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THE

NATURALIST:

A

MONTHLY JOURNAL OF

NATURAL HISTORY FOR THE NORTH OF ENGLAND

EDITED BY

THOS. SHEPPARD, M.Sc., F.G.S., F.R.G.S., F.S.A.(Scot.).

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RILEY FORTUNE, F.Z.S.

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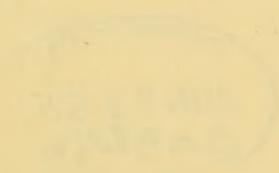
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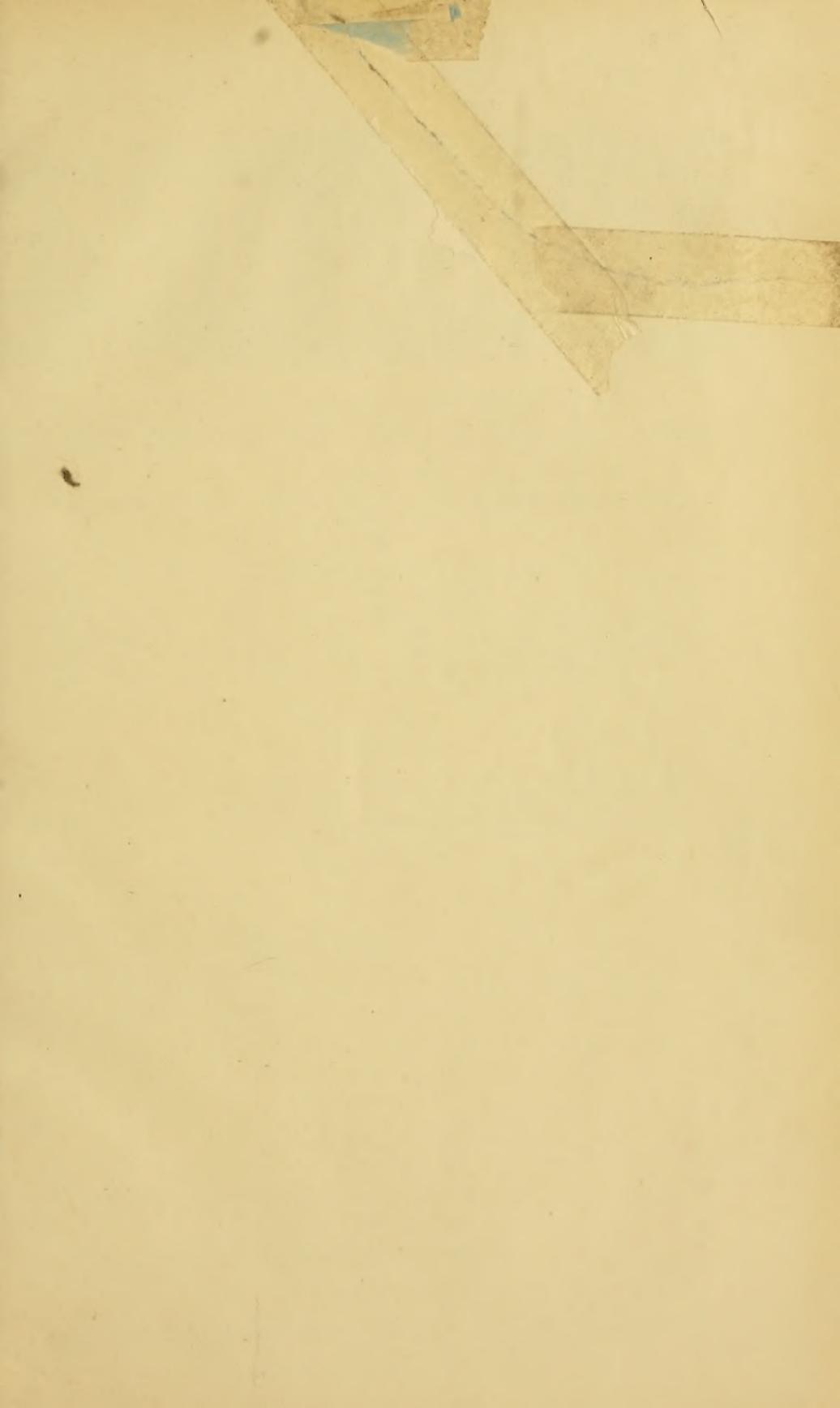
WITNESSES

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By JOHN W. TAYLOR, F.L.S., and others. Also in course of publication in the Transactions.

THE YORKSHIRE CARBONIFEROUS FLORA.

By ROBERT KIDSTON, F.R.S.E., F.G.S. Parts 14, 18, 19, 21, &c., of Transactions.

LIST OF YORKSHIRE COLEOPTERA.

By Rev. W. C. HEY, A.A.

THE NATURALIST. A Monthly Illustrated Journal of Natural History for the North of England. Edited by T. SHEPPARD, F.G.S., Museum, Hull; and T. W. WOODHEAD, F.L.S., Technical College, Huddersfield; with the assistance as referees in Special Departments of J. GILBERT BAKER, F.R.S., F.L.S., Prof. PERCY F. KENDALL, M.Sc., F.G.S., T. H. NELSON, M.B.O.U., GEO. T. PORRITT, F.L.S., F.E.S., JOHN W. TAYLOR, WILLIAM WEST, F.L.S., and R. FORTUNE, F.Z.S. (Annual Subscription, payable in advance, 6/6 post free).

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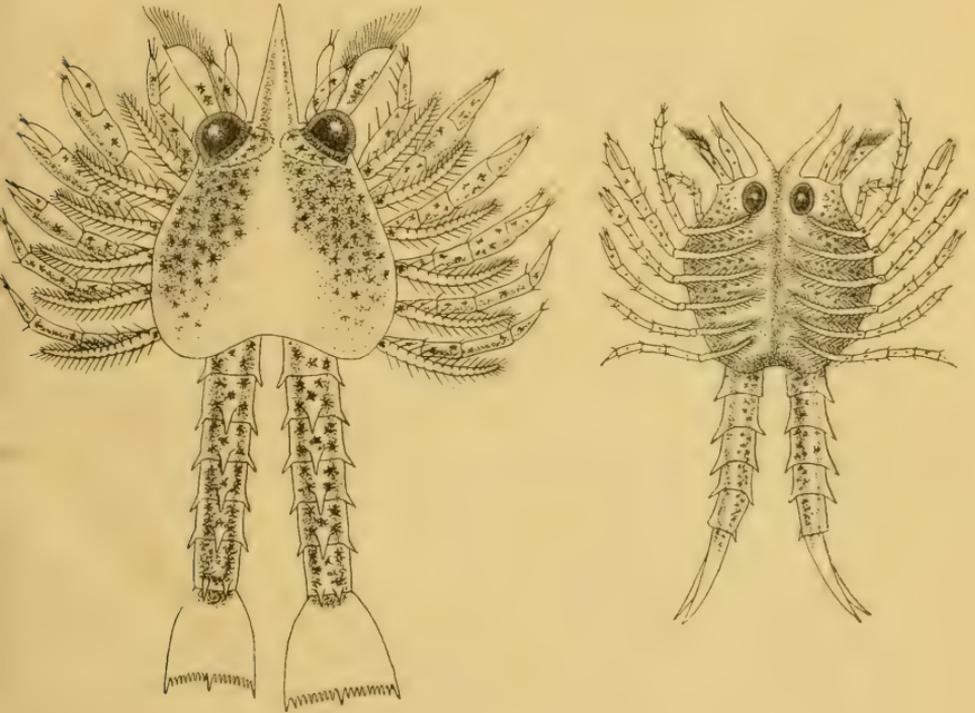
THE NATURALIST

FOR 1916.

NOTES AND COMMENTS.

LIVERPOOL BIOLOGISTS.

Volume xxix. of the Proceedings and Transactions of the Liverpool Biological Society* has been issued. It contains



Twinned Lobster Larvæ hatched at Port Erin.

the Presidential Address—'The Mode of Transmission of Some Tropical Diseases,' by Prof. J. W. W. Stephens; the Twenty-eighth Annual Report of the Liverpool Marine Biology Committee and their Biological Station at Port Erin, by Prof. W. A. Herdman, D.Sc., F.R.S.; a Report on the Investigations carried on during 1914, in connection with the Lancashire Sea Fisheries Laboratory at the University of Liverpool, and the Sea Fish Hatchery at Piel, near Barrow, by Prof. W. A.

* The University, Liverpool, 402 pages, 21s.

Herdman, D.Sc., F.R.S., Andrew Scott, A.L.S. and James Johnstone, D.Sc., as well as the L.M.B.C. Memoir on 'Tubifex,' by Gertrude C. Dixon, B.Sc. The last item is of special value, and is accompanied by seven excellent plates. The report throughout is illustrated by several interesting blocks, one of which, showing 'Twinned Lobster Larvæ hatched at Port Erin,' we are kindly permitted to reproduce.

GLIMPSES OF WILD LIFE.

Messrs. Virtue & Co., City Road, London, have issued an admirable series of fifty stereoscopic photographs taken from nature by H. Cox, F.Z.S. The photographs are chiefly of various phases of bird life. These are neatly packed in a suitable box, together with a well-made stereoscope, and in addition is a handbook giving descriptions of the photographs. The collection is sold at a guinea, and would be suitable for a very acceptable present. They are only sold by Messrs. Virtue & Co., direct.

EXIT THE ANTIQUARY.

We are sorry to find the following note in *The Antiquary* for November: 'The Publisher of *The Antiquary* regrets to be compelled to announce that, owing to lack of sufficient support, he is unable to continue the publication of the magazine. The December number will be the last.' For the past thirty-six years this journal has been regularly published monthly, by Elliot Stock, under various editors, the present being the fifty-first volume. *The Antiquary* has done much to encourage the study of antiquities, by the publication of original articles and by reviews and summaries of the various volumes and societies' Transactions of antiquarian interest. Many northern writers have been encouraged by the journal, especially by the present editor, Mr. G. L. Apperson. It seems strange that there are not sufficient people interested to support one popular antiquarian journal. Time was when there were several. We shall miss the familiar quotation from Goldsmith on the cover of the journal, which came before us each month: 'I love everything that's old; old friends, old times, old manners, old books, old wine,' and the passing of an old friend like *The Antiquary* makes one feel still older.

NORTHERN MINES AND QUARRIES.

