps fluviatilis*) was omitted from the list of Wensleydale birds in the June number of the *Naturalist*. It breeds in the dale at Semerwater and Locker Tarn. E. CHAPMAN, Carperby, Bedale, July 6th, 1886.

**Bird-notes from Thorpe, near Halifax.**—The Tree Sparrow (*Passer montanus*) has nested here this year. I have never been certain as to this, but a young bird just fledged was shot here the other day among some common Sparrows. It is a true Tree Sparrow and I have had it skinned. There have been a few Wood Pigeons (*Columba palumbus*) here this summer; no doubt they have nested in some of the large woods.—F. G. S. RAWSON, Thorpe, Halifax, August 2nd, 1886.

**Bird-notes from Whitby.**—1886. January 12th: Redshank (*Totanus calidris*), shot in Whitby Harbour. March 5th: Several Black-headed Gulls (*Larus ridibundus*) seen outside the piers at Whitby. March 7th: Water Rail (*Rallus aquaticus*) taken alive near Whitby. May 17th: Pied Flycatcher (*Muscicapa atricapilla*) shot in a garden near Whitby; the tenant states that it had killed a number of his bees, that was the reason it was destroyed; he also said that the Spotted Flycatcher is much more destructive among the Honey Bees than the Pied ones, especially when they have young. This is corroborated by another person, who has several hives of bees. I never before heard of either kind of Flycatcher destroying bees. It is fourteen years since I saw the Pied Flycatcher here, the last being 15th May, 1872, but this year two nests were found in Mr. Main's garden at Ruswarp, near here. May 28th: A fine specimen of the Turtle Dove (*Turtur communis*) was shot near Whitby.—THOMAS STEPHENSON, Whitby, August 11th, 1886.

Sept. 1886.

**Notes on Notts. Birds.**—A very fine Bittern (*Botaurus stellaris*) was shot close to the town of Nottingham about Christmas, and another seen by the Duke of St. Albans' head-keeper as it rose from the side of a pond in Bestwood Park, in February. I was watching the wild fowl on pond here the other day from the hall windows. On an open piece of water were two Tufted Ducks and two Swans. Every few minutes one of the Swans swam after one of the Ducks, which dived when the Swan got near. The Swan very eagerly dashed at the place where it went down, and pecked at the spot; about the third time the Swan swam up to the place and at once put its head and neck under water, and by the movements of its body was evidently trying to look if it could see where Mrs. Duck had gone. I need hardly say I was very much amused. It was a smart move on the part of *Cygnus olor*, but in the meantime, *Fuligula cristata* was twenty yards away, giving itself a satisfactory shake of the wings. I am certain the Swan did not put its head down to feed, as directly it drew its head out it again rushed after the Duck.—J. WHITAKER, Rainworth Lodge, Notts., March 15th, 1886.

**Brent Geese (*Bernicla brenta*) and Great Grey Shrike (*Lanius excubitor*) in Nidderdale.**—On January 7th, while walking on the Nidd banks near Pateley Bridge, I was fortunate enough to get within a few yards of two Brent Geese; and again, on the 8th, saw them near the same place. There is no other record of the occurrence of this marine species for Nidderdale that I am aware of.

On January 18th, when watching a large flock of Fieldfares, I started two Great Grey Shrikes, and followed them for a long distance, and could easily have shot them had I been so inclined. This is the fourth instance of this bird which has come under my notice in this district.—WM. STOREY, January 20th, 1886.

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#### NOTES—MAMMALIA.

**The Marten in Northumberland.**—In July 1871, the late Mr. Fife, of Lee Hall, while fishing in the North Tyne, Northumberland, saw a Yellow-breasted Marten (*Mustela martes*) come down to the river edge in the Countess Park, close opposite to where Mr. Fife was. It stayed some time, when, observing the proximity of the fisherman, it went back into the wood again. Mr. Fife was an excellent and practical naturalist, and there could be no doubt of its being the animal he said.—E. ANNE, Burghwallis Hall, Doncaster, August 5th, 1886.

**Porpoise near Whitby.**—May 24th: A Porpoise (*Phocena communis*) was captured off Whitby, on a baited hook set for fish. This is the first occurrence of such an event that has come to my knowledge.—THOMAS STEPHENSON, Whitby, August 11th, 1886.

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#### NOTES—FISHES.

**Doree at Flamborough.**—On the 3rd of March, Mr. Stephenson Warcup picked up on the beach, where it had been cast up by the recent heavy swells, a fine and perfect specimen of the John Doree (*Zeus faber* L.).—M. BAILEY, Flamborough, March 3rd, 1886.

**Whitby Fish-notes.**—August 6th, 1886: A Codfish (*Gadus morrhua*), purchased and sent (among others) to the north by Egton, was found, when opened here, to contain both smear and roe. This is a remarkable occurrence, as the male fish contains the smear or milt, and the female the roe. It was examined by several persons, but when I heard of it, it had been packed up, and I was too late to see it.—THOMAS STEPHENSON, August 11th, 1886.

A splendid Salmon Trout (*Salmo trutta*) was purchased here by Thos. Smailes, length  $29\frac{3}{4}$  inches, girth  $22\frac{1}{2}$  inches, weight  $15\frac{3}{4}$  lbs.; the finest fish I ever saw for the size of it. It was purchased yesterday.—THOMAS STEPHENSON, August 11th, 1886.

## NEW BRITISH LICHENS.

JOSEPH A. MARTINDALE,

I HAVE recently gathered the following lichens, new, so far as I know, to the British Flora :—

1. **Parmelia isidiotyla** Nyl. in Flora, 1875, p. 8. On walls near Cliburn, Westmoreland, and near Penrith, Cumberland.
2. **Pannularia lepidiota** (Snrft.) Nyl., Scand., p. 290. Lamy., Lich. de Cauterets, p. 34. On *Andræas* and other mosses, Red Screes, Westmoreland. Nylander has described this plant at page 124 of his Lich. Scand., under the name of *Pannaria prætermissa*.

## NOTE—MICRO-ZOOLOGY AND BOTANY.

**Microscopic Life near Askern.**—The report of micro. work at the Askern meeting on the 20th May, must of necessity be somewhat meagre, owing to the prevalent flooding of the water-courses and land at the time. The following were, however, noted:—ENTOMOSTRACA: *Cyclops quadricornis*, *Canthocamptus minutus*, *Diaptomus castor*. RHIZOPODS: *Arcella vulgaris*, *A. aculeata*, *Diffugia* sp. INFUSORIA: *Duisbryon sertularia*, *Paramecium* sp., *Trachelius lamella*, *Chaetognotus* sp., *Euglena pyrum*, *E. viridis*, *Chilodon cucullulus*. MICRO-FUNGI: *Puccinia anemones* (Campsall), *Æcidium ficariæ* (abundant in Burghwallis Wood), and *Podosphæra clandestina* (on hawthorn in road from Campsall to Burghwallis). ALGÆ: The Diatoms were plentiful, but of common species, *Pinnularia*, *Navicula*, and *Diatoma*, the chief feature being the large floating masses of *Diatoma elongatum* in the peaty ditches at Campsall. Of DESMIDÆÆ few were seen, viz.: *Cosmarium crenatum*, *C. pyramidatum*, *Closterium lunula*, *Cl. acerosum*, and a new Yorkshire form, which I have elsewhere described as *Cl. eboracense*. Among the unicellular Algæ a peculiar form was kindly pointed out to me by Major Bacon Frank, in the pools at Campsall. Of minute size (the little cells only measuring '000063 in. to '00015 in.) it covered, in irregular patches of pink hue, several square yards at the shallow end of the pool. It seemed to grow alike upon the debris leaves or dead sticks. On examination I find it is the *Pleurococcus roseo-persicinus* 'Peach-bloom Pleurococcus' (Kütz.) Rabenhorst; a rather interesting discovery, as I have never before seen it in the county. Other unicells were *Pandorina morum*, *Gonium pectorale* (both universal), and *Chlorosphæra oliveri*.—W. BARWELL TURNER, Leeds, July 28th, 1886.

**Spurn Head.**—The learned author of 'The Geology of Holderness,' published last year among the Memoirs of the Geological Survey, states at p. 101 of his very able and interesting work that 'previous to the 17th century an allusion in Camden's Britannia (published in 1586) is the only clue we have to the ancient form of Spurn Head . . . &c., and on p. 102 he asserts that 'the first survey of Spurn Head was that made by Capt. Greenville Collins, Hydrographer to the King, in 1684.' Mr. Clement Reid has evidently not seen the map of Yorkshire issued in 1577 by Christopher Saxton, the first English chorographer, and has not referred to the edition of the 'Britannia' of 1607, in which the map is reproduced. Saxton's epitaph, given by Tanner, informs us that the maps of England were made from an actual survey which took up nine years. The map of Yorkshire shows the form of Spurn Head very distinctly. A MS. chart of the Humber in Lord Burleigh's collection at the British Museum is also very instructive, though perhaps not very accurate.—LEWIS L. KROFF, 37, Margaret Street, Hull, June 12th, 1886.

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## BOOK NOTICES.

**The Book of Duck Decoys: Their Construction, Management, and History.**—By Sir Ralph Payne-Gallwey, Bart. London: John Van Voorst. 1886.

Singular to relate, this is the first work that has ever essayed to treat on a subject which should command wide sympathies, since it has claims upon the naturalist, the sportsman, and the archaeologist. Not only, however, has a complete treatise on decoys and decoying hitherto been a desideratum, but it is much to be regretted that little or nothing has been placed on record concerning them, mainly owing to the jealous reserve of the craftsman in the days of yore, and thus we are deprived of much information regarding the past history of decoys that would now have been of extreme interest to us.

So much, indeed, is buried in oblivion that even the situation of the first British decoy is quite unrecorded, and, in fact, all we know about it is that 'Sir W. Wodehouse (who lived in the reign of James the First, 1603-25) made among us the first device for catching ducks, known by the foreign name of a *koye*.' Long, however, before the early decades of the 17th century, there existed in our fenlands devices, bearing the name of decoys, into which in the summer and early autumn young ducks, or ducks which had moulted their flight feathers, were anything but *decoyed*, but were driven and hustled into tunnels covered with nets, erected on the margin of a suitable mere, by a cordon of advancing boats. In this way enormous numbers of fowl were captured annually, and there are records of as many as 4,000 being taken at a single drive.

The first true decoy, of which there are any adequate particulars, was made for King Charles II, in St. James's Park, by one 'Sydrach Hilcus,' a Dutchman imported from Holland, where such engines were worked to advantage, for the purpose, and was completed in 1665. After this, decoys became numerous in the fen-country, and in other suitable districts, and were, no doubt, a source of considerable profit to their owners, and continued so to be well into the 19th century, when the rapid advance of agriculture, the construction of railways, and perhaps, too, the perfecting of the fowling-piece, each and all militated against them, and gradually affecting their success only those survived which were either very favourably situated, and hence profitable, or those owned by persons who maintained them from a love of the sport they afforded. But decoying is not a dead art in this country yet, and it is encouraging to know that some few decoys have been constructed in recent years, among others by our author and Lord Lilford, and it is much to be hoped that an impetus in their favour may result from the advantages and enjoyments to be derived from them, which are so pleasantly and so ably set forth in the book under consideration.

After much introductory matter of an historic and singularly interesting nature, our author proceeds to give a complete description of the art of the decoyman, of the various methods used by him, his *modus operandi*, and of the structure of decoys; both sections of the subject being illustrated by a series of admirably coloured plates—reproductions in lithography of drawings by the author.

Then follows the most important portion of the subject from our own point of view—namely, the 'History of Decoys Past and Present'—and to this the major portion of the book is devoted. This section treats of the decoys formerly existing and those at present in use in the various counties of England, Wales, and Ireland—for no decoys exist or have ever been worked in Scotland—giving particulars as to their structural peculiarities, date of formation, the success attending their operations, and numerous other items of interest; while many of them are delineated upon coloured plans, specially prepared for the work. Want of space forbids our giving extracts relating to the decoys, past and present, in the North of England, with which several numbers of the *Naturalist* might be filled. They are no less than 61 in number, and of these 8 alone are still worked. They are distributed as follows:—

## DERBYSHIRE.

Hardwick Hall ... .. In use.

## LANCASHIRE.

Hale ... .. In use. Orford Hall ... .. Not in use.

## LINCOLNSHIRE.

Ashby ... ..	In use.	Friskney (5) ... ..	Not in use.
Bourne ... ..	Not in use.	Hagnaby ... ..	"
Deeping Fen (5) ... ..	"	Wainfleet St. Mary's (2) ... ..	"
Cowbit ... ..	"	Wrangle (3) ... ..	"
Fleet ... ..	"	Leake... ..	"
Dowsby ... ..	"	Skellingthorpe ... ..	"
Aslackby ... ..	"	Burton Hall ... ..	"
Millyard Farm ... ..	"	South Carlton ... ..	"
Sempringham Fen (3) ... ..	"	South Kelsey ... ..	"
South Kyme ... ..	"	Farlthorpe ... ..	"
North Kyme... ..	"	Broughton ... ..	"
Timberland ... ..	"	Keadby ... ..	"
Nocton Hall... ..	"	Great Cotes ... ..	"

## NOTTINGHAM.

Houghton ... ..	In use.	Ossington ... ..	In use.
Park Hall ... ..	"	Woolaton ... ..	Not in use.

## WESTMORELAND.

Lowther Castle ... .. Not in use.

## YORKSHIRE.

Hornby Castle ... ..	In use.	Scorborough ... ..	Not in use.
Thirkleby Park ... ..	"	Holme ... ..	"
Coatham ... ..	Not in use.	Sunk Island ... ..	"
Eserick (2) ... ..	"	Thorne ... ..	"
Osgodby ... ..	"	Goole ... ..	"
Meaux ... ..	"	Birdsall ... ..	"
Watton ... ..	"		

It is impossible to speak too highly of this book. Indeed, though long neglected, the Decoy Book has lost nothing from delay in recent years, when it has secured for its author the gentleman who of all others possesses pre-eminently the necessary qualifications for its successful compilation—namely, of being an excellent field-naturalist and a thorough sportsman; and the author of 'The Fowler in Ireland,' with his unrivalled knowledge of the duck tribe, has accomplished this labour of love in a manner worthy in every respect of his great reputation, and has produced a book at once invaluable and interesting.

We gladly make known the fact that Sir Ralph desires information on the unworked and almost forgotten decoys which may have escaped his notice. We are glad to be able to state that we ourselves are at present engaged in investigating the history of such an one in Yorkshire, which should be particularly interesting, since it was constructed in the year 1655. We shortly hope to present to the readers of the *Naturalist* all the information obtainable concerning it.—W.E.C.

### Lord Lilford's Coloured Figures of the Birds of the British Islands.

We have received Part II of this important work, containing figures of the Black-throated Thrush, Desert Wheatear, Whinchat, Stonechat, Lesser White-throat, Garden Warbler, Great Reed Warbler, Savi's Warbler, Sedge Warbler, Hobby (immature plumage), Arctic Bluethroat, and White-spotted Bluethroat. We had much pleasure in recommending this work to our readers in the January number of the *Naturalist*, and then expressed a very high opinion of its excellence. A critical examination and comparison of the plates enables us to state that they are decidedly amongst the best that have ever been produced.

**Report on the Migration of Birds in the Spring and Autumn of 1885.** By Mr. J. A. Harvie-Brown, Mr. J. Cordeaux, Mr. R. M. Barrington, Mr. A. G. More, and Mr. W. Eagle Clarke. Seventh Report, (Vol. II., No. 2). Edinburgh: Printed by M'Farlane & Erskine, . . . 1886. 8vo, 174 pages and map.

The present report includes the same serried mass as its predecessors of detailed facts which it is no light task to arrange, and we heartily congratulate the reporters on their work. The chief general results presented—so far as daylight can yet be seen—are the extreme regularity and precision of the migratory movements of each species, and the England East Coast reporter remarks that it would not be difficult to tabulate in advance with almost certainty the normal movements. The Scottish reporter describes the movements of 1885 as being compressed, and resembling a closed fan, and objects to the term 'accidental' as applied to occurrences of birds. The English West Coast reporter draws attention to the necessity of observing what connection there is between meteorological conditions prevailing at the time and the movements of migratory birds, and suggests that a competent meteorologist should take part in the work of the Committee. The Irish reporters lay stress on the importance of authenticating records by the preservation and identification of the wings of the birds killed. It is gratifying here to note the generosity of the Commissioners of Irish Lights, in presenting copies of Morris's Birds to several of the Lighthouses. The Reports are not, of course, without their imperfections, and it appears to us that a general supervision and a common plan of writing would be of infinite value. To illustrate this, one finds 'general remarks' on the first page, and naturally supposes them to apply to the whole of the book. But nothing of the kind; they simply refer to the Scottish observations. There are digressions, too, in some of the reports, which add nothing to their value, and are indeed quite irrelevant. What need to praise observers for the excellence of their observations, and then—in print—to ask them not to write across the red lines of the schedules? Would not a post-card serve to the latter end? Interest is added to the whole volume by the diary of Heligoland observations which is given in the middle—and, altogether, British science is to be congratulated on so admirable a compendium of hard facts.—W.D.R.

**The Code of Nomenclature and Check-List of North American Birds.**—Adopted by the American Ornithologists' Union from the report of the Committee of the Union on Classification and Nomenclature. New York, 1886. 8vo, pp. viii + 392.

If further proof were required to show that the modern American zoologists merit a foremost position among men of science, the Code of Nomenclature, which forms the first and perhaps the most important portion of the handsomely-printed book now before us, would amply suffice. In it are displayed with equal force the rigid caution and thorough examination of evidence which are involved in the due consideration of such a subject, and the boldness of conception without rashness which leads to the adoption of the views of which that examination has demonstrated the soundness. How long have our British naturalists stood shivering on the brink of certain reforms in their practice, which they cannot but see are inevitable? The influence on modern zoological views of the evolutionary thought of the last quarter-century necessitates the adoption in some form or other of the American conception of trinomial nomenclature, and, in certain cases, of a quadrinomial or even a polynomial system, inasmuch as the laws of nomenclature must in the long-run be made subservient to the actual facts of which they are to be the method of expression. On this, the radical side of the nomenclatural question, we hold that the American zoologists are on the right track, while reserving our judgment as to whether they have as yet proceeded as far on that track as the ultimate facts may require them to advance.

In respect of the conservative side of the question, we unreservedly express our conviction that their position is equally sound, in their stern, unbending, and rigid adherence to the Law of Priority in all its strictness, without any exceptions, qualifications, or grammatical or other emendations whatever. A name is a name, and nothing else, and it must be used and spelt as used and spelt by the author who

first gave it. European authors, we believe, are gradually approaching to this view, and the sooner it is adopted by all of them the better chance have we of arriving at that 'fixity of nomenclature' which is the Will-of-the-wisp zoölogists are ever in pursuit of and never attaining. We quite see that its adoption by British authors will bring tribulation for a space to British collectors and amateurs, till they can adapt themselves to the new environment; but we are afraid that hitherto far too much regard has been paid to their convenience, to the hindrance of true scientific research. One phase of this question is that in future certain species will have to bear duplicated names. For instance, when the list of British mollusca is finally rectified, it will include such names as *Planorbis planorbis*, *Carychium carychium*, *Vertigo vertigo*, etc. In these instances we have hitherto been misled by a provision of the British Association code of nomenclature which is the bane of that code, and quite out of harmony with the cardinal principle of the Law of Priority.

The laws of nomenclature are discussed in this work at great length, and with abundant citation of evidence, fact, and argument; and the discussion is followed by a series of recommendations to the framers of new names which, if acted upon by them, would add immensely to the convenience of future zoölogists.

The second part of the book is occupied by a Check-List of North American birds, which offers various improvements worthy of imitation elsewhere, but the discussion of the list itself hardly falls within the scope of this journal. We must conclude, therefore, by expressing our wish that the code of nomenclature could be separately reprinted and circulated broadcast among British zoölogists.

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### NOTES AND NEWS.

The Yorkshire Naturalists' Union fungus foray will take place on Thursday, September 30th. On the following day there will be an exhibition of the specimens in the Leeds Museum, kindly lent for the purpose; and in the evening the usual dinner. Several distinguished mycologists have promised to be present, and no effort is being spared on the part of the officials to make it a success.

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Matter of interest to Yorkshire geologists is afforded by the fact that one of the most distinguished of their number, Mr. Wilfrid H. Hudleston, M.A., F.R.S., was at the last anniversary meeting of the Geological Society of London elected one of its honorary secretaries, and that he has also become an associate-editor of the Geological Magazine.

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The Yorkshire Philosophical Society has sustained the loss of a munificent supporter by the decease, on the 15th August, at the ripe age of 78, of Mr. W. H. Rudston-Read, J.P., F.L.S., one of the landed gentry of the county. He filled the offices of vice-president and ornithological curator to the Society, and long ago presented what is known as the 'Rudston-Read Collection of British Birds.'

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We note that a 'Manual of North American Birds,' by the eminent ornithologist, Prof. Robert Ridgway, Curator, Department of Birds, Smithsonian Institution, Washington D.C., is in the press. The author has had unrivalled advantages, arising from his own field experience, as well as his connection with the National Museum, and the access granted him to various other public and private collections of birds. The work is to contain some 425 illustrations, suitably executed, and will conform to the geographical limits, classification, numeration, and nomenclature adopted by the American Ornithological Union, and is another proof of the extraordinary activity of the North American ornithologists in the cause of their science.

At the recent annual meeting of the Leeds Geological Association, the report showed that another year of usefulness and prosperity had been passed through. The interest taken by the members in the work of the association had been fully maintained. The membership showed an unprecedented increase, the numbers on the roll being fifty per cent. more than they were a year ago. The meetings for the reading of papers, the exhibitions of specimens, and the excursions had all been most practical in their character, the most notable feature in the latter being the local excursions in the Lower Coal Measures, conducted so efficiently by Mr. Holgate, F.G.S., who, from his special knowledge, imparted much information to those attending. The past year had also been a memorable one by the issue of the first part of the 'Transactions,' the work having received the approval of the most distinguished geologists in the country. Interchanges of proceedings are now made with kindred learned societies, thus enabling the members to be acquainted with geological progress and research in other districts. It was also felt that the association had now attained such a standing, when, to its further advancement, a class of honorary members might be instituted, consisting of eminent geologists and individuals who have rendered the association signal services. A resolution to this effect was carried, and Professors Green and Miall, of Leeds, the Rev. E. M. Cole, of Wetwang, and Mr. Wm. Horne, of Leyburn, were duly elected honorary members. The election of the Executive for the coming year resulted as follows:—President, Mr. C. D. Hardcastle; Vice-presidents, Messrs. J. E. Bedford, T. W. Bell, W. Cheetham, and B. Holgate, F.G.S.; Treasurer, Mr. J. H. Bromley; Librarian, Mr. C. Brownridge, F.G.S.; Council, Professor Green, F.R.S., Dr. Monckman, Messrs. C. Brownridge, F.G.S., and W. H. Gill, and Ald. John Hill, of Morley; Hon. Secretary, S. A. Adamson, F.G.S., 52, Wellclose Terrace, Leeds (re-elected third time).

### NOTE—PALÆONTOLOGY.

**The Fossil Tree at Clayton.**—In the account last month of this remarkable fossil, a material error arose in the dimensions given, by the unfortunate omission of two ciphers in the manuscript. The error, however, was too obvious not to escape immediate notice. The area given of the ramifications of the stigmarian roots was said to be 'between 80 feet and 90 feet'; of course, it should have been 'from 800 feet to 900 feet.' The measurement across this area from N. to S. is 29 ft. 6 in., and from E. to W. 28 ft., giving a superficial area exposed of 826 ft. Since last issue the following careful measurements have been obtained, which will give some idea of this colossal tree:—

Root No.	Diameter close to stump.	Distance from stump to point of bifurcation.	Distance from point of bifurcation to present termination of root.	Right Fork.	Left Fork.	Greatest Length of Root.
1	21 in.	4 ft.	9 ft. 6 in.	13 ft.	...	17 ft.
2	17½ "	4 "	8 "	6, 6 in.	...	12 "
3	16 "	5 "	7 "	4 "	...	12 "
4	16 "	4 "	2 "	4, 6 in.	...	8, 6 in.
5	17½ "	7 "	1, 6 in.	3 "	...	10 "
6	18 "	5, 6 in.	3 "	4, 6 in.	...	10 "
7	17 "	7, 6 "	3 "	2 "	...	10, 6 in.
8	17 "	7 "	9, 6 in.	7 "	...	16, 6 "

The proprietors of the quarry have most carefully and admirably built the two damaged roots into position, so that the unique spectacle is now presented of a huge Sigillarian stump sending out eight forked Stigmarian roots. They will let it remain in its present position a few weeks longer, although it stops work in that part of the quarry, and certainly all geologists at least in the North of England, should see this giant of the Carboniferous flora.—S. A. ADAMSON, Leeds, August 20th, 1886.

## LEPIDOPTEROUS FAUNA OF LANCASHIRE AND CHESHIRE.

JOHN W. ELLIS, L.R.C.P., L.R.C.S.E., F.E.S.,

*Liverpool; Honorary Secretary, Lancashire and Cheshire Entomological Society.*

### NOCTUÆ.

Fam. *BOMBYCOIDÆ*.

DILOBA, Boisd.

**Diloba cæruleocephala**, L. Common, and generally distributed throughout both counties.

DEMAS, Steph.

**Demas coryli**, L. Not common, the localities recorded being Dolphinholme, near Lancaster (J.B.H.); Grange, local (E.S.); Croxteth Park, near Liverpool (C.S.G.).

Fam. *ACRONYCTIDÆ*.

CRANIOPHORA, Snell.

**Craniophora ligustri**, L. Very scarce.

**Lanc.**—Speke, Hale, and Rainhill, at sugar (C.S.G.).

**Ches.**—Taken at Old Marsh Lane, Ince, by Mr. Newstead (A.O.W.).

ACRONYCTA, Ochs.

**Acronycta leporina**, L. Generally distributed.

**Lanc.**—Bolton (W.J.); Chat Moss (J.C., W.J.); Hale and Huyton (S.J.C.); Ormskirk (W.G.); Preston (J.B.H.); Rixton and Risley Mosses (J.C.); Simonswood Moss (F.N.P., W.J., J.W.E.); Birch-wood, near Woolton (C.S.G.).

**Ches.**—Bidston (J.F.B., C.S.G.); Carrington Moss (J.C.); Delamere Forest (F.N.P.); Dunham Park (J.C.).

**Acronycta alni**, L. Of occasional occurrence, principally in the larval state, recorded localities being:—

**Lanc.**—Grange (J.B.H.); two larvæ near his own house at Huyton, in August 1871 (S.J.C., Ent., v, 417); near Manchester in 1868 (J. Leigh, Ent. Mo. Mag., ii, 105); an imago at sugar, in June 1850, at Speke Hall (C.S.G.).

**Ches.**—Delamere Forest, taken by Mr. Leather in 1877 (A.O.W.); larvæ at Deysbrook, in August 1860 (C.S.G.); Dunham Park, in 1842 (J.B.H.), and in July 1872 by J. Chappell

(Ent. Mo. Mag., ix, 195), and again in 1879 (Ib. xvi, 185); Hale Moss, near Altrincham, in August 1863 (E. M. Geldart, Zool., p. 8,733); Marple (J.C.).

**Acronycta tridens** (W.V.). Recorded from Wallasey and Ness, by J. F. Brockholes, and from Chester and East Cheshire (*i.e.*, the neighbourhood of Warrington), by Alfred O. Walker.

**Acronycta psi**, L. Common, and generally distributed.

**Acronycta menyanthidis**, View. Common in the moss and moorland districts.

**Lanc.**—All the high moors in N.E. Lancashire (J.B.H.); Bolton (W.J.); Chat Moss (W.J., J.C.); Risley Moss (J.C.); Longridge, Withnell, and Staleybridge (J.C.M.); Pilling Moss (J.B.H.).

**Ches.**—Carrington Moss and Lindow Common (J.C.); Delamere Forest (F.N.P.).

The specific name of this species is so commonly regarded as a misnomer, that it is worth recording that on a single occasion Mr. Hodgkinson found the larva feeding on the bog-bean, (*Menyanthes trifoliata*) on Pilling Moss.

**Acronycta rumicis**, L. Common and generally distributed, though apparently not now so plentiful as in former years.

**Acronycta megacephala**, W.V. Common and generally distributed throughout Cheshire and South Lancashire, but becoming scarcer in the northern parts of the latter county.

**Acronycta aceris**, L. Recorded from Ashton-on-Mersey, where it is not common, by Mr. Chappell, and from Delamere Forest by Mr. A. O. Walker.

#### BRYOPHILA, Tr.

**Bryophila perla**, W.V. Common on lichen-covered walls throughout both counties.

**Bryophila algæ**, Fab. In the collection of the late Joseph Sidebottom are two specimens of this species captured at Disley, Cheshire, and obtained by him from Mr. R. S. Edleston's collection.

#### Fam. ORTHOSIDÆ.

#### NONAGRIA, Hübn.

**Nonagria arundinis**, Fab. (= **typhæ**, Esp.). Tolerably common wherever the reed-mace (*Typha latifolia*) grows.

#### CENOBIA, Stéph.

**Cænobia rufa**, Haw. (= **despecta**, Tr.). Ledsham and Little Neston, recorded by Mr. A. O. Walker on the authority of Mr. Brockholes.

## TAPINOSTOLA, Led.

**Tapinostola fulva**, Hübn. Common in swampy places throughout both counties.

## CALAMIA, Led.

**Calamia lutosa**, Hübn. Somewhat local, though abundant where it does occur.

**Lanc.**—Crosby (G. A. Harker); Lytham (J.B.H.); Manchester district, common (J.C.).

**Ches.**—Bidston Marsh, plentiful (C.S.G.); Wallasey (S.J.C., F.N.P.); throughout Wirral (J.F.B.).

## LEUCANIA, Ochs.

**Leucania pallens**, L. Abundant and generally distributed.

**Leucania impura**, Hübn. Abundant and generally distributed.

**Leucania straminea**, Fr. Taken by Mr. C. S. Gregson, and by Mr. T. Townley, from flowers growing in ditches between Leasowe lighthouse and Meols.

**Leucania obsoleta**, Hübn. Taken by Mr. Gregson and Mr. Townley—abundantly at one period, on Bidston Marsh.

**Leucania comma**, L. Common towards the coast-line of both counties, becoming scarcer inland.

**Leucania conigera**, W.V. Local, and apparently not common where it does occur. I have once met with it on ragwort flowers at Crosby; Mr. Johnson records it from Crosby; Preston, occasionally (J.B.H.). These are all the recorded localities in Lancashire.

**Ches.**—New Brighton and Dacre Park, near Birkenhead (C.S.G.) and Rock Ferry (J.F.B.).

**Leucania littoralis**, Curt. Confined to the coast sandhills from Lytham to Wallasey, where the larvæ are sometimes abundant, though the perfect insect is not often met with.

**Leucania lithargyrea**, Esp. Common, and generally distributed.

**Leucania turca**, L. Rare at sugar in Dunham Park (J.C.). (Confirmed by J.B.H.)

## STILBIA, Steph.

**Stilbia anomala**, Haw. Local, the only places of its occurrence of which I have record being:—

Dutton, near Ribchester (J.B.H., Ent., xiii, 105); Silverdale and Longridge (J.B.H. *in litt.*); Staleybrushes, one specimen taken by Thomas Hague (J.C.).

## CARADRINA, Tr.

**Caradrina exigua**, Hübn. Mr. George A. Harker captured a specimen of this rare species at light at Crosby, on September 16th, 1884. Mr. Hodgkinson mentions having once seen a specimen at Preston.

**Caradrina morpheus**, Hufn. Tolerably common, and generally distributed.

**Lanc.**—Crosby (G. A. Harker); Preston (J.B.H.); Prestwich (J.C.M.); Withington and Pendleton, at flowers of *Epilobium*, not uncommon (J.C.).

**Ches.**—Denhall and Chester (A.O.W.); Wallasey (J.C.M., J.W.E.).

**Caradrina cubicularis**, W.V. Abundant everywhere.

**Caradrina alsines**, Brahm. Not common. Preston district, not common (J.B.H.). Wallasey and Bromborough, scarce (A.O.W.). Mr. Gregson refers to its occurrence in this district, together with *C. blanda*, with which it had been confused.

**Caradrina blanda**, Tr. (= *taraxaci*, Hübn.). Not common. Preston (J.B.H.); Pendleton and Withington, at sugar, uncommon (J.C.); Wallasey (C.S.G., J.C.M., W.J.); Wirral (J.F.B.).

## LAMPETIA, Boie.

**Lampetia (Miana) arcuosa**, Haw. Common, and generally distributed.

**Lanc.**—Altcar and Halewood, near Liverpool (C.S.G.); Bolton (W.J.); Pendleton, common, but local (J.C.); Preston district, abundant at light (J.B.H.).

**Ches.**—Bowdon (J.C.); Bidston Marsh (C.S.G., F.N.P., J.F.B.); Puddington (J.F.B.).

## GRAMMESIA, Steph.

**Grammesia trilinea**, W.V. Somewhat local.

**Lanc.**—Crosby (G. A. Harker); Huyton (S.J.C.); Preston, not rare (J.B.H.); Prestwich and Silverdale (J.C.M.).

**Ches.**—Chester district (A.O.W.); Wallasey, common at sugar (F.N.P., W.J., J.W.E.).

The variety *bilinea*, Tr., occurs occasionally along with the type form.

## CLEOCERIS, Boisd.

**Cleoceris (Epunda) viminalis**, Fabr. Recorded only from Toppings Turton, near Bolton, where it was captured at heath flowers (J. W. Baldwin, *Young Naturalist*, I, 387), and by Mr. C. S. Gregson, from Hale and Knowsley.

3 SEP 1886



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Co-operation is invited from all interested, and any information or specimens (the common species of every district are particularly desired) will be welcomed and carefully acknowledged. The Authors may be addressed—c/o Mr. JOHN W. TAYLOR, Office of the Journal of Conchology; Hunslet New Road, Leeds.

Information is at present specially required on the Slugs (*Testacella*, *Limax*, and *Arion*), of which living specimens from every district are desired.

# THE NATURALIST.

*The Editors hope to publish the following papers within the next few months:—*

**Lepidopterous Fauna of Lancashire and Cheshire (Noctuae)—J. W. ELLIS, F.E.S., &c.**

**Notes on Birds of Cumberland, Westmoreland, and Furness.—JOHN WATSON. Bibliography for 1885.**

**Natural History of Lincolnshire.**—The next instalment of this is to be upon the **Mammalia**, by JOHN CORDEAUX. Schedules have been prepared for obtaining information: one will be sent to any one willing to furnish notes.

**Short Notes.**—It is the wish of the Editors to give in each number about a page of short notes in each of the various subjects of which the *Naturalist* takes cognisance. To this end they rely upon their friends keeping them well supplied. At present short notes on Botany, Entomology, Palæontology, Microscopy, Conchology, &c., are particularly desired.

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# THE NATURALIST

A  
MONTHLY JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND.

EDITED BY

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

AND

WM. EAGLE CLARKE, F.L.S.,

MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION.



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**Advertisements.**—Scale of charges may be had on application.

## BOOKS RECEIVED.

Notes on the Structure and Evolution of the Floridæ, by Geo. Masee, F.R.M.S., 8vo reprint, 13 pages and 2 plates, 1886. [The Author.  
Grevillea, a quarterly record of Cryptogamic Botany, No. 73, September 1886. [Dr. Cooke, Editor.

On Kew Gardens and some of the Botanical Statistics of the British Possessions—By J. G. Baker, F.R.S., 8vo reprint, 28 pages. [The Author.

Statuts de la Société Royale Malacologique de Belgique, deuxième édition, 1886, 16 pp. [La Société.

Procès-verbaux de Séances de la Société Royal Malacologique de Belgique, 1886, Janvier à Juillet, pp. 96. [La Société.

Philadelphia Academy of Natural Sciences—Proceedings, January—March, 1886. [The Academy.

Botanical Exchange Club of the British Isles—Report for 1885. [The Club.  
Mineralogical Magazine, July 1886. [The Mineralogical Society.

British Association—Address by Sir J. William Dawson, President, 8vo, 34 pp. [Mr. S. A. Adamson.

Bristol Naturalists' Society—Annual Report, etc., April 1886. [The Society.

Bristol Naturalists' Society—Proceedings, Vol. V, part i, 1885-6. [The Society.

Mineralogical Society—List of Members, February 1886. [The Society.

Natural History Journal, September 15th, 1886. [Mr. J. Edward Clark, Editor.

Midland Naturalist for September 1886. [The Editors.

The Young Naturalist for September 1886. [J. E. Robson, Editor.

The Naturalist's World for September 1886. [P. Lund, Editor.

Science Gossip for September 1886. [Chatto and Windus, Publishers.

Scottish Naturalist for Jan., April, and July 1886. [Prof. J. W. H. Trail, Editor.

Revue Bryologique, 13e Année, No. 5, 1886. [Mons. T. Husnot, Redacteur.

New York Microscopical Society—Journal for June 1886. [The Society.

## EXCHANGES.

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ANCHOCELIS, Guén.

**Anchocelis lunosa**, Haw. Recorded from Bidston lighthouse by C. S. Gregson; from Wallasey by Mr. Johnson; and from the district of Wirral by Mr. Brockholes.

RUSINA, Boisd.

**Rusina tenebrosa**, Hübn. Generally distributed, but apparently not common.

**Lanc.**—Carnforth and Longridge, not common (J.B.H.); Crosby (G. A. Harker); Manchester district (J.C.); Birch-wood, Woolton (C.S.G.).

**Ches.**—Tranmere (W.G.); Wallasey (F.N.P., J.W.E.); Wirral (J.F.B.).

ASTEROSCOPUS, Boisd.

**Asteroscopus sphinx**, Hufn. (= **Petasia cassinea**, W.V.). Bred from a larva found near Preston (J.B.H.); recorded by N. Greening from East Cheshire (A.O.W.).

DASYPOLIA, Guén.

**Dasypolia templi**, Thunb. Local.

**Lanc.**—Aigburth (C.S.G.); Crosby, a specimen taken on the sandhills in the autumn of 1885 (R.W.); Preston district (J.B.H.); West Derby, at light (C.S.G.).

**Ches.**—Bidston lighthouse (J.F.B.).

PANOLIS, Hübn.

**Panolis (Trachea) piniperda**, Panz. Common wherever there are fir plantations, especially in the neighbourhood of the 'mosses.'

CHARÆAS, Steph.

**Charæas graminis**, L. Generally distributed and found sometimes on the Lancashire moorlands in great abundance, as during 1881.

TÆNIOCAMPA, Led.

**Tæniocampa gothica**, L. Common and generally distributed through both counties.

**Tæniocampa populeti**, Fabr. Generally distributed, but not common.

**Lanc.**—Bolton (W.J.); Hale and Lydiate (C.S.G.); Chat Moss and Withington (J.C.); Longridge and Preston (J.B.H.); Prestwich (J.C.M.).

**Ches.**—Generally distributed through Wirral, but scarce (J.F.B.); Eastham (C.S.G.); Marple (J.C.).

**Tæniocampa miniosa**, W.V. Recorded as rare in Delamere Forest by Mr. Chappell.

**Tæniocampa cruda**, Tr. (= *pulverulenta*, Bork.). Generally distributed through both counties.

**Tæniocampa munda**, W.V. Not common.

**Lanc.**—Hale and Croxteth, occasionally (C.S.G.); Preston (J.B.H.).

**Ches.**—Bromborough and Puddington (J.F.B.); Dunham Park and Marple (J.C.); Eastham Wood (J.F.B., F.N.P., W.J.); Hooton (C.S.G.).

**Tæniocampa stabilis**, W.V. Common throughout both counties—the most frequent of the genus.

**Tæniocampa gracilis**, W.V. Local, and not common where it does occur.

**Lanc.**—Crosby (G. A. Harker, F.N.P., R.W.); Chat Moss, Barton Moss, and Withington (J.C.); Huyton (S.J.C.); Southport (G. T. Porritt); Preston district and Longridge (J.B.H.).

**Ches.**—Lindow Common (J.C.); Wallasey (G. T. Porritt and J.W.E.).

**Tæniocampa incerta**, Hufn. (= *instabilis*, Tr.). Generally distributed.

**Tæniocampa opima**, Hübn. The only recorded localities for this species are the Wallasey sandhills, where it is abundant; Lytham, where it occurs commonly; and Longridge.

#### PACHNOBIA, Led.

**Pachnobia leucographa**, W.V. Formerly common at Preston, but now scarce (J.B.H.).

**Pachnobia rubricosa**, W.V. Generally distributed, but apparently not common.

**Lanc.**—Agercroft, Chat Moss, and Withington, not common (J.C.); Preston district, formerly common (J.B.H.).

**Ches.**—Bowdon, Staley-brushes, and Marple (J.C.); Eastham Wood (J.C.M.); Delamere Forest (F.N.P., G. A. Harker); Wallasey sandhills (W.G., G. T. Porritt, J.C.M., J.W.E.); throughout Wirral (J.F.B.).

#### ORTHOSIA, Tr.

**Orthosia pistacina**, Fab. Generally distributed and fairly common.

**Orthosia rufina**, L. Not generally common.

**Lanc.**—Crosby (F.N.P., W.J.); Hale (C.S.G.).

**Ches.**—Alderley district, common (H. H. Corbett); Eastham (F.N.P., W.J.); Stourton and Bidston (C.S.G.); Staley-brushes, common (J.C.); Wirral, scarce (J.F.B.).

**Orthosia circellaris**, Hufn. (= **Xanthia ferruginea**, Tr.). Common and generally distributed.

**Orthosia lota**, L. Common and generally distributed.

**Orthosia macilenta**, Hübn. Local.

**Lanc.**—Agercroft (J.C.); Grange (S.J.C.); Birch-wood, Woolton (C.S.G.).

**Ches.**—Bowdon, not common (J.C.); Eastham Wood (W.J.); Rock Ferry, Eastham, and Puddington (J.F.B.).

**Orthosia litura**, L. Common and generally distributed.

#### DYSCHORISTA, Led.

**Dyschorista suspecta**, Hübn. Scarce.

**Lanc.**—Barton Moss (J.C.); Middleton (Ib., and J. Thorpe, Ent., iv, 135).

**Ches.**—Staley-brushes (J.C., J.B.H., J.C.M.); between Stourton and Hargreave Hall (C.S.G.).

**Dyschorista ypsilon**, W.V. Not very common.

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

**Ches.**—Marple (J.C.); Alderley, rare (H. H. Corbett); Wallasey, frequent (J.F.B., J.C.M., C.S.G., J.W.E.); West Kirby (F.N.P.).

#### PLASTENIS, Boisd.

**Plastenis retusa**, L. Not common.

**Lanc.**—Liverpool district, occasionally (W.J.); Formby, taken by Mr. Gregson (J.B.H.).

**Ches.**—Knutsford, rare (J.C.); Wallasey, Bidston, Tranmere, Puddington, not common (J.F.B.).

**Plastenis subtusa**, W.V. Common in the Preston district (J.B.H.); not common on Chat Moss, and at Pendleton, Sale, and Bowdon (J.C.); on sugar at Wallasey (C.S.G.).

#### CIRRHÆDIA, Guén.

**Cirrhœdia xerampelina**, Hübn. Scarce. The only localities of which I have any record are—

**Lanc.**—Clitheroe, taken by B. B. Labrey (J.B.H.); larva taken near Manchester (G. Campbell, Ent. Mo. Mag., vii, 140); Withington, by J. H. Aspinwall (Ent., viii, 229).

**Ches.**—One specimen recorded from Denhall by Mr. A. O. Walker, probably on Mr. Brockholes' authority.

## COSMIA, Ochs.

**Cosmia trapezina**, L. Abundant throughout both counties.

**Cosmia affinis**, L. Recorded as 'very rare' from Alderley by Mr. Corbett; while Mr. Gregson mentions having taken it at sugar in a young elm plantation between Hightown and Sephton.

(**Cosmia paleacea**, Esp. (= **Euperia fulvago**, Hübn.). Recorded from Lancashire in Newman's British Moths, p. 380, but on what authority I know not.)

## PYRRHIA, Hübn.

**Pyrrhia umbra**, Hufn. (= **Heliothis marginata**, Fab.). Local, but plentiful where it does occur. Crosby is the only Lancashire locality recorded, but it occurs on the Cheshire coast at Wallasey and New Ferry.

## HYDRÆCIA, Guén.

**Hydræcia nictitans**, L. Common and generally distributed, being especially abundant on the mosses.

**Hydræcia micacea**, Esp. Common throughout both counties.

**Hydræcia petasitis**, Doubl. Occurs in the moorland regions of both counties, but much scarcer of late years than formerly.

**Lanc.**—Bolton (W.J., J.B.H.); Preston and Ribchester (J.B.H.); Staleybridge, common in 1870 (J.C.M.).

**Ches.**—East Cheshire, recorded by N. Greening (A.O.W.).

## GORTYNA, Led.

**Gortyna flavago**, W.V. Common and generally distributed.

## XANTHIA, Tr.

**Xanthia gilvago**, Esp. Recorded from Eastham, where it was captured by Mr. Wm. Lello, in September 1868 (*Ent. Mo. Mag.*, v, 129); also by Mr. Brockholes from Ness and Puddington.

**Xanthia cerago**, Tr. (= **fulvago**, L.). Common, and generally distributed wherever tallows grow.

**Xanthia flavago**, Fab. (= **silago**, Hübn.). Common, but rather more local than the preceding species.

**Xanthia aurago**, W.V. 'Two taken at Lydiate, end of September' (C.S.G.).

**Xanthia citrago**, L. Local, and not very common where it does occur.

**Lanc.**—Aigburth (W.J., C.S.G.); Myerscough Hall, near Preston (J.B.H.); Withington (J.C.).

**Ches.**—Bowdon and Wilmslow (J.C.); Bromborough (C.S.G.); Dunham Park (J.C.M.); Chester (A.O.W.); Rock Ferry and Puddington (J.F.B.).

SCOPELOSOMA, Curt.

**Scopelosoma satellitia**, L. Common throughout both counties.

ORRHODIA, Hübn.

**Orrhodia vaccinii**, L. Common throughout both counties.

**Orrhodia ligula**, Esp. (= **spadicea**, W.V.). Somewhat local.

**Lanc.**—Agercroft (J.C.); Aigburth (W.J.); Preston (J.B.H.).

**Ches.**—Chester (A.O.W.); Dunham Park (J.C.); Wallasey (C.S.G.); Wirral, but not abundant (J.F.B.).

SCOLIOPTERYX, Germ.

**Scoliopteryx libatrix**, L. Not very common, but generally distributed throughout both counties.

AMPHIPYRA, Ochs.

**Amphipyra tragopogonis**, L. Abundant everywhere.

**Amphipyra pyramidea**, L. Recorded as rare in Dunham Park (J.C.); from Eastham Wood (W.J.); and one from Puddington in 1870 (J.F.B.).

Fam. *AGROTIDÆ*.

TRIPHÆNA, Hübn.

**Triphæna fimbria**, L. Generally distributed, but not common.

**Lanc.**—Chat Moss and Withington (J.C.); Crosby (G. A. Harker); Preston and Lytham (J.B.H.).

**Ches.**—Bowdon (J.C.); Chester (A.O.W.); Delamere (F.N.P.); Dunham Park (J.C.M.); Claughton, Denhall, Eastham Wood, Puddington, and Wallasey (J.F.B.); larvæ plentiful between Wallasey and Leasowe in March and April (C.S.G.).

**Triphæna ianthina**, W.V. Not generally common.

**Lanc.**—Preston, not common (J.B.H.); Garston (C.S.G.).

**Ches.**—Bowdon, not common (J.C.); Chester (A.O.W.); Delamere and West Kirby (F.N.P.); Tranmere and Rock Ferry (W.G.); Wallasey (J.W.E.); Wirral (J.F.B.).

**Triphæna interjecta**, Hübn. Local.

**Lanc.**—Wyre district, near Fleetwood (J.B.H.).

**Ches.**—Chester district (A.O.W.); New Brighton at flowers of ragwort (C.S.G.); Parkgate (W.G.); Wallasey (W.J., J.F.B., and W. Lello, Ent., iv, 155).

Mr. Gregson notices that this species does not come to ragwort flowers before 11 p.m.

**Triphæna orbona**, Fab. (= **comes**, Hübn.). Abundant everywhere. In his illustrations of varieties of Lepidoptera, Part II, Mr. Mosley figures several fine aberrations of this species from specimens in the collections of Messrs. Johnson and Roxburgh, of Liverpool.

**Triphæna pronuba**, L. Abundant everywhere.

AGROTIS, Hübn.

\* GRAPHIPHORA, Ochs.

**Agrotis augur**, Fab. Common and generally distributed.

**Agrotis neglecta**, Hübn. Scarce, the localities recorded being all in Lancashire, viz :—Dutton, near Ribchester (J.B.H., Ent., xiii, 105); two specimens recorded from near Hale (C.S.G.); Pendleton and Chat Moss, not common (J.C.).

**Agrotis xanthographa**, W.V. Abundant everywhere.

**Agrotis umbrosa**, Hübn. Somewhat local.

**Lanc.**—Chat Moss (J.C.M.); Crosby (F.N.P., G. A. Harker, R.W.); Preston (J.B.H.).

**Ches.**—Bowdon, not common (J.C.); Wallasey (F.N.P., J.W.E.).

**Agrotis rubi**, View. (= **bella**, Tr.). Common and generally distributed, though not so plentiful as formerly.

**Agrotis festiva**, W.V. Common and generally distributed.

**Agrotis conflua**, Tr. Recorded from Preston by Mr. Hodgkinson.

**Agrotis dahlii**, Hübn. Very local.

**Lanc.**—Windermere, at sugar (J.B.H.); Birch-wood, Woolton, near Liverpool (C.S.G.).

**Ches.**—Alderley, rare (H. H. Corbett); Hargreave Hall and Hooton (C.S.G.); Staley-brushes, not common (J.C.).

**Agrotis brunnea**, W.V. Common and generally distributed.

**Agrotis baja**, W.V. Generally distributed, though scarcely common.

**Agrotis rhomboidea**, Esp. Mr. Gregson records the capture of a specimen of this species, taken on the wing, between Linacre and Bootle.

**Agrotis triangulum**, Hübn. Not common.

**Lanc.**—Longridge, and near Lytham (J.B.H.); Middleton and Pendleton (J.C.); Prestwich (J.C.M.); Old Swan, near Liverpool (C.S.G.).

**Ches.**—Chester (A.O.W.); Staley-brushes (J.C.); Wallasey (E. L. Ragonot, Ent. Mo. Mag., v, 76); Wirral, scarce (J.F.B.).

**Agrotis C-nigrum**, L. Generally distributed and fairly common.

**Agrotis depuncta**, L. Recorded only from one (Cheshire) locality, viz.:—Staley-brushes, where it is rare (J.C.).

**Agrotis glareosa**, Esp. Local, and not common where it does occur.

**Lanc.**—On heath flowers at Toppings Turton, near Bolton (J. W. Baldwin, Y.N., i, 137); Crosby, one specimen (G. A. Harker); Longridge, rare (J.B.H.); Woolton (C.S.G.).

**Ches.**—Alderley, rare (H. H. Corbett); Dunham Park (J.C., J.C.M.); Ness, scarce (A.O.W.); Staley-brushes (J.C.); Stourton (C.S.G.).

**Agrotis saucia**, Hübn. Generally distributed, but nowhere common.

**Lanc.**—Aigburth, common some years (W.J.); Hale and Huyton (S.J.C.); Lytham, sparingly (J.B.H.); Pendleton and Chorlton, not common (J.C.).

**Ches.**—Alderley, rare and uncertain in its appearance (H. H. Corbett); Bidston, Eastham, Ness, and in the Upton Valley (J.F.B.); Staley-brushes (J.C.M.); Wallasey (C.S.G.).

**Agrotis plecta**, L. Common and generally distributed.

**Agrotis (Axylia) putris**, L. Generally distributed and fairly common.

**Agrotis porphyrea**, W.V. Tolerably common wherever there are large tracts of heather.

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

**Ches.**—Bidston Hill, very common in the larval condition (J.W.E.); Carrington Moss and Staley-brushes, not common (J.C.); Delamere Forest (J.C.M.); Stourton (W.G.); a specimen taken at sugar at Wallasey (J.C.M.).

**Agrotis agathina**, Dup. Scarce.

**Lanc.**—Chat and Rixton Mosses, rare (J.C.); Farrington Moss (J.B.H.); Simmonswood Moss (C.S.G.).

**Ches.**—Bidston Hill, occasionally (W.J., J.C.M.); Wallasey, one specimen taken by Mr. Almond, in August 1854 (C.S.G., J.F.B.).

\* \* SPÆLIOTIS, Boisd.

**Agrotis lucerneæ**, L. Only recorded from two localities, both in Lancashire, viz., on heath flowers at Toppings' Turton, near Bolton (J. W. Baldwin, Y.N., i, 387); near Grange (J.B.H.).

**Agrotis simulans**, Hufn. (= *pyrophila*, W.V.). Scarce.

**Lanc.**—Lytham, rare (J.B.H.); in Mr. Gregson's garden, Fletcher Grove, Old Swan, near Liverpool, in 1847 (Zool., 1848).

**Ches.**—Bidston (C.S.G.); Wallasey sandhills, once (W.J.).

**Agrotis ravidæ**, W.V. Recorded from only one (Lancashire) locality, viz.:—Rusholme, near Manchester, where it was once taken by Mr. G. W. Adams (H. H. Corbett).

**Agrotis præcox**, L. Common on all the coast sandhills from Southport to Wallasey; found inland rarely.

\* \* \* AGROTIS, Hübn.

**Agrotis cinerea**, W.V. Is recorded from the neighbourhood of Grange, but the locality of its capture is just beyond the boundary of Lancashire (J.B.H.).

**Agrotis ripæ**, Hübn. Recorded from Runcorn (Cheshire), by Messrs. Gregson and Melvill.

**Agrotis cursoria**, Bork. Common on the Lancashire and Cheshire coast sandhills. Recorded also from Denhall, by Alfred O. Walker.

**Agrotis nigricans**, L. Sandhills and mosses, tolerably common.

**Lanc.**—Chat Moss (J.C.); Farrington Moss (J.B.H.); Crosby sandhills (G. A. Harker); Southport (G. T. Porritt).

**Ches.**—Bowdon, not common (J.C.); Denhall (A.O.W.); Wallasey sandhills (W.J., F.N.P.).

Mr. Gregson notes (Ent., iv, 53) that the specimens which occur on or about the mosses are much darker in colour than the type form, this latter occurring on the sandhills.

**Agrotis tritici**, L. Common on all the coast sandhills and occasionally inland.

**Agrotis aquilina**, W.V. On the sandhills and mosses, but not so common as the preceding species.

**Agrotis obelisca**, W.V. Of very rare occurrence. Mr. Gregson records the species from Crosby and Stourton, and Mr. Brockholes mentions the fact of its having been taken by Mr. N. Cooke on the Wallasey sandhills. Mr. Wilding took a specimen of this species at Heswall in August 1884.

**Agrotis puta**, Hübn. One specimen captured near Wallasey is recorded by Mr. Brockholes.

**Agrotis segetum**, W.V. Common and generally distributed, occasionally abundant.

**Agrotis clavis**, Hufn. (= **corticea**, Hübn.). Local, and apparently not common where it does occur.

**Lanc.**—Crosby (C.S.G.); Preston, not common (J.B.H.).

**Ches.**—Wallasey (C.S.G., W.J., J.C.M., and E. L. Ragonot, Ent. Mo. Mag., v, 76).

**Agrotis exclamationis**, L. Abundant everywhere.

**Agrotis suffusa**, Hübn. Generally distributed and fairly common.

**Agrotis vestigialis**, Hufn. (= **valligera**, W.V.). Abundant at sugar and on ragwort flowers on the coast sandhills from Lytham to Wallasey.

Fam. *HADENIDÆ*.

*APLECTA*, Boisd.

***Aplecta occulta*, L.** Generally distributed, but not common.

**Lanc.**—Chorlton-cum-Hardy, near Manchester, rare (J.C.); Crosby, several (G. A. Harker); Stretford, near Manchester (J.B.H.).

**Ches.**—Claughton, near Birkenhead (J.F.B.); Delamere (A.O.W.).

***Aplecta herbida*, W.V.** Local, and nowhere common.

**Lanc.**—Chat Moss (R. S. Edleston, Zool., 1845, p. 1220); Botany Bay Wood, Cotteril Clough near Ringway, not common (J.C.); Hale and Woolton (C.S.G.); Preston district (J.B.H.).

**Ches.**—Only recorded from one locality, viz., Ledsham, by Mr. Brockholes.

*APAMEA*, Tr.

***Apamea (Luperina) testacea*, W.V.** Common and generally distributed.

*NEURONIA*, Hübn.

***Neuronia (Heliophobus) popularis*, Fab.** Common and generally distributed.

***Neuronia (Luperina) cespitis*, W.V.** Local.

**Lanc.**—Carnforth and Preston (J.B.H.); Crosby (C.S.G., W.J., F.N.P., G. A. Harker); Withington (J.C.).

**Ches.**—Dunham Park (J.C.); Wallasey (C.S.G., W.J., J.F.B., F.N.P.).

*APOROPHYLA*, Led.

***Aporophyla (Epunda) nigra*, Haw.** Recorded by Mr. Chappell as rare at Botany Bay Wood and Worsley; and by Mr. Gregson from Crosby, Speke, and Lydiate.

***Aporophyla (Epunda) lutulenta*, W.V.** Not common.

**Lanc.**—Var. *lunebergensis*, Frey, recorded from Dutton, near Ribchester, by Mr. J. B. Hodgkinson (Ent., xiv, 68).

**Ches.**—Chester, scarce (A.O.W.); Eastham Wood (J.W.E.); Wallasey (F.N.P.).

*CERIGO*, Boisd.

***Cerigo matura*, Hufn. (= *cytherea*, Fab.)**. Common and generally distributed.

*MISELIA*, Steph.

***Miselia oxyacanthæ*, L.** Common and generally distributed.

## DICHONIA, Hübn.

**Dichonia (Agriopis) aprilina**, L. Generally distributed, but not very common.

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

**Ches.**—Eastham Wood (W.J., G. A. Harker, F.N.P.); Bidston, Rock Ferry, Eastham, Ness, and Puddington (J.F.B.).

## DRYOBOTA, Led.

**Dryobota (Hadena) protea**, W.V. Tolerably common and generally distributed.

## EPUNDA, Dup.

**Epunda lichenea**, Hübn. Local, found only near the coast.

**Lanc.**—Lytham (J.B.H.); Formby, abundant in the larval state (J.W.E.); Crosby (G. A. Harker and F.N.P.).

**Ches.**—Wallasey sandhills (J.C.M., F.N.P., G. T. Porritt); Bidston lighthouse, taken there by Mr. Almond (J.F.B.).

## POLIA, Tr.

**Polia flavicincta**, W.V. Mr. Gregson records a specimen captured at Allerton Hall, on sugar, and two between Ditton and Hale.

**Polia chi**, L. Common and generally distributed, especially in the moorland districts.

## DIANTHÆCIA, Boisd.

**Dianthæcia conspersa**, W.V. Scarce.

**Lanc.**—Bedford Leigh (J.C.); Bickerstaffe (C.S.G.); Chorley, in 1853, by E. C. Buxton (Zool., xi, 4037); Preston, not common (J.B.H.).

**Ches.**—Tranmere, one specimen found by Mr. Warrington (J.F.B.); Marple (J.C.); West Kirby (C.S.G.).

**Dianthæcia capsincola**, W.V. Common and generally distributed.

**Dianthæcia cucubali**, W.V. Generally distributed, but not so common as the preceding species.

**Dianthæcia carpophaga**, Bork. Local, nearly confined to the coast.

**Lanc.**—Crosby, common (W.J. and G. A. Harker); Morecambe and Grange, common (J.B.H.); Hale and Formby (C.S.G.).

**Ches.**—Denhall, scarce (A.O.W.); West Kirby (C.S.G.).

## MAMESTRA, Ochs.

**Mamestra (Neuria) saponariæ**, Bork. Recorded as scarce from Denhall, and from Delamere Forest, by Mr. A. O. Walker.

- Mamestra (Hecatera) serena**, W.V. Local.  
**Lanc.**—Crosby sandhills (F.N.P., J.W.E.).  
**Ches.**—Ness, Burton, Capenhurst (J.F.B.); Wallasey sandhills (W.J.).
- Mamestra (Hadena) chenopodii**, W.V. A specimen captured at Denhall in 1870, and recorded by Mr. Brockholes, is the only record I have of its occurrence in either county.
- Mamestra dentina**, W.V. Fairly common, and generally distributed.
- Mamestra glauca**, Hübn. Rather local.  
**Lanc.**—Bolton (W.J.); Chat Moss (J.C.); Cheetham Hill (R. S. Edleston, Zool., 1845, p. 1220); Longridge, moors above Chorley, Withnell, and White Moss, near Middleton (J.B.H.); Simmonswood Moss (C.S.G.).  
**Ches.**—Delamere (A.O.W.); Lindow Common (J.C.); Staley-brushes (J.C., J.C.M.); Stourton (C.S.G.).
- Mamestra contigua**, W.V. Recorded from Barlow Moor, as rare, by Mr. Chappell, and from Rock Ferry, where a single specimen was captured in 1860, by Mr. Bockholes.
- Mamestra genistæ**. The only record I have of the occurrence of this species is as follows:—Larvæ found prior to 1868 on broom at Moore Station, Cheshire, by E. C. Buxton (communicated by J.C.M.).
- Mamestra thalassina**, Hüfn. Common, and generally distributed.
- Mamestra suasa**, W.V. Local.  
**Lanc.**—Chorlton-cum-Hardy and Stretford, not common (J.C.); Liverpool district (C.S.G.).  
**Ches.**—Bidston and Wallasey (J.F.B.); Denhall (A.O.W.); Altrincham (R. S. Edleston, Zool., ii, 683).
- Mamestra oleracea**, L. Abundant everywhere.
- Mamestra pisi**, L. Common and generally distributed.
- Mamestra persicariæ**, L. Common and generally distributed.
- Mamestra brassicæ**, L. Abundant everywhere.
- Mamestra albicolon**, Hübn. Common on the sandhills along the coast-line of both counties.
- Mamestra (Aplecta) nebulosa**, Hüfn. Fairly common and generally distributed.
- Mamestra tincta**, Bork. Recorded from Grange-over-Sands, by Mr. Hodgkinson.
- Mamestra advena**, W.V. Mr. Gregson records the capture of a specimen at valerian flowers at Hale, and one from the same plant at Lydiate.

## HADENA, Tr.

- Hadena leucostigma**, Hübn. (= **Apamea fibrosa**, Hübn.). Local.  
**Lanc.**—Huyton (S.J.C.); Morecambe, abundant (J.B.H.).  
**Ches.**—Dunham Park (S.J.C.); Wallasey sandhills, occasionally (W.J.).
- Hadena adusta**, Esp. Tolerably common and distributed over both counties.
- Hadena abjecta**, Hübn. Scarce. Preston, scarce (J.B.H.); two near Cloughton some years ago, taken by Messrs. Almond and Warrington (J.F.B.); and also recorded from Ness and Puddington by Mr. Brockholes.
- Hadena (Xylophasia) polyodon**, L. (= **monoglypha**, Hufn.). Abundant everywhere; the black variety occasionally taken on the moss-lands.
- Hadena lithoxylea**, W.V. Common and generally distributed.
- Hadena sublustris**, Esp. Recorded from Carnforth by Mr. Hodgkinson, and from Hale by Mr. Gregson.
- Hadena sordida**, Bork. (= **Mamestra anceps**, Hübn.). Local.  
**Lanc.**—Preston district, not common (J.B.H.).  
**Ches.**—Wallasey sandhills (C.S.G., J.C.M.); Wirral (J.F.B.).
- Hadena gemina**, Hübn. Common and generally distributed.
- Hadena unanimitis** (Hübn.). Not generally common.  
**Lanc.**—Chat Moss and Withington (J.C.); Hale and Croxteth (C.S.G.).  
**Ches.**—Chester, rather common in 1858 (A.O.W.); Prenton (C.S.G.); Wallasey, Rock Ferry, and Puddington (J.F.B.); occasionally about Alderley (H. H. Corbett).
- Hadena basilinea**, W.V. Common and generally distributed.
- Hadena hepatica**, Hübn. Local.  
**Lanc.**—Preston, not rare (J.B.H.); Hale and Croxteth (C.S.G.).  
**Ches.**—Cotteril Clough, near Ringway (J.C.); near Puddington (J.F.B.).
- Hadena rurea**, Fab., and the variety **combusta**, Dup. Abundant everywhere.
- Hadena scolopacina**, Esp. Recorded from Agercroft, near Manchester, on flowers of wild angelica, rare, by Mr. Chappell; and from Brockholes Wood, near Preston, by Mr. Hodgkinson.
- Hadena pabulatricula**, Brahm. (= **Apamea connexa**, Bork.) A single specimen taken at light at Wallasey, is recorded by Mr. Gregson.
- Hadena (Celæna) haworthii**, Curt. Common on the moors and mosses.

**Lanc.**—Bolton (W.J.); Chat Moss (J.C., W.J.); moors above Chorley, abundant (J.B.H.); Simmonswood Moss (C.S.G., W.J., F.N.P., J.W.E.).

**Ches.**—Carrington Moss and Lindow Common (J.C.); Delamere Forest (S.J.C., F.N.P.); Staley-brushes (J.C.).

**Hadena didyma**, Esp. (= *oculea*, Guén.). Abundant everywhere.

**Hadena (Miana) strigilis**, L. Common and generally distributed.

**Hadena fasciuncula**, Haw. Common and generally distributed.

**Hadena furuncula**, W.V. Fairly common, but not nearly so generally distributed as the two preceding species.

**Hadena literosa**, Haw. Common, and generally distributed.

HYPPA, Dup.

**Hyppa (Hadena) rectilinea**, Esp. Mr. Chappell records a specimen from Trafford, near Manchester; and Mr. Hodgkinson refers to the capture of the larva on balsam, near Windermere.

DIPTERYGIA, Steph.

**Dipterygia pinastri**, L. Of occasional occurrence. Mr. Hodgkinson reports having seen several which had been taken near Manchester. In Cheshire it has been taken several times at Knutsford (J.C.); while Mr. Corbett informs me it was common at Alderley in 1879, but that he had not seen it before or since (see also Ent., xiii, 14).

EUPLEXIA, Steph.

**Euplexia lucipara**, L. Abundant everywhere.

HABRYNTIS, Led.

**Habryntis meticulosa**, L. Common everywhere.

MORMO, Steph.

**Mormo maura**, L. Common and generally distributed.

NÆNIA, Steph.

**Nænia typica**, L. Common and generally distributed.

Fam. XYLINIDÆ.

XYLINA, Tr.

**Xylina socia**, Hufn. (= *petrificata*, W.V.). A specimen captured at the Dingle, near Liverpool, by Mr. W. Johnson, is the only record of the appearance of this insect in our counties.

**Xylina ornithopus**, Hufn. (= *rhizolitha*, Fab.). Scarce. Recorded from Chat Moss by Mr. E. C. Buxton (Zool., 1850, 2882); Manchester district, occasional (J.B.H.); Denhall, scarce (A.O.W.); and Mr. Brockholes records a specimen captured in the Upton Valley, near Birkenhead, in 1859.

CALOCAMPA, Steph.

**Calocampa vetusta**, Hübn. Local.

**Lanc.**—Aigburth (W.J.); Chat Moss, rare (J.C.); Crosby, occasionally (C.S.G.).

**Ches.**—Delamere (A.O.W.); Eastham (G. A. Harker and W.G.); Wallasey (J.C.M., J.F.B.); Bidston and Upton (J.F.B.).

**Calocampa exoleta**, L. Generally distributed, but not common.

**Lanc.**—Agercroft, Barton Moss, Chat Moss, Bury, and Middleton (J.C.); Preston district, not common (J.B.H.); Hale and Huyton (S.J.C.).

**Ches.**—Chester and Ince (A.O.W.); Eastham (W.G., W.J.); Liscard, common (C.S.G.); Wallasey (J.C.M.); Wirral (J.F.B.).

EGIRA, Dup.

**Egira (Cloantha) solidaginis**, Hübn. Local.

**Lanc.**—Bolton Moors, common (W.J., J.C.); Bamford Wood, abundant (J.C.M.); Anglesark, near Chorley, and Longridge, on stone walls (J.B.H.); a specimen taken at Walton Gaol, near Liverpool, on a lamp, by W. Harrison in 1861 (C.S.G.).