Some interesting statistics in reference to the output of mines and quarries in the north of England are given in Mr. J. R. R. Wilson's report, which appears in *The Quarry* for November. The information in reference to the output of the various rocks and minerals is summarised in two useful tables, which we take the liberty of quoting:—

County	Number of Mines	Persons Employed	Description of mineral										Total			
			Barytes	Chert	Fluor Spar	Gyp-sun	Igneous rocks	Iron ore	Lead ore	Lime-stone	Sand & sand-stone	Slate		Zinc ore		
			Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	
Cumberland	63	5,474	—	—	—	—	—	—	—	—	—	—	—	—	—	1,333,778
Durham	18	485	2,509	—	18,729	27,139	9,136	1,295,804	1,776	4,873	—	—	—	—	—	37,023
Lancashire (detached portion)	27	1,585	—	—	—	—	—	334,860	—	—	—	2,233	4,405	2,961	—	344,462*
Northumberland	3	241	5,052	—	—	—	—	—	—	593	700	—	—	—	3,930	10,275
Westmorland	6	151	1,474	—	—	1,176	—	—	—	952	—	—	—	870	—	4,472
Yorks. N.R.	16	225	1,459	1,494	—	—	35,013	—	—	29	—	—	2,180	—	—	40,183†
Isle of Man	5	218	—	—	—	—	—	—	—	—	—	—	—	—	1,621	1,944
Total in 1914	138	8,379	10,494	1,494	18,729	28,315	44,149	1,632,440	9,176	2,933	6,585	6,207	1,604	—	—	1,772,137

* Including Copper Ore, 3 tons. † Including Copper Ore, 8 tons.

County	No. of Quarries	Persons employed	Description of mineral										Total	
			Clay, brick-earth, marl, and shale	Ganister	Gravel and sand	Igneous rocks	Iron ore	Limestone (other than chalk)	Sand-stone, &c.	Slate*				
			Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Cumberland	107	822	16,622	—	11,463	120,605	18	—	—	351,907	18,660	451	—	519,726
Durham	161	2,959	374,619	38,543	49,632	128,577	—	—	—	1,974,063	32,494	—	—	2,598,528
Lancashire (detached portion)	59	422	46,999	—	6,775	4,915	—	—	—	160,270	4,201	11,108	—	234,268
Northumberland	128	1,275	75,660	2,395	40,221	272,221	—	—	—	54,870	91,367	—	—	536,838†
Westmorland	37	301	—	—	234	64,148	20	—	—	56,670	20	1,242	—	139,032†
Yorks. North Riding	106	1,026	59,178	12,766	1,340	96,158	79,049	—	—	457,349	28,590	—	—	734,430
Isle of Man	35	147	4,480	—	445	17,697	—	—	—	6,116	—	9,568	—	38,316
Total	633	6,952	577,558	53,704	110,120	704,321	79,067	—	—	3,061,845	175,332	22,369	—	4,792,138

* Including Roofing Slate, Slabs and Slate used as Building Stone and Road metal. † Including 104 tons of coal.

‡ Including 7,718 tons of gypsum.

EAST ANGLIAN PRE-HISTORIANS.*

This publication contains a number of papers bearing upon the Society's work, most of which have reference to East Anglia. Among the contributors are J. Reid Moir, Rev. H. G. O. Kendall, Louisa L. F. Gaton, W. G. Clarke, J. G. Marsden, H. Dixon Hewitt, A. Leslie Armstrong, T. E. Nuttall, A. E. Peake, R. H. Chandler, Reginald A. Smith, Henry Dewey, Nina F. Layard, Alfred Bell and C. S. Tomes. Of more particular interest to northern readers is an article on 'The Occurrence of Palæoliths in North-East Lancashire,' by Dr. Nuttall, and a paper on 'A Carib Type of Axe found in Yorkshire,' by Mr. Armstrong. Mr. Armstrong kindly showed us this axe-head some time ago, and we are satisfied, as indeed Mr. Armstrong quotes in his paper, that it is of Borrowdale Ash and is of Neolithic age. Notwithstanding this opinion, which apparently is not accepted, most of his paper has reference to what one writer describes as 'a fine example of the exceedingly rare West Indian Carib Type of Axe.'

'THEORIES.'

Mr. Armstrong asks: 'If their Carib origin is admitted, how can their European distribution in Neolithic times be accounted for?' Personally we think it much more likely that a Borrowdale ash axe-head found near Burley is of local origin, the same as are the thousands of other axe-heads found in the county, rather than that they have been brought into this country in Neolithic times from the West Indies. Such a theory is about as absurd as that which was advanced in all seriousness a little while ago to account for small flint flakes at Scunthorpe in Lincolnshire, because somewhat similar implements occurred in India. It was then suggested that some Indians had sailed to Scunthorpe in a boat and left these remains behind. Surely it must be seen that precisely similar objects can occur in countries far apart when the material available and the needs of the natives are similar.

LINCOLNSHIRE MOLLUSCA.

Mr. J. F. Musham has published a 'List of Lincolnshire Land and Freshwater Mollusca' (Selby, 22 pages). It contains elaborate details and localities of the various species, and notes on *Limnea glabra* in captivity, on *Vivipara contecta*, *Anodonta cygnea*, etc. Mr. Musham's object in printing it was in order to make his notes more accessible, and we understand only about half a dozen copies were issued. We are indebted to him for one. We recently had an opportunity of examining his extensive collection of Lincolnshire shells, which contains many rare examples.

* Proceedings of the Prehistoric Society of East Anglia, Vol. II., part I (157 pages, 3s. 6d. net).

THE 'NAMING' MANIA.

In *The Entomologist's Monthly Magazine* for December, Mr. Pool states that the insects standing in British lists as *Plinus testaceus* must all be referred to *P. pusillus*. Mr. Gahan adds that 'Mr. Pool's note, as it stands, may lead to continued error. The *P. testaceus* to which he refers is not the *P. testaceus* of Olivier or Boieldieu, which is a species quite distinct from *P. pusillus* Sturm. = *P. pusillus* Boield., but is merely the species known to British collectors as *P. testaceus*. . . . What Mr. Pool has shown in his notes is that the female of *P. pusillus* has been wrongly identified in British collections as *P. testaceus* or *P. brunneus*.' On the next page Mr. E. R. Newberry points out that '*Ochthebius poweri* is a variety of *metallascens* Rosen. . . . In the Exchange List recently published the above note was forgotten, and the insect referred to a var. of *dentifer* Rey, evidently in error.' All these errors and corrections may be very interesting, but surely there is some fault or carelessness somewhere. On the very next page is the following note by Mr. D. Sharp: '*Meotica exiliformis* and *M. exillima*. Dr. Joy and I are agreed that these names apply to the same species; the explanation being that he is so much occupied that he altogether overlooked the description of *exillima*.' It seems a pity that those who have not time to examine previous descriptions, should still have time to describe alleged 'new species' which so soon after require correcting.

AUSTRALIAN FUNGI.

The Royal Botanical Garden, Kew, have issued a Bulletin (No. 8, 1915), by Miss E. M. Wakefield, on 'A Collection of Fungi from Australia and New Zealand.' This is devoted to a description of a collection formed by the President of the Yorkshire Naturalists' Union, Mr. W. N. Cheesman, while with the British Association in 1914. The collection has been presented to Kew, and Miss Wakefield describes a number of new species, which are figured on two plates. Two of these are named after Mr. Cheesman, viz., *Heterochacte Cheesmanii* and *Peniophora Cheesmanii*.

GEOLOGY OF SCARBOROUGH;

After 33 years the Geological Survey has issued a second edition of the Memoir dealing with the geology of the country between Whitby and Scarborough. Since the first edition (1882, 60 pages), many important publications have appeared, mostly from the pens of amateurs, and these have necessitated the Memoir being entirely re-written. This has been done under the supervision of Mr. G. W. Lamplugh, the Memoir itself being prepared by the late C. Fox-Strangways, and Mr. G. Barrow. There is also a chapter on 'The Palaeontological

Classification of the Local Jurassic Rocks,' by Mr. S. S. Buckman. Briefly, the main directions in which our knowledge of the area has been increased are with regard to the system of glacier lakes so admirably worked out by Prof. Kendall; the extraordinary discoveries made among the fossil plants of the district by Prof. Seward and others; and in naming and zoning of the Ammonites, by Mr. Buckman.

SPECIAL WORK.

Some idea of the extent to which this last work has proceeded may be gathered from the table on page 65. From this we learn that our old friend *Ammonites annulatus* is now '*Dactyloceras tenuicostatum*; *D. gracile*'; and *Ammonites spinatus* is now '*Paltopleuroceras hawskerense* and other species.' On the other hand certain species frequently recorded and referred to on the old maps are not now recognised at all, and are dismissed with the words, 'No Species seen.' All this is the result of specialising, which is undoubtedly valuable, and in all probability the new names are accurate, but it makes the work of an amateur, and even of a fairly advanced student, very disheartening, if not impossible. We are sorry that the Survey has not adopted the example set in the second edition of the memoir for the adjoining district South of Scarborough, which was illustrated by many excellent plates of the coast and landscape, from photographs; but at 2s. 6d. the present Memoir of 144 pages cannot be looked upon as dear, though the almost total absence of illustrations and the poorness of paper makes us wish that our Government surveyors had the funds at their disposal to enable them to produce volumes after the style of those of the well-known American surveys. We notice that the bibliographies appearing in *The Naturalist* are recommended to those desiring particulars of the papers written on the district.

THORBURN'S BRITISH BIRDS.*

The second volume of this magnificent publication has made its appearance, and, if possible, is even more beautiful than the first. It contains plates 21 to 40, and deals with Passeres, Picariæ, Striges, Acciptres, Steganopodes and Herodiones. The various species are dealt with tersely, accurately, and in a pleasant style, on the 72 pages of letterpress. The frontispiece represents the Golden Eagle (adult and young) in flight, and is perfect. We do not remember having seen a finer representation of this king of birds. The plate of Swifts and Nightjars is also remarkably fine. The Eagle Owl, which alone occupies plate 28, is another masterpiece. We can only wish the book the success it certainly deserves.

* Vol. II., 72 pages and 20 plates, 4to. London: Longmans, Green & Co., 31s. 6d.

STAFFORDSHIRE POTTERY.*

Major Cyril Earle has spent much time and much money in gathering together a remarkably fine collection of picked pieces of Staffordshire Pottery. There are 750 examples, many marked with the maker's name. Major Earle has been careful to gather together typical pieces, several of which, judging from the prices they realize nowadays, are as much sought after as the wares of the Derby, Worcester, or better-known factories. Major Earle's collection is in the Hull Museum, and this work contains a detailed description of each piece; all are figured, many being in colours. He has fine examples of Slipware, Saltglaze, Whieldon, Toby Jugs, figures, and an enormous number of the quaint representations of animals, some of which, however, might not perhaps appeal to a critical zoologist!

EVOLUTION OF THE POTTER'S ART.