**Ches.**—Staley-brushes, common (J.C., J.C.M., G. T. Porritt).

Fam. *CLEOPHANIDÆ*.

XYLOCAMPA, Guén.

**Xylocampa lithorhiza**, Bork. (= *areola*, Esp.). Tolerably common and generally distributed.

Fam. *CUCULLIDÆ*.

CUCULLIA, Schrank.

**Cucullia asteris**, W.V. Mr. Hodgkinson records the capture of the larva of this species on golden-rod (*Solidago virgaurea*) at Grange.

**Cucullia umbratica**, L. Local.

**Lanc.**—Bury, Middleton, Pendleton, and Staleybridge, not common (J.C.); Chorley (E. C. Buxton, Zool., xi, 4037); Crosby (R.W., G. A. Harker); Preston, but not so common as formerly (J.B.H.).

**Ches.**—Bowdon (J.C.); Bidston (J.F.B.); Ness and Chester (A.O.W.); Wallasey (J.C.M., J.F.B., E. L. Ragonot, Ent. Mo. Mag., v, 76).

**Cucullia chamomillæ**, W.V. Local.

**Lanc.**—Aigburth, the larva common a few years ago (J.W.E.); Fylde district, not rare (J.B.H.); Irlam and Moss-side, near Manchester (J.C.); Lytham (J.B.H., *Intell.*, 1856, p. 53).

**Ches.**—Bidston (J.F.B., J.W.E.); Bowdon, rare (J.C.); Denhall (A.O.W.); Tranmere (W.G.); Wallasey (G. T. Porritt).

Fam. *HELIOTHIDÆ*.

HELIOTHIS, Ochs.

**Heliopsis armigera**, Hübn. Very scarce. This species was first captured in Britain, at Salford, by Mr. Jno. Thomas, in September 1840. (Recorded R. S. Edleston, *Zool.*, 1843, p. 260). A specimen was captured on a salt-marsh at the mouth of Bromborough Pool, in November 1857, by Mr. Almond (*Zool.*, xvi, 5947). It has also been recorded from Huyton (S.J.C.) and Staleybridge (J.B.H.), and from Linacre, near Bootle, on ragwort (C.S.G.).

**Heliopsis peltigera**, W.V. Very scarce. Recorded from Blackpool, June 1876, by J. W. Aspinwall (*Ent.*, ix, 183); from Lytham and Farrington Moss, by Mr. Hodgkinson. Mr. Gardner records the capture of a specimen on ragwort flowers at Wallasey in 1879; and Mr. Wilding had the good fortune to find a specimen and the wings of a second on the Wallasey sandhills, on July 17th, 1884.

Fam. *ANARTIDÆ*.

HELIACA, Herr.-Schäff.

**Heliaca tenebrata**, Scop. (= **Heliodes arbuti**, Fab.). Local.

**Lanc.**—Abundant on a railway bank at Chorley (J.B.H.); Longridge (Ib.); Orrell and Ford, near Liverpool (C.S.G.).

**Ches.**—Beeston Castle and Chester (A.O.W.); Prenton Lane and Puddington (J.F.B.); between Spital and Parkgate (C.S.G.); Wilmslow, Knutsford, Ashley, and Maberley (J.C.).

ANARTA, Tr.

**Anarta myrtilli**, L. Abundant on heaths and mosses.

Fam. *PLUSIDÆ*.

ABROSTOLA, Hübn.

**Abrostola triplasia**, L. Generally distributed, but scarcely common.

**Lanc.**—Bolton (W.J., J.C.); Bury (J.C.); Chorley (E. C. Buxton (*Zool.*, xi, 1853, 4037); Crosby (G. A. Harker); Preston, rare (J.B.H.); West Derby (R.W.).

**Ches.**—Chester and Ince (A.O.W.); Knutsford (J.C.); Wallasey (J.W.E.); Wirral (J.F.B.); Alderley (H. H. Corbett).

**Abrostola tripartita**, Hufn. (= *urticæ*, Hübn.). Somewhat local.

**Lanc.**—Bolton (W.J.); Preston, rare (J.B.H.).

**Ches.**—Ince (A.O.W.); Willasey (J.C.M.); Alderley (H. H. Corbett).

PLUSIA, Ochs.

**Plusia chrysitis**, L. Generally distributed, but not usually common.

**Lanc.**—Hutton (S.J.C.); Preston, not common (J.B.H.).

**Ches.**—Bowdon, Marple, and Wilmslow, not common (J.C.); Alderley (H. H. Corbett); Chester district, common (A.O.W.); Tranmere and Oxton (W.G.); West Kirby (F.N.P.).

**Plusia chryson**, Esp. (= *orichalcea*, Hübn.). The only specimen captured in either Lancashire or Cheshire, of which I have any record, was beaten out of honeysuckle near Preston by Mr. Hodgkinson, twenty years ago.

**Plusia bractea**, W.V. Has occurred in several localities, viz.:—

**Lanc.**—Longridge, and formerly at Preston (J.B.H.); near Hyde, Manchester (R. S. Edleston, Zool., ii, 1007); Staley-bridge, captured by —. Radcliff (J.C.M.).

**Ches.**—Bowdon (R. S. Edleston, Intell., 1857, vol. i, p. 123); and again at Bowdon by J. Sidebotham (J.C.M.); Marple, Disley, and Macclesfield, rare (J.C.).

**Plusia festucæ**, L. Local.

**Lanc.**—Bolton (W.J.); Hall Road, near Crosby (G. A. Harker); round Manchester, but not common (J.C.); Chorley (E. C. Buxton, Zool., 1853, 4037).

**Ches.**—Birkenhead and Puddington (J.F.B.); Chester (A.O.W.); Bowdon (R. S. Edleston, Intell., 1857, vol. i, p. 123); Alderley and Cheadle Hulme, rare, Heatley, common (H. H. Corbett).

**Plusia iota**, L. Local.

**Lanc.**—Crosby (G. A. Harker); Chorley, common (J.B.H.); Manchester district, but not common (J.C.); Preston, not common (J.B.H.).

**Ches.**—Alderley, common (H. H. Corbett); Bowdon (R. S. Edleston, Intell., 1857, i, 123); Bromborough (R.W.); Chester and Ince (A.O.W.); New Brighton (J.C.M.); Puddington (J.F.B.).

**Plusia pulchrina**, Haw. (= *V-aureum*, Guén.). Not common.

**Lanc.**—Manchester district (J.C.); Preston, not common (J.B.H.); Prestwich, one in 1876 (J.C.M.).

**Ches.**—Bowdon (R. S. Edleston, Intell., 1857, i, 123); Chester (A.O.W.); Puddington, scarce (J.F.B.); West Kirby and Frankby, at briar flowers (C.S.G.).

**Plusia gamma**, L. Common and generally distributed, sometimes abundant.

**Plusia interrogationis**, L. Local.

**Lanc.**—Chat Moss (J.C.M.); Preston (T. R. Pugh, *Intell.*, 1857, i, 115); Longridge Moors, common (J.B.H.).

**Ches.**—Staley-brushes, four taken by Thomas Hague (J.C.). Recorded also from the latter locality by Mr. Edleston (*Zool.*, ii, 734).

Fam. *OPHIUSIDÆ*.

CATOCALA, Schrank.

**Catocala fraxini**, L. I have records of the capture of about ten specimens of this scarce and handsome species in our counties.

**Lanc.**—A specimen at Bolton in September 1859 (*Intell.*, 1859, ii, 27); one at Agercroft Bridge, near Kersall Moor, August 1846 (R. S. Edleston, *Zool.*, 1515); one at Prestwich Clough about 1846, by C. Doyle (J.B.H.) (N.B.—Do these two latter records refer to the same specimen?); near Chorley (J.B.H.); one near Newton Heath (R. S. Edleston, *Zool.*, 1515); one near Manchester in 1868 (E. Hopley, *Ent. Mo. Mag.*, v, 173).

**Ches.**—A specimen in Mrs. Peacock's garden, Saughall Massie (C.S.G.); a specimen captured in a smithy at Upton (Ib.); one at sugar in Eastham Wood, September 12th, 1868, by W. Lello and E. L. Ragonot (*Ent. Mo. Mag.*, v, 129); Bowdon (recorded by J.C.); one near Carrington Moss (R. S. Edleston, *Zool.*, 1515).

EUCLIDIA, Ochs.

**Euclidia mi**, L. Local, but common where it does occur.

**Lanc.**—Kirby, Hale, and Lydiate, plentiful (C.S.G.); Silverdale (J.C.M.).

**Ches.**—Ashley, formerly common (J.C.); railway bank between Wallasey and Spital, common (R.W., J.W.E., G. A. Harker); Wallasey Sandhills, scarce (J.B.H.).

**Euclidia glyphica**, L. Recorded from only one locality in Lancashire, viz., Speke, by Mr. Gregson. Local in various places in Cheshire, viz., Ashley, formerly common (J.C.); Beeston and Chester (A.O.W.); Eastham (Ib.); Shotwick, taken by Mr. Almond (J.F.B.); Knutsford (T. Harrison, *Intell.*, 1857, i, 123); sparingly with *E. mi* on the railway bank between Spital and Bromborough (R.W., W.G., J.W.E.).

Fam. *NOCTUOPHALÆNIDÆ*.

PROTHEDES, Led.

(**Prothedes (Miana) expolita**, Staint. Mr. Hodgkinson remarks that this species probably occurs on Hamp's Fell, Grange; it certainly occurs on the borders of Lancashire.)

PROTHYMIA, Hübn.

**Prothymia viridaria**, Clerck. (= *ænea*, W.V.) Common on the moss-lands and some of the sandhills.

**Lanc.**—Lytham (J.B.H.); Southport (G. T. Porritt, J.B.H., W.J.); Simmonswood Moss (F.N.P., C.S.G.).

**Ches.**—Bidston Hill (J.F.B.); Prenton (C.S.G.); Delamere Forest (J.C.); Lindow Common, common (Ib.).

*NOTE—LEPIDOPTERA.*

**Lepidoptera near York.**—On looking over Mr. Porritt's 'List of Yorkshire Lepidoptera' I find that a few which I have taken have not been noted for York since Mr. Stainton placed them in his 'Manual.'

*Tephrosia crepuscularia*.—I took this insect in Acomb Wood from the bole of an oak tree in 1882.

*Numeria pulveraria*.—This is another Geometer which I took in Acomb Wood by beating a few years ago.

*Dicranura furcula*.—Is not given for York; I have taken it repeatedly. I remember one occasion when the larvæ were found very commonly on the round-leaved willow, *Salix caprea*, in the York Nurseries; I found them soon after hatching and the eggs had invariably been laid in twos and threes on the upper side of the leaves.

*Xanthia citrigo*.—This insect is not a very common one in any locality. I remember some years ago beating a female out of some young lime trees in the York Nurseries.

*Heliodes arbuti*.—This pretty little insect I have taken in this locality. I found it in the corner of a field near Hobmoor. It is a gentle flyer and settles on the flower of the buttercup (*Ranunculus acris* and *R. bulbosus*).

*Coleophora paripennella*.—Beating for larvæ in September 1883, I came across cases of a *Coleophora* which I did not know. I submitted them for Mr. Stainton's inspection and he gave them the above name. I tried to rear them, but failed.

*Coleophora siccafolia*.—This rare case-bearer I was pleased to find in the autumn of last year amongst birch in Askham Bogs. They were not plentiful, as I only found two, and the case was formed of half a withered leaf, the remaining half being left unrolled up.

*Nemotois minimella*.—The same evening that I found the *siccafolia* cases I came across the place where this species was flitting. I had taken it before, but had no recollection where.—THOS. WILSON, Holgate Nurseries, York, August 24th, 1886.

*NOTE—HEMIPTERA.*

**Triecphora vulnerata Illig. near Louth, Lincolnshire.**—This pretty insect, known as the 'scarlet-hopper,' is very plentiful about the month of June on the herbage by the sides of a certain hedge and ditch at Kenwick, near Louth. It has also been found in two or three other localities in the district, but not plentifully.—H. WALLIS KEW, Louth, 11th September, 1886.

**A YORKSHIRE SPECIMEN OF STURNUS UNICOLOR,  
AND OTHER UNCOMMON BIRDS, IN A  
YORK COLLECTION.**

JAMES BACKHOUSE, JUN., M.B.O.U.,

*York; Secretary to the Vertebrate Section of the Yorkshire Naturalists' Union.*

A FEW days ago whilst looking over the valuable collection of British Birds belonging to the York Blue Coat Boys' School, I had my attention drawn especially to a case containing a company of Starlings in various states of plumage, and amongst them two varieties, a cream-coloured one and a black one, *i.e.*, an unspotted one! Thinking that possibly this latter bird might be a specimen of the Sardinian or Unspotted Starling, I wrote, on my return home, to Mr. Dresser for skins, which he kindly sent at once, and by the aid of which I was enabled upon next visiting the collection to identify the Black Starling without doubt as the Sardinian species. It is apparently an immature male. An inspection of the case in which this bird stands revealed a label bearing the following important words:—'Presd. by G. Wright, 31, Fossgate. 1840. Blk. Starling, shot nr. Howden.' I have here given every word exactly as they are written upon the case, that there may be no mistake.

I further learnt from the keeper of the collection, Mr. Helstrip, that he remembered this bird being given to the Blue Coat School for their collection by the late Mr. Chapman, Birdstuffer, St. Helen's Square, as a curious melanism!

Having stated all the facts relating to this bird that I know worth recording, I leave the question of worthiness to rank as a British Bird to those who are competent to judge; but as this species has only a very limited range in Europe, probably never having been known to occur north of the Riviera, I thought it best to send this note to the 'Naturalist.'

I do not advocate its being called a *British Bird*, however, even if its claim as having actually occurred appears to justify such a term, for I highly disapprove of cataloguing 'waifs and strays' along with our own avifauna.

Why should *I* be termed a Frenchman because I take a trip to France to see the country? And why should a young and inexperienced *Sturnus unicolor* be dubbed a 'British Bird' if he happens to stray away out of his right migration route in some severe gale, and fall a victim to a Howden gunner?

As I noticed several other birds of more or less interest, with descriptions as to locality where they occurred, &c., in our county, I think it best to simply enumerate some of the more important ones here, as I am not aware that they have previously been recorded.

**Common Crossbills (*Loxia curvirostra*).** Shot at Sand Hutton and Sledmere in 1866.

I understand that great quantities were also observed at Stockton-on-Forest during the same summer; sixty or seventy having been brought at one time to a York birdstuffer.

**Red-backed Shrike (*Lanius collurio*).** Obtained at Melbourne, near York.

**Rose-coloured Pastor (*Pastor roseus*).** Shot at Dunnington in 1850.

**Hoopoe (*Upupa epops*).** Shot near Selby in 1858.

**Spotted Crake (*Porzana maruetta*).** Foss Islands, York, 1848.

**Sand Grouse (*Syrhaptes paradoxus*).** One shot out of a flock of five at Stockton-on-Forest (about 1863?); another from the same locality; and a third killed on Haworth Moor, near Keighley.

**Norfolk Plover (*Edicnemus scolopax*).** Shot near York.

**Solitary Snipe (*Gallinago major*).** Everingham Park, near York.

**Little Gull (*Larus minutus*).** Shot at Bridlington in 1868.

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### NOTES—ORNITHOLOGY.

**Little Gull in County Durham.**—A specimen of the Little Gull (*Larus minutus*) was shot on Whitburn Sands, near Sunderland, on 28th August last, and was brought to me the same morning. It is in immature plumage, much like that of a young Kittiwake: eye and bill black, legs flesh-coloured, breast faintly tinged with roseate. The tail is distinctly forked, showing an affinity with the Terns; which latter birds were also numerous on this coast at the same date. They appeared on August 25th, on their passage southwards. Dimensions of Little Gull: length, 9½ in.; expanse, 2 ft. 3 in.; weight, a trifle over 3½ oz.; sex, male; sent to Mr. Collingford, of Durham.—ABEL CHAPMAN, Silksworth House, Sunderland, August 31st, 1886.

**Flamborough Bird Notes.**—Since Sunday (September 5th) I have observed several migratory birds congregating on the headland. The strong westerly breezes have brought them here in large numbers. Quantities of Swallows (*Hirundo rustica*) perch on the telegraph wires, and Wheatears (*Saxicola oenanthe*) on garden walls and about the lanes. Several Pied Wagtails (*Motacilla lugubris*) are to be seen in the fields making ready for their departure.—MATTHEW BAILEY, Flamborough, September 9th, 1886.

**Duck Decoys.**—There is, I believe, another decoy in Lincolnshire besides those mentioned in the list on p. 281 of the 'Naturalist' for September 1886 (unless indeed it be included among the five at Deeping Fen). This is at Crowland, and was said to be in use when I was in the neighbourhood in the autumn of 1881. The mode of working was described to me, and I was told that a little dog was trained to perform antics on the edge of the water, the ducks following him out of curiosity, and being thus led on into the fatal tunnel. If this be so, the name 'The Dog and Duck,' frequently borne by public-houses in the low-lying districts of Eastern England, may be a relic of the former existence of decoys, and not merely a reference to the use of sporting dogs in wild-duck shooting.—H. F. PARSONS, London, September 4th, 1886.

## NOTES—FISHES.

**Snake Pipe Fish on the Lincolnshire Coast.**—I have had brought to me a fine specimen of *Nerophis ophidion*, picked up dead on the sands at Skegness in the present month (September).—WM. EAGLE CLARKE, Leeds, September 18th, 1886.

**Fishes observed near Goole.**—I reported last year the capture of the Angler Fish (*Lophius piscatorius*) near Goole. I have again to state that some have been taken in the salmon nets. In August a Weever (*Trachinus vipera*) was picked up on a sand-bank three miles below Goole; and this morning (7th September) a Pipe Fish (*Syngnathus* sp. ?), 16 inches long, was brought me from Howden Dyke, three and a half miles above Goole, and more than fifty from Spurn. The largest Salmon (*Salmo salar*) caught here weighed 35 lbs. Some Sturgeon (*Acipenser sturio*) were caught, but no Porpoises or Bottle-noses, though many were seen.—THOMAS BUNKER, Goole, 7th September, 1886.

**Grey Mullet near Scarborough.**—On the 30th August a single specimen of a 'Grey Mullet' (*Mugil* sp. ?) was caught off the East Coast, not far from the beach at Hayburn Wyke, equi-distant from Scarborough and Whitby. It was taken in a drift-net by Mr. Patrick, whilst fishing for Salmon. It was a very fine one, and the weight 4 lbs.

Mullet, as a rule, swim along in shallow water, among weeds where small crustaceans abound, and the moment a boat approaches dart off with a heavy splash. The conformation of the mouth is very remarkable, besides the peculiarity of the lips. There is a ridge or an elevated rib in the lower jaw which fits into a groove in the upper part of the palate, which enables it to seize its prey in muddy sea-bottoms, and to reject the silt and sand.

I need hardly say that the Grey Mullet is an epicure's dish, and is rarely to be met with on the Yorkshire coast. Its habitat is on the shores of the Bristol Channel, and Caermarthen Bay and the county of Sussex.—JOHN H. PHILLIPS, Yorkshire Fishery District, Scarborough, 17th September, 1886.

[It would be of the greatest interest to ascertain the precise species to which this interesting note refers, inasmuch as *Mugil chelo* Cuv. (= *M. septentrionalis* Günth), the Lesser Grey Mullet, which occurs regularly in summer within the mouth of the Humber estuary, is the only species whose occurrence off the Yorkshire coast rests upon indisputable authority (that of Dr. Günther). The claim of *M. capito* rests upon the statement of Meynell (1844) that 'both species of Grey Mullet' occur.—EDS.]

## NOTE—PALÆONTOLOGY.

**Discovery of Carboniferous Vegetation at Bradford.**—Yorkshire is becoming noted for discoveries of fine examples of Carboniferous vegetation, for, following closely upon the case of the now celebrated tree at Clayton, I have had reported to me, also in the Lower Coal Measures, a group of fossil roots at Bradford. These were come across by workmen in excavating for the erection of some new offices in Darley Street, and, as in the former case, great care has been exercised in their baring. My friend, Mr. J. H. Monckman, D.Sc., furnishes the following particulars:—There are seven distinct stumps in position, within a distance of 12 yards, varying in size from 1 ft. 6 in. to 2 ft. 6 in. in diameter. The roots are in loose sandy shale, the stumps in ragstone, in which ripple-marked and worm-tracked stones are found. The largest stump has a diameter of 2 ft. 6 in. longest axis, and 2 ft. diameter at right angles to longest axis. It has been partly bared only, showing some stigmarian roots. The larger roots and the stump are covered with carbonaceous matter. The second stump is smaller; height of stump, 1 ft. 8 in.; longest diameter, 17 in.; at right angles to this, 16 in. There are four chief roots at right angles to each other, stretching roughly S.E., S.W., N.W., and N.E. From the stump to the bifurcation of the roots is, approximately in each case, 2 ft.; diameters of roots near the stump vary from 8 in. to 9 in.; length of root exposed, 5 ft. 6 in. The remaining stumps are not yet bared; they will not be cleared for a little while. Messrs. A. & G. Taylor, Bradford, have photographed the second stump just referred to.—S. A. ADAMSON, Leeds, September 22nd, 1886.

## WATERFALL ON KINDERSCOUT, DERBYSHIRE.

H. FRANKLIN PARSONS, M.D., F.G.S.

KINDERSCOUT, the highest hill in the Peak of Derbyshire, has a broad flat table-top, formed of a thick bed of coarse gritstone (Kinderscout grit), the lowest bed of the millstone grit series. This plateau ends on the western side in a long, nearly straight, rocky edge. The surface of the plateau is covered with a bed of peat many feet in thickness, through which the watercourses have cut deep winding channels, frequently down to the rock. The drainage of a large part of the plateau converges to a notch in the centre of the western edge. Here there is a shelving rock, ending below in a free edge; down this rock the water slides and falls in a cascade about 50 feet in height. Approached from below the waterfall is found to be at the point of a funnel-shaped rocky gorge. When the wind is in the west it blows up the gorge, and, intensified by convergence, meets the falling water and blows it back in the form of spray. On June 23rd there being heavy showers, with a stiff westerly breeze, the cloud of spray as seen from Disley, six miles distant as the crow flies, was conspicuously visible, rising like a high column of steam above the hill. The next day, when I visited the waterfall, the weather being fine, the stream had shrunk to smaller dimensions, and there was less wind, but the water going over the fall was all blown back as spray, none reaching the bottom except such as was splashed upon the rocks and trickled down them. The rocks around the top of the fall were washed bare by the spray, and I was told by an inhabitant that in cold weather he had observed the spray to freeze in the air and fall as hail. It rarely happens that a waterfall is so situated as to form a conspicuous object in the landscape at a distance; it is usually in a rocky glen (excavated by itself), or at the head of a mountain valley shut in by hills. The prominent position of the one on Kinderscout is due to the configuration of the hill; the broad plateau affording the gathering ground for a stream of some size, while the high rocky escarpment forms the hard edge over which the water falls. It is obvious also that, under the conditions above described, the volume of the water passing down the fall is augmented by that which has been blown back, and has found its way again into the stream above the fall; in fact, some of the water has to tumble down the fall twice or more before it reaches the bottom.

I may mention that the Cloudberry (*Rubus chamæmorus*) is abundant on Kinderscout, and that the flowers (of rare occurrence on the Yorkshire moors) were found in some plenty at one somewhat sheltered spot.

## MOLLUSCA OF WRESSLE AND NEIGHBOURHOOD.

GEORGE ROBERTS,

*Lofthouse, Wakefield; Author of the History and Topography of Lofthouse, etc.*

THE parish of Wressle is situate on the banks of the Derwent, in the East Riding of Yorkshire. The river rises near Robin Hood's Bay in the North Riding, on the east coast, runs inland, and, after passing through the central part of the East Riding, falls into the Ouse at Barnby-on-the-Marsh. The district about Wressle is flat, and is intersected by slow-running drains. The soil rests on sand; height above sea-level, about 30 feet. The tide comes up the river, and vessels can get up with the flow to Malton. The flounder, and I think some other species of small flat-fish, are found in the river and in the dikes. The extensive ruins of Wressle Castle stand near the river. The foss contains a little water; *Conium maculatum* and *Chenopodium Bonus-Henricus* grow in it, and *Dipsacus sylvestris* in a hedge close by. One of the ivy bushes which grow up the castle walls is an enormous size; the bole near the bottom will be sixteen or seventeen inches in diameter.

The mollusks enumerated in the following list were observed or collected mainly during a day's visit to Wressle in August, 1884, and another similar visit, in company with Mr. J. Beanland, of Bradford, in July, 1886. A few of the species to which J.B. are affixed have been collected by Mr. Beanland at other times during 1885-6.

### AQUATIC.

**Sphærium corneum.** Near the Castle, and in Fleetdyke between Wressle and Bubwith. Hundreds of young (July 1886), but very few adults.

**Pisidium amnicum.** Fleetdyke, J.B.

**Pisidium fontinale.** Fleetdyke, on caddis case.

**Anodonta anatina** var. **ventricosa.** Fleetdyke, dead shells.

**Anodonta cygnea.** Newsholme, July 1886, J.B.

**Paludina contecta.** A few, mostly young, in Fleetdyke, 1884.

**Bythinia tentaculata.** Newsholme and Wressle, very common.

**Bythinia tentaculata** var. **cornea** Locard. 'Horn-colour, more or less pale, rather transparent.' Fleetdyke.

**Bythinia leachii.** Fleetdyke, on caddis cases. Rare.

**Valvata piscinalis.** Fleetdyke, in 1884 and 1886.

**Valvata piscinalis** var. **subcylindrica.** Fleetdyke.

**Planorbis spirorbis.** Newsholme, J.B. Wressle.

**Planorbis vortex.** Fleetdyke, and near the Castle.

**Planorbis complanatus.** Common in most drains.

**Planorbis corneus.** In a small pond near the Castle, and in the Fleetdyke. Also in a small pond near the Crescent Inn going to Bubwith. Here Beanland threw in his net and brought out at the first haul a very fine one amongst a lot of *Zannichellia palustris*, but none were found afterwards.

**Planorbis contortus.** White Rails dyke, J.B.

**Physa hypnorum.** In a moist muddy dyke, mostly lying on the surface—dead and empty shells.

**Physa fontinalis.** Fleetdyke, hundreds on June 12th, 1886, but very few to be found July 24th.

**Limnæa peregra.** Common in Fleetdyke and other places on July 24th, but nearly all young. It is curious what becomes of the full-grown mollusks. Probably water-rats and shrews will feed on them, and they may be able to extract the animal without gnawing the shell. In the tidal drains such as the Fleetdyke, mollusks may be more uncertain and unstable than in other places not influenced by the tide, as by simply leaving hold of their food-plant they may be floated either up or down to a considerable distance every day. Dead shells will be floated down into the river and forwards into the sea in vast numbers. I once found shells of *Sphærium corneum*, *Sphærium rivicola*, *Neritina fluviatilis*, *Bythinia tentaculata*, *Valvata piscinalis*, *Limnæa peregra*, *Limnæa truncatula*, *Succinea elegans*, *Helix rufescens*, *Helix cantiana*, *Helix hispida*, *Patella vulgaris*, *Littorina rudis*, and *Littorina littorea*, with the tooth of a rat and the tooth of a dog, in a barrowful of sand which had been dredged from the river Aire. The epidermis on many of these was quite perfect.

**Limnæa peregra** var. **ovata.** Newsholme, 1885, J.B.

**Limnæa auricularia.** Newsholme, rare, 1886, J.B.

**Limnæa stagnalis.** Newsholme, 1886, J.B. A small form like *fragilis* was in the Fleetdyke in 1884.

**Limnæa palustris.** Type and varieties *tincta* and *elongata* in new drains at Newsholme, July 1886, J.B.

**Limnæa truncatula.** In White Rails drain, Newsholme, 1886, J.B.; and on caddis cases in Fleetdyke.

#### TERRESTRIAL.

**Arion ater.** On the banks of the Derwent, 1886.

**Limax agrestis.** Creeping on the reeds on the bank of the Derwent.

**Succinea putris.** Common on mud near the Fleet.

- Succinea virescens.** 'Shell thin, mouth expanded.' One specimen found with *putris*. This was seen and identified by Mr. T. D. A. Cockerell, of Chiswick.
- Succinea pfeifferi.** Creeping on the surface of a muddy dyke with the above.
- Succinea pfeifferi** var. **brevispirata** Baud. With the above.
- Zonites nitidulus.** On the river bank.
- Zonites cellarius.** Wressle, under stones.
- Zonites purus.** Wressle.
- Helix aspersa.** Frequent about cottage gardens, but apparently scarce elsewhere.
- Helix nemoralis.** Common near the river.
- Helix nemoralis** var. **albolabiata.** One specimen on the banks of the Derwent.
- Helix nemoralis** var. **libellula**  $1\ 2\ 3_{4\ 5}$  + **bimarginata.**
- Helix nemoralis** var. **petiveria.** Common, with and without bands.
- Helix nemoralis** var. **trochoides** Clessin. Alt. 16 mill., diam. 17 mill. Remarkably trochiform. Shell yellow; band-formula  $1\ 2\ 3\ 00$ . These varieties of *nemoralis*, along with others, were obtained on the artificial bank which runs along the river side from Wressle towards Bubwith. The yellow shells with and without bands predominate, and are very glossy with the epidermis perfect to the apex. I saw no *Helix hortensis*.
- Helix arbustorum.** Abundant on the river side.
- Helix arbustorum** var. **depressa** Scholtz. Alt. 20, diam. 26 mill. Wressle, J.B.
- Helix arbustorum** var. **conoidea?**
- Helix arbustorum** var. **trochoidalis** Roffiaen. Alt.  $20\frac{1}{2}$  mill., diam.  $18\frac{1}{2}$  mill. A variety new to Britain. One specimen of this remarkable variety was picked up on the artificial bank in 1884, but three more were obtained at the same place in July 1886.
- Helix arbustorum** var. **fusca.** In a ditch near the railway station in 1884, but none in 1886. Occurs also on the Derwent banks.
- Helix arbustorum** var. **fusca** + **roseolabiata** (new var.). Lip tinged with pink. Other specimens have the lip of a purplish colour.
- Helix arbustorum** var. **cincta.** One specimen in 1884; none in 1886.
- Helix arbustorum** var. **marmorata.** One specimen, J.B. A large percentage of the shells of both *nemoralis* and *arbustorum* that occur on the artificial bank which borders the river, have a pyramidal spire. The vegetation is of an ordinary kind. The

bank is about ten yards from the river. Many of the shells were empty, but were quite fresh, as if the animal had been removed only a day or two before.

**Helix cantiana.** Occurs on the bank with the above, but mostly young on July 23rd, 1886.

**Helix cantiana** var. **rubescens.** Intermixed with the type.

**Helix rufescens.** Appears to be rare. I have a note of finding one specimen in 1884.

**Helix concinna.** Frequent with the other Helices on the river side.

**Helix hispida.** Very few on the river side; probably common in the woods.

**Helix hispida** var. **fusca** Menke. One or two; sent to Mr. Cockerell.

**Helix sericea.** Newsholme, June 12th, 1886, J.B.

**Helix rotundata.** Frequent.

Some of the *Limnæa palustris* sent to me from Wressle by Mr. Beanland, are small and might be the variety mentioned by Alder as inhabiting the margins of tidal rivers. Two of the *L. stagnalis* are of an iridescent purple tinge on the outside of the last whorl, and pearly on the inside. One specimen is obscurely 5-banded. A large number of the *Helix arbustorum* would fall under the variety *alpestris*, 'shell smaller, spire produced,' if that variety be continued in the British list, but it would be better to comprehend them under *conoidea* with a reduced size. One large conical specimen of *H. arbustorum* reaches alt. 23 mill., diam. 21 mill., but this, large as it is, falls short of the dimensions given for *conoidea*. In regard to measurements, I think British conchologists ought to fix a standard for themselves, and not be guided by measurements taken from shells which inhabit southern areas that are much more favourable than Britain to the development of mollusca.

#### NOTE—MOLLUSCA.

**The Conchological stigma removed from Yorkshire.**—It is with much pleasure that I have to announce the discovery of *Amalia gagates* at Middlesbrough. A specimen was taken on September 20th in a well situate in one of the kitchen gardens which are the remains of the old 'Tea Gardens,' the fortunate discoverer being Mr. T. A. Lofthouse, son of Mr. R. Lofthouse, architect. The slug was seen by Mr. W. Denison Roebuck and myself immediately after capture and proved to be a fairly typical specimen. Notwithstanding the fact that it is by no means uncommon on the Lincolnshire coast line and also occurs abundantly in Durham, Yorkshire, until now, was unable to give any authentic record. Now, however, that the spell has been broken probably it will put in an appearance and give an account of itself elsewhere. At the same time and place several fine specimens of *Amalia marginata* were taken. This is, I believe, the first time this species has been recorded for Cleveland.—BAKER HUDSON, Redcar, September 20th, 1886.

## BOOK NOTICES.

**The Naturalist's Diary:** a Day-Book of Meteorology, Phenology, and Rural Biology. . . . Arranged and Edited by Charles Roberts, F.R.C.S., L.R.C.P., etc., . . . with a Chart showing the blossoming of spring flowers in Europe, and an introduction on natural periodic Phenomena, etc. London: Swan Sonnenschein, Le Bas & Lowrey . . . [1886].

The object of this work is two-fold. It is a guide to the recurrence of the periodic phenomena of nature, giving the average dates at which they may be looked for, a large number of species both of animals and plants being thus referred to; and it also provides a blank half-page for each day of the year, on which to enter personal observations of a similar character. Each page of this book is devoted to a day in the year; being divided vertically the left side of the page contains the indications first mentioned, while the right side is left blank for the record of such phenomena as may fall within the cognizance of the possessor. The introduction and the map are largely based upon the German observations of Herren Hoffmann and Ihne, of Giessen, and a perusal of it will show that the observers of periodic natural phenomena are endeavouring to advance beyond the Gilbert White stage and to search for the laws which regulate these phenomena. It is satisfactory to note that greater rigidity and precision in recording the details is now to be aimed at, and that therefore greater accuracy may henceforth be expected in the generalizations based upon them.

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**Hand-book of Mosses,** with an Account of their Structure, Classification, Geographical Distribution, and Habitats. By James E. Bagnall, A.L.S. . . . Second Edition. London: Swan Sonnenschein, Lowrey & Co. . . . 1886. [Price 1s., 96 pages, small 8vo.]

**The Young Collector. British Fungi, Lichens, and Mosses, including Scale-mosses and Liverworts.** By E. M. Holmes, F.L.S., . . . and Peter Gray, A.B.S.Edin. . . . London: Swan Sonnenschein, Lowrey & Co. . . . 1886. [Price 1s. . . . 32+29 + 32 pages, small 8vo.]

**Sea-weeds, Shells, and Fossils.** By Peter Gray, A.B.S.Edin.; and B. B. Woodward. . . . London: Swan Sonnenschein, Le Bas & Lowrey. [Not dated. Price 1s., 94 pages, small 8vo.]

These little books form part of a series of introductions to collecting in various departments of natural history, and are all nicely printed and copiously illustrated. In merit they are unequal, and decidedly the best is the admirable little hand-book of mosses by Mr. Bagnall, whose methodical treatment of his subject within the narrow limits assigned to him enables him to expound it to the best advantage. As to the others we cannot pretend to admire the plan of treating upon such diverse and comprehensive sciences as phycology, malacology, and palæontology in a single volume of no greater size than that allowed to Mr. Bagnall for a subject of much less extent, nor can we conceive that these volumes will serve any more useful purpose than that of whetting the appetite for works more advanced, more detailed and precise in their treatment of the subject. The publishers are, however, to be congratulated upon their evident desire to be of service to their fellow-men by the production of low-priced manuals for collecting.

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 The Bradford Naturalists' Society have printed as a 16-page pamphlet the very excellent paper on the '*History of Botany*,' which was read at one of their meetings by Mr. J. Clayton. In it he carries the origin of the science back to very early times, and treats graphically and well of its subsequent progress down to the time of Darwin.

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 We have received for notice a copy of a penny pamphlet entitled '*Workmen and Museums*': being selections from a series of letters contributed to the '*Liverpool Mercury*' during the latter part of 1885 and the beginning of 1886, by 'R.M.'? It runs to 28 pages, and treats of *Teredo* and *Pholas*, then of silk-producers, the growth of coal plants, whales, the nautilus as a prototype of modern shipping, and the foraminiferal origin of our chalk rocks.

## NOTES AND NEWS.

At the annual meeting of the Wakefield Naturalists' Society, held on Wednesday, 1st September, the following were appointed officers for the ensuing year:—President, Dr. W. H. Haley; Hon. Sec. and Treasurer, W. Rushforth; Delegate to Yorkshire Naturalists' Union, W. Rushforth.

Mr. Samuel A. Adamson, F.G.S., gave a paper before the British Association in the Geological Section, at the recent meeting in Birmingham, on 'The Discovery of the base of a large Fossil Tree at Clayton.' Sir Wm. Dawson, President of the Association, Dr. H. Woodward, and other distinguished geologists, spoke in appreciation of the paper, and also of the value of the discovery.

The Louth Naturalists' Society still continues to flourish, as we are pleased to note, and to work actively at the natural history of their district. At the annual meeting, held on the 5th of July, an encouraging report was given, in which some interesting details concerning the year's investigations were recited. The list of officers for the ensuing year now stands thus:—Patron, Rev. W. W. Fowler, M.A., F.L.S., Sec. E.S.; President, Mr. T. E. Markham; Vice-president, Mr. A. R. Yeoman, M.A.; Honorary Secretary and Treasurer, Mr. H. Wallis Kew, F.E.S.

At the September meeting of the Entomological Society of London, the following gentlemen were elected Fellows:—Mr. P. Cowell, of Liverpool; and Mr. A. O. Walker, F.L.S., of Colwyn Bay, North Wales. Mr. C. O. Waterhouse called attention to the numerous reports which had lately appeared in the newspapers of the supposed occurrence of the Hessian Fly (*Cecidomyia destructor*) in Britain, and inquired whether any communication on the subject had reached the Society. The Rev. W. W. Fowler stated, in reply, that he had been in communication with Miss Ormerod on the subject, and that she had informed him that neither the imago nor larva of the insect had been seen, and that the identity of the species rested on the supposed discovery of the pupa. Mr. A. H. Swinton communicated a paper, entitled 'The dances of the Golden Swift.' In this paper the author expressed an opinion that the peculiar oscillating flight of the male of this and allied species had the effect of distributing certain odours for the purpose of attracting the females.

At one of the usual monthly meetings of the Lancashire and Cheshire Entomological Society, amongst the objects exhibited were specimens of a caterpillar brought from New Zealand by the Rev. J. W. Walker, and presented to Mr. S. J. Capper. These animals are called by the natives Aweto, and form the root of a bulrush (*Sphæria Robertsia*). Another strange phase of animal life was shown, in spirits, in the shape of a fly carrying off a large spider! This was captured in the very act in Entre Rios, South America. Mr. Frederick Taylor, of Rainhill, presented this strange couple, and it is owing to the same gentleman's interest in spiders that the Liverpool Museum has the finest collection of trap-door spiders and their houses of any museum in the kingdom. Besides these specimens, there was an enormous beetle, between four and five inches long, with a pair of giant horns and dangerous-looking mandibles. It was feeding quietly on a faded banana, and seemed quite at home. This came from South America, and has been kept alive since June. It is called *Dynastes typhon*, or, more familiarly, the elephant beetle. In the museum, where it is now on view, it is more commonly known as Jumbo. The paper of the evening was by Mr. S. L. Mosley, who attempted to show the necessity existing for a more definite classification than we have at present in entomology. All the variations of the type which is generally considered specific should be ranged under one of four groups, and the names used for those groups should not be used indiscriminately, as now. That terms are too loosely used at present is admitted by all, and a reformation in scientific nomenclature is greatly needed. The groups suggested are—A, *Race*, as applied to a geographical or altitudinal form of a species; B, *Variety*, to be used only for those forms which occur only more or less commonly with the type form, but which are recurrent, and should therefore receive distinct names, in addition to the specific ones; C, *Aberration*, a departure from the type in colour, but not recurrent; and D, a *Monstrosity*, which is a departure from the type in form, but which is not recurrent.

THE LICHENS OF WESTMORELAND.

JOSEPH A. MARTINDALE,

*Staveley, near Kendal, Westmoreland.*

Family I. EPHEBACEI Nyl.

Tribe I. SIROSIPHEI Nyl.

I. *SCYTONEMA* Ag.

1. **Scytonema myochrous** Ag., Syst., p. 40; Cooke, Brit. Fr. W. Algæ, p. 265, pl. cv, fig. 1; Zwackh., Lich. Heidelbergs, p. 1.  
On moist rocks near the Force on the Kent, Levens Park.

II. *SIROSIPHON* Ktz.

2. **Sirosiphon saxicola** Näg. in Ktz., Sp. Alg., p. 316; Cooke, Brit. Fr. W. Algæ, p. 273, plate cxi, fig. 1.  
On rocks near Staveley, and in Kentmere.

III. *GONIONEMA* Nyl.

3. **Gonionema velutinum** (Ach., Syn., 329); Nyl., Syn., p. 88, tab. i, fig. 11; Leighton, Lich. Fl., p. 9.  
Fertile on rocks near Kentmere Hall.
4. **Gonionema compactum** (*Scytonema* Ag., *Sirosiphon* Ktz.); Nyl. in Flora, 1883, p. 104. *Sirosiphon compactus*, Leighton, Lich. Flora, p. 9.  
Fertile on rocks in Mardale.

Tribe II. PYRENOPSEI Nyl.

No species of the two British genera *Euopsis* and *Pyrenopsis* has yet been discovered in Westmoreland.

Tribe III. HOMOPSIDEI Nyl.

Sub-tribe I. EPHEBEI Nyl.

IV. *EPHEBEIA* Nyl.

5. **Ephebeia hispidula** (Ach., Syn., 302); Nyl. in Flora, 1877, p. 231.  
On rocks, Red Screes. Barren.
6. \***Ephebeia Martindalei** Crombie; Nyl. in Flora, 1883, p. 104.  
Sprangly fertile on rocks near Staveley.

V. *EPHEBE* (Fr.) Nyl.

7. ***Ephebe pubescens*** (Ach., Syn., 302); Nyl., Syn., p. 90, tab. ii, fig. 1 and 17-20; Leighton, Lich. Flora, p. 10.

On rocks in almost all the valleys of the Cumbrian group, yet sparingly in each locality and not often fertile. Kentmere with both apothecia and spermogonia.

## Family II. COLLEMACEI Nyl.

## Tribe I. LICHINEI Nyl.

VI. *LICHINA* Ag.

8. ***Lichina confinis*** (Ach., Prod., p. 208); Nyl., Syn., p. 92; Leighton, Lich. Flora, p. 12.

On rocks at the mouth of the river Kent, Sandside.

## Tribe II. COLLEMEI Nyl.

VII. *COLLEMA* (Ach.) Nyl.

9. ***Collema chalazanodes*** Nyl. in Flora, 1869, p. 293; Leighton, Lich. Flora, p. 16.

On mossy rocks, Brigsteer.

10. ***Collema myriococcum*** Ach., L.U., p. 638; Nyl., Syn., 104, tab. iv, fig. 21; Leighton, Lich. Flora, p. 16.

On mossy walls near Tolson Hall; at Plumgarths and elsewhere in the limestone district.

11. ***Collema auriculatum*** (Hffm., Flora Germ., p. 90); Nyl., Syn., p. 106; Leighton, Lich. Flora, p. 17.

On mortared walls at Staveley. *Obryzum corniculatum* parasitic on it.

12. **\**Collema granosum*** (Wulf in Jacq., Coll. iii, 131, tab. 10, fig. 2); Nyl. in Stizb., Lich. Helv., 269.

Among mosses on walls and rocks—Beathwaite Green, Brigsteer, and Kentmere Hall.

13. ***Collema granuliferum*** Nyl. in Flora, 1875, p. 103; Leighton, Lich. Flora, p. 21; Larb., Lich. Herb., 204.

On mossy walls at Brigsteer and near Kendal.

14. ***Collema flaccidum*** Ach., Syn., p. 322; Nyl., Syn., p. 107; Leighton, Lich. Flora, p. 23.

On wet rocks by the Kent, at Staveley, and on rocks by the Lowther and elsewhere. Not uncommon.

15. **Collema furvum** Ach., Syn., p. 323; Nyl., Syn., p. 107  
Leighton, Lich. Flora, p. 17.  
On limestone walls at Beathwaite Green, Levens Park,  
Heversham Head, and near Kendal.
16. **Collema melænum** Ach., Syn., p. 315; Nyl., Syn., p. 108;  
Leighton, Lich. Flora, p. 20.  
Common in the limestone district, as are also its varieties  
*complicatum* Schär., and *marginale* (Huds.).
17. **Collema polycarpon** Schär., Spic., 532, En. 255, tab. x, fig. 4,  
d.e.; Nyl., Syn., p. 109; Leighton, Lich. Flora, p. 22.  
Common on limestone at Levens, Heversham, and Kendal.
- Collema stygium** (Del.); Schär., Spic., 544, En. 260; Leighton,  
Lich. Flora, p. 23, is merely a form of *C. polycarpon*, vide  
Nyl. in Flora, 1883, p. 105. It is common in the limestone  
district about Kendal and Levens, but most frequently  
barren.
18. **Collema crispum** (Huds., Flora Angl., 447; Ach., Meth., 234);  
Nyl., Syn., 110 (excl. syn. *concinnum* Flot.); Leighton, Lich.  
Flora, 19 (excl. Zw., 159.)  
On mossy limestone walls near Brigsteer.
19. **Collema pulposum** (Bernh.); Ach., Syn., p. 311; Nyl., Syn., 109;  
Leighton, Lich. Flora, p. 18.  
Not rare on limestone soil at Levens, Brigsteer, Under-  
barrow, and Scout Scar, near Kendal.
20. **Collema limosum** Ach., Syn., p. 309; Nyl., Syn., p. 110;  
Leighton, Lich. Flora, p. 19.  
On limestone soil near Kendal, and at Beathwaite Green.
21. **Collema cheileum** Ach., Syn., p. 310; Nyl., Syn., p. 111;  
Leighton, Lich. Flora, p. 20.  
On mortared walls at Staveley, Kendal, and Levens.
22. **Collema conglomeratum** Hffm., D. Flora, ii, p. 102; Nyl., Syn.,  
p. 115; Leighton, Lich. Flora, p. 24 (*C. fasciculare*).  
Near Ambleside, Sir J. E. Smith, fide Leighton, Lich.  
Flora, loc. cit. I have not gathered the plant myself in  
Westmoreland.
23. **Collema nigrescens** (Huds., Flora Ang., p. 450); Ach., Syn.,  
p. 321; Nyl., Syn., p. 114; Leighton, Lich. Flora, p. 24.  
On trees, Levens Park and at Brow Foot, near Staveley,  
very rare. All the Westmoreland plants I have seen are  
barren.

24. **Collema multipartitum** Smith, E. Bot., 2582; Nyl., Syn., p. 116; Leighton, Lich. Flora, p. 24.

Common on the limestone, Heversham Head, Farleton Knott, Whitbarrow, and Kendal.

[**Collema isidioides** Nyl. in Flora, 1883, p. 98, will probably be found on the limestone in South Westmoreland. I have gathered it just beyond the border at Warton Crag, Lancashire.]

VIII. *COLLEMEDIUM* Nyl.

25. **Collemodium microphyllum** (Ach., Syn., 310); Nyl., Syn., 113; Leighton, Lich. Flora, 26; Lamy, Lichens de Caeterets, p. 5; Larb., Lich. Herb., 2.

On elms, Levens Park.

26. **Collemodium plicatile** (Ach., Syn., 314); Nyl., Syn., 109; Leighton, Lich. Flora, p. 30; Stiz., Lich. Helv., p. 11.

On limestone walls and rocks at Sizergh and Levens, on a bridge near Staveley.

IX. *LEPTOGIUM* (Ach.) Nyl.

27. **Leptogium tenuissimum** (Dicks., Brit. Crypt., i, 12); Mudd, Man., p. 46; Leighton, Lich. Flora, p. 26.

On mossy decaying stump of a tree, Levens Park; J. M. Barnes.

28. **Leptogium muscicola** (Sw.); Nyl., Syn., 134, tab. iv, fig. 11-15; Leighton, Lich. Flora, p. 34; Larb., Lich. Herb., 121.

On rocks near streams and lakes—Scandale, Ambleside, Staveley, Kentmere, and Mardale.

29. **Leptogium lacerum** (Sw.); Nyl., Syn., p. 122; Leighton, Lich. Flora, p. 28.

On mossy walls, Patterdale, Kentmere, Staveley, Kendal, Heversham.

30. \***Leptogium lophæum** (Ach., Syn., p. 324); Nyl., Syn., p. 122; Leighton, Lich. Flora, p. 29; Stiz., L. H., p. 14.

On mossy walls, Plumgarths, Kendal, Milnthorpe.

31. \***Leptogium pulvinatum** (Hffm., D. Flora, ii, p. 104); Nyl., Syn., p. 122; Leighton, Lich. Flora, p. 28; Stiz., L. H., p. 14; Larb., Lich. Herb., 241.

On mossy walls, Kendal, Heversham, Milnthorpe.

32. **Leptogium sinuatum** (Huds., Flora Angl., 535); **L. scotinum** Nyl., Syn., p. 123 p. pte.; Leighton, Lich. Flora, p. 29.

On walls, Staveley, Kendal, Levens, Milnthorpe.



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**Bibliography for 1885.**

**Natural History of Lincolnshire.**—The next instalment of this is to be upon the *Mammalia*, by JOHN CORDEAUX. Schedules have been prepared for obtaining information: one will be sent to any one willing to furnish notes.

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The Scottish Naturalist for October 1886. [Prof. Trail, Editor.]  
Natural History Journal, October 1886. [Mr. J. Edmund Clark, Editor.]  
The Young Naturalist for October 1886. [Mr. J. E. Robson, Editor.]  
British Association, Birmingham Meeting—Daily Journal. [Mr. S. A. Adamson.]  
The Microscope (monthly), September 1886. [The Editors.]  
Journal of Conchology, October 1886. [Mr. J. W. Taylor, Editor.]  
Journal of Microscopy, October 1886. [Mr. Alfred Allen, Editor.]  
Science Gossip for October 1886. [The Publishers.]  
Northamptonshire Natural History Society—Journal, Sept. 1886. [The Society.]  
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33. **Leptogium saturninum** (Dicks., Brit. Crypt., 2-21); Nyl., Syn., p. 127, pro parte; Leighton, Lich. Flora, p. 32 (excl. exs. cit.).  
On a tree in Naddle Forest, Mardale.
34. **Leptogium Burgessii** (Lightf., Flora Scot., 827); Nyl., Syn., p. 132; Leighton, Lich. Flora, p. 33.  
On trees in Naddle Forest, Mardale.
35. **Leptogium Schraderi** (Bernh.); Nyl., Syn., p. 133; Leighton, Lich. Flora, p. 34; Larb., Lich. Herb., 4 (*Collemodium* Crombie, Grevillea, xv., 12).  
On limestone walls and rocks, Brigsteer, Levens, Milnthorpe.

X. *COLLEMOPSIS* Nyl.

36. **Collemopsis oblongans** Nyl. in Flora, 1874, p. 305; Leighton, Lich. Flora, p. 36.  
On limestone rocks at Haverbrack, and on Whitbarrow.

Fam. III. LICHENACEI Nyl.

Tribe I. CALICIEI Nyl.

XI. *TRACHYLIA* (Fr.) Nyl.

37. **Trachylia stigonella** (Ach., Meth., p. 88); Nyl., Syn., p. 167, tab. v, fig. 33; Leighton, Lich. Flora, p. 47.  
Parasitic on corticolous *Pertusariæ*. Levens Park, Underley Park, Lowther Park, and elsewhere.

XII. *CALICIUM* (Pers.) Nyl.

38. **Calicium aciculare** (Sm., E. Bot., tab. 2385); Nyl., Syn., p. 148, tab. v, fig. 14; Leighton, Lich. Flora, p. 40; Larb., Lich. Herb., 81.  
On trees, Levens Park and Lowther Park.
39. **Calicium arenarium** (Hampe); Nyl. in Lamy, Lichens du Mont-Dore, p. 9. (*C. citrinum* Nyl., Syn., p. 149, tab. vii, fig. 1; Leighton, Lich. Flora, p. 44).  
Parasitic on the thallus of *Lecidea lucida*, on a wall near Staveley. This is the only place within the county where I have seen it, but I found it growing in tolerable abundance in the neighbourhood of Sedbergh, just outside the county.

40. **Calicium trichiale** \***stemoneum** Ach., Syn., p. 62; Nyl., Syn., p. 150, tab. v., fig. 15; Leighton, Lich. Flora, p. 40.  
On oaks, Lowther Park.  
[**Calicium melanophæum** (Ach.) and its variety *ferrugineum* (T. & B.) will probably be found within the county, as I have gathered both on pines in the plantation on Penrith Beacon, which is a very short distance outside the county boundary.]
41. **Calicium hyperellum** (Ach., Prod., p. 85); Nyl., Syn., p. 152, tab. v, fig. 23; Leighton, Lich. Flora, p. 42.  
Common on old trees in Levens Park, and elsewhere. Extremely abundant in Lowther Park.
42. **Calicium roscidum** Flk., D. L., 42; Nyl., Syn., p. 153, tab. v, fig. 22.  
Almost covering the trunks of two or three old oaks in Lowther Park.
43. **Calicium trachelinum** Ach.; Nyl., Syn., p. 154, tab. v, fig. 24; Leighton, Lich. Flora, p. 42.  
On trees in Levens Park and Lowther Park.
44. **Calicium parietinum** Ach.; Nyl., Syn., p. 158, tab. v, fig. 26; *C. subtile*, p. pte., Leighton, Lich. Flora, p. 44.  
On a decorticated portion of an oak trunk in Lowther Park.

XIII. *STENOCYBE* Nyl.

45. **Stenocybe byssacea** (Fr.) Nyl. in Bot. Notis, 1854, p. 84 (*Calicium* Nyl., Syn., p. 160, tab. v, fig. 27; Leighton, Lich. Flora, p. 45).  
On alder twigs, near Staveley. Probably common.

XIV. *CONIOCYBE* (Ach.) Nyl.

46. **Coniocybe furfuracea** (L.); Nyl., Syn., p. 161, tab. v, fig. 37; Leighton, Lich. Flora, p. 45.  
The barren thallus is somewhat frequent on sandy soil at the roots of trees in North Westmoreland. Var. *fulva* on elm in Lowther Park.

XV. *SPHINCTRINA* (Fr.). D.N.

47. **Sphinctrina turbinata** (Pers.); Nyl., Syn., p. 142, tab. v, fig. 1; Leighton, Lich. Flora, p. 38.  
Common on *Pertusaria*. Levens Park, Rigmaden, Underley, Staveley. Very abundant in Lowther Park.

Tribe II. SPHÆROPHOREI Nyl.

XVI. SPHÆROPHORON, Pers.

48. **Sphærophoron coralloides** Pers.; Nyl., Syn., p. 171, tab. v, fig. 46; Leighton, Lich. Flora, p. 48.

On rocks and among mosses. Staveley, Kentmere, Troutbeck, Patterdale, Grisedale, Mardale, and elsewhere. In great abundance on Stybarrow Crag, at the head of Ulleswater.

49. **Sphærophoron fragile** (L.), Nyl., Syn., p. 172, tab. v, fig. 45; Leighton, Lich. Flora, p. 49.

More generally distributed and commoner even than the preceding species.

Tribe III. BÆOMYCEI Nyl.

XVII. BÆOMYCES Pers.

50. **Bæomyces rufus** (Huds., Flora Anglica, p. 527); Nyl., Syn., p. 176, tab. i, fig. 12, tab. vi, fig. 12-14; Leighton, Lich. Flora, p. 50.

Common on stones and earth. Staveley, Kentmere, Mardale, Lowther Park, and elsewhere.

51. **Bæomyces roseus** Pers.; Nyl., Syn., p. 179, tab. vi, fig. 15-21; Leighton, Lich. Flora, p. 51.

Gathered once in fruit on the hills south of Bowness. A sterile thallus, which seems to be the same as one kindly sent me by Dr. Arnold, of Munich, as *Bæomyces rufus f. coccodes* Fries., Sched., p. 15; Scand., p. 329, is common on the Lake District hills.

52. **Bæomyces placophyllus** Ach., Meth., p. 323, tab. vii, fig. 4; Nyl., Syn., p. 180; Leighton, Lich. Flora, p. 51.

In the higher parts of most of the valleys of the Cumbrian group, as in Kentmere, Mardale, Patterdale, and Langdale, but only seen once in fruit, and that immature.

[**Bæomyces icmadophilus** (Ehrh.) will no doubt be found in Westmoreland, at all events along the eastern hills. I have gathered it on these hills, but on the Yorkshire side of the dividing line.]

Tribe IV. PILOPHOREI Nyl.

XVIII. PILOPHORON Tuck.

53. **Pilophoron fibula** Tuck.; Nyl., Syn., p. 229; tab. vii, fig. 6; Leighton, Lich. Flora, p. 69; Larb., Lich. Herb., 5.

In fine condition, and covering the perpendicular surface of a large rock in Great Langdale.

## Tribe V. STEREOCAULEI Nyl.

## XIX. STEREOCAULON Schreb.

54. **Stereocaulon coralloides** Fr.; Nyl., Syn., p. 241, tab. vii, fig. 16;  
Leighton, Lich. Flora, p. 69.  
On rocks. Kentmere, Mardale, Patterdale, and elsewhere.
55. **Stereocaulon paschale** (L.); Nyl., Syn., p. 242, tab. vii, fig. 18-28; Leighton, Lich. Flora, p. 70.  
On rocks in all the valleys of the Lake district.
56. **Stereocaulon denudatum** Flk., D. L., 79; Nyl., Syn., 247, tab. vii, fig. 29; Leighton, Lich. Flora, p. 71.  
On rocks, not uncommon. Staveley Head, Kentmere, Patterdale, Glenridding.
57. **Stereocaulon condensatum** Hffm.; Nyl., Syn., p. 249, tab. vii, fig. 31; Leighton, Lich. Flora, p. 72 (excl. var. *cereolinum*).  
On rocks, Staveley Head, Kentmere.
58. **Stereocaulon pileatum** Ach., Syn., p. 285 (*St. cereolinum* Nyl., Syn., p. 250, p. pte.; Leighton, Lich. Flora, p. 72 omnino?)  
On stones of a wall near Staveley.

## XX. LEPROCAULON Nyl.

59. **Leprocaulon nanum** (Ach., Meth., p. 315; Nyl., Syn., p. 253; Leighton, Lich. Flora, p. 73); Nyl. in Flora, 1876, p. 578; Larb., Lich. Herb., 284.  
In the fissures of rocks, Reston Scar, Staveley. I saw it there in plenty in the year 1880, but lately looking for it I could not find the place.

## Tribe V. CLADONIEI Nyl.

## XXI. PYCNOTHELIA (Ach.) Nyl.

60. **Pycnothelia papillaria** (Ehrh.; Nyl., Syn., p. 188); Leighton, Lich. Flora, p. 52; Cromb. in Grevillea, xi, p. 111.  
Recorded in Leighton's Lich. Flora, p. 53, as having been gathered in Westmoreland, but no locality is given.

## XXII. CLADONIA (Hffm.) Nyl.

61. **Cladonia pyxidata** (L.); Nyl., Syn., p. 192; Cromb. in Grev., xi, p. 111.  
Generally distributed and common.  
Var. **pocillum** (Ach., Meth., 336).  
On mossy walls near Tirrill, North Westmoreland.

## BOTANY OF THE CUMBERLAND BORDER MARCHES.

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IN the county of Cumberland there are five well-marked physical tracts, as follows:—(1) The Coast Line. (2) The Lake Hills. Of these two alone is the botany tolerably thoroughly recorded. (3) The Plain of Carlisle (Red Sandstone). (4) The Border Marches, a tract consisting of arenaceous and aluminaceous hills that do not reach any considerable elevation, intersected by deep wooded river-beds. (5) The Pennine Hills, further south than the last, which form part of the great back-bone chain of the island, into which limestone rock enters prominently, and which are much more lofty than those of the last group, reaching in Crossfell an altitude of 2,900 feet, which is higher than any mountain in Yorkshire, and only 250 feet lower than the topmost Lake peak. District No. 4 has no doubt the smallest flora of the five. The general elevation is high enough to repel a large number of the common lowland plants of the north of England, and the mountains are not high enough to bring in many of the characteristically boreal plants. As just indicated, it is a strictly arenaceo-argillaceous region, without any intervention of limestone or basalt, so that one never sees such plants as *Helianthemum vulgare*, *Arabis hirsuta*, *Origanum vulgare*, or *Draba incana*. It may be compared to the Whitby district in North Yorkshire (leaving of course the littoral out of account), which has the smallest flora of all the nine North Yorkshire drainage districts, or in the West Riding to the neighbourhoods of Sheffield, Huddersfield, Dewsbury, Bradford, or Todmorden, or to the little bit of upland Cheshire about Staley-bridge. As there is hardly anything on record as to the plants it yields, I made, whilst staying there this year in September, and making excursions from Gilsland as a centre, a complete catalogue of all the plants I saw. I doubt whether the total flora of the tract will mount much over 400 species in a broad sense (Flowering Plants and Vascular Cryptogamia). From Gilsland northward to the border (above a dozen miles) stretch low undulating grassy moors, of which the following plants form the predominant phanerogamic vegetation:

Potentilla Tormentilla,	Vaccinium Myrtillus,
Galium saxatile,	Juncus effusus,
Calluna vulgaris,	Juncus conglomeratus,
Erica Tetralix,	Juncus squarrosus,

Scirpus cœspitosus,	Aira flexuosa,
Eriophorum angustifolium,	Molinia cœrulea,
Agrostis vulgaris,	Nardus stricta.

The hills are much more grassy and less heathy than our ordinary Yorkshire moors. The charm of the district to a south-country botanist lies in the abundance of wild wood (trees and shrubs) that clothes the rocky banks of the deep river ghylls. Here oak and ash and wych-elm, birdcherry and hawthorn and blackthorn, and many more have grown in abundance and luxuriance, undisturbed from time immemorial. The stream which drains the district is the Irthing, with many tributaries, which falls into the Eden not far from Carlisle. At Gilsland and higher up, the Irthing forms the boundary between Northumberland and Cumberland, but my notes refer solely to the Cumberland side of the river. They do not reach further down the valley than Brampton, where the red sandstone of the Carlisle plain begins, and as regards elevation belong entirely to the upper half of Watson's mid-agrarian zone. Here, as at the Lakes, cultivated fields are few in number. There is no wheat, so that they are all barley, oats, turnips, potato-fields, or plots of garden ground, so that many of the common agrestal weeds are absent, and many of those usually common are scarce, and as at the Lakes houses and cultivated fields cease upwards, not with the limit of the super-agrarian, but with that of the mid-agrarian, zone. No doubt it will be a capital country for mosses, lichens, and fungi, but to these I paid no attention.

**Ranunculaceæ.**—*Anemone nemorosa*, plentiful. *Ranunculus hederaceus* replaces *aquatilis*; I saw a ditch many yards long crammed full of it. *R. Flammula*, *acris*, and *repens*, and *Caltha palustris*, all common.

**Berberaceæ.**—*Berberis vulgaris*, hedges near Rosehill, in the angle between the Irthing and Poltross Burn, not native.

**Papaveraceæ.**—*Papaver dubium*, plentiful in the cultivated fields at Brampton and sparingly higher up the valley at Low Row and Nether Denton. *P. Rhæas*, not seen. *P. Argemone*, sparingly at Brampton.

**Cruciferae.**—*Sinapis arvensis* and *Brassica Rapa*, neither plentiful. *Sisymbrium officinale*, road-sides at Brampton. *S. Alliaria*, woods at Naworth and hedge-banks at Brampton. *Cheiranthus Cheiri*, plentiful on the walls of Lanercost Priory. *Cardamine pratensis* and *hirsuta*, both common. *C. sylvatica*, damp woods at Gilsland Spa and Naworth. *Nasturtium officinale* and *Capsella*, both common.

**Violaceæ.**—*Viola palustris*, *sylvatica*, and *tricolor*, all three common, the latter both type and *arvensis*, with intermediate forms.

**Droseraceæ.**—*Drosera rotundifolia* only seen.

**Polygalaceæ.**—*Polygala depressa*, Irthing bank above Gilsland.

**Caryophyllaceæ.**—*Silene inflata*, bed of the Irthing at Burdoswald, a few-flowered glabrous form. *Lychnis vespertina*, *diurna*, and *Flos-cuculi*, all three frequent. *Cerastium glomeratum*, frequent. *C. triviale*, common. *Stellaria nemorum*, abundant in the damp woods about the stream in Naworth Park, from the castle all down to the Irthing. *S. media*, common, both type and var. *neglecta*. *S. Holostea*, *graminea*, and *uliginosa*, all three common. *Arenaria serpyllifolia*, on the Roman wall at Burdoswald, the walls of Lanercost Priory, and, the type and var. *leptocladus*, in sandy fields at Talkin Tarn. *Sagina procumbens*, common. *Spergula arvensis*; this, *Galeopsis Tetrahit*, and *Polygonum Persicaria*, the three commonest weeds of cultivated ground.

**Portulacææ.**—*Montia fontana*, common in the runnels, both type and var. *rivularis*.

**Hypericaceæ.**—*Hypericum perforatum*, only once seen, on the walls of Lanercost Priory. *H. dubium*, side of the road between Talkin Tarn and Brampton. *H. tetrapterum*, *humifusum*, and *pulchrum*, frequent. *H. hirsutum*, wooded banks of the Irthing at Gilsland and Burdoswald.

**Tiliaceæ.**—*Tilia intermedia*, frequently planted. *T. grandifolia*, avenue near Naworth Castle, planted.

**Linaceæ.**—*Linum catharticum*, frequent in dry grassy places.

**Geraniaceæ.**—*Geranium sylvaticum*, common in woods and fields by the Irthing from Cromel Linn down to Burdoswald. *G. molle* and *dissectum*, frequent. *G. Robertianum*, woods and hedge-banks, common. *Erodium cicutarium*, sandy fields at Brampton, the large caulescent form. *Oxalis Acetosella*, common in all the woods.

**Ilicaceæ.**—*Ilex Aquifolium*, wild at Talkin Tarn, etc., but by no means common.

**Aceraceæ.**—*Acer Pseudo-platanus*, woods and plantations, common, very fine trees near Lanercost Priory, doubtfully native, but copiously self-sown.

**Leguminiferæ.**—*Ulex europæus* and *Sarothamnus*, common. *U. Gallii*, abundant below Talkin Tarn, seen also in Naworth Park and on the edge of the moor at Banks and Burdoswald. *Ononis arvensis*, north bank of the Irthing beneath Burdoswald. *Anthyllis vulneraria*, sandy field east of Talkin Tarn. *Medicago lupulina*, frequent. *Trifolium pratense*, *medium*, *repens*, *procumbens*, and *minus*, all frequent. *Lotus corniculatus*, common in the meadows. *L. major*, common in damp meadows. *Vicia Cracca*, *V. sepium*, and *Lathyrus pratensis*, all three frequent.