Mr. T. Sheppard, in whose charge the collection is, contributes a chapter on 'The Evolution of the Potter's Art,' which is illustrated by about a hundred examples of ancient pottery from the Driffield and Hull collections. Mr. Sheppard evidently believes that there is no art so ancient as the Potter's Art. We have heard that even Adam was made of clay and Eve made a mug of him! At any rate, illustrations are given of mugs quite as old as Adam's time, and the improvements from primitive pottery to the best productions of the Chelsea, Derby, etc., factories, are graphically shown. The book is printed on hand-made paper, the plates on fine art paper, and the binding and printing are of the best. Speaking with some knowledge of the subject, we can say that it is the finest book that has ever been produced in Hull. We doubt if the price at which it is sold will produce a profit, but that is no concern of ours!

FOSSILIFEROUS LIMESTONE FROM THE NORTH SEA.

At a recent meeting of the London Geological Society, Mr. R. B. Newton described a piece of Limestone trowled from the floor of the North Sea, some 100 miles N.E. $\frac{1}{2}$ N. of Buchan Ness, and was forwarded to the British Museum (Natural History) by Mr. R. D. Thomson, of Aberdeen. It presents no appearance of glaciation, so that its occurrence *in situ* is thought to be probable. There is no record of a similar limestone from either England or Scotland. It is of highly siliceous character and full of marine shells, of which the Pelecypoda are the more prominent; there are, also, occasional fragments of wood in contact with the limestone which, from a preliminary exami-

*'The Earle Collection of Early Staffordshire Pottery,' by Major Cyril Earle, T.D. With an introduction by F. Faulkner, and a supplementary chapter by T. Sheppard, F.G.S. London: A. Brown & Sons, Ltd., 4to, 243 pages, 25s. net.

nation, appear to show coniferous characters. Some twenty-three species of mollusca have been determined, all of which exhibit a southern facies, including ten gastropods and thirteen pelecypods: the latter embrace a new Dosiniform shell belonging to the genus *Sinodia*, the relationships of which are entirely confined to the Indian Ocean regions of Southern Asia. Eighteen of the species, or about 80 per cent., trace their origin from the Vindobonian stage of the Miocene; ten, or about 40 per cent., may be regarded as extinct; whereas twelve, or 50 per cent., still exist in recent seas. The majority of the species are fairly evenly distributed in both the Coralline and the Red Crag formations of East Anglia, although, on account of so large a number being extinct, and bearing in mind their southern facies, it is thought that the rock must be of older age than Red Crag. Additional support is given to this view, because such shells as *Arcoferna sericea*, *Tellina benedeni*, and *Panopæa menardi* are not known of later age in this country than the Coralline Crag. The occurrence also of the extinct gastropods *Streptochetus sexcostatus* and *Ficus* (*Pyrula*) *simplex*, which are particularly characteristic of the Upper Miocene or Messinian deposits of Northern Germany, constitutes further evidence in favour of a greater antiquity for this limestone than that of the Red Crag: it is, therefore, considered to be of Coralline Crag age.

POSSIBLY OF GLACIAL ORIGIN.

Mr. G. W. Lamplugh congratulated the author on his very notable addition to our scanty knowledge of the rock-floor of the North Sea. Geologically, this area was as essentially part of Europe as the land above water, and deserved every possible effort to determine its structure. Much of the Glacial Drift on the margin of Eastern England has been dragged in from seaward, and gave some indication of the character of the sea-floor. This material included transported patches of early Glacial marine deposits along with masses of Jurassic and Cretaceous strata; but in no case had the speaker seen, in the Drifts between the Tees and the Humber, any rock resembling that now exhibited. It seemed unlikely that any bed of rock like that shown existed beneath the southern part of the North Sea, and the present discovery certainly added a new and important factor to the geology of the whole basin. He asked whether the author had considered the possibility that the rock might originate from a detached mass carried by the ice-flow from the Baltic basin, as the site of the discovery lay in the right position for such transport. Personally we consider Mr. Lamplugh's attitude the correct one, and that it would be unwise to form any conclusions as to the probable geological history of the North Sea floor based solely on an isolated fragment of rock dredged up by a trawler.

THE WILD ROSES OF DURHAM.

J. W. HESLOP HARRISON, B.Sc.
Middlesbrough.

THE necessity of working out the Wild Roses of Durham and Northumberland, occasioned by the compilation of a 'card index' of the flora and fauna of the two counties, has led to the present paper. It has been deemed advisable to divide Durham into certain areas, a table of which is given here as it is made use of in the list of roses.

As far as possible, the divisions chosen are natural ones, based on geological or geographical features, or both, and it is clear that any such divisions will depend greatly on the three drainage areas of the county. The divisions proposed are:—

- I. TYNELAND SOUTH—Divided by the water-parting between the Team and Derwent into (a) Tyneland south proper (b) the Vale of Derwent as far west as Edmondbyers.
- II. UPPER WEARDALE—Comprising all the Wear Valley west of Wolsingham with that part of the Vale of Derwent west of Edmondbyers.
- III. MID WEAR—Including all the rest of the Wear Drainage, except the Magnesian Limestone Area.
- IV. COASTLAND—Coinciding with the Magnesian Limestone minus the wedge which strikes toward the Tees west of the Skerne.
- V. UPPER TEESDALE—The Tees Drainage west of Egglestone.
- VI. MID TEES—The Millstone Grit and Magnesian Limestone formation between Coniscliffe and Egglestone.
- VII. LOWER TEES—The Tees Drainage from Coniscliffe to the mouth of the river.

The Rose Flora of Durham appears to be, on the whole, a very rich one, but one which almost baffles any geographical classification.

It is certain, of course, that the Eucanine group is dominant everywhere except on the sea coast where *Rosa spinosissima* is the commonest form, and possibly at certain points in Upper Weardale and the Vale of Derwent where the *Villosæ* group runs it very closely. Elsewhere, the *Villosæ* are widespread, occurring very sparsely in Tyneland South proper and Lower Tees, but gradually becoming more abundant in Coastland, and as we proceed westward. How much this apparent scarcity of the *Villosæ* in the industrial areas is real, and how much artificial, it is difficult to say, but, of the two species which stand for the group in Baker and Tate (1868) *Rosa mollissima* Fr. and *R. tomentosa* Sm., their remark is 'common.' Increasing population may be the cause of the apparent change

as only rarely are the pink flowered forms allowed to fruit, and, if they do fruit, their ornamental bristly fruits are soon taken. On the other hand, we have the same scarcity of this group in areas in other counties of similar geological formation where the population difficulty does not exist.

The Rubiginosæ are to be found dotted here and there in very small numbers and in such suspicious localities that one is irresistibly forced to the conclusion that, as far as our county is concerned, this group is merely a naturalised one.

To the Systylæ and Synstylæ I think the same applies; the former is not recorded by Baker and Tate while the latter has now vanished from many of the stations given by them, and elsewhere is always found in positions such as to lead one to imagine that the plants had been planted for the purposes of cover.

The other groups usually listed are merely hybrids and, of course, can only occur where their parent forms overlap and, in our counties, these possible areas are almost all near the sea coast.

SYNSTYLÆ.

ROSA ARVENSIS Hudson.

Rare in plantations Ravensworth (Ia.) quite typical.

SYSTYLÆ.

ROSA SYSTYLA Desv.

A single plant referable to this species has likewise been discovered at Ravensworth, and as the form is exclusively southern it seems probable that it was planted with the *Rosa arvensis* noted above.

EUCANINÆ.

ROSA CANINA L.

m.* *lutetiana* Lem. Common in all the divisions.

m. *flexibilis* Desigl. Scarcely worth a name differing from *lutetiana* practically in the styles only (Ia.) Birtley; (VII.) Billingham.

m. *senticosa* Ach. (VII.) Cowpen Bewley.

ROSA SARMENTACEA Woods = *dumalis* Bech.

Practically typical forms occur at (Ia.) Birtley; (II.) Wolsingham; (III.) Satley, Lanchester, Witton Gilbert; (IV.) general; (VII.) general.

m. *biserrata* Mér. A strongly biserrate form, but with feebly glandular peduncles apparently intermediate between this and the type, but leaning most strongly toward *biserrata*, occurs at Lamesley (Ia.)

m. *Malmundariensis* Lej. Fine and typical. (II.) in a dene just above Wolsingham; (VII.) near Greatham.

* m. = microgene, or little species, a term applied to the members of an aggregate species.

ROSA ANDEGAVENSIS Bast.

A fine bush quite typical in a hollow just south of Wolsingham Station (III.)

ROSA SCABRATA Crep.

m. *vinacea*. Odd plants in most divisions.

ROSA DUMETORUM Thuill.

Type thinly but widely spread.

m. *urbica* Lem. Common everywhere.

m. *hemitricha* Rip. Very near *urbica*, slightly more villous, in same areas but rare.

m. *platyphylla* Rau. Another minor form (VII.) Billingham.

m. *frondosa* Bkr. Rare (VII.) Cowpen Bewley.

m. *incerta* Dés. (III.) Wolsingham.

ROSA GLAUCA Vill. = REUTERI God.

This rose is widespread in Durham, but for some reason it seems to flower but rarely with us, and this renders it very difficult to name its forms. I have, however, seen it flowering in its typical form at (III.) Witton Gilbert; (VII.) near Greatham.

m. *complicata* Gren. (V.) Rare near Egglestone.

ROSA CAESIA Sm. = CORIIFOLIA Fr.

Nearly typical. (III.) Satley; (VII.) Thorpe, Cowpen Bewley.

m. *Watsoni* Baker. Very fine and plentiful in a hedge bordering Birtley Fell (Ia.)

m. *subcollina* Christ. One plant on mineral line near Vigo (III.)

m. *Bakeri* Des. (Ia.) Between Birtley and Lamesley.

m. *pruinosa* Bkr. (II.) Wolsingham.

ROSA OBTUSIFOLIA Desv.

m. *Borreri* Wood. (= *tomentella* Lem.) Rare, Bewicke Main (Ia.)

RUBIGINOSÆ.

ROSA MICRANTHA Sm.

Generally but sparingly on the Magnesian Limestone (IV.)

ROSA EGLANTERIA L. = RUBIGINOSA L.

m. *comosa* Rip. Sparingly in the Team Valley (Ia.); one plant Wolsingham (II.)

m. *echinocarpa* Rip. A form very near to this occurs between Satley and Wolsingham (III.)

VILLOSÆ.

ROSA MOLLISSIMA Willd. = TOMENTOSA Sm.

Regarded as strictly equivalent to *tomentosa* Sm., nearly typical forms occur in varying abundance everywhere.

m. *cinerascens* Dum. In spite of the doubt recently

thrown upon the occurrence of this form in Durham by certain writers, uniserrate forms which can only be referred to this do occur with us at Billingham (VII.)

- m. *pseudo-mollis* J. G. Baker. Almost typical plants but with larger leaves than this form demands occur on Birtley Fell (Ia.)
- m. *cuspidatoides* Crep. Sparingly throughout our area.
- m. *Sherardi* Davies. Once, West Cornforth (IV.); two or three plants growing together Wreckerton (Ia.)
- m. *scabriuscula* Winch. (III.) Langley Park, Waldrige.
- m. *eminens* Harrison. This is a new form which I described in the October *Vasculum* from Wolsingham (II.); it also occurs (III.) Satley and Lancaster.

ROSA OMISSA Dés.

- m. *resinosoides* Cr. Thinly distributed, but not uncommon in the western divisions. Rare at Waldrige (III.); Billingham (VII.)
- m. *submollis* Ley. Nearly the same, leaves eglandular, Wolsingham (II.)

ROSA VILLOSA L.

- Quite common in the west; rare elsewhere.
- m. *caerulea* Woods. Rare Beamish (Ia.)

ROSA POMIFERA Herrm.

- A single and quite typical plant in a hedge between Greatham and Cowpen Bewley (VII.) Near a garden and possibly an escape.

PIMPINELLIFOLIÆ.

ROSA SPINOSISSIMA L.

- m. *pimpinellifolia* L. (II.) Sparingly everywhere; (III) Rare; (IV.) Very common in the coast denes, thins out inland; (V.) Falcon Clints.

PIMPINELLIFOLIÆ × VILLOSÆ.

ROSA INVOLUTA Sm.

- Form. *Sabini*. Sparingly Horden, etc. (IV.)

PIMPINELLIFOLIÆ × EUCANINÆ.

ROSA HIBERNICA Templ.

- This hybrid occurs near Haverton Hill (VII.) but for the same reason as recorded under *Rosa glauca*, I cannot be sure of the exact form. There are several plants growing close together in a hedge which to judge from their foliage and armature must have the parentage assigned to them above, but they never flower. If my judgment is correct then the parentage will be *Rosa spinosissima* × *R. glauca*.

The list given above represents the work of one individual

carried out as a kind of relaxation and change whilst studying other groups. I feel sure that steady work on the coast, particularly in the denes which cut through the Magnesian Limestone and in the country west of Wolsingham and Lanchester, will reveal the occurrence of many rare and novel forms. This work I intend to carry out as opportunity offers and hope thus materially to extend this preliminary statement of the Durham Rose Flora.

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British Birds for November contains an excellent portrait of the late R. M. Barrington.

Notes on 'New and Little-known British Aphides,' by F. V. Theobald, occur in *The Entomologist* for November.

The Irish Naturalist for November is nearly entirely occupied by a memoir on the late Richard Manliffe Barrington.

The *Quarterly Notes of the Belfast Museum*, No. 30, being publication No. 51 (13 pages), are devoted to 'An Introduction to the Study of Birds' Eggs' (illustrated).

The Scottish Naturalist for November contains 'Some Observations and Deductions regarding the Habits and Biology of the Common Wasp,' by Dr. James Ritchie.

In *The Entomologist* for October Mr. G. T. Bethune-Baker points out that Mr. Rowland Brown says that he (Mr. Bethune-Baker) retains *Thecla æsculi* as a local form of *ilicis*, whereas he informs us that he has not seen a specimen of *æsculi*. Mr. Rowland Brown says that he was evidently mistaken.

In *The Lancashire and Cheshire Naturalist*, No. 90, Mr. J. A. Wheldon figures and describes 'A New British Lichen from the Isle of Man,' and gives it the name of *Acrocordia monensis* sp. nov. He also describes and figures what 'should probably be cited as *Bidens cernuus* Linn. var. *discoideus* Cand. f. *minima* Williams.'

In *Knowledge* for October, Mr. A. R. Horwood writes on 'The Flower Table and its Educational Value.' It appears that the Leicester Museum now has wild flower exhibitions arranged scientifically. Brighton is said to be one of the first museums in England to exhibit wild flowers, presumably Leicester is one of the last.

In *The Entomologist's Monthly Magazine* for October, a specimen of *Rhantus exoletus* Forst, var. *nigriventris* nos, taken at Askham Bog in 1895, is recorded as new to the British list; *Meligethes brevis* Sturm, is recorded for Durham; *Carabus arvensis* in the West Riding, *Emmelesia minorata*, from Grassington, new to Yorkshire, etc.

In *British Birds* for October is an article on "'Wait and See" Photography' by E. L. Turner. This variety is accomplished by sitting inside a tent all day. The paper is illustrated by many interesting photographs. Eric B. Dunlop writes 'On Incubation.' There is also an illustration of the Eastern Black-eared Wheatear seen on the Cleveland Hills, Yorkshire, on June 6th, 1915.

In *The Entomologist's Monthly Magazine* Mr. Norman H. Joy points out that a species which he has described as *Gabrius primigenius* Joy, was previously named *G. velox* by Sharp. '*G. primigenius* Joy, is therefore a synonym of *G. velox*.' There has also been a mistake with regard to an illustration. We may be mistaken, but it certainly seems to us, in view of these frequent 'corrections,' that some of our entomological friends are much too Sharp in describing new species, and the result can only be that one's Joy will be turned to Sorrow!

A CELERY FUNGUS.

T. B. ROE.

MR. T. N. ROBERTS has handed to me a fungus which has attacked his celery plants in the Scarborough district. It is *Septoria petroselini* Desm. var. *apii* Br. et Cav., one of the Deuteromycetes.

This fungus is new to Yorkshire. Although previously known on the Continent and in N. America, the first authentic record of its appearance in this country was in 1906 in South Devon, although there is reason to believe that it had appeared here still earlier. Since then it has caused much damage to celery both in this country and in Ireland.

The leaves and leaf-stalks show yellowish or pale brown areas which later become covered with numerous minute black dots just distinguishable by the unaided eye, but better seen by the aid of a lens, and which are the perithecia or fruiting bodies of the fungus, these being strictly the pycnidia. They are somewhat globose in shape and rather flattened and about 200-250 μ in diameter. They are amphigenous and sunk in the mesophyll, at first covered by the epidermis, just breaking through at maturity, the spores dehiscing by a minute apical pore, in a worm-like tendril-shaped mass. The spores are filiform, usually curved, three or more septate and guttulate, about 50-65 by 1.5-2 μ , and produced in enormous numbers. This accounts for the rapid spread of the disease after it first manifests itself. The mycelium ramifies among the cells of the mesophyll, destroying the chlorophyll, thus interfering with the activities and nourishment of the plant, and the leaves and leaf-stalks finally wilt and die.

Mr. Roberts informs me that last year he lost three-quarters of a crop of 30,000 heads of celery through this disease alone.

This year on a different part of his land it has again made its appearance but not with the severity of last year's attack; still, the damage is considerable. The disease is usually observed about the end of July or beginning of August when, unfortunately, it is well established, and the damage is practically past repair.

As it has been proved that the 'seed' has been known to contain fruits of the fungus, washings from which have been made by experiment to infect healthy plants, it would be advisable for growers to watch their *young* plants, and at the first sign of the disease to spray them with dilute Bordeaux mixture or potassium sulphide solution. As a precautionary measure microscopical examination of samples of 'seed' might be made, and if the fungus be detected thereon, washings in a fungicide might be tried, although it is possible that this would

be little more than a palliative. Growers should promptly burn all diseased foliage. The practice of throwing diseased plants on to a rubbish heap is a great mistake as there is no doubt that the fungus can live through the winter and attack fresh plants the following year.

Mr. Roberts informs me that if he had many visitations like that of last year, celery growing would become impracticable. The disease must not be confounded with *Cercospora apii* Fr., a Hyphomycete, which attacks celery plants usually early in the season.

Still another celery disease, *Phyllosticta apii* Halsted, has appeared in this country during recent years. This is somewhat similar in outward appearance to the Septoria, but the spores in the former are broadly elliptical, while in the latter they are needle-shaped.

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We much regret to record the death of Prof. R. Meldola, at the age of 66.

Mr. W. Denison Roebuck has been elected an honorary member of the Conchological Society.

Dr. R. Assheton, F.R.S., the well-known zoologist, has died. He was born at Downham Hall in Lancashire in 1863.

The Collections in the British and Mediæval Department at the British Museum have been re-arranged and better displayed.

The roll of British Officers who have fallen in Gallipoli includes the name of Colonel Neville Manders, A.M.S., F.Z.S., F.E.S.

Lady Church has recently presented to the British Museum the fine collection of precious stones formed by the late Sir Arthur Herbert Church.

An excellent portrait and biography of Prof. William Whitehead Watts appears in the *Geological Magazine* for November. It is one of the 'Eminent Living Geologists' series.

We notice from the syllabus of one of our leading Yorkshire natural history societies that 'ladies are now admitted as "full" members.' Apparently the gentlemen have previously had the monopoly of being 'full.' This society's meetings ought to be lively, anyway.

We see that a meeting has been held to form a 'Society for the Study of Geological Physics,' or 'A Society to Study Mineral Life,' we are not quite sure which. In any case, we do not anticipate that it will seriously clash with the work of the Mineralogical Society.

Mr. E. K. Robinson is organising a fund to send copies of his pamphlet, 'The Meaning of Life' to the soldiers. It contains four leaves, without covers, and is sold at 1½d. ! The 'leading article' in the leaflet before us is entitled, 'Is there a Devil?' It may be of use to the soldiers.

We much regret to record the death of Mr. W. H. Wheeler, at the age of 83. He was an occasional contributor to these columns. He paid much attention to the problems connected with coast erosion and the draining of fen lands. So long ago as 1868 he published a 'History of the Fens of South Lincolnshire.' He also published books on 'Tidal Rivers' (1893); 'The Sea Coast' (1902); 'Practical Manual of Tides and Waves' (1906), and 'The North Sea' (1908). Mr. Wheeler was elected a member of the Institution of Civil Engineers in 1867, and he was a frequent visitor to the meetings of the British Association.

YORKSHIRE ZOOLOGISTS AT LEEDS.

 A. HAIGH-LUMBY.

MR. E. W. WADE presided at the meetings of the Vertebrate Section held in the Leeds Institute on November 20th, 1915.

The Annual Reports for the West Riding, North and East Ridings, and York District, were presented respectively by Messrs. Booth, Wade and Smith, and that of the Wild Birds Committee was read by Mr. Booth, on behalf of Mr. J. Wilkinson, the Secretary.

Mr. W. H. Parkin was unanimously elected to the Presidency of the section.