**Rosaceæ.**—*Prunus spinosa*, everywhere common in woods and thickets. *P. Avium*, banks of the stream below Naworth Castle. *P. Padus*, everywhere common in woods and hedges, reaching the size of a tree 30 feet high, with a naked trunk, on the banks of the stream below Gilsland church. *Spiræa Ulmaria*, common. *Agri-  
monia Eupatoria*, Combe Crag and by the Irthing near the Popping Stone. *Sanguisorba officinalis* and *Poterium Sanguisorba*, north bank of the Irthing beneath Burdoswald. *Alchemilla arvensis*, sandy fields over Talkin Tarn. *A. vulgaris*, common. *Potentilla Tormentilla*, common on the moors. *P. Fragariastrum*, *reptans*, and *anserina*. *Comarum palustre*, moory bogs. *Fragaria vesca*, common. *Rubus Idæus*, universal in woods, thickets, and hedges. No suberect *Rubus* seen. *R. affinis* Bab. non W. & N., common about Brampton and less frequent higher up the valley at Low Row and Nether Denton; a form with leaves densely hairy below at Over Denton. *R. rhamnifolius*, once seen, near the Irthing above Naworth Bridge. *R. villi-  
caulis*, once seen, at Denton. *R. mucronatus*, once seen, at Burdoswald. *R. umbrosus*, everywhere common in thickets and on the edge of the moors. *R. Radula*, Red Beck and road-side near Nether Denton. *R. infestus*, frequent in hedges and thickets from Gilsland all down the valley to Brampton. *R. pallidus*, the universal bramble of the woods, from Gilsland all down the valley to Brampton; very plentiful in the Naworth woods. *R. corylifolius*, frequent, especially about Naworth and Lanercost. *R. cæsius*, woods and hedges at Burdoswald and Denton, all the robust variety *agrestis* W. & N. *Rosa mollissima*, abundant in the woods and hedges, very conspicuous in September with its bright red drooping globes of fruit; very fine near the railway crossing at Over Denton and by the Irthing beneath Burdoswald. *R. tomentosa*, frequent. Var. *scabriuscula*, by the Irthing beneath Burdoswald. *R. rubiginosa*, apparently wild on the north side of the Irthing beneath Burdoswald. *R. canina*, common; many curious forms of the *subcristatæ*, including *subcristata*, *coriifolia*, *Watsoni*, and *marginata*; a form of *subcristata* with glaucous leaves, hispid peduncles, and glandular sepals, in hedges at Over Denton. *Cratægus monogyna*, everywhere common in woods and thickets. Var. *laciniata*, by the Irthing at Lanercost. *Pyrus Malus* var. *acerba* and *P. Aucuparia*, both common in the native woods.

**Onagraceæ.**—*Epilobium hirsutum*, seen only once, on the banks of the stream below Naworth Castle. *E. parviflorum*, *obscurum*, and *montanum*, common. *E. palustre*, rills on Spade-adam waste. *Circæa lutetiana*, frequent in woods.

**Haloragiaceæ.**—*Myriophyllum alterniflorum*, Talkin Tarn. *Callitriche stagnalis*, runnels and ponds, frequent.

**Grossulariaceæ.**—*Ribes Grossularia*, scattered in woods and hedges, but only single bushes.

**Crassulaceæ.**—*Sedum acre*, walls of Lanercost Priory.

**Saxifragaceæ.**—*Saxifraga aizoides*, dripping rocks in the Cromel Linn Ravine and over Gilsland Spa. *Chrysosplenium oppositifolium*, damp woods at Gilsland and Naworth. *Parnassia palustris*, bogs all down the valley from Cromel Linn to Brampton.

**Umbelliferæ.**—*Hydrocotyle vulgaris*, frequent in bogs. *Sanicula europæa*, frequent in woods. *Ægopodium Podagraria*, in the neighbourhood of most of the villages, but never far from houses. *Pimpinella Saxifraga*, frequent in grassy places. *Angelica sylvestris*, everywhere in swamps. *Heracleum Sphondylium*, common. *Torilis Anthriscus*, common. *Chærophyllyllum sylvestre*, common. *C. temulum*, hedge-banks at Burdoswald and Brampton. *Myrrhis odorata* and *Conium maculatum*, road-sides near Brampton.

**Araliaceæ.**—*Hedera Helix*, common in woods, and on rocks and walls.

**Caprifoliaceæ.**—*Sambucus nigra*, woods and hedges, frequent. *Viburnum Opulus*, truly wild in the woods by the Irthing at Gilsland, Burdoswald, etc. *Lonicera Periclymenum*, frequent in woods and hedges.

**Rubiaceæ.**—*Galium boreale*, rocks in the Irthing, from Cromel Linn down beyond Gilsland. *G. cruciatum* and *verum*, frequent. *G. Mollugo*, frequent on the hedge-banks all down the valley from Gilsland to Brampton. *G. saxatile*, common on the moors. *G. uliginosum*, bog near Greenhead Cottages. *G. palustre* and *Aparine*, both frequent. *Asperula odorata*, frequent in woods, extending to the hedgerows. *Sherardia arvensis*, sandy field at Talkin Tarn.

**Valerianaceæ.**—*Valeriana officinalis*, frequent in bogs.

**Dipsaceæ.**—*Scabiosa succisa*, common in grassy places. *S. arvensis*, frequent.

**Compositæ.**—*Carduus lanceolatus*, *palustris*, and *arvensis*, all three common. *C. heterophyllus*, north bank of the Irthing below Burdoswald. *Arctium nemorosum*, woods and road-sides, frequent; typical *minus* not seen. *Centaurea nigra* and *Chrysanthemum Leucanthemum*, both very common. *Matricaria Parthenium*, on the bridge over the Poltross burn at Rosehill, etc. *M. inodora*, the common mayweed of road-sides and cornfields. *Anthemis Cotula*, twice seen about Gilsland. *Tanacetum vulgare*, road-side between Brampton and Talkin Tarn, near a cottage. *Achillæa Millefolium*, common. *A. Ptarmica*, frequent in moory fields. *Artemisia vulgaris*, hedges at Burdoswald and Brampton. *Filago germanica* and *minima*, sandy fields over Talkin Tarn. *Gnaphalium uliginosum*, frequent on peat.

*Senecio vulgaris*, *Jacobæa*, and *aquaticus*, all three common. *S. sylvaticus*, sandy banks below Talkin Tarn. *Bellis perennis*, common. *Solidago Virgaurea*, Combe Crag and banks of the Irthing at Lanercost Bridge. *Tussilago Farfara*, common. *Petasites vulgaris*, banks of the Naworth stream and of the Irthing at Burdoswald, etc. *Eupatorium*, expected, but not seen. *Lapsana*, *Hypochæris radicata*, *Leontodon hispidus*, *L. autumnalis*, and *Taraxacum*, all common. *Lactuca muralis*, beech wood over Talkin Tarn. *Sonchus oleraceus* and *asper*, frequent. *S. arvensis*, cultivated fields, occasionally. *Crepis virens*, hedge-banks. *C. paludosa*, dripping cliffs of Cromel Linn ravine and at Gilsland Spa. *Hieracium Pilosella*, frequent. *H. cæsius*, damp rocks at Gilsland Spa. *H. vulgatum*, rocks of Cromel Linn ravine, walls of Lanercost Priory, etc. *H. boreale*, very common.

**Campanulaceæ.**—*Jasione montana*, sandy ground over Talkin Tarn. *Campanula latifolia*, woods at Gilsland, Naworth, etc. *C. rotundifolia*, common.

**Ericaceæ.**—*Vaccinium Myrtillus*, common on heaths; abundant at Combe Crag. *Erica Tetralix*, more common than *E. cinerea*. *Calluna*, common.

**Jasminaceæ.**—*Fraxinus*, common in the wooded ravines. *Ligustrum*, hedges near the church at Gilsland; not native.

**Convolvulaceæ.**—*Convolvulus sepium*, frequent in gardens and hedges adjacent; not native.

**Scrophulariaceæ.**—*Verbascum Thapsus*, walls of Naworth Castle. *Scrophularia nodosa* and *Digitalis*, frequent. *Linaria Cymbalaria*, walls of Naworth Castle and Lanercost Priory. *Veronica agrestis*, an occasional weed. *V. arvensis*, *serpyllifolia*, and *officinalis*, frequent. *V. montana*, damp woods of Gilsland Spa. *V. Chamædrys* and *Beccabunga*, common. *Euphrasia*, *Bartsia Odontites*, and *Rhinanthus Crista-galli*, common. *Pedicularis sylvatica*, swamps.

**Labiataë.**—*Mentha hirsuta*, frequent, type and var. *paludosa*. *M. arvensis*, cultivated fields, a very robust form in a farmyard at Burdoswald. *Thymus Serpyllum*, frequent. *Calamintha Clinopodium*, hedges. *C. Acinos*, sandy field over Talkin Tarn. *Nepeta Glechoma*, hedges at Brampton. *Prunella*, frequent. *Stachys Betonica*, *palustris*, and *sylvatica*, all three frequent, but *ambigua* not seen. *Galeopsis Tetrahit*, a frequent weed. *Lamium incisum*, road-side at Nether Denton. *L. purpureum*, frequent. *Ajuga reptans* and *Teucrium Scorodonia*, both common.

**Boraginaceæ.**—*Myosotis cæspitosa*, common in the runnels. *M. arvensis*, frequent. *Anchusa arvensis*, sandy turnip-field at Brampton.

**Pinguiculaceæ.**—*Pinguicula vulgaris*, frequent in swamps.

**Primulaceæ.**—*Primula vulgaris* and *officinalis*, both frequent. *Lysimachia nemorum*, woods at Gilsland Spa.

**Plantaginaceæ.**—*Plantago major* and *lanceolata*, common.

**Chenopodiaceæ.**—*Chenopodium* and *Atriplex angustifolia*, occasional weeds. *C. Bonus-Henricus*, road-sides.

**Polygonaceæ.**—*Rumex nemorosus*, *obtusifolius*, *crispus*, *Acetosa*, *Acetosella*, all common. *R. conglomeratus*, not seen. *Polygonum Convolvulus*, *aviculare*, *Hydropiper*, and *Persicaria*, all four common.

**Euphorbiaceæ.**—*Euphorbia Helioscopia*, turnip fields at Brampton. *Mercurialis perennis*, woods and hedges.

**Urticaceæ.**—*Parietaria diffusa*, walls of Naworth Castle. *Urtica dioica*, common. *U. urens*, farmyards at Burdoswald, etc. *Humulus*, hedges near a cottage at Brampton. *Ulmus suberosa*, hedges and plantations; not native. *U. montana*, common in the wild woods along the streams; several very fine trees about Lanercost.

**Amentiferæ.**—*Castanea* and *Carpinus*, hedges and plantations. *Quercus*, *Corylus*, *Betula*, and *Alnus*, everywhere common in the wild woods. *Populus nigra*, *alba*, and *tremula*, Naworth Woods, etc., doubtfully native. *Salix pentandra*, frequent by streams and in hedges; a long hedge full of it near Nether Denton. *S. fragilis* and *alba*, by the streams about Naworth and Lanercost, doubtfully native. *S. purpurea*, abundant on the rocky margin of the river all the way down from Gilsland to Lanercost Bridge. *S. viminalis*, a doubtful native. *S. Smithiana*, stream-sides and hedges at Nether Denton and Naworth. *S. caprea* and *cinerea*, both common. *S. aurita* and *repens*, edge of the moor at Over Denton. *S. nigricans*, banks of the Irthing below Burdoswald, and very fine in the hedges near the Over Denton railway crossing.

**Coniferæ.**—*Pinus sylvestris*, woods of Naworth, etc. *Juniperus*, edge of the moor at Burdoswald. *Taxus*, edge of the ravine below Cromel Linn.

**Typhaceæ.**—*Sparganium ramosum*, runnels at Burdoswald and Milton.

**Naiadaceæ.**—*Polygonum natans*, pool at Gilsland. *P. polygonifolius*, moorland bogs. *P. praelongus*, *obtusifolius*, and *pusillus*, Talkin Tarn.

**Alismaceæ.**—*Triglochin palustre*, shores of Talkin Tarn.

**Hydrocharidaceæ.**—*Elodea*, a small pond near the Irthing full of it, flowering freely; Talkin Tarn.

**Orchidaceæ.**—The wrong season of the year, only *Orchis maculata* and *Listera ovata* seen.

**Iridaceæ.**—*Iris Pseudacorus*, pond in Naworth Park.

**Liliaceæ.**—*Scilla nutans* and *Allium ursinum*, woods. *Narthecium*, Spade-adam waste.

**Juncaceæ.**—*Luzula pilosa*, beech wood over Talkin Tarn. *L. sylvatica*, abundant in the Gilsland and Naworth Woods and at Combe Crag. *L. campestris* and *multiflora*, frequent. *Juncus conglomeratus*, *effusus*, *glaucus*, *acutiflorus*, *bufonius*, and *lamprocarpus*, all common.

**Cyperaceæ.**—*Scirpus pauciflorus*, bog below Talkin Tarn. *S. cæspitosus*, common on the moors. *S. setaceus*, damp road-sides. *Eriophorum angustifolium*, swamps of Spade-adam waste. Too late for Carices. The following only seen in recognisable condition—viz., *Carex acuta*, *vulgaris*, *glauca*, *panicea*, *sylvatica*, and *ampullacea*.

**Gramina.**—*Anthoxanthum*, *Digraphis*, *Alopecurus geniculatus*, *Phleum pratense*, all common. *Agrostis vulgaris*, very common, both type and var. *nigra*. *Aira cæspitosa*, common in swamps. *A. flexuosa*, common on the peaty moors. *A. caryophyllea*, sandy fields over Talkin Tarn. *Avena flavescens* and *elatior*, frequent. *Holcus mollis*, *lanatus*, *Triodia*, and *Molinia*, all common. *Melica uniflora*, shaded woods at Gilsland and Naworth. *Glyceria fluitans*, frequent in swamps. *Poa annua*, *pratensis*, *trivialis*, *Briza*, *Cynosurus*, *Dactylis*, *Festuca ovina*, *duriuscula*, and *pratensis*, all common. *F. elatior*, bed of the Irthing at Gilsland, etc. *Bromus asper* and *giganteus*, very fine in the woods at Gilsland, Naworth, etc. *B. mollis*, frequent. *Brachypodium sylvaticum*, frequent about the Irthing. *Triticum caninum*, woods at Gilsland and Naworth. *T. repens* and *Lolium perenne*, common. *Nardus*, very common on the moors.

**Filices.**—*Pteris*, *Lomaria*, *Athyrium Filix-fœmina*, *Nephrodium Filix-mas*, *N. dilatatum*, and *Polypodium vulgare*, common. *Asplenium Ruta-muraria*, walls at Gilsland, Naworth, and Lanercost. *A. Trichomanes*, with the last on the walls of Naworth Castle and Lanercost Priory. *Cystopteris*, walls at Gilsland and Brampton.

**Equisetaceæ.**—*Equisetum arvense*, common. *E. maximum*, very fine in the Naworth Woods near Lanercost Bridge and by Kilnhill Beck. *E. sylvaticum*, abundant in the wood over the Spa at Gilsland.

#### NOTES—FUNGI.

**Cortinarius alboviolaceus** Fr., and **Boletus cyanescens** Bull., near Kendal.—These interesting species of fungi, which do not seem to have been found before in the North of England, were growing in woods this year near Kendal. The latter species is remarkable for turning a deep azure blue immediately the flesh is broken.—C. H. WADDELL, Kendal, 8th October, 1886.

**Cynophallus caninus** Fr., near Leeds.—A perfect specimen of this somewhat rare species was found by Dr. Hick in his garden at New Wortley, and brought to me on the 14th inst. Mr. H. T. Soppitt, to whom I sent it for determination, has found it only at Saltaire and Bingley.—W. EAGLE CLARKE, Leeds, October 16th, 1886.

## THE HITCHINGSTONE, KEIGHLEY MOOR.

S. A. ADAMSON, F.G.S.,

*Joint Geological Secretary to the Yorkshire Naturalists' Union, and Secretary to the Leeds Geological Association.*

THE celebrated and time-honoured rock bearing the above name, rests upon the moors about five miles to the west of Keighley. Celebrated it certainly has been for many generations, for in pre-scientific days it attracted the notice of the curious and the superstitious. Did not then the tradition go round how the wise woman of Cowling, in the valley below, seeing the block in her garden, and liking its room better than its company, thrust her broomstick into it, and suddenly 'hitched' it to the top of the moors above? And if any were incredulous, why, was not the hole still left (of which more presently) showing where the broomstick had entered? Later, when science had enlightened the observers, the geological 'reason why' was applied to it, and for the last forty years the presence of the Hitchingstone in its solitary position has been attributed to icebergs, to land ice, etc.; in fact, the 'Great Ice Age' was held to be sufficient to account for it. Thus, in 1874, we find a Mr. E. G. Spencer reporting it to the Boulder Committee of the British Association, at the Belfast meeting, as an erratic or ice-borne boulder. It must be said, however, that the account was hardly accurate enough, nor was the examination sufficiently exhaustive, to justify such a decision or report. A few years later, Mr. J. R. Dakyns, of the Government Geological Survey, who had surveyed the whole district, stated, in a letter to the Geological Magazine, that 'in his opinion it is not a boulder,' and in a further communication says: 'It has no single characteristic of a boulder about it. It is not rounded or scratched, nor is it standing on end, nor in any such a way as to raise a suspicion of its having been removed.' In the face of such conflicting statements, it was felt, for the honour of Yorkshire geology, that something should be done to solve the problem. The writer of these notes, in a lecture before the Keighley Scientific Society on 'Erratics,' given last winter, suggested that this would be practical work for them to accomplish. The idea was taken up, and the Boulder Committee of the British Association communicated with for instructions. These were duly received and acted upon, and the investigation carried to a successful issue. Although the work was nominally done by the Keighley Society, it is only fair to state that it was really executed by a single member, Mr. Daniel Smith, who, being very enthusiastic in the matter, claimed as a native of Cowling the privilege of bearing the entire expense.

All being ready, the Leeds geologists were invited to inspect the excavation and give an opinion respecting it; but before stating their verdict, it would be well to give a few details relative to the stone. The Hitchingstone is an immense block of Rough Rock, or upper section of the Millstone Grit series, standing on the moor behind Wainman's Pinnacle (that rude monument situated on the crest of the bold escarpment of Earl Crag, so familiar to railway travellers on their way to Skipton, as it stands out in sharp relief against the blue sky), and is at an elevation of 1,175 feet above sea level. As a boundary stone, it has been used from time immemorial to mark the place where the extensive estates of three great landowners meet, who each claim a portion of the block, viz., the Duke of Devonshire (Keighley Moor), Mr. Townley Parker (Stott Hill Moor), and Mr. Jas. Lund (Sutton Moor). It measures on its southern and western faces 28 ft. 9 in. and 25 ft. respectively, and is 21 ft. in height. It has been estimated to contain about 15,250 cubic feet of stone. There is a cavity running right through it, which coincides in its direction with the bedding plane; it is of an oval shape, its axes measuring  $15\frac{1}{2}$  in. by 12 in. An old work on Keighley gives very gravely an opinion 'that it is evidently the mould or matrix of an enormous fish'; but it is really a hole left by the weathering out of a large tree, which by the markings show it to have been of a *Lepidodendroid* character. It was interesting to note that the longer axis of this cavity was horizontal, showing that it had been flattened by pressure. There are no indications of striæ whatever (although any that may have existed may have weathered off), but there is every appearance of jointing, the east and west sides specially showing this. This favours the opinion that the adjoining portions of rock may have been separated from this along the joints, leaving it in its original position. The upholders of the erratic-block theory point out that there is an unconformability, that is, the plane of the bedding of the stone does not coincide with the dip of the surrounding strata; but this may be explained. An examination of the excavation shows that both the stone itself and the underlying bed have suffered much more by weathering on the north than on the south side, a portion of the under part of the stone to the north, two yards wide and one yard high, having been quite weathered away, leaving a passage from the western to the southern side. By means of this weathering the stone has evidently been lowered at the northern end, and tilted up at the southern, thus causing the bedding of the stone to incline in a direction almost contrary to the original dip. The section made by the excavation showed some ten inches of black peaty soil, and beneath this about a foot of quartz gravel, the latter arising from the denudation of the

Rough Rock. Then followed a bed of sandstone, upon which the Hitchingstone immediately rests, of such a character and position as to indicate the basement bed of the Rough Rock. This is of a much finer grain, and the large quartz pebbles which abound on the weathered face of the Hitchingstone are absent, the latter being in many places quite a conglomerate. A few words should also be said upon the geology of the district. The grit of Earl Crag, before mentioned, is the principal rock of the Middle or Third Grits. This is well defined and distinctly marked, and can be identified wherever it occurs. It extends from Earl Crag down the Glusburn Valley to Hawkcliffe, which overhangs the valley of the Aire between Steeton and Keighley, and appears again on the northern side of the Aire in Brunthwaite Crags, Addingham High Moor, and Otley Chevin. Brimham Rocks are also composed of this rock. In this part of Yorkshire there are generally three beds of grit (when not interfered with by faults) between this bed of grit and the Rough Rock. In walking from Earl Crag to the Hitchingstone, we pass from this main bed of the Third Grits to a bed of shale ; then across another bed of grit, and another bed of shale ; then over two faults, which meet almost at right angles between Round Hill and Winter Hill. Having crossed the faults, we step over another bed of grit, then another of shale, which underlies the bed of grit composing Hitchingstone Hill, on which is the block the subject of this article. In this walk we follow the direction of the dip, and consequently have passed by degrees from lower to higher strata. On account of the faults, there is a little difficulty in tracing all the beds, but it is almost a certainty that at Hitchingstone Hill we are upon the basement bed of the Rough Rock. Scattered over all the surface of the moor are to be seen scores of smaller, but still large blocks of the coarse conglomerate of the Hitchingstone, and higher up the moors, southwards, for miles, it occurs *in situ*. The glacialists have made many conjectures as to the original home of this block. Rivoock, on the north of the Aire, the Earl Crag, and several other places on the adjacent moors have been pointed out as likely positions to have furnished such a stone. There are two methods by which large blocks like this may have been removed during the glacial period. They may have been forced along the ground by land ice, or have been carried on an iceberg and dropped to the sea bottom as the ice melted. There is no evidence that this part of the country was, during the glacial period, so thickly covered by ice as to admit of a glacier so powerful as would be required to push onwards such a ponderous mass as this ; and if it had been dropped from an iceberg, it is probable that the surface of the rock underneath would have presented a different appearance

to what it does now. Mr. Hardcastle, President of the Leeds Geological Association, standing appropriately under the shadow of the mighty block, reviewed all these facts in a short address, and stated the result of the examination—viz., that the stone is not a true erratic, as that term is understood, but that it is a portion of the strata of Rough Rock which originally covered these moors.

With respect to the solution of the 'Hitchingstone' problem, as narrated above, Mr. Adamson informs us that he has received the following opinion of the investigation from Dr. Crosskey, the Secretary to the Boulder Committee of the British Association:—'Many thanks for the very valuable account of the examination of the Hitchingstone. The conclusion arrived at seems to me justified by the facts narrated, and the dignity of a "Boulder" will have to be taken away from the famous Hitchingstone.'—Eds.

#### NOTE—PALÆONTOLOGY.

**Discovery of the base of another large Fossil Tree.**—Yorkshire quarry owners seem now to be thoroughly on the *qui vive* for fossil trees, for I have had a second example of some colossal fossil roots reported to me, and along with my friends, Messrs. C. Brownridge, F.G.S., and Hoffman Wood, F.G.S., have visited the scene of the discovery. This is again at the Fall Top Quarry, Clayton, but in a part worked by Messrs. Briggs and Shepherd. They have only partially bared it, further progress being at a standstill until a road is diverted. Being in near proximity to the former example of Messrs. Murgatroyd's, it is, of course, in the same geological horizon, viz., in the measures between the Better Bed Coal and the Elland Flagstone. In order that a comparison might be instituted between this and the former discovery, the following measurements of the roots now exposed were carefully made by the gentlemen above-named. The diameter of the area at present bared is from N. to S. 20 ft., and from E. to W. 22 ft. 4 in., or a superficial area of 446 ft. The base of the stump is irregular in shape, but approximately circular with an average diameter of 3 ft. 11 in. There are eight roots again in this example, some not yet bared very far, and all those exposed are broken at their extremities; beginning with the roots on the south we have

Root No.	Diameter close to stump.	Distance from stump to point of bifurcation.	Distance from point of bifurcation to present termination of root.		Present length of root Exposed.
			Right Fork.	Left Fork.	
1	20 in.	6 ft.	2 ft. 3 in.	2 ft. 6 in.	8 ft. 6 in.
2	20½ "	7, 6 in.	1, 9 "	2, 6 "	10 "
3	19 "	7, 6 "	6 "	8, 6 "	16 "
4	17½ "	8 "	7, 6 in.	7, 6 "	15, 6 in.
5	20 "	7 "	3 "	— 3 "	10 "
6	18 "	7 "	4 "	1, 9 "	11 "
7	20 "	7 "		Not bared	7 "
8	20½ "	Partially bared		"	5, 6 in.

The stump is almost entirely denuded away, as at the utmost some 12 or 15 inches only can be said to be left of it. There are many broken pieces of stigmaria laid about in various places, but we were informed they did not all belong to the tree in question, and as they were thus mixed it would be quite unreliable to attempt to restore the roots to their original length. Although most certainly this is a magnificent specimen, yet after careful comparison and due consideration of all points, we did not consider it as fine an example as the one previously discovered by Messrs. Murgatroyd.—S. A. ADAMSON, October 13th, 1886.

## THE HABITS OF THE GREATER HORSE-SHOE BAT.

REV. H. 'A. MACPHERSON, M.A.,

*Member of the British Ornithologists' Union; Joint-Author of the  
'Birds of Cumberland.'*

CONSIDERING the number of field naturalists at work at home, it is to be regretted that our knowledge of the distribution of our Bats has made little or no advance in the last ten years. Even that admirable granary of facts, the Zoologist, has taught us little or nothing about Bats of late years, and other periodicals present a similar blank of information. Exception must, of course, be taken as to Yorkshire, in which the distribution of British mammals has been traced with such admirable exactness by Mr. Roebuck; as to almost all the other counties, our ignorance exceeds our knowledge. In Cumberland, some *six* species of Bats have been obtained, the most interesting being the Barbastelle. It has not, indeed, come under the writer's notice in his county; but he lately examined, in the collection of Mr. Bond, two examples of the Barbastelle, obtained at Carlisle by the late Mr. T. C. Heysham. The object of the present paper is to embody some interesting observations on a somewhat rare species, the Greater Horse-shoe Bat, as observed in Devonshire. The writer having recently advertised for live Bats, Mr. Mitchell, of X—, in Devonshire, offered to supply him with some 'Lesser Horse-shoe Bats'; but the species intended proved to be the rarer Greater Horse-shoe.

In a note of August 14th, Mr. Mitchell remarked, 'I generally get the Horse-shoe Bats in some large caves, a few miles distant.' On the 17th he wrote, 'I am sorry to keep you so long waiting for the Bats; I went to the caves yesterday, but although I was in them for nearly three hours, I only succeeded in catching two, and one of these was so badly hurt, having its wing broken in capture, that I was obliged to kill it. The other is doing well, and sleeps comfortably all day, only feeding in the evening. I am going down to the caves again to-morrow; they are situated close to the river Y—. I hope to secure half a dozen more. The only reason that I can assign for my failure to obtain more specimens yesterday is that a great many visitors have been to see the caves lately, and I fancy that their noise and the lights which they carried must have disturbed the Bats. Early in the spring I could go down and pick off as many as I could carry away, since they were not in the least frightened, and would permit me to take them down from where they were hanging with scarcely a movement; whereas now, as soon as I entered the cave they began to fly from one part of the cave to the

other. Stationing myself near a rather small hole, which leads from one passage to another, I managed to secure two in a butterfly net as they flew through. Although they fly very swiftly, I feel sure that if I had had a larger net to put before the hole, which is about 5 ft. by 3 ft. in size, I should have been able to catch a dozen or so in as many minutes. The hole in question slopes downwards, leading from a higher passage to a lower one, and I noticed that the Bats only flew *down* this hole, never up it. I may remark, that though I am generally pretty accurate with the butterfly net, yet the Bats were nearly always too quick for me, and I was surprised to see how quickly they turned aside, avoiding the net and the projecting pieces of rock in the neatest manner possible. . . . I enclose a few moth wings [chiefly those of a large yellow underwing, H.A.M.], which I picked up out of a heap of their refuse, in order to demonstrate the general nature of their food; there were several Cockchafers, Dor-beetles, Scavenger-beetles, and other Coleoptera, all partly eaten, in these heaps, which were near the mouth of the cave. The Bats seem to prefer the mouth of the caves to the interior parts, for although I went in a great distance, I failed to see a single Bat beyond a certain limit, *i.e.*; where the daylight failed absolutely.'

In another letter, of August 19th, this admirable observer remarks, 'I again visited the caves yesterday to try to get a few more Bats. I am sorry to report that I only secured a single specimen; they have become so excessively wild that I experienced the greatest difficulty in getting that one, which I only obtained by stretching a net across a certain part of the cave. I send you the two I have been able to catch, by this morning's post.'

The specimens in question were duly delivered next day, one only being alive and well. The other had died, no doubt in transit. It was a male, and of an extremely pale colour above, as compared with its fellow. The writer at once handed it over to the Natural History Museum at Kensington—the *British Room* of which is much in need of Bats,—Mr. Harting kindly taking charge of the specimen in the absence of Mr. Thomas.

The survivor, a female, exhibited great anxiety to escape, and crawled with some agility, rapidly twitching its large and delicate ears.

The horse-shoe membrane, which shrinks in preserved examples, was fully developed in both specimens, and the canine teeth seemed large in comparison with the very small incisors.

Upon being released the female made a few circles round the room, flying slowly and heavily, as compared with the smaller British Bats. *Once*, indeed, it struck in flight against a bookcase, being, perhaps, confused by the shaking of its journey and the strangeness

of its fresh environment. After a brief period of exercise, during which it twice settled on a book, it alighted on the corner of a picture, and there remained hanging during the remainder of the day. It was absolutely free from any disagreeable scent, and seemed to be of a mild disposition, never attempting to bite, even if roughly handled. It was placed at night in a glass cage, and supplied with water, which it lapped with eagerness, clinging to the back of the case by its posterior limbs, the anterior portion of the body resting upon the saucer's edge. Unfortunately, it refused to eat, though supplied with house flies and mealworms, and in spite of care only survived its companion a few days. Twice it uttered a low cry when being handled.

As already remarked, the specimens in question were undoubtedly Greater Horse-shoe Bats, a species for which the writer and others have of late years searched unsuccessfully in Kent's Cavern, where it was formerly obtained by Montagu.

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#### NOTES—MAMMALIA.

**Lesser Horse-shoe Bat in Nidderdale.**—On September 23rd a friend and I found one of these Bats suspended from the roof of a disused level of a coal mine, near Pateley Bridge. This confirms Mr. Storey's previous note of this species (*Rhinolophus hipposideros*) in this district.—W. C. CLARKSON, Pateley Bridge, October 16th, 1886.

[It is of interest to confirm the occurrence of a species like this on what is, so far, the northernmost outskirts of its known range in Britain.—EDS.]

**Whitby Notes.—Mammalia.**—In the Whitby Museum is the skull of what is here called the Bottle-nosed Whale, which was stranded at Whitby many years ago; it is labelled *Delphinus (Hyperoodon) bidentatus*.

On the 29th September, 1886, a Porpoise (*Phocaena communis*) was brought into Whitby, caught in the herring-nets.—THOMAS STEPHENSON, Whitby, 15th October, 1886.

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#### NOTE—ARACHNIDA.

**Chelifer DeGeerii Koch near the Lincolnshire Coast.**—On 2nd October, 1886, I took two examples of this pseudo-scorpion from behind the decayed bark of some wooden railings, near the sea, at Mablethorpe. Earlier in the summer I observed other specimens in the same locality, one of which had eggs attached to the underside of her abdomen. Mr. Cambridge, who kindly identified the species, states that he had only before received it from Hastings.—H. WALLIS KEW, Louth, Lincolnshire, 7th October, 1886.

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#### NOTE—CRUSTACEA.

**Galathea strigosa on the Yorkshire Coast.**—Last August a specimen of this crustacean was given me which had been taken at Runswick, in a net (trawl, I presume). Happening to be in Scarborough shortly after, Mr. E. Thompson, of Westborough, naturalist, showed me a large number of specimens of it, about an inch long, and said they were frequently brought into Scarborough. He called it the Squat Lobster, and I see that Mr. P. H. Gosse, in one of his papers, calls it the Squat Crab. Reference is made to its habit of springing backwards to a very considerable distance, when alarmed, and its ability to so spring backwards into a small hole for shelter with unerring aim.—EDWARD H. SMART, The Vicarage, Kirby-in-Cleveland, via Northallerton, September 3rd, 1886.

## NOTES—ORNITHOLOGY.

**Cream-coloured Skylark in Nidderdale.**—A friend of mine has sent me a cream-coloured Skylark (*Alauda arvensis*), which he caught on Hayshaw Moor, near Pateley, September 10th, 1886.—WM. STOREY, Pateley Bridge, October 11th, 1886.

**Albino Blackbird in Nidderdale.**—I have obtained a perfect white example of the Blackbird (*Turdus merula*), which was found badly injured by flying against the telegraph wires at Pateley, by Mr. Thos. Milner, on October 2nd, 1886.—WM. STOREY, Pateley Bridge, October 11th, 1886.

**Pochard and Hooded Crow in Durham.**—A Pochard (*Fuligula ferina*) and a very dark specimen of the Hooded Crow (*Corvus cornix*) were shot by a local gunner on 7th October, 1886.—J. T. T. REED, Ryhope, Durham, 11th October, 1886.

**Duck Decoys.**—Dr. Parsons is quite correct about there being a Decoy near Crowland, but it is in Northamptonshire, not Lincolnshire, it is situated. It is one of the best in England, has eight pipes, and is rented by Mr. Williams, whose family have been its lessees for over 200 years. The pool lies between the rivers Nene and Welland, in the N.E. corner of the county, between Peakirk and Crowland, two miles N.E. of the former town.—R. P. GALLWEY, Thirkleby Park, Thirsk, Oct. 4th, 1886.

**Flamborough Bird-notes.**—On October 5th Woodcocks arrived on the headland, along with several Crested Wrens and Hooded Crows. Since October 2nd more sea-birds have frequented our coast than I ever remember, and such a variety too. Manx Shearwaters (*Puffinus anglorum*), Cineras Shearwaters (*Puffinus griseus*), and hundreds of Skuas and Gannets (*Sula bassana*); also Guillemots (*Lomvia troile*) and Razorbills (*Alca torda*) in their winter plumage, Little Gulls (*Larus minutus*), Terns, one Black Guillemot (*Uria grylle*), immature, and thousands of Kittiwakes (*Rissa tridactyla*) feeding in the early morning, several I saw having herrings' tails hanging out of their bills. The birds covered a large area north and south of the headland.—MATTHEW BAILEY, Flamborough, October 13th, 1886.