Mr. H. B. Booth exhibited a Cuckoo's egg, sent by Mr. Rosse Butterfield, taken from nest of Twite in the Bradford District, an unusual host in that locality.

An interesting collection of field notes was read by Mr. W. H. Parkin, comprising records of unusual varieties, peculiar nesting incidents, etc., which aroused a very interesting discussion.

A paper was given by Mr. T. H. Fowler, entitled 'Observations on the Sparrow Hawk and Long-Eared Owl.' Of late, many valuable 'life histories' of different species of birds have been written, and the lecturer has been a diligent disciple of this new school of naturalists, who rightly maintain that very little of the psychology and economy of any individual or family of birds can be learnt from stuffed specimens—however elaborately mounted. A peculiarity of the Sparrow Hawk shared by other members of the 'Raptore' family, was of great assistance when the quest of this particular species was decided upon. 'Once a Merlin haunt, always a Merlin haunt,' is an accepted truism, and the same applies to the subject of this paper. Although the pair of birds was destroyed two years in succession, yet a third came and occupied the same beat the next year, and with the forbearance of the keeper, observations were made and photographs taken covering the whole period from the construction of the nest to the leave-taking of the young.

The Long-Eared Owl, generally recognised as a confirmed 'tree' breeder, has recently been noted to be somewhat wayward in this particular, and Mr. Fowler gave two instances coming under his observation: one nest containing five young about fourteen days old, and the other four young and one addled egg, on May 15th. In both cases the nest was on the ground.

A fine series of photographs illustrating the home life of both Sparrow Hawk and the Owl were shewn on the screen, supplemented by a series of the Crested Tit, taken in the Spey Valley last year, shewing the bird and nesting sites of this extremely local species.

Slides of the Kestrel, Golden Plover, etc., were described by Mr. Jasper Atkinson, and Mr. H. B. Booth related his experiences of hunting the Golden Eagle, Ptarmigan and Crested Tit in Scotland, also illustrated with slides.

A vote of thanks was unanimously accorded to the several lecturers and to Mr. Graham for the loan of the room.

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An Osprey was noted in Cheshire in September. (*British Birds*, December).

In *Knowledge* for November, Dr. P. Q. Keegan writes on 'The Inner Life of Some Common Plants.'

Aphelocheirus aestivalis is recorded for Nottinghamshire. (*Entomologist's Monthly Magazine*, December).

The Zoologist for October contains records of an Albino Water-Vole, an Albino Pheasant, Dunlin, and Little Owls, all in Nottinghamshire.

In a note on 'Some Coniopterygidæ in the North,' in *The Entomologist* for December, Mr. J. W. H. Harrison describes *Conwentzia pineticola*, an addition to the British list.

In *The Entomologist's Record* for October, Mr. R. S. Bagnall records a specimen of *Pterodela livida* Enderlein, a psocid new to the British fauna, from Ovingham-on-Tyne, Northumberland.

Mr. A. W. R. Roberts reports on the Aphidæ for the Lancashire and Cheshire Fauna Committee, though nearly all his records are for Westmorland. (*Lancashire and Cheshire Naturalist* for November).

In *The Zoologist* for November, Mr. Alfred Bell gives a valuable account of the Pleistocene and later Bird Fauna of Great Britain and Ireland. He refers to the remains found in caves, peat beds, etc., including Yorkshire.

With the aid of several figures, Mr. R. S. Bagnall gives 'A Brief Review of the British Coniopterygidae (Neuroptera) with tables of the European Genera and Species,' in *The Entomologist's Record* for November. Several northern county species are enumerated.

From a note in *The Lancashire and Cheshire Naturalist* for October we gather that a correspondent has recently seen a large bird with powerful flight and he thinks it might be a Great Bustard. He is also 'assured that the Great Bustard is of very rare occurrence in Lancashire.' His informant is correct. His name has three o's in it, and they are from three different founts. The same journal contains a record of *Blepharidea vulgaris* in the Rochdale district, a dipteran parasitic of *Abraaxas grossulariata*.

In *The Entomologist's Monthly Magazine* for November, Mr. G. C. Champion points out that a species to which he had given the name *Xylophilus immaculatus* should be altered to *X. immaculipennis*, 'Lea having already used the same name (under *Syzeton*, a synonym of *Xylophilus*) for an Australian insect.' On the previous page the same writer tells us that '*Ochthebius poweri* Rye, treated as a variety of *O. dentifer* Rey, in our latest British catalogue, seems to me to be inseparable from *O. metallescens*.'

The Entomologist's Monthly Magazine for November contains records of *Patrobis septentrionis*, *Lesteva luctuosa* and *Carabus arvensis* in Yorkshire; *Bothynotus pilosus* near Carlisle, and *Syrphus guttatus* in Cheshire. In the December number Mr. G. T. Porritt points out that the specimens of *Stenobothrus bicolor*, which occur among the rubbish near the houses at St. Anne's-on-Sea, are much darker than the ordinary form, in some cases being nearly black. Mr. F. N. Pierce and the Rev. J. W. Metcalfe describe some additions to the British *Tortricina*, some of which are from Teesdale, Hartlepool, Darlington, Cheshire, etc.

YORKSHIRE MYCOLOGISTS AT SCARBOROUGH.

A. E. PECK.

THE Autumn Fungus Foray was held at Scarborough (with headquarters at Forge Valley), from September 25th to September 29th. Present: Harold Wager, D.Sc., F.R.S. (Chairman),

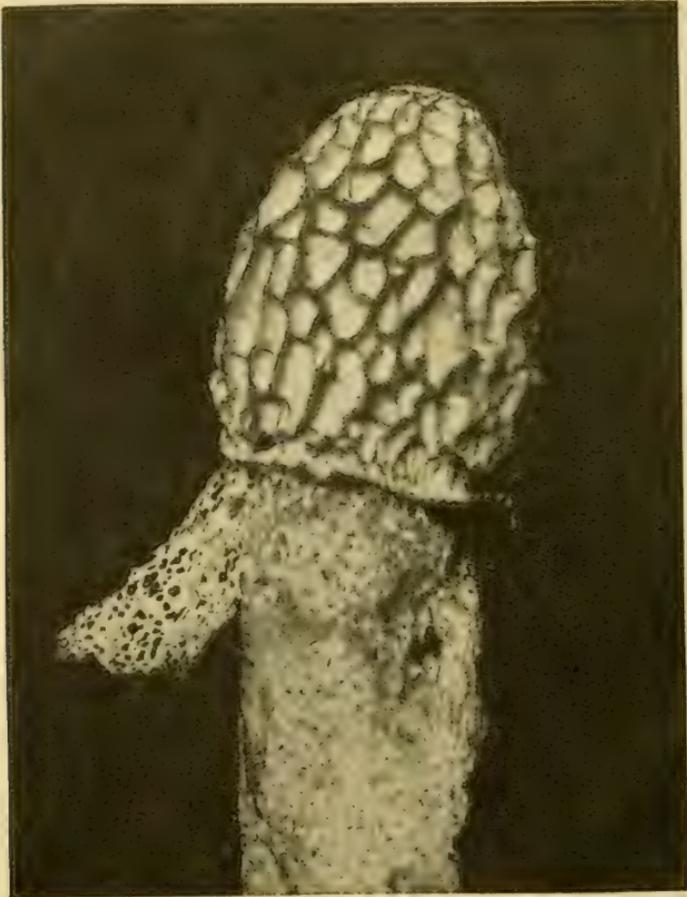


Photo by]

Phallus impudicus with veil.

[A. E. Peck.

W. N. Cheesman, J.P., Alfred Clarke, J. W. H. Johnson, M.Sc., T. B. Roe, M. Malone, R. Fowler Jones, J. Ackroyd, Thos. Hey, and A. E. Peck (Hon. Secretary). Several members of the Scarborough Field Naturalists' Society called to inspect the specimens on view.

Permission to visit their respective estates had been granted by Lord Londesborough and Major the Hon. J. Dawnay.

Naturalist.

First attention was devoted to the Ing's plantation on the Carrs, where specimens proved numerous, the best finds being *Helvella macropus*, *Lactarius scobiculatus* and *Lepiota felina*.

Yedmandale, like other woods subsequently visited, was found to be too dry to produce a first-class mycological display. *Craterellus cornucopioides* was here observed.

Raincliffe Woods produced *Hydnum aurantiacum* and *Helvella lacunosa*, the latter with a white stem somewhat resembling *H. crispa*.

At Beedale *Lepiota lenticularis* was gathered, and also what proved to be the most interesting feature of the meeting in the form of a Phalloid or Stinkhorn fungus, eleven inches in height, bearing a reticulated veil suspended from the underside of the pileus to a depth of three inches and surrounding the stem. This veil was recognised as being characteristic of tropical phalloids of the genus *Dictyophora*. The specimen (as well as others gathered a month later) was critically examined by Mr. Clarke whose findings, together with photographs by the writer, were submitted to Mr. Masee who writes as follows:—

'The photos sent certainly represent *Phallus* or *Ithyphallus impudicus*.

'The occurrence of a more or less perfectly formed veil has been many times observed in this country and elsewhere. Its occurrence in this condition is erratic and the conditions that favour the reversion are unknown. There is always a ridge or margin corresponding to the starting point of the veil, just under the lower loose edge of the cap. Our *Phallus impudicus* may be looked upon as a degenerate type of tropical species of *Dictyophora* that has wandered north and for some reason has found no use for the veil under northern conditions; the veil however, sometimes appears, but always abnormal as compared with the more or less regularly netted typical form. In North America our *Phallus impudicus* occurs in the typical form, but more frequently a veil is present, as in our very exceptional cases, and has there been called *Phallus duplicatus*.

'It would appear that *Phallus impudicus* is a somewhat unstable species that has become *Phallus* as separated from *Dictyophora* by the absence of a veil, although the veil is sometimes present as a reversion, in a more or less rudimentary form.

'The above is my interpretation of the matter, as also that of other continental and American mycologists, but of course, it is not invulnerable.

'There is a decided difference between *Phallus* and *Dictyophora* apart from the veil, that can only be seen in section.'

An interesting evening programme had been arranged. Mr. Wager spoke upon 'The Classification of the Fungi.' An outline of the classifications of the main sub-divisions of

the Fungi was given, and the characteristics of the principle groups briefly discussed. It was pointed out that the Agaricinæ offer peculiar difficulties in the discrimination of genera and species, owing to the fact that the characters commonly used are mainly the size, colour and texture of the stem and pileus, the attachment, size and conformation of the gills, and the colour, shape, surface and size of the spores. It was suggested that the microscopic examination of the structure and arrangement of the various tissues might afford valuable aid in the determination of species and genera, especially in forms which have a very close resemblance to one another.

An interesting discussion followed in which Messrs. Clarke, Cheesman, Roe, Johnson and Malone took part.

Mr. W. N. Cheesman exhibited a collection of Fungi and Mycetozoa made by him last year in Australia and New Zealand. He pointed out the salient features of interest in each species and gave a description of the bush or jungle found at the Antipodes and other collecting grounds visited. The Fungi consisted mainly of polypores and resupinate Thelephoraceæ, of which seven species new to science were recorded. These are described in the current number of the Kew Bulletin, by Miss E. M. Wakefield, and the Mycetozoa in the July number of *The Journal of Botany*.

Mr. Peck contributed a Lantern Exhibition illustrative of the Fungus Flora of the district, and of interesting specimens met with at recent annual Forays.

Mr. Johnson gave an account of his investigations upon the Salmon disease amongst coarse fish.

The attention of the Mycological Committee was directed to certain beech trees in Forge Valley believed to be suffering from a fungus disease, but investigation revealed the pest to be due to insects. Specimens were collected and sent to the Board of Agriculture and Fisheries who identified the Beech Felted Coccus, *Cryptococcus fagi*, the subject of the Board's leaflet, No. 140. The owner expressed his intention to carry out the Board's recommendations.

Altogether 310 species and varieties were met with, divided into the various groups as follows:—

Agaricinæ ..	145	Sclerodermeæ ..	1
Polyporeæ ..	26	Uredinaceæ ..	18
Hydneæ ..	11	Pyrenomycetæ ..	12
Thelephoreæ ..	13	Hysteriaceæ ..	3
Clavariæ ..	6	Discomycetæ ..	25
Tremellinæ ..	4	Phycomycetes ..	4
Dacryomycetæ ..	1	Deuteromycetes ..	3
Phalloideæ ..	2	Hyphomycetes ..	3
Nidulariaceæ ..	1	Mycetozoa ..	29
Lycoperdaceæ ..	2	Anomalous ..	1

Miss E. M. Wakefield kindly identified several species included in the Telephoreæ.

Mr. Cheesman as usual dealt with the Mycetozoa, and Mr. Roe was responsible for the Ascomycetes, Uredinaceæ, etc.

The following species marked † are new to the County, those marked ** are new to the N.E. Vice-County, and those marked * are new to the Scarborough district.

- **Amanita muscaria* L. var. *puella* Pers.
- †*A. strobiliformis* Vitt.
- ***Lepiota lenticularis* (Lasch.) Fr. = *Amanita lenticularis* W.G.S.
- **Mycena nivea* Quèl.
- ***Pleurotus pantoleucus* Fr.
- †*Lactarius scobiculatus* (Scop.) Fr.
- **L. vietus* Fr.
- ***L. minimus* W.G.S.
- ***Russula rosacea* Fr.
- **R. purpurea* Gillet.
- **R. coerulea* Pers.
- **R. atropurpurea* Krombh.
- ***Cantharellus Friesii* Quèl.
- **Entoloma speculum* Fr.
- ***Leptonia aethiops* Fr.
- **Nolanea pisciodora* (Ces.) Fr.
- ***Inocybe plumosa* (Bol.) Fr.
- †*Cortinarius* (Myx.) *delibutus* Fr.
- **Coprinus fuscescens* (Schæff.) Fr.
- †*Hydnum aurantiacum* (Batsch.) Fr.
- ***H. stipatum* Fr.
- †*Tremellodon gelatinosum* (Scop.) Fr.
- **Clavaria fusiformis* (Sow.)
- †*Lycoperdon molle* Pers.
- †*Septoria petroselini* Desm. var. *apii* Br. et Cav. (On cultivated celery, Seamer Road, Scarborough, per T. N. Roberts).
- **Physarum didermoides* Rost.
- **Didymium nigripes* Fr. var. *xanthopus*.
- **Cribraria macrocarpa* Schrad.
- **Enteridium olivaceum* Ehrenb.

Notwithstanding the serious disadvantage arising from the absence of such expert workers as Messrs. Geo. Masee, Chas. Crossland, and Thos. Gibbs, the results of the Annual Foray of 1915 are highly satisfactory.

At the 'Business' Meeting held, votes of thanks were accorded to Lord Londesborough and Major the Hon. J. Dawnay for permission to visit their estates, and it was decided to meet next year at Buckden from September 23rd to September 28th.

YORKSHIRE NATURALISTS AT KEIGHLEY.

THE welcome rainfall damped not the enthusiasm of the members of the Union who assembled from every quarter of the county in good numbers at Keighley on Saturday, December 6th, 1915, to attend the fifty-fourth annual meeting of the Union.

Under the guidance of Mr. Jonas Bradley and Mr. John Holmes, a party of early arrivals spent an interesting time in the Brontë country. Training to Oxenhope they visited the West-end quarries, noting en route one of the oldest Grammar Schools in the neighbourhood, founded in 1638. Proceeding to Sladen Valley they were there conducted over the new reservoir in course of construction for the Keighley Corporation, by the Waterworks Engineer, Mr. M. Ratcliffe Barnett, who explained in detail the works in course of construction, and also exhibited erratic boulders, etc., found during the excavations. The return was made from Haworth.

At the meeting of the General Committee held in the Lecture Hall at the Museum, twenty-five of the affiliated societies were represented. The President occupied the chair. The annual report, a full text of which appears in this issue of *The Naturalist*, was presented by the Secretaries, and unanimously adopted. The excursions for 1916 were arranged, and the invitation of the Selby Scientific Society that the annual meeting of the Union for 1916 should be held at Selby, was accepted. The financial position was fully explained by the Hon. Treasurer (Mr. Edwin Hawkesworth), and hearty appreciation was voiced that there was a substantial surplus of income over expenditure on the year's working. The announcement that Mr. W. N. Cheesman, J.P., F.L.S., of Selby, had accepted the office of President for the ensuing year, was cordially received. Mr. Cheesman suitably acknowledged his appointment. No change was made in the other officials of the Union. The Divisional Secretaries and Local Treasurers were re-elected, except that Mr. J. W. Sutcliffe takes the place of Mr. Charles Crossland as local treasurer for Halifax. Thanks were accorded to all officials for their services. The meeting heard with deep regret of the death of Mr. H. Eeles Dresser, a past President of the Union, and a vote of condolence to his widow was passed.

After the preliminaries at the evening meeting, when four new members were elected, the retiring President, Mr. Riley Fortune, F.Z.S., delivered his address from the chair. There was a large attendance, every seat in the room being occupied, and many visitors had to stand. Upon the platform were His Worship the Mayor of Keighley, Councillor W. A. Brigg, M.A., J.P., Alderman J. Smith, J.P. (Chairman of the Parks

and Museum Committee), Mr. Sam Clough, J.P., Mr. W. N. Cheesman, J.P., F.L.S. (President-Elect), Mr. Charles Crossland and Mr. W. Denison Roebuck, M.Sc., F.L.S. (Past Presidents of the Union), the Secretaries, and Treasurer. Choosing for the title of his address, 'Some Notes on the Vertebrate Fauna of Yorkshire: its Distribution and Preservation,' Mr. Fortune entertained his audience with an account of the mammals and birds which were once Yorkshire species, present day species which were rapidly disappearing, and species which appear to be increasing; and upon the recent additions to the county's fauna. He extolled the useful work performed by the Wild Birds and Eggs Protection Committee of the Union, and made suggestions as to the manner in which the existing Acts of Parliament relative to the preservation of bird life might be usefully strengthened. The whole lecture showed how deep a student Mr. Fortune was of the fauna of the county, whilst the lantern slides, used by way of illustration, were excellent. A cordial vote of thanks to Mr. Fortune for his address, and for the great interest he has ever taken in the work of the Union was unanimously recorded. It is hoped to print Mr. Fortune's valuable address in these pages.

After the address a conversazione was held in the Museum under the auspices of the Keighley, Crosshills and Earby Naturalists' Societies, and the guests were received by the Mayor, and Mayoress (Mrs. W. Cecil Sharpe).

There was a good array of exhibits other than the museum collections. These latter were displayed in a very educative manner. In addition to the general collections of natural history, the museum contains quite a good collection of obsolete implements of the local industries and objects of antiquarian interest. The Curator (Mr. Rosse Butterfield) has also built up a very good school circulation collection of the more common local natural history objects. Also interesting was the collection of local lichens and mosses made in 1808 by the late Abraham Shackleton of Braithwaite, near Keighley, and of his botanical notebooks descriptive of his finds. Additional exhibits were made by the following gentlemen:—Mr. A. Gilligan, B.Sc., F.G.S., specimens of Millstone Grit from the Netherwood Plantation Quarry, Silsden, containing pebbles, and also microscopic slides displaying their structure; Mr. R. Jebson, a series of well mounted local plants; Mr. W. A. Hiscoe, drawings of local fungi; Mr. Jonas Bradley, nature study lantern slides, chiefly of wild birds in their natural haunts; Mr. G. F. Townend, photographs and lantern slides of Coal Measure fossils; Mr. C. A. Cheetham, coloured lantern slides of wild flowers in their natural haunts, and scenery; Mr. T. Fieldhouse, case of local lepidoptera; by the Crosshills Naturalists' Society, Relief Map of the Aire Valley from

Keighley to Skipton, made by their members; also a series of the rarer local plants occurring in their district, and the nest of the hive bee in the bole of a holly tree; Mr. Blackburn Holding, a good collection of photographs of Yorkshire Boulders; and by Mr. Thomas Hebden, a series of finely executed coloured drawings of local fungi, and a splendid display of lichens. Lecturettes were delivered by Mr. C. A. Cheetham and Mr. Jonas Bradley. Refreshments were kindly provided by the Mayor and Mayoress. Heartly thanks were accorded to them for their hospitality, and also to the Parks and Museum Committee of the Keighley Corporation for use of the rooms, to the three inviting Societies, Mr. R. Butterfield for making the local arrangements, and to the guides of the excursion.

The response of the Mayor and Mr. Bradley brought to a close a meeting which was in every way a most pronounced success. Thanks are also due to the Boy Scouts who acted as guides through the Park at night.—W. E. L. W.

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We regret to notice the death on November 10th, of Thomas Prichard Newman, proprietor of *The Zoologist*, whose father, Edward Newman, founded that journal.

The Board of Agriculture and Fisheries has recently issued the following leaflets: 'War Food Societies,' 'Calf Rearing,' 'Diseases of Peas,' 'The Breeding of Useful Pigeons,' 'Rabbit Breeding for Small-Holders,' 'Housing and General Management,' and 'Silver Leaf in Fruit Trees.'