**A Suggested Explanation of the Occurrence of the Sardinian Starling in England.**—Mr. Backhouse's record of the Sardinian Starling (*Sturnus unicolor* Marm.) in Yorkshire is very interesting. It seems very likely that this species has once occurred in the New Forest, for Mr. G. B. Corbin writes in the *Zoologist* (1877, p. 22) of a black Starling killed there, and which, like the Yorkshire bird, was supposed to be a variety of the common species. There is, however, an undoubted tendency in species to vary occasionally in plumage, so as to resemble other closely-allied species, and cases like the present may sometimes be accounted for in this way. If it be so, the two black Starlings now recorded are not emigrants from Spain, but the progeny of common English Starlings (*Sturnus vulgaris*), and probably were bred in this country. I merely throw out this suggestion for what it is worth.—J. H. GURNEY, jun., Northrepps, Norwich, Oct. 4th.

**Greenshank in Nidderdale.**—On Saturday last a Greenshank (*Totanus canescens*) was brought me, which had been shot three days previously on the margin of a small stream, near Pateley; there is no record of a similar instance happening near Pateley Bridge, or in Nidderdale.—WM. STOREY, Pateley Bridge, October 11th, 1886.

[On the 26th and 27th of September we observed no less than five Greenshanks in the Washburn Valley, where they frequented the muddy flats around the reservoirs, which were very low. It was amusing to observe the brisk manner in which they searched for food in the shallows, running too and fro in an almost excited state. Occasionally they would swim quite unconcerned across deep channels to neighbouring shallows. We also saw this bird here at the same date last year; it is no doubt of annual occurrence in suitable inland as well as coast localities, when on its autumn migration.—W. E. C.]

## THE PIED FLYCATCHER IN NORTHUMBERLAND.

ALFRED CRAWHALL CHAPMAN.

THAT the Pied Flycatcher (*Muscicapa atricapilla*) is a regular summer visitant to this country is sufficiently well known, but in Northumberland it is distinctly scarce, and not until this year (1886) have I had an opportunity of studying it at its breeding-place.

On the 23rd May last I visited a certain locality in Northumberland with a view of seeing this bird, and was well rewarded by seeing no less than six males and three females between the hours of 4 and 8 a.m. During the course of the day I came across two other males in a different locality, so that in all I counted eight males and nearly as many females in one day's walk.

I was very anxious to find a nest of this species, and though I spent hours in watching the bird, it was only by the merest good fortune that I succeeded in watching one hen to her nest. It was evidently early in the season for them to be breeding, and I confidently believe that with the exception of one pair, none of the others had as yet any thought of nidification.

After 8 o'clock in the morning any attempts at nest-building seemed to cease altogether, for though up to that time both male and female were constantly carrying dry grasses to a certain tiny hole in the wing-wall of a bridge over a small stream, yet after this the hole seemed to be deserted altogether, and not even the birds were to be seen in the vicinity of the nest.

Evidently, therefore, one pair was building, and I was well pleased with the result of this day's observation.

The notes I made at the time impressed me with the apparently delicate nature of these birds' constitutions, but this was doubtless due to the fact that they had only recently arrived in this country, and were fatigued with their long journey. The cocks nearly always sat with drooping wings and fluffed out body feathers, though at the same time they were busily engaged all day feeding on the flies along the stream-side. They constantly kept uttering their pretty little song, which reminded me rather of that of the Hedge Sparrow, but the tone was much more mellow; at times, also, it seemed to resemble the song of the Whitethroat and Reed Bunting. When perched they have a habit of gently flirting the tail up and down, and they seemed equally at home whether sitting on the ground, or on a stone in mid-stream, or perched on the topmost branches of the trees. I once watched one bathe himself, and, after carefully drying and preening his feathers in the sun, recommence feeding.

The presence of water seems indispensable to them, probably on account of the flies about it ; and I observed that at times, especially when frightened, both genders uttered a shrill note, very like that of *M. grisola*.

The males, when gliding through the trees, reminded me of short-tailed House Martins, and when sitting, or clinging to the bark of a tree, of Lesser Spotted Woodpeckers.

I saw an old nest of the previous year in a decayed stump of a tree, and this, or a hole in some bridge or wall, seems to be their regular nesting-place. They always affect the more open parts of the woods, and seem to rigorously avoid thick cover.

On June 5th I revisited the nest found building on May 23rd, and to-day the hen bird was sitting, snugly ensconced on her nest in the wall, which contained six fresh eggs.

The female sat very close, and was loath to leave her eggs ; even when I touched her with a twig as she sat, she only crouched lower down on her nest. Meantime the male bird, which had been singing close at hand, came quite near, and when we withdrew a little distance, he popped into the hole beside his mate ; both then, however, came out together, and we proceeded to examine the nest, which was composed entirely of dry white grasses, with a few dead leaves as a foundation ; there were absolutely no signs of any other material in the lining.

It was remarkable that we only saw one other pair of birds here to-day, where on May 23rd we had seen so many, and I then concluded that the birds seen on the first occasion were part of a migratory flock, most of which had since passed on ; moreover, the keepers on the estate informed me—and they were men thoroughly acquainted with the birds of the district—that they had never seen so many Pied Flycatchers in any previous year.

#### NOTE—ORNITHOLOGY.

**The Turtle Dove in Yorkshire.**—There is no doubt that many birds which a few years ago were considered purely South of England birds are gradually extending, year by year, their range northwards. Perhaps one or two instances of the extended range of the Turtle Dove (*Columba turtur*) may prove interesting to the readers of the *Naturalist*.

On July 31st of the present year I saw a pair of these birds near Weeton. They were on the Harrogate side, and when first seen were feeding in a grass field. I have no doubt but that the nest was near at hand.

A specimen has also been obtained near Guisborough, this year, May 22nd. It was in fine plumage, but in poor condition.

Last year I found them nesting in fair numbers in the neighbourhood of Alnwick, Northumberland, on July 26th ; and this year they have also been seen in the same county near Chathill, a name which will be recognised by many as being the nearest station to the noted Farne Islands.—RILEY FORTUNE, Alston House, Harrogate, September 27th, 1886.

## NOTES ON THE EAGLES OF THE LAKE DISTRICT.

JOHN WATSON,  
*Fern Leigh, Kendal.*

No bird list has yet been published having reference to the area comprehended in the above title.\* And this is the more remarkable, as the avi-fauna of the Lake District is, in some respects at least, peculiarly rich. One or two local lists, valuable in their way, yet extremely meagre, are scattered throughout various topographical works, but no one has attempted hitherto to focus this matter, or even to sift it. For a dozen years past we have been at pains to bring together what has been already referred to, and to add from our own personal knowledge facts connected with the geographical distribution of the birds of the district. In doing this, it need hardly be said that we have ignored political boundaries, nor that the district referred to is a well-defined geographical area. Roughly speaking there are five different geological formations, and the physical constitution of the ground would seem in many cases to determine the food supply. Certain species favour the smooth conical hills of the soft Skiddaw slates, and the birds of prey have their haunts among the rugged and splintery peaks of the Borrowdale series—forming perhaps the grandest scenery in the district. And so, in like manner, the smooth undulating hills of the Silurian system, the scours of the carboniferous limestone, and the plains and gentler undulations of the country occupied by the new red sandstone—these, the five great geological divisions of our local area, has each its birds. Another fact which must not be lost sight of, is the great extent of sea-board, which stretches from the Solway Firth on the Cumbrian coast, down to Morecambe Bay; this fact adds to our list a host of birds which feed upon sea-haunting creatures.

It need hardly be said that in a mountainous country like the Lake District, the Raptores are, and have ever been, the strong point of its avi-fauna. This has been abundantly shown upon previous occasions,† and we purpose now to reduce to something like order some notes on the birds of this hitherto neglected district.

**Golden Eagle (*Aquila chrysaëtus*).** Although there has been no recent occurrence of the Golden Eagle, there can be no question that at one time it commonly bred among the Lake mountains. About fifty years ago (in 1837, as nearly as we can determine)

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\* Since this was written, Messrs. Duckworth and Macpherson have published a list of the Birds of Cumberland, with some notes on the Birds of Westmoreland.

† Eagles' Haunts in the North of England, by John Watson; Field, January 24th, 1885.

two remarkably fine specimens, male and female, were deposited in the Kendal Museum, from Cumberland, though the late Dr. Gough, more than a local naturalist, deplored that they were not accompanied by actual *data*. There can be little doubt that the Eagle which Clarke\* described as the 'largest,' and being of a colour 'very dark brown, inclining to black on the back and upper part of the neck,' was *A. chrysaëtus*. In this bird the stretched wings measured six feet eight inches, and the species referred to was very 'daring and bold.' Golden Eagles certainly had their haunts near those of the wild Red Deer on Martindale Fells, and in 1775 tried to establish an eyrie there. And Richardson—who contributed a paper on the Natural History of Ullswater to Hutchinson's 'History of Cumberland'—states that the majority of Eagles which frequented the Lake District belonged to *A. chrysaëtus*. The golden eagle bred on the highest part of the Cheviots, and in 1838 one or two pairs bred among the Border mountains. From the description of birds killed, but not identified by competent naturalists, there are probably records of half a dozen Golden Eagles; from the circumstance mentioned, however, these must always remain among the possibly doubtful specimens. Durnford in his 'Birds of Walney Island,' records a specimen of *A. chrysaëtus* shot near Furness Abbey in 1815. At the present time it cannot even be said that the Golden Eagle is even a casual visitant to its former haunts, and there is no recent record of its occurrence.

**White-tailed Eagle (*Haliaëtus albicilla*).** Even now the White-tailed Eagle occasionally makes its appearance at intervals of a few years, the birds mostly occurring in winter, and being in immature plumage. In January of the present year (1886) a specimen occurred off Humphrey Head, where it stayed for about a week, preying upon sea-birds. On a Sunday the gamekeeper, walking his rounds, came upon the bird feeding upon a dead sheep; fortunately, at the time, he was without his gun.

This species was certainly common, almost throughout the whole district, during the second half of the last, and the beginning of the present centuries. Not less than a dozen eyries must have existed at the same time. About 1777, Clarke records that the species bred at Wallow Crag, near Haweswater, in Westmoreland. The birds laid two eggs, and when the young were hatched it was from the vicinity of the nest that there were taken thirty-five fish (mostly Lake Trout), seven lambs, besides other provision of game. The trout were mostly taken from

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\* Survey of the Lakes, 1787.

Haweswater. Clarke further tells us that of this White-tailed species many bred in the mountains every year. The Sea Eagle also nested among the precipitous mountains which surround the head of Ullswater, and here, as in the case mentioned above, their prey consisted of the Great Lake Trout and lambs. The mountainous environment of Keswick also held Eagles' eyries; and from Borrowdale, Dr. Law, Bishop of Elphin, received a young bird of the species under notice, which lived in captivity nineteen years; its tail became white at six years old.

Seeing that the shepherds of the district lost so many lambs during the breeding season of the Eagles, they almost every year plundered the eyries. Of these, one of the ancient seats was at Eagle Crag in Borrowdale, and the nest here was annually robbed. Upon an appointed day shepherds from the neighbouring mountains assembled armed with guns and other weapons, one of them being let down the rocks to a distance of about a hundred and eighty feet. He generally succeeded in bringing away either the eggs or young eagles, and his remuneration was regulated accordingly. If eaglets were brought away the money they would bring was considered ample remuneration; but if eggs, every neighbouring shepherd gave to the climber for each egg five shillings. The nest of the white-tailed species is described as being made of twigs twisted together and more than a yard over. Never more than two eaglets nor eggs were discovered, and after the young were hatched they were always either conducted or driven from the locality as soon as they were strong on the wing. In spring and summer they feasted upon lambs, sometimes carrying away such as were a month old; and in winter the water-fowl of the lakes supplied them abundantly with food. At Raven Crag, Eagle Crag, and Eskdale were eyries of the White-tailed Eagle as well as at the spots already indicated. A specimen of *H. albicilla* was seen flying at Low Wood, on the banks of Windermere, in 1822, and a pair nested at Whitbarrow Scaur, a towering limestone escarpment at the head of Morecambe Bay, Westmoreland, in 1849. The species also bred on the precipitous rock which forms the western barrier to the front of Helvellyn, and Willoughby also speaks of an eyrie in Whinfield Park, Westmoreland. A bird of this species was captured on Black Coomb in 1838, and an immature bird occurred on Blundell Sands about 1860.

**Spotted Eagle (*Aquila clanga*).** Mr. W. A. Durnford examined a specimen of this rare species in 1875. It was picked up dead on Walney Island by a party of fishermen. We have grave doubts

whether this was not an escaped bird from one of the Liverpool dealers, or from some of the show places in its vicinity. Certainly such birds were there about the time of the occurrence of this particular example.

The whole of the above has reference to the Eagles where the species is either stated, or specific marks for identification are pointed out. But besides this there are a number of records in which simply the 'Eagle' is stated, and where there is little or nothing to lead to identification. Under this head, then, must be classed the 'Eagles' that bred in the parish of Brampton (Aubrey); the two seen on the same day by Mr. Thompson near Ullswater; and, finally, those comprehended in the list from the churchwardens' accounts of the parish of Crosthwaite, Cumberland. These are as follows:—'1750: To Mr. Jas. Bowe's man for one old eagle, 1s.; to Jas. Bowe for two young eagles, 1s. 1752: To Wm. Ware for one old eagle, 2s.; to Jas. Gateskel for two young eagles, 2s. 1762: For two eagles and one fox, 4s. 4d. 1762: For foxes and eagles, £1 6s. 6d.' In the same district to which this list refers the parish authorities kept a rope to use in robbing the eyries, and this was for long let out on hire to the shepherds and dalesfolk. Upon one occasion, when a general raid was made upon the *fera nature*, there were destroyed '15 Foxes, 9 Martens, 12 Wild Cats, besides a prodigious number of Foulmarts, *Eagles*, Ravens, Gleades, &c.'

**The Osprey (*Pandion haliaëtus*).** The Osprey is a casual visitant of not unfrequent occurrence, and appears regularly as a visitant in both spring and autumn. Scarcely a year passes without one being shot, and in the autumn of one year no less than five were taken. Their silver crests prove these to be matured birds, though occasionally immature ones have been taken. When passing they invariably stop to rest about the still mountain tarns or the more secluded lakes, and it is mostly in the vicinity of these that the birds are shot. Even if unmolested they rarely stay more than two or three days before passing on. More occur on the autumn migration from their northern breeding haunts than in spring. In an account of the natural history of Ullswater we are told that Ospreys bred in large trees in Whinfield Park, Westmoreland. Sir Humphrey Davy and Wordsworth saw one of these birds fishing in one of the quiet tarns among the hills which they speak of as 'the grey, or silver, or fishing eagle.' The individual occurrences of the birds are too many to particularise, and these seem much less frequent in the north and west of Cumberland than in the more southern portion of the area.

## NOTES—CONCHOLOGY.

**Planorbis complanatus var. submarginata in Yorkshire.**—Of this variety of Moquin Taudon's I collected about one hundred specimens on September 30th, 1886. The shell is large; keel rather sharp, and placed a little apart from the margin. The locality for this—which I suppose is new to Yorkshire, if not to Britain—is Sharleston, near Pontefract.—GEO. ROBERTS, Loft-house, Wakefield, October 19th, 1886.

**Addition to Wressle List of Mollusca.**—Since the publication of my list Mr. Beanland has called my attention to a variety of *Sphærium corneum* which was collected at Fleetdyke, in July 1886. The variety, which has been submitted to Mr. Cockerell, of Chiswick, turns out to be a new one to Britain.

*Sphærium corneum* var. *regularis* Pascal. The description is, 'Regularly globose, with yellow margin.' About six specimens were found, along with others of the typical form.—GEO. ROBERTS, Lofthouse, Wakefield, October 19th, 1886.

**Cyclostoma elegans re-discovered in North Lincolnshire.**—I have had the pleasure of re-discovering this shell in its old locality in the Louth district, Burwell Wood, for which place the celebrated Dr. Martin Lister (who was doubtless of the family of Lister of Burwell) recorded it in his 'Historiæ Animalium Angliæ' so long ago as 1678. The part of Burwell Wood in which the species occurs is a valley with steep chalky sides known locally as 'Grisel Bottom.'—H. WALLIS KEW, Louth, 11th September, 1886.

**Limax cinereo-niger at Shipley Glen.**—Mr. J. A. Hargreaves, of Baildon, has sent me a fine specimen of the var. *maura* of this species, which he found under a stone in Shipley Glen, on the 30th of September, the same locality in which Mr. West found the first Yorkshire specimen some years ago, the variety on that occasion being *luctuosa*.—WM. DENISON ROEBUCK, Sunny Bank, Leeds, October 6th, 1886.

**Estuarine Shells at Tetney, Lincolnshire.**—On 12th July I had occasion to go to Tetney (near the mouth of the Humber), and was able to spend a short time on the foreshore. *Cardium edule* L. was very plentiful, 'cockle-beds' extending for miles. Specimens of *Mya arenaria* L. were obtained from some men who were digging them out of the clay, considerably above low-water mark. The animals of this species are eaten by people living near the sea, under the name of 'clams.' *Littorina rudis* Maton, was taken from the muddy pools in the saltmarsh. *Littorina littorea* (L.) was extremely abundant all over the sand- and mud-flats, often amongst *Salicornia herbacea*. Most of the specimens of this shell were referred by Mr. Cockerell to the v. *paupercula* of Jeffreys. *Hydrobia ulva* Penn. was of course abundant. I searched for, but was unable to find, *Melampus myosotis* (Drap.), which is recorded for Saltfleet on this coast.—H. WALLIS KEW, Louth, Lincolnshire, October 6th, 1886.

## NOTE—HYMENOPTERA.

**Hymenoptera at Louth, Lincolnshire.**—As the natural history of the county of Lincoln is so little known, it may be well, perhaps, to record the following six species of Hymenoptera, which have been kindly identified by Mr. E. Saunders, viz.:—*Chrysis ignita*, *Gorytes mystaceus*, *Andrena albicans*, *Andrena albicans*, *Odynerus pictus*, and *Halictus subfasciatus*, all taken in the Louth district, 1886. Mr. E. A. Fitch has kindly identified a specimen of *Ichneumon trilineatus*, of which I found eight examples beneath the loose bark of two dead ash-trees in Grisel Bottom, Burwell Wood, near Louth, in December 1885.—H. WALLIS KEW, Louth, Lincolnshire, 6th October, 1886.

## NOTE.—YORKSHIRE TOPOGRAPHY.

**The Rocks at Flamborough.**—Allow me to state—in reference to the two pinnacles in Selwick's Bay, which are mentioned at p. 218 of the July *Naturalist* as being unnamed, and for which names are there suggested—that ever since I can remember they have been called Adam and Eve.—MATTHEW BAILEY, Flamborough, September 9th, 1886.

## NOTE—ORTHOPTERA.

**Occurrence of the true Migratory Locust in Lincolnshire.**

—On Friday last Mr. H. Wallis Kew sent me a living female of *Pachytylus migratorius* L. to identify, and has asked me to send a notice of its occurrence. He obtained it from a taxidermist in Louth, to whom it was brought by a little girl, who said it was found in a stubble field at Withern, eight miles from Louth.—ELAND SHAW, St. Mary's Hospital, London, W., 19th October, 1886.

[In presence of the fact that the Yorkshire specimens of 1876 were referred by Mr. Robert McLachlan, F.R.S., and the Baron de Selys-Longchamps, to *Pachytylus cinerascens*, the occurrence of the true *P. migratorius* is of considerable interest. Mr. Shaw informs me that not only the specimen now recorded, but the other British examples he has seen, were referable to the true *migratorius*, which is very readily distinguishable from *cinerascens*. He expresses a wish to be placed in communication with any entomologists of the North of England who collect Orthoptera, inasmuch as all the localities from which he at present possesses specimens are in the South. Entomologists who possess Northern specimens of Orthoptera cannot, therefore, do better than increase our very limited range of information on this department of the entomological fauna of the North, by entrusting their specimens to him for determination.—W.D.R.]

## NOTES AND NEWS.

Messrs. Taylor and Francis will shortly publish a work by Mr. T. Mellard Reade, F.G.S., entitled 'The Origin of Mountain Ranges.' In addition to containing a systematic theory of Mountain-Building, with detailed Experimental Illustrations, the Structure and Geological History of the great Mountain-Masses of the Globe will be discussed. The work will also contain many Maps and Sections of Mountain Ranges, and a contoured Map of the North-Atlantic Ocean, together with numerous sketches of Mountain-Structure and Scenery, from Nature, by the Author.

Geological readers will be glad to know that the celebrated Clayton fossil tree has found a permanent home in one of our northern universities, Prof. Williamson, F.R.S., having purchased it for Owens College, Manchester. The genial and learned professor was in Clayton recently, and, along with the curator of the college, personally superintended the removal, which, by the help of Messrs. Murgatroyd and their workmen, was very expeditiously and carefully done, being accomplished in three days. The weight of the fossil, when detached from its bed, was found to be about five tons, certainly a respectable weight for a single specimen of our Yorkshire carboniferous vegetation.

In Section C (Geology) of the British Association at the recent meeting in Birmingham, were read a large number of papers bearing in some way upon the geology of the North of England, viz.:—Report on the Erratic Blocks of England and Wales, Dr. Crosskey, F.G.S.; Notes on the discovery of a large Fossil Tree in the Lower Coal Measures, at Clayton, near Bradford, S. A. Adamson, F.G.S.; Report on the Fossil Plants of the Tertiary and Secondary Beds of the United Kingdom, J. S. Gardner, F.G.S.; On recent researches amongst the Carboniferous Plants of Halifax, Prof. W. C. Williamson, F.R.S.; On the Lower Palæozoic Rocks near Settle, J. E. Marr, F.G.S.; On the exploration of Raygill Fissure, J. W. Davis, F.G.S.; On Concretions, H. B. Stocks; On the Stratigraphical Position of the Salt Measures of South Durham, Prof. Lebour, F.G.S.; On the Classification of the Carboniferous Limestone series, Northumbrian type, Hugh Miller, F.G.S.

At the October meeting of the Entomological Society of London, Mr. W. F. Kirby exhibited, on behalf of Mr. John Thorpe, of Middleton, a long series of buff and melanic varieties of *Amphidasis betularia*, and read notes on them communicated by Mr. Thorpe. The Rev. W. W. Fowler exhibited a number of minute *Acaræ*, which had been doing injury to fruit trees near Lincoln. Mr. Poulton gave an account of experiments recently made by him with the larvæ of several species of *Vanessa*, for the purpose of ascertaining the relations of pupal colour to that of the surface on which the larval skin was thrown off, and exhibited the frame constructed for these experiments.

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THE Editors are indebted to Messrs. S. A. Adamson, F.G.S., and Alfred Harker, M.A., F.G.S., for the present instalment of the Bibliography; to both gentlemen for contributing the titles and abstracts, and to the former for arranging and classifying the materials thus brought together. There are a few titles cited of papers for 1884 which had previously escaped notice or come to hand since the 1884 instalment was published.

Papers which appear in the *Naturalist* itself are cited but not abstracted.

- Sir FREDERICK ABEL. Yorkshire, Lancashire, Durham, Derbyshire.  
**Explosions in Coal Mines.** [Gives list of disastrous explosions in coal mines in northern counties since 1875. Suggests safeguards against accidents, as improved ventilation, better safety lamps, etc.] *Journal of Society of Arts and Nature*, December 3rd, 1885, xxxiii, 108-112.
- S. A. ADAMSON. Yorkshire.  
**Report of Excursion to Idle and Thackley** [description of strata (the Halifax beds) at the West Yorkshire Colliery, Idle, also of a remarkable fault in railway cutting between Idle and Thackley]. *Trans. Leeds Geol. Assoc.*, 1885, p. 28.
- S. A. ADAMSON. Yorkshire.  
**Report of Excursion to Guiseley and Menston** [description of glacial drift in railway cutting]. *Trans. Leeds Geol. Assoc.*, 1885, p. 27.
- S. A. ADAMSON. Yorkshire.  
**Report of Excursion to Wrose Hill and district** [details of section given at Wrose Hill Fire Clay Works, and review of the Elland Flagstone at Idle]. *Trans. Leeds Geol. Assoc.*, 1885, pp. 29, 30.
- S. A. ADAMSON. Yorkshire.  
**Report of Excursion to Hawes** [geology of railway journey from Leeds to Hawes described. Sections of Yoredale rocks given, also explanation of cause of the ravine at Hardraw and deposition of Yoredale rocks.]. *Trans. Leeds Geol. Assoc.*, 1885, pp. 30-32.
- S. A. ADAMSON. Yorkshire.  
**Report of Excursion to Norber** [account of Silurian erratics on Mountain Limestone, with reasons for their deposition: Conglomerates observed at base of Mountain Limestone]. *Trans. Leeds Geol. Assoc.*, 1885, pp. 32-34.
- S. A. ADAMSON. Yorkshire.  
**Report of Excursion to Pateley Bridge** [beds at Scot Gate Ash Quarries described]. *Trans. Leeds Geol. Assoc.*, 1885, pp. 34-36.
- S. A. ADAMSON. Yorkshire.  
**Report of Excursion to Barnsley** [section in excavating a gasholder tank minutely described: in blue clay a number of basaltic and felspathic boulders found, evidently from Cumberland: Pre-historic relic of mica schist discovered about 30 ft. from surface]. *Trans. Leeds Geol. Assoc.*, 1885, pp. 42-43.

- S. A. ADAMSON. Yorkshire.  
**Report of Excursion to Keighley Moors** [deposit of Travertin in Sutton Clough noted: the 'Hitchingstone,' a huge block of millstone grit near Earl's Crag, described, and theories adduced for its cause]. *Trans. Leeds Geol. Assoc.*, 1885, pp. 39-41.
- S. A. ADAMSON. Yorkshire.  
**Report of Excursion to Brimham Rocks** [description of Brimham Rocks given, with their cause. Denudation ascribed to atmospheric agencies]. *Trans. Leeds Geol. Assoc.*, 1885, pp. 38-39.
- S. A. ADAMSON. Yorkshire.  
**Report of Excursion to Ingleton** [account of unconformity at Thornton Force, Carboniferous Limestone upon highly-inclined Silurian schists]. *Trans. Leeds Geol. Assoc.*, 1885, pp. 37-38.
- H. C. BEASLEY. Lancashire.  
**A Quarry at Poulton and the relations of the Glacial markings there** to others in the neighbourhood. [This quarry is in the Keuper Sandstone and near the north end, one face of a joint is exposed: the joint is a closed one, but the part exposed is covered with Slickensides and very distinctly striated horizontally: there are also three other exposures which are described, each showing glaciation.] *Proc. Liverpool Geol. Soc.*, 1885, vol. v, pp. 84-93.
- T. G. BONNEY. Cumberland.  
**On the Occurrence of a Mineral allied to Enstatite in the Ancient Lavas of Eycott Hill, Cumberland.** [The rocks are described as enstatite-diorite, with a silica percentage of about 53.06; the enstatite is mostly converted into serpentine. There are also crystals of augite and small scales of iron-glance.] *Geol. Mag.*, February 1885, Dec. iii, vol. ii, pp. 76-80.  
**The Enstatitic Lavas of Eycott Hill** [a reply to Mr. Rutley's letter]. *Geol. Mag.*, July, Dec. iii, vol. ii, pp. 334, 335.  
**On the so-called Diorite of Little Knott (Cumberland)** . . . [The character of the mass varies in texture and composition from an ordinary diorite to the type of rock which the author names hornblende-picrite. The paper also comments on the distribution of the boulders from this source: the Anglesey boulders, formerly described, are probably derived not from Little Knott, but from outcrops in the island itself.] *Quart. Journ. Geol. Soc.*, vol. xli, pp. 511-522, Pl. xvi; *Abstracts in Phil. Mag.*, August, vol. xx, p. 205; *Geol. Mag.*, July, Dec. iii, vol. ii, pp. 328, 329.
- WM. BROCKBANK, F.G.S. Lancashire.  
**On the Levenshulme Limestone: a Section from Slade Lane eastwards.** [These Limestones are classed as Permian by the Author, although Boyd Dawkins refers them to the Upper Coal Measures. Reasons for this given, also account of the section investigated.] *Mem. Manch. Lit. and Phil. Soc. Third Series*, vol. viii, 1884, pp. 125-132.
- GEO. H. BROCKLEHURST. Yorkshire.  
**A Visit to Whitby and its neighbourhood.** [Very brief sketch of the rocks in the vicinity of Whitby, with a few of the characteristic fossils named.] *Nat. World*, January 1885, ii, 11-12.
- R. T. BURNETT. Lancashire.  
**Report of Excursion to Hill Top near Bury** [notes a fault near Chesham Brook, and a seam of coal in the millstone grit in a quarry]. *Proc. Manch. Scientific Students' Assoc.*, 1884, p. 32.
- R. T. BURNETT. Derbyshire.  
**Report of Excursion to Castleton** [notes deposit in a quarry at Windy Knoll of Elaterite (commonly known as Elastic Bitumen) lying upon the massive limestone with a thin capping of brecciated limestone on the top]. *Proc. Manch. Sci. Stud. Assoc.*, 1884, pp. 32, 33.

- S. CHADWICK. Yorkshire.  
**Geological [Report]** [notes additions to Museum, particularly a giant Ammonite from the lower or flint chalk on Thixendale Wold, measuring 4 feet in diameter and weighing about 20 stones; also a sponge new to Britain of the genus *Cystispongia* from the lower chalk]. Malton Nat. Society's Annual Report for 1884-5, pp. 37-40.
- S. CHADWICK. Yorkshire.  
**Inoceramus involutus, Sow., at Ganton Wold.** Naturalist, June, vol. x, p. 258.
- Rev. E. M. COLE. Yorkshire.  
**On some Sections at Cave and Drewton** with plate [in first section a ferruginous sandstone exposed belonging to the *A. spinatus* zone of the Middle Lias: second section is in the Cave Oolite equivalent to the Millepore Limestone of the Lower Oolites: third section at Drewton gave a splendid exposure of the Kellaways Rock]. Proc. Yorks. Geol. and Pol. Soc., 1885, pp. 49-52.
- Rev. E. M. COLE. Yorkshire.  
**On the Physical Geography and Geology of the E. Riding of Yorkshire.** [General review of its Physical Geography, with table of geological formations occurring; these formations then considered in detail, with their localities.] Proc. Yorks. Geol. and Pol. Soc., 1885, pp. 113-123.
- J. R. DAKYNS and C. FOX STRANGWAYS. Yorkshire.  
**The Geology of Bridlington Bay** (Memoir of the Geological Survey): pp. 18 with sections and index. [In this memoir the following beds are reviewed: the White Chalk; Boulder Clay and Gravel, with Bridlington Crag; Sands and Gravels and Upper Boulder Clay; Late Glacial Beds; Lacustrine and Fluvial Beds. A list of fossils from the Bridlington Crag is given, also a list of publications on the district. An account of the Lake-dwelling at Ulrome, the first explored in England, is included.]
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**Large Ammonite at Hesse.** Naturalist, November 1885, p. 378.
- Yorkshire.  
**Mammalian Remains at Kelsey Hill, Holderness.** Naturalist, November 1885, p. 378.
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**Notes on some Carboniferous Gasteropoda from Penton and elsewhere.** [Describes a new species, *Aclisina costatula*.] Trans. Cumb. and Westm. Assoc., No. ix, p. 127, with a Plate.
- [EDITOR OF THE FIELD.] Yorkshire.  
**The East Riding of Yorkshire** [a lengthy review of Mr. Tiffin's Essay on the agriculture of the East and North Ridings. Includes a sketch of the surface geology and soils]. Field, March 14th, 1885, p. 348.

ETHERIDGE, R.

Northern Counties generally.

**Manual of Geology, by John Phillips, Part II, Stratigraphical Geology and Palæontology;** 712 pp., with 32 plates, map, and many tables of fossils. [This volume has but little matter in common with the original work of Professor Phillips. It contains much information relative to the geology of the North of England, among which may be cited the portions referring to the Cambrian and Silurian of the Lake District, pp. 66-69, 78-81; the Carboniferous Limestone and Yoredale series, pp. 213, 215-217, 221-223; the northern coal-fields, 226, 228-232, 249, 258, 259; the Permian, pp. 307-311; the Trias of Lancashire and Cheshire, pp. 327-329; the Lias of Yorkshire, pp. 359-367, 372, 376-379, 381-383, 386-388, 393-399, 402, 403; and of Lincolnshire, pp. 374, 375; the Oolites of Northamptonshire and Lincolnshire, pp. 412-415, 425-427, 473; the Yorkshire Oolites, pp. 353, 354, 440-444, 450-452, 460-466, 482, 483; the Speeton and Tealby series, pp. 529-532; the Yorkshire Chalk, pp. 565-568; the Glacial deposits of northern England, pp. 673, 677, 679; and the bone-caves of Kirkdale, etc., pp. 682, 683.] Reviewed in Geol. Mag., December 1885, Dec. iii, vol. ii, pp. 563-569.

Prof. EVERETT.

Lancashire, Cheshire.

**Seventeenth Report of the Committee,** consisting of [17 names] appointed for the purpose of investigating the Rate of Increase of Underground Temperature downwards in various localities of Dry Land and Under Water. [Relates observations made in the Mersey Tunnel and in various pits in the East Manchester coal-field.] Nature, September 24th, 1885, xxxii, 503-4.

GEOLOGICAL SURVEY OF ENGLAND AND WALES. Northern Counties generally.

**Publications in 1885** (Edward Stanford, 55, Charing Cross, London, Sole Agent).

**Horizontal Sections**—6 in. to mile.

- No. 133.—Passing near Darlington and Osmotherley Moor. Black Hambleton, Boltby, Hood Hill, Kilburn, Coxwold, Hushwaite, and Easingwold.
- „ 135.—Upsall, Boltby Moor, Hambleton Hills, Hawnby, the Tabular escarpment, Cropton, Salter's Gate, Hackness, Seamer Moor, Gristhorpe Bay.
- „ 137.—Knaresborough, Vale of York, Crayke, Howardian Hills, Vale of Pickering, Kirkby Moorside, Lasingham, Pickering, and Fylingdales Moors to Robin Hood's Bay.
- „ 138.—Sections illustrating the structure of the Oolites of the Howardian Hills.
- „ 139.—Section along the western escarpment of the Wolds, Malton, Langton, Burythorpe, Leavening, Acklam, Kirkby Underdale, Bishop Wilton, Kildwick Percy, Londesborough, Market Weighton, Sancton, Newbald, South Cave, Brough-on-the-Humber.