Professor P. F. Kendall, the Professor of Geology in the Leeds University, has been elected as an honorary fellow of the Edinburgh Geological Society. Among the geological organisations of the kingdom the Edinburgh Society ranks second only to that of London. The honour conferred on Professor Kendall is shared by Dr. Teall, the director of the Geological Survey; Dr. Henry Woodward, editor of *The Geological Magazine*; and Dr. A. Smith Woodward, keeper of the Geological Department of the British Museum.

The Report for 1914 of *The Botanical Exchange Club* (Vol. IV., part 2, pp. 109-177, 3s. 6d.), has been issued, and contains the usual particulars of the Club's work. We notice some of the roses originally found by Mr. S. Margerison have been distributed. These were described by Major Woolley-Dod under the name of '*Rosa spinosissima* (agg.) \times *dumetorum* (agg.) or (*coriifolia* ? agg.) f. *Margerisonii* f. nov.' We are inclined to agree with C. E. Britton, who says 'How much more satisfactory would it have been had Woolley-Dod simply described this as \times *Rosa Margerisoni*.'

The Vasculum for October (32 pages, 1s.), contains a number of papers of general interest dealing with collecting, etc. Among those of definite local value we notice notes on 'Some Birds in Teesdale,' by George Bolam; 'Local Pseudoscorpions,' by J. E. Hull, and a number of notes and records in various sections of natural history. From Mr. Bolam's paper it is evident there is an abundance of bird life at Rokeby. The Nuthatch, Long-tailed Tit, etc., are fairly common. There is an abundance of Greater and Marsh Tits, and a suggested recent immigration of the British Willow Tits. We would like to suggest to our friends the editors of *The Vasculum* that the value of their publication would be materially increased if the contents were confined to the area covered by the journal.

In Memoriam.

HENRY EELES DRESSER.

WE much regret to record the death of Henry Eeles Dresser. He came of a good old Yorkshire family. He was born on May 9th, 1838, at Thirsk, and lived afterwards at Topcliffe. In late years, on his visits to Harrogate, he always spent a day at Topcliffe.



He was educated at Bromley, near London, afterwards in Germany, and also spent some time at Gefle and Upsala in order to learn the Swedish language, German and Swedish being necessary for his business in the timber trade; later he embarked in the iron trade. He visited most European countries and America, and had many interesting anecdotes to relate concerning his adventures in all of them. He told me several interesting ones connected with peccaries. He

was always most entertaining. Together with Mrs. Dresser he several times called on me while staying in Harrogate, and it was a treat to listen to him. He had the rare quality of never saying a bad word about anyone. He was strongly opposed to the present craze for nomenclature and species mongering.

The first part of his great work 'The Birds of Europe,' was issued in 1871, in collaboration with R. B. Sharp, who, however, withdrew from participation when appointed Zoological Assistant to the Natural History Museum. Dresser then carried the work on to its completion in 1881. Though it was a very costly undertaking, strange to say it proved to be a financial success.

Other notable works of his are 'A Manual of Palæarctic Birds,' published in two parts, 1902-3; 'The Eggs of the Birds of Europe,' a complement to his 'Birds of Europe.'

The illustrations in 'The Birds of Europe,' the two Monographs, and 'The Eggs of the Birds of Europe,' are exceptionally fine and true to nature. The former sells at the present time at £50 to £60.

He also published two important Monographs; one on the Bee-eaters (1884-86), and one on the Rollers (1893). He contributed many important articles to *The Zoologist*, *Ibis*, etc., besides translating several valuable Swedish articles.

When President of the Yorkshire Naturalists' Union he joined us on the Middleton-in-Teesdale excursion. For a number of years he was a member of the Yorkshire Wild Birds and Eggs Protection Committee.

He had a magnificent collection of eggs and birds' skins, and I was able to present him with a few varieties of eggs I had in my collection which he had never obtained in his long experience as a collector. His collections are now in the Manchester Museum.—R.F.

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Punch quotes (not from *The Yorkshire Observer*): 'Wanted, Shepherd, must be used to feeding on roots.'

An illustrated account of the Nelson stone quarries, Lancashire appears in *The Quarry* for December.

We read in a contemporary that the Annual Soiree of the Coventry Natural History Society was recently held. There were about 60 guests present, including the Mayor, Councillor M. K. Pridmore, which seems all right. But the paragraph is headed, 'The Solitary or Mud Wasp!'

The Transactions of the Yorkshire Numismatic Society, Vol. I., part 5, edited by T. Sheppard, M.Sc., has recently been issued, and the part completes the first volume. (Hull: A. Brown & Sons, 1s.). Since the Society was founded in 1909, its publication has contained descriptions of nineteen new Yorkshire medals and tokens, nineteen unpublished seventeenth century Yorkshire tokens and eight unpublished Lincolnshire pieces. The complete volume contains 238 pages, 19 plates, and no fewer than 415 illustrations in the text.

FIELD NOTES.

FUNGI.

***Puccinia iridis* at Scarborough.** — I found *Puccinia iridis* Wallr. recently, on cultivated Iris in some gardens in Scarborough. On examination an abundance of teleutospores were seen along with uredospores. This disposes of the late Dr. Plowright's theory 'that the form which occurs on our cultivated Irises is different from that on our native species, because he could not find any teleutospores in the former' (see Grove 'Brit. Rust Fungi,' p. 231). In the present case I found them freely, and they agreed in every respect with those of *P. iridis*. This fungus is new to Yorkshire—T. B. ROE, Scarborough.

Apple Tree Mildew near Scarborough. —Mr. W. Pearson, of Scarborough, has handed to me some apples from Ebberston in this district, which have been attacked by the Apple Tree Mildew *Podosphaera leucotricha* Salm., a fungus which is new to Yorkshire. The quality of the fruit was much depreciated by the disease, the apples being small in size and studded with the perithecia of the fungus. Masee in 'Mildews, Rusts and Smuts,' page 40 says: 'Parasitic on species of Pyrus. This is a very destructive parasite to the apple in many parts of the world.' The specimens found were in the ascigerous or perfect stage which is apparently rare in this country, the oidium or conidial condition being that usually met with, in which the leaves are densely covered with the conidia which appear as whitish dust. According to Masee (*loc. cit.*), 'it is believed that the mycelium of the fungus hibernates between the bud scales and gives rise to the white oidium condition of the fungus.'—T. B. ROE, Scarborough.

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The Norwich Museum has issued 'Descriptive Notes on Some British Plants used in Witchcraft and Medicine,' by James Hooper, 23 pages.

Birkenhead has issued its *First Annual Report of the Public Libraries, Museum and Art Gallery*. The Art Gallery and Museum were opened in 1912, and views are given in the report.

One of the last official functions of the Lord Mayor and Lady Mayoress of Leeds (Mr. and Mrs. J. E. Bedford, F.G.S.), before retiring from office, was to hold a Conversazione in the hall of the Literary and Philo-sophical Society. The Society's museum at Leeds contains many interesting objects from Mr. Bedford's collection.

A General Guide to the Collections in the Manchester Museum: Manchester Museum Handbook, No. 97, has been issued (Longmans, Green & Co., 3d., 66 pages). The recent important addition of the Egyptian rooms to the museum accounts for a good proportion of the handbook, though the geological, zoological and botanical sections are well represented. The guide book is necessarily somewhat condensed. It is well illustrated, and there is an excellent plan of the museum.

REVIEWS AND BOOK NOTICES.

The World of Life. By **Alfred Russel Wallace.** London: Chapman & Hall, 408 pages, 6s. net. Most naturalists will remember the reception given to Wallace's 'World of Life' when it appeared in 1910. It was 'A manifestation of creative power, directive mind and ultimate purpose.' In that volume Wallace summarised his half-century of thought and work on the Darwinian theory of evolution. He also brought many views forward which he had obtained during the last few years of his long and busy life; views which were not accepted with the unanimity which greeted his earlier work. In any case a book by Wallace has a value and a charm, and the purpose of this note is to draw our readers' attention to the fact that an edition, well printed and illustrated, and occupying over 400 pages, can now be obtained for the small sum of six shillings.

In **The Birth-Time of the World,** Professor **J. Joly** follows the example set by other geologists, and brings together a dozen essays on varying subjects (T. Fisher Unwin, xvi. + 307 pages, 10s. 6d. net), the first of which gives the title to the volume. A few years ago he paid a visit to the Alps, which much impressed him, and Alpine views illustrate most of his lectures, though we hardly see how views of the Aletsch Glacier and of Perched blocks assist his essay on Skating! The Birth-Time of the World refers to Professor Joly's work on the age of the earth as based upon the amount of salt in the ocean; 'Denudation' naturally follows; 'Mountain Genesis' and 'Alpine Structure' have reference to the geological intervention of radioactivity. 'The Abundance of Life' and 'The Bright Colours of Alpine Flowers' deal with the same area; in 'Other Minds than Ours,' the author explains the canals in Mars, not as artificial, but as formed by the near approach of satellites to the planet in former times. In 'Skating' Professor Joly shows that we do not skate on ice, but on water. Other essays are on 'The Latent Image'; 'Pleochroic Haloes,' which is an account of a beautiful phenomenon of the rocks which finds explanation in the most subtle fact of radioactivity; 'The Use of Radium in Medicine'; and 'A Speculation as to a Pre-Material Universe.' All are well written and readily understood.

Vigour and Heredity. By **J. Lewis Bonhote.** London: West, Newman & Co., 263 pages, 10s. 6d. net.

If you have a little 'Zoo' and you don't know what to do

Do not publish lists of visitors and trash

But experiment in breeding, observing, crossing, feeding,

Results will be much better than mere cash.

Read of spermatozoa, the zygote and the ova,

The part that each one plays on this life's stage

And keep your eye on 'vigour,' *it* really is the trigger

That scores the bulk of bull's eyes in this age.

When the reviewer read it he said *Vigour* and *Heredity*

By Bonhote (J. L.) was a thoughtful book;

But whether it will mend all the deficiencies of Mendel

And of Darwin is quite another crook.

Statistics of his dogs and cats,

And pedigrees of ducks and rats

Literally abound among the pages.

The secret of success in lives

Which he has watched (like bees in hives)

Undoubtedly is 'Vigour,' not in ages.*

* We must apologise to our readers for this. We fear it is the result of our reviewer devoting too much attention to Mr. Bonhote's statistics.—
ED.