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- No. 70.—Sections to illustrate the Carboniferous Limestone in the district between Woodend and Moor Row (Cumberland Iron and Coal fields).
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## BOOKS RECEIVED.

- Revue Bryologique, 1886, No. 6. [Mons. T. Husnot, Redacteur.  
Natural History Journal, November 1886. [Mr. J. Edmund Clark, Editor.  
The Young Naturalist for November 1886. [Mr. J. E. Robson, Editor.  
Science Gossip for November 1886. [The Publishers.  
The Midland Naturalist for November 1886. [The Editors.  
The Manx Note Book, No. 8, October 1886. [A. W. Moore, Editor.  
Liverpool Science Students' Association—Report, 1885-6. [The Association.  
The Auk, a Quarterly Journal of Ornithology, October 1886. [The Editor.  
Geology of the District between Market Weighton and the Humber—F. Fielder  
Walton, 8vo, 24 pages. [The Author.  
Hertfordshire Nat. Hist. Transactions, vol. iv, part 3, Oct. 1886. [The Society.  
Classification of the Vegetable Kingdom—Compiled by J. D. Siddall—A broad-  
sheet. [The Compiler.  
Leeds Nat. Field Club—Trans., 1886, 8vo, pp. 88 and plate. [The Club.  
The Structure and Life-history of the Cockroach, by L. C. Miall and Alfred Denny—  
8vo, 1886. [The Authors.  
Manchester City News, weekly. [The Editor.  
The Badminton Library—'Shooting,' by Lord Walsingham and Sir Ralph Payne  
Galloway, Bart.—2 vols., 8vo, 1886. [Messrs. Longmans.

### The Distribution of the Lepidoptera in the British Isles.—

As I am compiling notes for a work on this subject, I shall be much obliged for Local Lists of Lepidoptera, which, however incomplete, will be useful to me.—  
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A. GEIKIE.

**Northern Counties generally.**

**Textbook of Geology**; 2nd ed., revised and enlarged; London, 1885; 992 pp. with many illustrations. [This valuable standard work contains many references to the geology of the northern counties: we may mention a few. Local Metamorphism around the Skiddaw granite, p. 563; 'Lower Silurians' of Westmoreland and Cumberland, p. 669; 'Upper Silurians,' p. 681; Carboniferous Limestone and Yoredale series of North of England, p. 737; Lancashire Coal-measures, p. 742; Permian rocks, pp. 753, 754; Yorkshire Lias, p. 789; Inferior Oolite of Yorkshire, p. 795; Oxfordian and Corallian rocks, pp. 797, 798; Speeton Clay, p. 823; and Glacial deposits of northern counties, p. 903.]

W. H. GILL.

**Yorkshire.**

**Speeton Cliffs to Gristhorpe Bay** (Abstract) [describes White Chalk at Speeton, Red Chalk, Neocomian beds at Speeton, Kimmeridge Clay, Lower Calcareous Grit, Oxford Clay, and Lower Oolites, with fossils]. Trans. Leeds Geol. Assoc., 1885, pp. 21-23.

W. H. GILL.

**Yorkshire.**

**Iron Ore from Allotment Gardens at Stourton** [this deposit due to the flow of an ancient watercourse heavily charged with iron, which had converted the original soil into a deposit of iron ore about 15 in. in thickness, varying in width from 9 ft. to 4 ft. 6 in.]. Trans. Leeds Geol. Assoc., 1885, p. 7.

J. G. GOODCHILD.

**Cumberland.**

**The Penrith Sandstone** [an exhaustive account of the Penrith Sandstones of the Lower Permian series; giving also a sketch of Cumberland at the time when they were deposited, their relation to the older strata, and speculations as to the life of the period; advocates a lacustrine origin for this sandstone, the associated conglomerate or Brockram being supposed to have originated by the aid of shore-ice]. Trans. Cumb. and Westm. Assoc., 1883-84, ix, 31-51.

J. G. GOODCHILD.

**Cumberland, Westmoreland.**

**Contributions towards a list of the Minerals occurring in Cumberland and Westmoreland** (concluding part). [Concluding part of list, with General Index to list of Cumberland and Westmoreland minerals.] Trans. Cumb. and Westm. Assoc., 1883-84, pp. 175-199.

HERBERT GOSS.

**Derbyshire.**

**On some recently discovered Insecta from Carboniferous and Silurian Rocks** [*Archaeoptilus ingens* from the Coal-measures near Chesterfield is the largest known of British Palæozoic insects (p. 4 of reprint)]. Proc. Geol. Assoc., 1885, vol. ix, No. 3, pp. 131-151.

W. S. GRESLEY.

**Derbyshire.**

**On certain Fossiliferous Nodules and Fragments of Hæmatite** (sometimes Magnetite) from the (so-called) Permian Breccias of Leicestershire and South Derbyshire. [Abstract.] [The author refers the dimpled and striated character of these pebbles to ice-action.] Quart. Journ. Geol. Soc., vol. xli. Proceedings, pp. 109, 110.

**Derbyshire, Lancashire, Cheshire.**

**On the occurrence of Quartzite Boulders in a Coal-seam in Leicestershire.** [Describes the occurrence of a boulder of quartz-conglomerate, and of pebbles of quartzite in the underclay of a coal-seam at Church Gresley Colliery, Derbyshire. Refers also to similar discoveries in Lancashire and Cheshire.] Geol. Mag., December, Dec. iii, vol. ii, pp. 553-555.

- WILLIAM GUNN. ? Northumberland.  
**On the Finding of Shells** [marine, of existing species, 14 names given] **in the Boulder Clay near Berwick-on-Tweed.** Proc. Berw. Nat. Club, vol. x, pt. ii (1885), pp. 540-1.
- W. GUNN. Northumberland.  
**Posidonomya Becheri.** [States that this shell was long ago recorded from Budle by Murchison and others, and discusses the correlation of the Carboniferous beds of Northumberland, etc.] Geol. Mag., February, Dec. iii, vol. ii, pp. 92, 93.
- A. HARKER. Yorkshire.  
**The Oolites of the Cave District.** Naturalist, May 1885, pp. 229-232.
- B. HOLGATE. Yorkshire.  
**On the Geology of Leeds** (Abstract) [notes river-terraces on the banks of the Aire, also the ancient 'bell pits,' so common in and about Leeds, formerly worked extensively for ironstone]. Trans. Leeds Geol. Assoc., 1885, pp. 5, 6.
- B. HOLGATE. Yorkshire.  
**On Geology of the Nidd Valley.** [General summary of conditions under which the strata had been laid down, and alternations of beds accounted for.] Trans. Leeds Geol. Assoc., 1885, pp. 35, 36.
- T. V. HOLMES. Cumberland.  
**Notes on the best Locality for Coal beneath the Permian rocks of North-West Cumberland.** [After stating that coal-seams beneath the Permian rocks of North-West Cumberland may be looked for at Maryport, Aspatria, and Bolton Low Houses, uses great caution, as the available facts are few in number, and such as allow but vague conclusions. Gives particulars of several borings and criticises at length Mr. Kendall's paper on the same subject.] Trans. Cumb. and Westm. Assoc., 1884-85, pp. 109-119, and woodcuts.
- T. V. H[OLMES]. Cumberland.  
**Changes of Channel in the Solway.** [Brief note drawing attention to maps published in 1841 and 1877 showing changes in the Solway channels, but no details given.] Trans. Cumb. and Westm. Assoc., 1883-4, ix, 215.
- T. V. H[OLMES]. Cumberland.  
**Silloth New Dock.** [Beds in excavating this dock consisted of alternations of sand and well-rounded, false-bedded gravel resting on a chocolate clay. Clay contained both local and travelled boulders, such as Criffel Granite, Ennerdale Syenite, etc. Mammalian remains found at or near the base of the sand and gravel. Upper formation contained remains of recent littoral shells, as Trophon, Fusus, Cardium, Tellina, Pecten, etc.] Trans. Cumb. and Westm. Assoc., 1883-84, ix, 214.
- T. V. H[OLMES]. Cumberland.  
**Section North of Silloth** [section a little north of Silloth; the low foreshore consists of tough boulder clay; above this a belt of fine clay, covered by blown sand. Most interesting to note that the surface of the fine clay had been drained, and exhibited evidences of the action of the plough, pointing to a greater extension of the land westward at no very remote period]. Trans. Cumb. and Westm. Assoc., 1883-84, pp. 213-214.
- T. V. H[OLMES]. Cumberland.  
**The Carlisle Water Supply** [comments on 'the ancient and fish-like smell' which often accompanies the water supply of Carlisle, and suggests the sinking of an artesian well to tap the Kirklington and St. Bees' Sandstone, to remedy this]. Trans. Cumb. and Westm. Assoc., 1883-84, p. 213.
- J. HORNE. Isle of Man.  
**The Geology of the Isle of Man.** Trans. Glasgow Geolog. Soc., vol. vii, part 2 (1882-84), 1885, p. 254.

W. H. HUDLESTONE.

Yorkshire.

**Contributions to the Palæontology of the Yorkshire Oolites** [describes and figures Yorkshire species of gasteropoda belonging to the genera *Neritopsis*, *Turbo*, *Trochus*, *Pleurotomaria*, *Trochotoma*, *Patella*, *Actæonina*, *Actæon*, and *Bulla*, from the Oolitic strata, giving synonyms and references to the literature of the subject]. *Geol. Mag.*, February to June 1885, Dec. iii, vol. ii, pp. 49-54, 121-129, 151-159, 201-207, 252-257, with plates ii-v, and folding table. Concluded from 1884.

WILFRID H. HUDLESTONE.

Yorkshire.

**The Geology of Malton and Neighbourhood**, being the Presidential Address delivered before the Malton Field Naturalists' and Scientific Society. . . . November 18th, 1884. [A graphic sketch of the geology of Malton and district, giving contour map and several sections. Detailed description of the Corallian rocks and their fauna, the Supra-Coralline and Kimmeridge Clay, Post-Jurassic and Cretaceous rocks. The three great faults near Malton described, and review of the glacial and post-glacial periods, with their effects upon the district.] *Annual Report of Malton Nat. Soc. for 1884-5*, pp. 1-30, illustrated.

O. W. JEFFS.

Lancashire and Cheshire.

**A Buried Valley.** *Naturalist*, April, vol. x, p. 212.

Westmoreland, Durham, Yorkshire, Northumberland, Cumberland,

T. RUPERT JONES and JAMES W. KIRKBY.

Lancashire.

**Notes on the Palæozoic Bivalved Entomostraca.—No. XIX. On some Carboniferous Species of the Ostracodous genus Kirkbya, Jones.** [*K. permiana* Jones, Durham, Yorkshire, Northumberland, Cumberland, Lancashire (179). *K. umbonata* (D'Eichw.), Northumberland, Cumberland, and Westmoreland. *K. annectens* J. & K., Yorkshire (183). *K. spiralis* J. & K., Northumberland, Cumberland, and Westmoreland (176-185). *K. spinosa* J. & K., Northumberland, Cumberland, and Lancashire (186). *K. costata* (M'Coy), Westmoreland, Cumberland, and Northumberland (187). *K. urei* Jones, Northumberland and Lancashire (190).] *Ann. and Mag. Nat. Hist.*, March 1885, (5) xv, 174-191, and plate iii.

Lancashire, Westmoreland, Northumberland, &amp;c.

T. RUPERT JONES and J. W. KIRKBY.

**The Carboniferous Ostracoda of the North-West of England.** [This paper gives lists of the bivalve entomostraca from a number of localities in the Furness district, the specimens being derived from the shales associated with Scar Limestone and from the Yoredale beds. Several new species are mentioned but not described. A list is given comparing the species found here with those of the Northumberland area and of Scotland.] *Geol. Mag.*, December, Dec. iii, vol. ii, pp. 535-541.

Cumberland, Durham, Yorkshire, Derbyshire.

T. RUPERT JONES, J. W. KIRKBY, and G. S. BRADY.

**A Monograph on the British Fossil Bivalved Entomostraca from the Carboniferous Formations.—Part IV**, pp. 57-92, plates vi, vii. [Describes several species of *Cytherella* and *Entomis* from the Mountain Limestone series, including new species, *C. valida* from Calees, East Cumberland, *E. Burrovii*, *E. Koninckiana*, and *E. obscura* from Settle, West Yorkshire.] *Palæontograph. Soc. Mem.* for 1884.

JOHN W. JUDD.

Cheshire.

**A Problem for Cheshire Geologists** [Abstract]. [After referring to several patches of strata or outliers, the results of denudation, but which were evidently once connected with the strata forming escarpments in their immediate vicinity, and also stating generally the immense changes effected by denudation, he draws attention to an outlier of the Lias between Audlem and Wem, about 10 to 12 miles in length and 4 miles in breadth. He requests

the Society to investigate the exact extent and limits of the outlier, its relation to the surrounding strata, and the nature, thickness, and fossil contents of the strata which make up the outlier.] Proc. Chester Soc. Nat. Sci., No. 3, 1885, pp. 45-49.

- A. J. JUKES-BROWNE. Lincolnshire, Yorkshire.  
**The Boulder Clays of Lincolnshire.** [The author divides the boulder clays of Lincolnshire and Holderness into two distinct types: (1) the grey or blue, and (2) the brown series; the former being the 'Chalky' or 'Basement' clay, and the latter including both the 'Purple' and the Hessle clays, which he regards as forming one series. Between the two types named he finds a distinct break, the brown clays being of much newer date than the grey. The author's conclusions are confirmed by Mr. Lamplugh as regards Holderness.] Quart. Journ. Geol. Soc., vol. xli, pp. 114-132. Abstracts in Nature, vol. xxxi, p. 402; Geol. Mag., March, pp. 135-137; etc.
- A. J. JUKES-BROWNE. Lincolnshire, Nottinghamshire.  
 The Geology of the South-West part of Lincolnshire, with parts of Leicestershire and Nottinghamshire. Mem. Geol. Surv. Eng. and Wales, 1885, 180 pp.
- J. D. KENDALL. Cumberland.  
**On the Best Locality for Coal beneath the Permian Rocks of North-west Cumberland.** [A reply to a paper by Mr. T. V. Holmes.] Trans. Cumb. and Westm. Assoc., No. x, 1884-5.
- H. WALLIS KEW. Lincolnshire.  
**Nature near Louth, East Lincolnshire** [Jukes-Browne's observations (Q. J. G. S., 1884) quoted]. Nat. World, February 1885, ii, 24-25.
- R. KIDSTON. Northumberland.  
**On some new or little known Fossil Lycopods from the Carboniferous formation.** [Two new species are described from the Coal-measures of Newcastle, etc.—*Sigillaria coriacea* and *Lepidodendron Peachii*.] Ann. and Mag. Nat. Hist., May 1885, 5th ser., vol. xv, pp. 357-365, plate xi.
- R. KIDSTON. Northumberland, Durham, Yorkshire.  
**On the Relationship of Ulodendron, Lindley and Hutton, to Lepidodendron, Sternberg; Bothrodendron, Lindley and Hutton; Sigillaria, Brongniart; and Rhytidendron, Boulay.** [*Lepidodendron veltheimianum* Sternb., various Northumberland localities; *Sigillaria discophora* König, Durham, Northumberland, Yorkshire.] Ann. and Mag. N. H., October 1885, (5) xvi, 239-260, with plates iii-vii.
- W. S. LEAN and J. LOVELL. Yorkshire.  
**[Two Letters to 'Nature' on the Earthquake felt in East Yorkshire at 10.47 a.m. on June 18th.** The shock was most severe at North Dalton, near Driffield; but no structural damage is recorded. See also the 'Hull Packet,' 'Eastern Morning News,' and 'Hull Express' for June 19th and 20th.] Nature, June 25th, 1885, p. 175.
- G. A. LEBOUR. Northumberland.  
**Note on the Posidonomya Becheri Beds of Budle (Northumberland),** with remarks on the distribution of the species. [Describes the Budle Shales, and cites their commoner fossils. The author agrees with Mr. Gunn in referring these beds to the Bernician, not the Tuedian series. He also discusses the range of *Posidonomya* in England and on the Continent]. Geol. Mag., February 1885, Dec. iii, vol. ii, pp. 73-76.
- G. A. LEBOUR. Durham.  
**Note on an Abnormal Deposit of Drift Coal in North Durham.** Naturalist, March 1885, pp. 179-180.
- G. A. LEBOUR.  
**On some recent Earthquakes on the Durham Coast and their Probable Cause.** [Ascribes the shocks to the falling in of cavities in the Magnesian Limestone on which Sunderland stands. Alludes also to similar shocks at Middles-  
Naturalist,

brough, and to the 'breccia-gashes' of the Durham coast, which are regarded as of cognate origin]. Geol. Mag., December, Dec. iii, vol. ii, pp. 513-515. [A paper read before the Geological Section (C) of the British Association, Aberdeen, September 1885]. Abstract also in Nature, October 8th, vol. xxxii, p. 559.

- J. LEITCH. **Cumberland.**  
**Notes on the Geological Formation and Fossils of the Silloth New Dock.** [Detailed description of the strata met with mentioned in T. V. Holmes' note, with full account of the Mammalian remains found in the gravel]. Trans. Cumb. and West. Assoc., 1883-4, pp. 169-174, and plate [of remains of *Bos primigenius*].
- PERCY LUND. **Yorkshire.**  
**Calcareous Jottings.** [Brief description of Cracoe near Skipton, its scenery and geology]. Nat. World, January 1885, ii, 8-10.
- M. LUCEYT. **Lancashire.**  
**Mémoire sur le bassin houiller du Lancashire.** Annales des Mines, sér. 8, tom. v, 1<sup>e</sup> livr. de 1884, p. 5.
- D. MACKINTOSH. **Cheshire.**  
**Traces of an Inter-glacial Land-surface at Crewe.** [Short account of good sections of book or leaf clay at Crewe Railway Station, which graduated within a vertical extent of about a foot, into a very typical and undisturbed Upper Boulder Clay. Mr. Siddall states this leaf clay is the finest he has yet examined, finding in it a shallow or brackish water species of Foraminifera—viz., *Polystomella striatopunctata*]. Proc. Chester Soc. Nat. Sci., No. 3, 1885, pp. 50-51.
- A. T. METCALFE. **Derbyshire.**  
**On the Discovery in one of the Bone-Caves of Cresswell Crags of a portion of the Upper Jaw of *Elephas primigenius*,** containing, *in situ*, the first and second milk-molars (right-side). [Found in red sand at the entrance to the Pin-hole Cave: described by Sir Richard Owen.] [Abridged.] Quart. Journ. Geol. Soc., vol. xli, p. 30. Abstract in Geol. Mag., January 1885, Dec. iii, vol. ii, p. 44.
- L. C. MIALL. **Yorkshire.**  
**On a Megalichthys from the Yorkshire Coal-field.** Naturalist, January 1885, pp. 121-124 and pl. i.
- H. MILLER. **Cumberland and North of England generally.**  
**On Fluxion Structure in Till.** [See Bibliography for 1884, in Nat., 1885, p. 400]. Rep. Brit. Assoc., 1884 (Montreal), pp. 720-721.
- J. R. MORTIMER. **Yorkshire.**  
**On the origin of the Chalk Dales of Yorkshire with sections** [Cannot accept the erosion theory as sufficient to account for them; states they are due originally to fractures in the crust, their present rounded outlines the result of subsequent denudation.] Proc. Yorks. Geol. and Pol. Soc., 1885, pp. 29-42.
- G. H. MORTON. **Lancashire.**  
**On the Microscopic Character of the Triassic Sandstones of the country round Liverpool** [Review of former researches on this subject—26 specimens of Sandstones (localities named) microscopically described. Concludes that the quartz and other minerals forming these sandstones were derived from two or three different sources, chemical changes having also occurred since their deposition]. Proc. Liverpool Geol. Soc., part 1, vol. v, pp. 52-74.
- F. M. NORMAN. **Northumberland.**  
**Report of Excursion to Pallinsburn.** [Account of the 'Bradford Kaims' near Locker Station. One of those remarkable ridges known as 'Eskers.' These are composed of rolled shingle from Silurian Rocks.] Proc. Berwickshire Nat. Club, 1884, pp. 440-442.

- F. M. NORMAN. Northumberland.  
**Report of Excursion to the Farne Islands.** [States the Farne Islands are an outcrop of the Great Whin Sill, with remains of sedimentary fossiliferous rocks and boulder clay. Marks of glaciation were seen.] Proc. Berwickshire Nat. Club, 1884, pp. 455 and 456.
- F. M. NORMAN. Northumberland.  
**Report of visit to Newcastle Museum.** [List of mineral and fossil collections contained therein.] Proc. Berwickshire Nat. Club, 1884, pp. 481-485.
- F. M. NORMAN. Northumberland  
**Embedded Reptiles**, with special reference to the discovery of a Live Frog in the Carboniferous Limestone at Scremerston, with two plates. [History given of previous examples, and the present case exhaustively examined and described. This frog, the modern species, *Rana temporaria*, of which nothing is known till Post-Pliocene times, whereas the Scremerston Limestone is at the base of the Carboniferous Rocks.] Proc. Berwickshire Nat. Club, 1884, pp. 491-505.
- SIR R. OWEN. Derbyshire.  
**Notes on Remains of *Elephas Primigenius* from one of the Cresswell Bone-Caves.** [Gives description and figures of the teeth found by Mr. Metcalfe (vide supra).] Quart. Journ. Geol. Soc., vol. xli, pp. 31-34. Abstract in Geol. Mag., January, Dec. iii, vol. ii, p. 44.
- J. POSTLETHWAITE. Cumberland.  
**On the Trilobites of the Skiddaw Slates.** [Records several new forms]. Trans. Cumb. and Westm. Assoc., No. x, 1884-5, with four plates.
- H. PRODHAM. Durham.  
**Drift-Coal in Durham.** Naturalist, April 1885, p. 213.
- T. MELLARD READE. Lancashire.  
**Evidence of the Action of Land-Ice at Great Crosby, Lancashire.** [Abridged.] [At the Mowbrey brick and tile works there occurs between the Keuper Marls and the Low Level Boulder Clay a deposit 3 ft. or 4 ft. thick formed from the marl, and containing large blocks of Keuper Sandstone, grooved and striated. The author refers this to the action of land-ice.] Quart. Journ. Geol. Soc., vol. xli, pp. 454-456. Abstract in Phil. Mag., July, vol. xx, p. 73.
- T. MELLARD READE. Cheshire, Lancashire.  
**The Mersey Tunnel: its Geological Aspects and Results.** [The rock on the Birkenhead side very hard and compact; on the Liverpool side softer and more thinly bedded. All of it evidently belongs to the division of the Bunter known as the Pebble beds. The rock under the river was remarkably homogeneous throughout, and comparatively free from faults. In the actual Tunnel, at some 300 yards from Liverpool side, the bottom of the pre-glacial valley was intersected by the upper part of the Tunnel, the roof for about 100 yards being in hard Boulder clay. Speculations on the history of the erosion of the pre-glacial channel of the Mersey, also the history of the formation of the post-glacial channel of the river given.] Proc. Liverpool Geol. Assoc., Part i, vol. v, pp. 74-84.
- T. MELLARD READE. Lancashire.  
**Borings on the Southport and Cheshire Lines Extension Railway.** [Several records of bore holes given, which are interesting as extending the knowledge of the lie of the post-glacial beds in the neighbourhood.] Proc. Liverp. Geol. Soc., Part i, vol. v, pp. 93-100.
- T. MELLARD READE. Lancashire.  
**On a Section across the River Douglas at Hesketh Bank.** [The special interest of this section is due to the fact that in constructing the foundation of a bridge were discovered, about 20 ft. from the surface, some human remains, consisting

of right and left thigh bones, 16 inches long; also the fibula and two portions of the pelvis, containing the sockets. These bones lay very close to the top of the very coarse gravel forming the bottom stratum of the post-glacial deposits.] Proc. Liverp. Geol. Soc., Part i, vol v, pp. 100-104.

CLEMENT REID.

Yorkshire, Lincolnshire.

**The Geology of Holderness and the adjoining parts of Yorkshire and Lincolnshire.** (Memoir of the Geological Survey), pp. 177 with map, sections, and index. [This memoir describes the glacial and post-glacial deposits of Holderness and adjoining parts of Yorkshire and Lincolnshire. It refers to sheets 85, 94 S.E. and N.E., and also to considerable areas in 94 S.W. and N.W. Flamborough Head is the northern limit of this area, and the chalk downs for some way southwards its western boundary. Against these uplands, and in the depression to the east and south of them, a series of glacial, interglacial, and post-glacial deposits has been accumulated to a depth of about 100 feet. The almost continuous range of coast cliffs from Flamborough Head to the Humber mouth exposes interesting sections of the boulder clays with transported stones from remote and widely-separated sources, among which are Cumberland, the Cheviot Hills, and the mountains of Scandinavia. The interesting transported masses of sand and clay known as the 'Bridlington Crag' receive minute notice, and much use in their description has been made of the writings of Mr. Lamplugh. There are some interesting charts from 1684 to the present time, showing the changes in the course of the Humber. There is a good bibliography of works on Holderness dating from 1662. The chapters on Economic Geology and Water Supply are very practical, and there are lists of Well Borings and Sections which occupy 30 pages.] Reviewed Geol. Mag., February 1886, p. 85, and Naturalist, March 1886, p. 86.

C. RICKETTS.

Cheshire, Lancashire.

**On some Erratics in the Boulder Clay of Cheshire, etc., and the Conditions of Climate they denote.** [Abridged.] [These erratic blocks, which occur in a clay beneath the true boulder clay in the Mersey valley, are of a variety of rocks. They show evidence not only of glacial striation, but of subsequent weathering, and sometimes splitting *in situ*. The author explains the weathering by the supposition that these boulders once formed portions of land moraines, and were subsequently carried down to sea in consequence of an extension of the glaciers]. Quart. Journ. Geol. Soc., vol. xli, pp. 591-598. Abstracts in Phil. Mag., August, vol. xx, p. 207; Geol. Mag., July, Dec. iii, vol. ii, p. 330.

F. RUTLEY.

Cumberland.

**The Enstatitic Lavas of Eycott Hill** [a personal reference to the work done by the late Mr. J. Clifton Ward].

F. RUTLEY.

Cumberland, Westmoreland.

**The Felsitic Lavas of England and Wales**, with an introductory description of the chief characters of this Group of Rocks, by F. Rutley, F.G.S., index of localities and 4 plates. [Definition of felsitic rocks with chapters on banded, spherulitic, and perlitic structure. Fluxion structure also explained. Tabular statement of petrological affinities or the relation which the rocks mentioned in the memoir bear to one another. Examples of felsitic lavas occur in Lake District at Red Crag, Long Sleddale Valley, Till's Hole, near Grizedale Tarn, in Duddon Valley, Copper-mine Valley, The Knott, Broughton Moor, west side of Great Stickle, Appletreeworth, Shap Wells, etc.] Memoirs of the Geol. Surv. Engl. and Wales.

S. JAMES A. SALTER.

Derbyshire, Yorkshire.

**Marble** [Enumeration of various Derbyshire and Yorkshire marbles]. Notes and Queries, March 14th, 1885, 6th Series, xi, 201-202.

H. W. SCHNEIDER.

Furness.

**On the Hæmatite Iron Mines of Low Furness.** Trans. Cumb. and Westm. Assoc., No. x, 1884-5.

- S. H. SCUDDER. Lancashire.  
**Two more English Carboniferous Insects.** [Records and describes two portions of insects' wings from the Lancashire coal-field. Both belong to the group Protophasmida of Brongniart: one is referred to the genus *Archaeoptilus*, while the other is quite new, and is here named *Ædeophasma anglica*.] Geol. Mag., Dec. iii, vol. ii, pp. 265, 266.
- J. SHIPMAN. Notts.  
**The Story of the Hemlock Stone.** [Gives a *résumé* of speculations as to the origin of the Hemlock Stone, a huge, isolated pillar of sandstone of the Keuper Basement Beds of the Trias at Stapleford Hill, about six miles west of Nottingham. Conclusions formed that it was formed by weathering through vast periods of time; then buried by the drift in the Great Ice Age, which has since been carried away by denudation, leaving the rock pillar in its present state.] 32nd Annual Report, Nottingham Naturalists' Society, pp. 11-16.
- W. SHONE. Cheshire.  
**The Silting up of the Dee: its cause** [Geological history of the Dee reviewed. Cause of its silting up being the flood tide bringing up vast quantities of sand, and the width of the river decreasing rapidly within a few miles. The narrowing of the river between Connah's Quay and Chester produces a violent 'bore' with each flow of the tide. This carries coarse sand up the river, and the causeway at Chester, checking the 'bore,' causes the sediment to be thrown down. The withdrawal of water from the upper Dee by the canal aggravates the evil.] Proc. Chester Soc. Nat. Sci., No. 3, 1885, pp. 52-61.
- JOHN SIM. Northumberland.  
**Objects of Interest in our [Northumbrian] Pit District.** [*Anthracosia ovata* figured at p. 32]. Sci. Goss., February 1885, pp. 31, 32.
- M. SIMPSON. Yorkshire.  
**The Fossils of the Yorkshire Lias described from Nature.** With a carefully measured Section of the Strata, and the Fossils peculiar to each. 2nd ed., 1884, Whitby. [The first edition appeared in 1855. The present edition reprints also the 'Section of the Yorkshire Lias' given in the 4th edition of the Guide to the Geology of the Yorkshire Coast in 1868. The Fossils are carefully described, but without figures].
- [THEODORE] SINGTON. Derbyshire.  
**Mineral Deposit, occurring on Windy Knoll, near Castleton.** [Very brief account of this deposit, which has not been named or its chemical constitution definitely ascertained]. Proc. Manch. Lit. and Phil. Soc., February 16th, 1885, xxiv, 53.
- H. B. STOCKS. Yorkshire.  
**Analysis of a Hydraulic Limestone Concretion from the Yorkshire Coast.** [Analysis of one from Sewerby, near Flamborough, compared with one from Isle of Sheppey. General remarks on other concretions]. Proc. Yorks. Geol. and Polyt. Soc., 1885, pp. 55, 56.
- C. FOX STRANGWAYS, C. REID, and G. BARROW. Yorkshire.  
**The Geology of Eskdale, Rosedale, etc.** (Memoir of the Geological Survey), pp. 65, with index. [This memoir describes the area represented in sheet 96 N.E. Old Series; sheet 43 New Series. The geology of this remarkable part of the north-east of Yorkshire is minutely detailed. Nowhere can be seen so plainly the effects of erosion in carving out the numerous valleys which radiate from the table-land. The Lias, Lower and Middle Oolites with their divisions, all of which are so well seen in these valleys, are described. Numerous tables of sections and analyses of ores are given. A short chapter gives an account of the Whinstone or Cleveland Dyke. The Physical Geography of the district is explained, and a list of geological works referring to this part of Yorkshire given.]

(The late) GEO. TATE. Northumberland.

**On a Toad in a Limestone Rock at Whittle.** [This toad said to have been found in Carboniferous Limestone. The idea scouted as to its having been thus enclosed; the Limestone being of marine origin, and toads not in existence at the time.] Proc. Berwickshire Nat. Club, 1884, pp. 505, 506.

J. J. H. TEALL. Northumberland, Cumberland.

**On some Quartz-Felsites and Augite-Granites from the Cheviot District.** [The author describes fully the varieties of quartz-felsite met with in the Cheviots, and also certain granites remarkable for containing augite as well as biotite; and speculates on the relations of the two rocks. The paper also contains Dr. Petersen's analyses of a hypersthene-andesite and a porphyrite from the same district, and of their respective ground-masses; and refers to the felsite of Carrock Fell, Cumberland, and its relations.] Geol. Mag., March, Dec. iii, vol. ii, pp. 106-121.

Yorkshire, Lancashire, Westmoreland,

B. THOMPSON and T. J. GEORGE. Derbyshire.

**A Catalogue of the Geological Collection in the Northampton Museum. Part III.—The Carboniferous System.** [Gives list of Carboniferous fossils, one of the most interesting being a large slab of Limestone from Swaledale, showing in relief some fine specimens of *Woodocrinus macrodactylus*.] Journal Northamptonsh. Nat. Hist. Soc. and Field Club, vol. 3, No. 22, May 1885, pp. 240-245.

Rev. J. STANLEY TUTE. Yorkshire.

**Note on Spirangium carbonarium, with woodcut.** [This specimen discovered in breaking a sandstone boulder from the Drift, probably derived from one of the members of the Yoredale series.] Proc. Yorks. Geol. and Pol. Soc., 1885, p. 53.

W. Y. VEITCH. Yorkshire.

**Three new species** [*Chonetes clevelandicus*, *Pleuromya navicula*, and *Isis liassica*] observed in the Yorkshire Lias, with plate. Proc. Yorks. Geol. and Pol. Soc., 1885, p. 54.

G. R. VINE. Northumberland, Lancashire, Yorkshire, Derbyshire.

**Micro-Palæontology of the Northern Carboniferous Shales.** Parts iv, v, vi (concluded from 1884). Naturalist, April, September, November 1885, pp. 207-212, 313-320, 367-378.

G. R. VINE. Lancashire.

**Notes on the Yoredale Polyzoa of North Lancashire, with plate.** [Table showing the range of Carboniferous Polyzoa in the Yoredale rocks. Detailed descriptions of species, several of them being new forms.] Proc. Yorks. Geol. and Pol. Soc., 1885, pp. 70-98.

THOMAS WARD. Cheshire.

**On the Manufacture of Salt in Cheshire.** [Historical account of salt trade given; a short review of the geology of the Cheshire salt beds; a description of the process of manufacturing common salt; statistics of trade and other valuable information.] Memoirs of Manch. Lit. and Phil. Soc., Third Series, vol. viii, 1884, pp. 9-26.

THOMAS WARD. Cheshire.

**On the Action of Water upon beds of Rock Salt.** [Phenomena exhibited by the action of water upon beds of Rock Salt carefully dealt with in classes—viz., Water in a state of rest; Water descending by gravitation and passing over beds of salt in its course to a lower level; Water descending by gravitation to beds of salt below the surface of the earth, and reappearing as brine springs at the surface, but at a higher level than the salt beds; Natural Water set in motion, or its motion accelerated by artificial means, such as pumps; Water conveyed artificially to salt beds, and then pumped up again.] Proc. Manch. Lit. and Phil. Soc., 1883-4, xxiii, 5-28.

EDWARD WETHERED.

Yorkshire.

**On the Structure and Origin of Carboniferous Coal Seams.** [Review of literature on this subject. Section of Better Bed at Low Moor given, and results of microscopic examination inch by inch through the seam carefully detailed. The author is unable to endorse Prof. Huxley's statements as to the structure of coal, as though the first 3 in. from the top is very largely made up of macrospores and microspores, and the same may be said of the layer 4 in. from the top, though they are mostly of a different species to those above, yet below that point spores form but a small proportion of the whole mineral.] Journ. Roy. Micr. Soc., June 1885, v, 406-420.

J. WHITE.

Cumberland, Westmorland, Lancashire.

**Random Notes on the English Lake District.** Trans. Glasgow Geol. Soc., vol. ii, part 2 (1882-84), 1885, p. 334.

W. C. WILLIAMSON.

Lancashire, Yorkshire.

**On some undescribed tracks of Invertebrate Animals for the Carboniferous Rocks,** and on some inorganic phenomena, simulating plant remains, produced on tidal shores. [Brief abstract given, mentioning a new form of Chrossocorda, which the author regards as merely tracks of marine animals, in opposition to the views of Schimper and others, who think this genus represents some fucoidal form of Palæozoic life. A second form of track found by J. W. Davis, F.G.S., at Hawes, in the Yoredale beds, has been named *Protichnites davisi* after its discoverer. Casts of markings produced recently by drainage lines combined with ripple marks left by the retiring tide, producing an effect easily mistaken for the geometrically arranged scale leaves of some Cycad, were exhibited at the reading of this memoir.] Proc. Manch. Lit. and Phil. Soc., 1885, xxiv, 37-38.

E. WILSON.

Lincolnshire.

**The Lias Marlstone of Leicestershire as a source of Iron.** [General features of the Lias Marlstone described. Good section in railway cutting south of Tillon Station, with characteristic fossils in each zone given. Short history of its discovery as a valuable article of mining industry. Refers to Lincolnshire.] Midl. Nat., March 1885, viii, 61-66, with plate.

A. SMITH WOODWARD.

Yorkshire.

**On the Literature and Nomenclature of British Fossil Crocodilia.** [Quotes species from the Whitby Lias.] Geol. Mag., November, Dec. iii, vol. ii, pp. 496-510.

A. S. WOODWARD.

Cheshire.

**Note on the Occurrence of Evansite in East Cheshire.** [The first record of this mineral in the British Isles.] Mineral. Mag., 1884, vol. v, pp. 333, 334.

H. WOODWARD.

Yorkshire, Derbyshire, Cumberland.

**A Monograph of the British Carboniferous Trilobites, Part II,** pp. 39-86, plates viii, ix; Palæontograph. Soc. Mem. for 1884. [Describes species of *Griffithides*, *Phillipsia*, and *Brachemytopus* from Settle, Longnor, Caldbeck, and other northern localities.]

T. WRIGHT.

Yorkshire.

**Monograph on the Lias Ammonites of the British Islands, Part vii,** pp. 441-480, plates lxxviii-lxxxvii; Palæontographical Soc. Mem. for 1884. [Treats of several species of the genera *Harpoceras* and *Stephanoceras* from the Upper Lias of Whitby, etc., giving diagnoses, dimensions, descriptions, affinities, and differences, localities and stratigraphical positions.]

YORKSHIRE NATURALISTS' UNION.

Yorkshire, Nottinghamshire.

**Excursion to Anston Stones,** in conjunction with the Nottinghamshire Naturalists, April 30th. Naturalist, June 1885, pp. 260-262.

Yorkshire.

**Excursion to Boroughbridge, May 25th.** Naturalist, July 1885, pp. 279-281.

**Excursion to Pocklington, June 24th.** Naturalist, August 1885, pp. 307-309.

**Excursion to Whitby, August 3rd.** Naturalist, October 1885, pp. 348-350.

**Excursion to Blubberhouses, September 26th.** Naturalist, November 1885, pp. 379-382.

Naturalist,

**THE BIRDS OF  
THE LINCOLNSHIRE FENS AND WOLDS IN 1612.**

MICHAEL DRAYTON ;

WITH

ANNOTATIONS BY JOHN CORDEAUX, M.B.O.U.

[THE stanzas here given, which are taken from the 23rd and 25th Songs of the well-known *Poly-olbion*, a poetical description of the counties of England and Wales, which was published about the year 1612, constitute, perhaps, the oldest record of the Lincolnshire avifauna, and enable us in some measure to compare its former state with that of the present day. It forms, therefore, with the annotations, a fitting continuation of our series of papers on the natural history of Lincolnshire. Some of the notes are by the late William Yarrell, as published by him at p. 228 of the 'Annals of Natural History' for 1844, and one or two from Dr. Samuel Johnson's edition of the 'British Poets.' For the names, which are in conformity with the B.O.U. list of British Birds, and for most of the annotations, we are indebted to Mr. Cordeaux, than whom no one knows the county and its avifauna better. The authorship of the notes is shown by the initials S.J. (for Dr. Johnson), W.Y. (for William Yarrell), and J.C. (for John Cordeaux).—EDS. *Naturalist*.]

From Ely all upon that eastern sea,  
Then Lincolnshire herself, in state at length doth lay,  
Which for her fatt'ning fens, her fish, and fowl, may have  
Pre-eminence, as she that seemeth to outbrave  
All other southern shires. . . . .

['THE FENS.']

She<sup>1</sup>, by the Muse's aid, shall happily reveal  
Her sundry sorts of fowl, from whose abundance she  
Above all other tracts, may boast herself to be  
The mistress, and (indeed) to sit without compare,

. . . . .  
With her just proper praise, thus Holland doth proceed :

. . . . .  
" My various fleets for fowl, O who is he can tell,  
The species that in me for multitudes excel !  
The Duck<sup>2</sup> and Mallard<sup>2</sup> first, the falconer's only sport,

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<sup>1</sup> 'She' refers here to the fen district of Lincolnshire, or the 'Parts of Holland.'

<sup>2</sup> *Anas Boschas L.*; female and male. The Peregrine Falcon was the species most commonly used for duck-hawking, and our Wild Duck, from its courage as well as its powers of flight, is almost the only duck that will take the air boldly and try conclusions with him. I have been told by falconers, that if it blows hard, the Wild Duck can make its way up wind so fast as to get clear off. The Peregrine Falcon is frequently called the Duck-hawk. They breed on high rocks near the coast, and subsist almost exclusively on water-fowl.—W. Y.

(Of river flights the chief, so that all other sort  
 They only green-fowl term) in every mere abound,  
 That you would think they sat upon the very ground,  
 Their numbers being so great, the waters covering quite,  
 That rais'd, the spacious air is darken'd with their flight ;  
 Yet still the dangerous dykes, from shot do them secure,  
 Where they from flash to flash, like the full epicure  
 Waft, as they lov'd to change their diet every meal ;  
 And near to them you see the lesser dibbling Teal<sup>3</sup>  
 In bunches<sup>4</sup>, with the first that fly from mere to mere,  
 As they above the rest were lords of earth and air.  
 The Gossander<sup>5</sup> with them, my goodly fens do show  
 His head as ebon black, the rest as white as snow.  
 With whom the Widgeon<sup>6</sup> goes, the Golden-eye<sup>7</sup>, the Smeath<sup>8</sup>,  
 And in odd scatter'd pits, the flags and reeds beneath,  
 The Coot<sup>9</sup>, bald, else clean black, that whiteness it doth bear  
 Upon the forehead star'd, the Water-hen<sup>10</sup> doth wear  
 Upon her little tail, in one small feather set.  
 The Water-Woosell<sup>11</sup> next, all over black as jet,  
 With various colours, black, green, blue, red, russet, white,  
 Do yield the gazing eye as variable delight  
 As do those sundry fowls, whose several plumes they be.  
 The diving Dobchick<sup>12</sup>, here amongst the rest you see,  
 Now up, now down again, that hard it is to prove,  
 Whether under water most it liveth, or above :  
 With which last little fowl, (that water may not lack,  
 More than the dobchick doth, and more doth love the brack<sup>13</sup>.)

<sup>3</sup> *Querquedula crecca* (L.).

<sup>4</sup> The word used in falconry and by fenmen for a company of teal.—S.J.

<sup>5</sup> Gossander=Goosander, *Mergus merganser* L.

<sup>6</sup> *Mareca penelope* (L.).

<sup>7</sup> *Clangula glaucion* (L.).

<sup>8</sup> Smeath would appear to be another name for the Smew, *Mergus albellus* L.—W.Y.

<sup>9</sup> Coot-Bald or Bald-Coot, *Fulica atra* L.

<sup>10</sup> Water-hen or Moor-hen, *Gallinula chloropus* L. The specific name refers to the green colour of the legs ; the under tail-coverts are nearly white, as noticed by Drayton.—W.Y.

<sup>11</sup> This can scarcely refer to the Water Ouzel or Dipper, a bird which could never have been common in Lincolnshire ; certainly not in the fens. May have been one of the Rails. An old name of the Water Rail (*Rallus aquaticus*) is 'Brook Ouzel.'—J.C.

<sup>12</sup> Dabchick or Little Grebe, *Tachybaptus fluviatilis* Tunst.

<sup>13</sup> Salt water.—S.J.

The Puffin<sup>14</sup> we compare, which coming to the dish,  
Nice palates hardly judge, if it be flesh or fish<sup>15</sup>.

“ But wherefore should I stand upon such toys as these,  
That have so goodly fowls, the wand’ring eye to please.  
Here in my vaster pools, as white as snow or milk,  
(In water black as Styx,) swims the Wild<sup>16</sup> Swan, the Ilke<sup>16</sup>,  
Of Hollanders so term’d, no niggard of his breath,  
(As poets say of swans, who only sing in death)  
But oft as other birds, is heard his tunes to roat,  
Which like a trumpet comes, from his long arched throat<sup>17</sup>,  
And tow’rds this wat’ry kind, about the flashes brim,  
Some cloven-footed are, by nature not to swim.  
There stalks the stately Crane<sup>18</sup>, as tho’ he march’d in war,  
By him that hath the Hern<sup>19</sup>, which (by the fishy car)  
Can fetch with their long necks, out of the rush and reed,  
Snigs<sup>20</sup>, fry, and yellow frogs, whereon they often feed :  
And under them again, (that water never take,  
But by some ditches’ side, or little shallow lake  
Lie dabbling night and day) the palate-pleasing Snite<sup>21</sup>,  
The Bidcock<sup>22</sup>, and like them the Redshank<sup>23</sup>, that delight  
Together still to be, in some small reedy bed,  
In which these little fowls in summer’s time were bred.  
The buzzing Bitter<sup>24</sup> sits, which through his hollow bill  
A sudden bellowing sends, which many times doth fill  
The neighbouring marsh with noise, as though a bull did roar ;  
But scarcely have I yet recited half my store :  
And with my wondrous flocks of Wild-Geese<sup>25</sup> come I then,  
Which look as though alone they peopled all the fen,

<sup>14</sup> *Fratercula arctica* (L.).

<sup>15</sup> Several species of water-fowl, supposed to feed exclusively on fish, are permitted to be eaten by Catholics on their maigre days.—W.Y.

<sup>16</sup> Elk and Hooper, names of the Wild Swan, *Cygnus ferus*.—W.Y.

<sup>17</sup> See Dr. Latham and Mr. Yarrell’s papers in the ‘ Transactions of the Linnean Society,’ vols. iv., xvi., and xvii., on the convoluted wind-pipes of Wild Swans.—W.Y.

<sup>18</sup> *Grus communis* Bechst.

<sup>19</sup> *Ardea cinerea* L.

<sup>20</sup> Small eels.—W.Y.

<sup>21</sup> Snite or Snipe, *Gallinago caelestis* (Frenzel).

<sup>22</sup> Bidcock and Bilcock, old names for the Water Rail, *Rallus aquaticus* L.

<sup>23</sup> *Totanus calidris* L.

<sup>24</sup> Bitter or Bittern, *Botaurus stellaris* (L.). The generic name is derived from *Bos* and *Taurus*, in reference to the bull-like roar.—W.Y.

<sup>25</sup> The particular species is doubtful.—W.Y.

Which here in winter time, when all is overflow'd,  
 And want of solid sward enforceth them abroad,  
 Th' abundance then is seen, that my full fens do yield,  
 That almost through the isle, do pester every field.  
 The Barnacles<sup>26</sup> with them, which wheresoe'er they breed,  
 On trees, or rotten ships, yet to my fens for feed  
 Continually they come, and chief abode do make,  
 And very hardly forc'd my plenty to forsake :  
 Who almost all this kind do challenge as mine own,  
 Whose like, I dare aver, is elsewhere hardly known.  
 For sure, unless in me, no one yet ever saw  
 The multitudes of fowl, in mooting time they draw :  
 From which to many a one, much profit doth accrue.

“ Now such as flying feed, next these I must pursue ;  
 The Sea-Meaw<sup>27</sup>, Sea-Pye<sup>28</sup>, Gull<sup>29</sup>, and Curlew<sup>30</sup>, here do keep,  
 As searching every shoal and watching every deep,  
 To find their floating fry, with their sharp-piercing sight,  
 Which suddenly they take, by stooping from their height.  
 The Cormorant<sup>31</sup> then comes, (by his devouring kind)  
 Which flying o'er the fen, immediately doth find  
 The Fleet, best stor'd of fish, when from his wings at full,  
 As though he shot himself into the thicken'd skull<sup>32</sup>,  
 He under water goes, and so the shoal pursues,  
 Which into creeks do fly, when quickly he doth choose  
 The fin that likes him best, and rising, flying feeds.  
 The Ospray<sup>33</sup> oft here seen, though seldom here it breeds,  
 Which over them the fish no sooner do espy,  
 But (betwixt him and them, by an antipathy)  
 Turning their bellies up, as though their death they saw,  
 They at his pleasure lie, to stuff his glut'nous maw.”

<sup>26</sup> In reference to the old fable.—W.Y.

<sup>27</sup> Sea-Mew, Sea-Mell, and Sea-Mall, old names for a small common Gull  
 Thus Caliban, among his other offers of service to Stephano, says : ‘ and some-  
 times I'll get thee young sea-mells from the rocks.’—*Shakspeare's 'Tempest,'* Act 2,  
 Scene 2.—W.Y.

<sup>28</sup> Sea-Pye, a name for the Oyster-catcher, *Hæmatopus ostralegus*, in reference  
 to its black and white colours.—W.Y.

<sup>29</sup> Already noticed.

<sup>30</sup> *Numenius arquata* L. Both words refer to the bent form of the beak ;  
*Numenius* meaning ‘ new moon.’—W.Y.

<sup>31</sup> Cormorants, *Phalacrocorax carbo* (L.), nested in trees on the shores of Fritton  
 Lake, Norfolk, as late as 1825.—J.C.

<sup>32</sup> Scull, or scool, a shoal ; so, in Cornwall, a school of pilchards, &c.—W.Y.

<sup>33</sup> *Pandion haliaëtus* L.

## [ ' THE WOLDS. ' ]

' . . . <sup>34</sup> that which Holland seems to vaunt her on the most,  
 By me is overmatch'd ; the fowl which she doth breed,  
 She in her foggy fens, so moorishly doth feed,  
 That physic oft forbids the patient them for food,  
 But mine more airy are, and make fine spirits and blood :  
 For near this batt'ning isle in me is to be seen,  
 More than on any earth, the Plover<sup>35</sup> gray, and green,  
 The corn-land loving Quail<sup>36</sup>, the daintiest of our bits,  
 The Rail<sup>37</sup>, which seldom comes, but upon rich men's spits :  
 The Puet<sup>38</sup>, Godwit<sup>39</sup>, Stint<sup>40</sup>, the palate that allure,  
 The miser, and do make a wasteful epicure :

<sup>34</sup> What precedes is the chant of the ' Parts of Holland ' in praise of the Fens. The ' Parts of Lindsey ' now takes up the strain in defence of the Wolds.

<sup>35</sup> The Golden Plover, *Charadrius pluvialis*. This is the ' Grey ' Plover, ' Whistling ' Plover, ' Green ' Plover of old authors. Perhaps in no part of England do we still find larger flocks of the Golden Plover during the winter months ; numbers are shot in the north-eastern marshes, and often form no inconsiderable proportion of the home wild-fowl exposed in the game shops. The true Grey Plover (*Squatarola helvetica*) rarely occurs at any distance from the sea. The young of this, in the golden-spotted plumage of autumn, was very frequently confounded with the Golden Plover.—J.C.

<sup>36</sup> *Coturnix communis* nests annually on the Lincolnshire north wolds. The familiar and monotonous call notes may be heard from the time of turnip sowing till harvest, after which they probably leave the district, as they are rarely met with in the shooting season.—J.C.

<sup>37</sup> Rail or Daker-hen—Corncrake, *Crex pratensis*. Abundant in some seasons, and less common in others ; of fairly frequent occurrence in September. The Landrail should be cooked when quite fresh ; it was much appreciated by old sportsmen as a delicacy.—J.C.

<sup>38</sup> Peewit or Lapwing, *Vanellus vulgaris*.—Several isolated farmsteads in North Lincolnshire bear the name of ' Pyewipe ' from the former abundance of this species. Enormous flocks still frequent the east coast marshes and middle marsh district in the winter, and large numbers are netted.—J.C.

<sup>39</sup> Bartailed Godwit (*Limosa lapponica*) and Blacktailed Godwit (*L. aegocephala*). The former is a common migrant on the coast of Lincolnshire in the autumn ; again appearing in the spring, during the second week in May, often in very considerable flocks. It very rarely occurs at any distance from the coast. With reference to this species, Fothergill, in the ' Ornithologia Britannica,' 1799, p. 7, says—' This bird is caught, and shot, mixed with the ruffs, in our marshes, especially in the fens opposite Spurn Point.' In the ' Boston Corporation Records,' 1597, appears the entry :—' To be sent to the Lord Treasurer as a present, one dozen Godwights, five dozen Knots, and one dozen Puetts, at the Corporation charge.' The Black-tailed Godwit formerly bred regularly in the fens. It now occurs occasionally in the autumn on the coast, but very rarely in the spring, on the return migration.—J.C.

<sup>40</sup> Stint=Dunlin, *Tringa variabilis*.

The Knot<sup>41</sup>, that called was Canutus' bird of old,  
 Of that great king of Danes, his name that still doth hold,  
 His appetite to please, that far and near was sought,  
 For him (as some have said) from Denmark hither brought :  
 The Dotterel<sup>42</sup>, which we think a very dainty dish,  
 Whose taking makes such sport, as man no more can wish ;  
 For as you creep, or cowl, or lie, or stoop, or go,  
 So marking you (with care) the apish bird doth do,  
 And acting every thing, doth never mark the net,  
 Till he be in the snare, which men for him have set.  
 The big-bon'd Bustard<sup>43</sup> then, whose body bears that size,  
 That he against the wind must run, e'er he can rise :  
 The shoulder, which so shakes the air with sailly wings,  
 That ever as he flies you still would think he sings.  
 These fowls, with other soils, although they frequent be,  
 Yet are they found most sweet and delicate in me.'

<sup>41</sup> *Tringa canutus* L.—The wide-extending muds and sands on the Lincolnshire coast, and the great flats of ooze at the entrance of the Humber and Wash, afford very attractive feeding grounds for immense flocks of Knot, and great numbers remain in these situations during the winter. This species was formerly taken in nets, like the Ruff, and when fattened for the table was considered almost equal in delicacy of flavour.—J.C.

<sup>42</sup> *Eudromias morinellus*.—Occurs with tolerable regularity, but in very limited number, on the high wolds, in the last week in April, and in the marsh districts of North and North-east Lincolnshire early in May, sometimes continuing till later in the month. Dotterel are not easily distinguishable on fallow-land or newly-sown corn. Their habit, however, when resting, of suddenly elevating a wing—just as Golden Plover do—will frequently lead to their instant detection. The poem alludes to the well-known belief that Dotterel imitated or mimicked the actions of the fowler.—J.C.

<sup>43</sup> *Otis tarda*.—The records of the Bustard on the Lincolnshire wolds are very few. They probably became extinct about the close of the last century or commencement of the present, when the wolds were enclosed and cultivated.—J.C.

#### NOTE—ORNITHOLOGY.

**Tree-sparrow in North Lincolnshire.**—November 13th. This pretty species (*Passer montanus*), which nests somewhat sparingly in North-east Lincolnshire, occurs in very large numbers in the autumn, arriving in October and November. This afternoon I found a flock crowding the top of a low hedge, probably numbering 2,000 birds. They sat very closely packed along the sunny side of the fence, from which, with much chattering, they continued to drop in a continuous stream on to a barley stubble, and concentrating specially at one spot, till a space of something like eight yards by five was so densely crowded that to the eye nothing but a brown patch was visible ; for many yards around this also hundreds were scattered on the stubble, apparently searching for small seeds, as they constantly shifted their position. When put up they flew rapidly in three or four very crowded detachments to the next fence, again uniting in one flock and dropping as before on the stubble. From their very bright and clean appearance I think they must have been quite a recent arrival.—JOHN CORDEAUX, Great Cotes, November 15th, 1886.

## STRASBURGER ON FOREIGN POLLINATION.

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BOTANICAL readers of the *Naturalist* will probably remember that in the last volume some account was given of Strasburger's New Investigations on the process of Fertilisation in Phanerogams. In the course of those investigations, *foreign* pollen grains were often met with on the stigmas of plants, which had not only put forth pollen-tubes, but had forced the same to a greater or less distance down the styles. Struck with this phenomenon, and doubtless recognising its important bearing upon several physiological questions, Strasburger instituted a series of observations and experiments, with the object of determining within what limits the formation of pollen-tubes on foreign stigmas is possible, whether any disadvantage is connected therewith, and if so, whether there exist any protective contrivances by which such a mode of pollination is, as a rule, prevented. The results of the investigation he has recently published in a paper which appears in the current part (Band xvii, Heft I) of Pringsheim's 'Jahrbücher für wissenschaftliche Botanik,' and which, like everything from the pen of the Bonn Professor of Botany, will well repay close and attentive study. The title of the paper is 'Über fremdige Bestäubung,' which we have translated as above—'Foreign Pollination'—and purpose in what follows to give a *resumé* of the experiments made and of the conclusions arrived at. In doing so, Strasburger's own language will be followed as closely as possible, so that no injustice may be done him by a misinterpretation of his statements. Of the experiments themselves nothing need be said, save that they were rigorous and numerous enough to ensure the reliability of the general results, and that wherever possible the pollination was effected reciprocally, that is, the stigma of A was dusted with the pollen of B, and conversely the stigma of B with the pollen of A.

The first plant to be experimented with was *Fritillaria persica*, taken first in the early year. It was soon found that the pollen of this plant is capable of forming pollen-tubes, not only on its own stigma, but on those of other plants belonging to different genera, and even to different natural orders. Thus the pollen grains germinate on the stigmas of *Convallaria latifolia*, *C. polygonatum*, *Tulipa Gesneriana*, *Scilla hispanica*, *S. non-scripta*, *Orchis mascula*, and *O. Morio*. The germination on *Convallaria latifolia* quite agrees with the normal behaviour on its own stigma. The pollen-tube penetrates the stylar

canal from the stigma, grows downwards therein, and as its protoplasmic contents move forwards, the emptied portion of the tube become closed up in the usual way by the formation of cellulose plugs. Yet only a small number of pollen-tubes reach the ovary, and of these the further development is soon arrested, no tube growing into the micropyle of an ovule. In *Orchis mascula* and *O. Morio* the process is often carried considerably further. Here the *Fritillaria* pollen-tubes may penetrate more deeply into the ovary, where they form six strings, growing downwards in the placentas. Now in many Orchideæ, the ovules themselves are only formed as a consequence of pollination, and it is highly significant that the development of the ovules in the species named was excited by the pollen-tubes of *Fritillaria*, as if they had been derived from the pollen of the Orchis itself. In one example of *Orchis Morio* this development went as far as the formation of the inner integument of the nucellus, when the process was arrested by the death of the pollen-tubes. Thus the stimulus only continues so long as the pollen-tubes remain alive, but so long as it lasts it is quite of the same kind as that produced in normal pollination. In no case did a pollen-tube of *Fritillaria* reach the micropyle of an ovule and complete the fertilising process.

On the stigmas of other plants, the pollen grains of *Fritillaria* were unable to germinate and form pollen-tubes. This happened in experiments with *Narcissus poeticus*, *Chelidonium majus*, *Pæonia officinalis*, *Cheiranthus Cheiri*, *Lupinus luteus*, *Lamium album*, *Doronicum Pardalianches*, and other species.

The reciprocal experiments with these plants were limited by a want of material, but it was established that the pollen of *Narcissus poeticus* and *N. odoratus* germinates as little on *Fritillaria* as the pollen of *Fritillaria* on the *Narcissi* named. *Orchis Morio* on the contrary, in certain cases, formed tolerably good pollen-tubes on the stigma of *Fritillaria*. From this it would seem as though a reciprocity in the germinating power of pollen-grains might be inferred to hold generally, but experiment shows that such a reciprocity is absent quite as frequently as it is present. Taking all the experiments into consideration, however, Strasburger thinks it follows, with evidence, that the capacity of pollen grains to put forth tubes on foreign stigmas is in no way restricted within the limits of sexual affinity, nor even within those of relationship.

Another position he considers to be established is that the proper pollen of a plant is not able to exclude foreign pollen from germinating. On the stigma of *Scilla hispanica*, its own pollen and that of *Fritillaria persica* form tubes simultaneously, which grow intermingled downwards in the style. So, on the stigma of *Orchis Morio*, its own

and vigorous *Fritillaria* pollen-tubes were simultaneously produced; but when the latter were given 24 hours' start, they did not prevent the former from developing normally, entering the ovary, and later on completing the fertilising process. Hence pollinating with foreign pollen, even when the latter is capable of forming pollen-tubes, need not be disadvantageous to the plant concerned.

On dicotyledonous plants the experiments with the pollen of *Fritillaria* did not succeed in causing the development of vigorous pollen-tubes, and on this account the experiments in this direction were chiefly made with *Agapanthus umbellatus*. On the stigma of *Achimenes grandiflora* the pollen of *Agapanthus umbellatus* germinates readily, the tubes growing deep down into the style and building numerous drops of cellulose. This shows that even monocotyledonous pollen is capable of vigorous development on a dicotyledonous stigma. On the contrary, however, the pollen of *Achimenes grandiflora* did not germinate on *Agapanthus*, so that here is a case of failing reciprocity. On *Nicotiana tabacum* only a portion of the pollen grains of *Agapanthus* germinate, but these form tubes of very considerable length, the poisonousness of *Nicotiana* offering apparently no hindrance to their development. Moreover, *Nicotiana* pollen produced very good tubes on *Agapanthus* which penetrated a distance far into the style, and thus furnished an example of vigorous development of dicotyledonous pollen on a monocotyledonous stigma. A very beautiful illustration of this is also afforded by the behaviour of *Lathyrus montanus* on *Convallaria latifolia*, where the pollen-tubes of the *Lathyrus* actually reach the cavity of the ovary of the *Convallaria*. The pollen of *Lathyrus montanus* germinates well also on *Orchis Morio*, though the tubes do not penetrate into the ovary and have but an inconsiderable influence on the development of the ovules.

In the cases hitherto referred to, which are typical of numerous experiments recorded by the author, the pollen grains germinated on the foreign stigma, but the fertilising process was not completed by the entrance of the tube into the micropyle and the copulation of the sperm nucleus with that of the egg-cell or oosphere. But in others, a nearer approach to complete fertilisation was exhibited. Thus, specimens of *Orchis Morio* were pollinated with *Orchis fusca*. In a short time pollen-tubes were put forth in the normal way, and grew down into the ovary, stimulating, as usual, the development of the ovules. By the time the egg-apparatus was fully formed in the embryo-sac, the ends of the pollen-tubes had turned to the ovules, and soon entered the micropyle. In many ovules the embryo-sac shrivelled before the entrance of the pollen-tube; in others the tip of the pollen-tube reached the embryo-sac, but fertilisation did not

follow ; in others, again, fertilisation was in process and presented the usual phenomena ; while, lastly, in some ovules a rudimentary embryo was already formed. These rudiments were partly normal and partly abnormal in appearance, but ultimately all died. From these facts it may be inferred that the fertilisation and the development of the embryo are here effected under conditions of some difficulty, and are therefore not carried to a successful termination. Incidentally too, they point to a possible explanation of the well-known circumstance that hybridisation often yields only a few seeds capable of germinating, and frequently gives rise to mal-formed embryos.

Similar experiments with other species of *Orchis* gave similar results, but in the case of *Orchis latifolia* pollinated with *O. mascula*, tolerably numerous embryos of normal appearance were developed, some of which attained maturity and ripened themselves fully. On these, however, there is no need to dwell, as hybrids are well known to occur among orchids, not merely within the limits of the same species, but between members of distinct genera.

Besides experimenting as described, Strasburger also tried the effect of placing pollen on the transverse section of the style after the removal of the stigma, and also of placing pollen directly in the cavity of the ovary. As might be expected, the results in both cases were very various, both when proper and foreign pollen was employed. When treated with their own pollen some plants produced as good seed after pollination in these irregular ways as after pollination of the stigma, and with foreign pollen the degree of pollen-tube formation differed in different cases. Thus, however useful as a receptive surface, and as a suitable nidus for the germination of the pollen, the stigma is not an indispensable portion of the sexual apparatus.

The fact having been established that heterogeneous plants are capable of forming pollen-tubes on one another, Strasburger next enquired whether social plants are protected against this, especially those that are wind-fertilised. He found that the pollen of *Plantago lanceolata* germinates on the stigma of *Ranunculus acris*, and sends its tubes into the style, so that in this *Ranunculus* there would seem to be no protection against wind-fertilised neighbours. On the other hand, the pollen of *Plantago* did not germinate on *Stellaria Holostea*. In the converse experiments, pollen from *Ranunculus acris* was found to put forth a few short tubes on the stigma of *Plantago lanceolata*, while that from *Stellaria Holostea* developed vigorous tubes which entered a good way into the style.

In this connection the *Gramineæ* are obviously of special interest, but there are many difficulties in the way of obtaining decisive results

from them. It is not easy, indeed, to prevent a stigma from being fertilised by its own pollen, nor to distinguish this from pollen derived from a foreign source. But speaking generally, Strasburger states that species belonging to different genera only seldom form pollen-tubes on one another, but that species of the same genus mostly do. From this he infers that there can be no question of special protection here, since it would be as much required for allied species as for allied genera.

Summing up the whole of the evidence on this head, our author thinks it follows that in wind-fertilised phanerogams no special protection exists to prevent the entrance of pollen-tubes, and the same may probably be said of Gymnosperms, though he confesses he has made no experiments upon them.

It would seem then, from what is here recorded, that there are no protective adaptations to prevent the germination of foreign pollen on the stigma and the entrance of its tube into the style, and even the ovary, and that the germination and entrance of foreign pollen is possible within the widest limits, even from Monocotyledons to Dicotyledons, and the reverse. That foreign pollen-tubes do not often come to the ovary, and seldomer find their way between the ovules, is connected with the circumstance that here the disadvantageous influences to which they are exposed in the foreign environment are accumulated. In no case will a pollen-tube find in a foreign plant quite the same conditions as in its own, the specific distinctions of the two plants pre-supposing the specific variety of their protoplasm. Moreover, where foreign pollen reaches a stigma, there is little or no disadvantage to the plant, as the normal development of the proper pollen is not hindered by the presence of the foreign, even though the latter puts forth pollen-tubes which traverse the style and reach the ovary.

The wide range within which heterogeneous pollination is possible, and the absence of protective contrivances against it, would, at first sight, lead us to expect a much more frequent occurrence of spontaneously-produced hybrids than experience shows is the case. But, as Strasburger shows, the very processes which bring about pollination limit the production of such hybrids to an extremely small number. Many circumstances conspire to bring legitimate pollen to a stigma, whether by the agency of insects, the wind, or otherwise, and it will usually happen that a flower will be legitimately pollinated several times, so that if by any chance foreign pollen be brought, it will be debarred from operating by the super-abundance and prepotency of the proper pollen. As a proof, however, that spontaneously produced hybrids do occur, Strasburger refers to the

genera *Salix*, *Rubus*, *Cirsium*, and *Hieracium*, which are rich in species and tend to form varieties, and in which fertile hybrids are known to arise.

Such is a brief account of these most interesting researches. It is not pretended that it is at all adequate to the importance of the subject or the merits of the paper; but it will, at least, show the direction in which the accomplished author is at present working, and may induce some of our readers to seek further details in a perusal of the paper itself.

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NOTE—ORNITHOLOGY.

**Variety of the Kittiwake.**—A White Kittiwake (*Rissa tridactyla*) was shot at Flamborough, about one mile south of the headland, by Mr. Saltfleet, on Saturday, October 23rd. This most splendid specimen is all white, with the exception of a little fawn colour on the wing coverts, with a deeper fawn where the black should be on the primaries; eyes brown; legs, feet, and bill yellow.—MATTHEW BAILEY, Flamborough, November 11th, 1886.

[This specimen, from the above slight description, appears to us to agree fairly well with what is known of a certain immature phase in the plumage of the Ivory Gull (*Pagophila eburnea*).—EDS.]

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NEW WESTMORELAND LICHENS.

JOSEPH A. MARTINDALE,  
*Staveley, near Kendal, Westmoreland.*

DR. NYLANDER has recently described, at p. 461 of 'Flora' for this year, two new Lichens gathered in Westmoreland, and submitted to him for determination. As both may be expected to occur in similar places in Britain, I append a translation of Nylander's descriptions.

**Lecanora flavocitrina** Nyl. Like *L. citrina*, but having the thallus composed of thin appressed squamules, which are either altogether citrino-pulverulent or only so at the margins; apothecia orange-yellow, biatorine, margined (0·3—0·4 mm. broad); spores 8, shaped like those of the *Placodia*, 0·007—0·010 mm. long, and 0·006 mm. broad. Hymenial gelatine turning a full blue with iodine.

On clay slate stones in walls near Staveley (J. A. Martindale).

**Lecanora crenulatella** Nyl. Thallus citrine, thin, unequal, rimose; apothecia subconcolorous, zeorine (about 1 mm. broad) most frequently surrounded by an elegantly crenulated thalline margin; spores 8, shaped like those of the *Placodia*, 0·016—20 mm. long and 0·008—9 mm. broad (loculi of medium size).

On limestone blocks near Sandside (J. A. Martindale),

A well-marked plant, hardly to be placed under *L. erythrella*.

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