Zoological Philosophy: an Exposition with Regard to the Natural History of Animals. By J. B. Lamarck. Translated, with an Introduction by Hugh Elliot. London: Macmillan & Co., 410 pages, 15s. net. By publishing this valuable treatise Messrs. Macmillan have once again earned a deep debt of gratitude from all naturalists. The great position attained by Lamarck in the scientific world makes a careful study of his work essential. His *Zoological Philosophy* was published half a century before *The Origin of Species*; and by far its most outstanding feature is its defence of the theory of the mutability of species against the theory of special creations for each species, then almost universally current. Lamarck's work was in three parts; (1) 'Considerations on the Natural History of Animals, their Characters, Affinities, Organisation, Classification and Species; (2) An Enquiry into the cause of life, the conditions required for its existence, the exciting force of its movements, the faculties which it confers on bodies possessing it, and the results of its presence in those bodies; (3) An Enquiry into the physical causes of feeling, into the force which produces actions, and, lastly, into the origin of the acts of intelligence observed in various animals.' Through Mr. Elliot's excellent translation these works are now readily available to the English student. In addition, Mr. Elliot gives a masterly resumé of Lamarck's work, which occupies nearly a hundred pages. To his pen 'falls the lot of vindicating the memory of one who, if he had laboured to destroy his fellow-men instead of to enlighten them, would have received all the glories of a national hero.'

A Naturalist in Madagascar. By James Sibree. Seeley Service & Co., 320 pages, 16s. net. Messrs. Seeley Service & Co., are to be thanked for introducing us in such a charming way to another most interesting territory. The flora and fauna of Madagascar have long had an attraction to the student of distribution, as to the naturalist generally. But for the most part the information available was locked up in scattered papers and memoirs, difficult to consult. Now, in one volume, from the able pen of Mr. Sibree, who has spent half a century on the island and knows it thoroughly, we get a careful record not only of the plants and animals, but of the natives. There are no 'big game' in Madagascar; the most dangerous sport is hunting the Wild Boar; the largest carnivore is the *fosa*, and the most dangerous reptile is the crocodile. In twenty-three chapters Mr. Sibree gives a wonderful insight into the capabilities of this wonderful island. There is even a fishing story, which we may be pardoned for quoting:—'A curious account is given by the natives of a fish which they call *Hamby*, whose length is said to be about that of a man's arm, and its girth about that of his thigh. Its dorsal fin, they say, is just like a brush, and it has a liquid about it, sticky like glue, and when it fastens on to another fish from below with this brush on its head, the fish cannot get away, but is held fast. On account of this peculiarity the people use the hamby to fish with. When they catch one they confine it in a light cage, which they fasten in the sea, feeding it daily with cooked rice or small fish; and when they want to use it, they tie a long cord round its tail and let it go, following it in a canoe. When it fastens on a fish they pull it in and secure the spoil.' And Mr. Sibree is a missionary.

British Ants: Their Life History and Classification. By H. St. J. K. Donisthorpe. Plymouth: W. Brendon & Son, Ltd., pp. xvi. + 379 Price 25s. net. This book will be welcomed by all entomologists, few of whom can be unfamiliar with the valuable researches into the life histories and habits of our British Ants carried out for over twenty years by the author. So intimate is the association between ants and numerous other forms of animal and plant life, that no naturalist can dispense with a knowledge of our indigenous species. Such a knowledge can be easily acquired from this volume, which describes the species of British ants in a manner so clear and interesting that no one should have difficulty in

identifying any form they find. Each species is dealt with very thoroughly as regards its synonyms, technical description, distribution, habitat, habits and myrmecophiles, and in every case the original description is quoted. Too many of our entomological works are mere classified lists of technicalities and forbidding in form and substance; but Mr. Donisthorpe's book, written in a new spirit, avoids this error, and will command the interest of every intelligent naturalist. Particularly interesting are the chapters dealing with Colony Founding, Propagation, Metamorphosis, Parthenogenesis, Polymorphism, Psychology, etc. The book is illustrated by eighteen photographic plates and ninety-two diagrams, and there is a very complete bibliography and index. In the preface the author points out that his book 'has been brought to a conclusion during the opening months of a supreme national crisis—well nigh within sound of the guns. At such a time it is too much to hope or even to wish that the problems of biological science should receive their due meed of attention. But later on, when the success of which we cannot be doubtful shall have attended our efforts and those of our Allies, when intellectual pursuits have resumed their sway, it is hoped that the present volume will serve both as an inducement and an aid to the study of the most fascinating of all insects.'

The County of the White Rose: An Introduction to the History and Antiquities of Yorkshire. By A. C. Price. London: A. Brown & Sons, Ltd., 403 pages, 3s. 6d. net. The author tells us that 'this book is intended neither for the skilled antiquary nor for the hasty reader, but it is hoped that it may be of service to those, whether old or young, who take a real interest in the history of their county, but lose much of the profit of what they see or read because of their inability to understand the allusions and technicalities in the ordinary guide books. Nor does it intend to be a complete history of the county.' The author has also had in view the needs of the teachers, and being neither a 'hasty reader' nor a 'skilled antiquary,' the present writer is prepared to state that the book is up to the author's standard. It is also well illustrated, well printed, well bound, and reasonable in price. He deals with geology, prehistoric man, the Romans, Angles, Danes, Normans, the Barons, Churches and Abbeys, Mediæval Towns, Tudors, Stuarts, and Modern Yorkshire. The author is obviously neither a 'skilled antiquary' nor a 'hasty reader' himself. He has evidently read much and 'made notes' as he read. Unfortunately he has not been able to differentiate between the reliable and the unreliable in his reading, which has resulted in many irritating, if trifling errors, which, however, do not seriously detract from the value of the book. It is a pity the author has not had some reliable geological and antiquarian friend to read through his proofs. For instance he states that the geological map 'tells us the kind of rocks we should find if we were to remove the turf and upper layer of soil.' Yet his geological map shows all Holderness as chalk, which means that 'turf,' etc., to a depth of over a hundred feet has been removed! The fact is the author has based his map on the 'solid' Survey map, instead of the 'drift' edition. Similarly, reference is made to the Roman altar found at Patrington, and he falls into the error originated, we believe, by Phillips, in stating that Patrington is a Roman station. This surmise was certainly founded on the 'altar,' no other trace of Roman occupation having occurred at Patrington. A few years ago the 'altar' was rescued for a Yorkshire Museum, and was shown to be a seventeenth century sun-dial! A pterodactyle can hardly be called 'a kind of enormous bat'; both the lists of Museums on pages 20 and 25 are incomplete, and surely Mortimer's 'Forty Years' Researches' contains more about Prehistoric Yorkshire than all the books Mr. Price quotes put together. There is a good index, and an excellent map of the county at the end.

A YEAR'S SCIENTIFIC WORK IN YORKSHIRE:
 BEING
 THE YORKSHIRE NATURALISTS' UNION'S
 FIFTY-FOURTH ANNUAL REPORT
 FOR 1915.

(Presented at Keighley, 4th December, 1915).

THE FIFTY-THIRD ANNUAL MEETING was held at Leeds on December 5th, 1914, under the Presidency of Mr. Thomas Sheppard, M.Sc., F.G.S., F.S.A.(Scot.). A report of this most successful meeting, the attendance thereat constituting a record, appeared in *The Naturalist* for January, and our journal also has contained a portion of Mr. Sheppard's Presidential Address on "Yorkshire's Contribution to Science."

The best thanks of the Union are due to the Leeds Naturalists' Club and Scientific Association, the Leeds Geological Association, the Leeds Co-operative Field Naturalists' Club, and the Leeds Conchological Club for the hospitality extended to the Union on that occasion, and to the authorities of the Leeds University for placing at our disposal the rooms in which the meetings were held.

The whole of the six Field Excursions were successfully carried through, and despite the withdrawal of the usual cheap travelling facilities by the Railway Companies owing to the war, the attendance at most of these meetings has been good. The Excursions were as follows:—

Sawley, near Ripon, Saturday, April 24th.

Settle (Whit Week-end), May 22nd to 24th.

Bishop Wood, near Selby, Saturday, June 19th.

Hebden Bridge, Saturday, July 17th.

Saltburn (August Bank Holiday Week-end) July 31st
to August 2nd.

Mycological Meeting, Scarborough, September 24th to
29th.

Excursion programmes have been printed and distributed prior to each excursion, and detailed reports have appeared in the pages of *The Naturalist*, accompanied, in some cases, by illustrations.

The best thanks of the Union are once more due to the various Landowners who so kindly granted facilities and privileges. Several of the Sections have also held successful gatherings.

The Excursions for 1916 will be as follows:—

Malton (Easter Week-end), April 22nd to 24th.

Bolton Woods, Saturday, May 20th.

Middleham (Whit Week-end), June 10th to 12th.

Driffield, Saturday, July 8th.

Wentbridge, near Pontefract (August Bank Holiday Week-end), August 5th to 7th.

Mycological Meeting, Buckden, September 23rd to 28th.

The ANNUAL MEETING for 1916 will be held at Selby by the kind invitation of the Selby Scientific Society.

OBITUARY.—The Union has again suffered severe loss by the death of many of its prominent members. Amongst them was the distinguished Palæobotanist, William Cash, F.G.S., of Halifax, whose scientific attainments and charming personality will ever remain monuments to his memory; the Rev. F. H. Woods, B.D., of Bainton, an active worker of the Marine Biology Committee; Thomas Bunker, of Goole, a general all round naturalist, and Thomas Whitham of Bramhope, two of the oldest members of the Union; B. Holgate, F.G.S., of Leeds; Joshua Rowntree, J.P. of Scalby, near Scarborough; Wm. Simpson, F.G.S. of Settle; and Second-Lieutenant George Mitchell of Bradford, an ardent ornithologist and an expert on falconry. Obituary notices of these gentlemen have appeared in the pages of *The Naturalist*.

HONORARY DEGREES FOR YORKSHIRE NATURALISTS.—The Union desires to express its appreciation of the honour done by the Leeds University in recognition of the work of the Union by conferring honorary degrees upon representative members thereof, viz:—D.Sc.: Mr. Harold Wager, F.R.S., F.L.S.; M.Sc.: Mr. Thomas Sheppard, F.G.S., F.S.A. (Scot.); Dr. T. W. Woodhead, F.L.S.; Mr. John W. Taylor; Mr. W. Denison Roebuck, F.L.S.; Mr. T. H. Nelson, J.P., M.B.O.U.; and Mr. John G. Wilkinson. The formal presentation of these gentlemen to the Chancellor, the Duke of Devonshire, was witnessed by an enthusiastic assemblage at Leeds on July 3rd. A full report of the ceremony appeared in the pages of *The Naturalist* for August.

DIVISIONAL SECRETARIES AND LOCAL TREASURERS.—These gentlemen have again rendered valuable service in their respective offices, and the thanks of the Union are tendered to them for their assistance.

GENERAL COMMITTEE.—The following has been elected a member of the General Permanent Committee of the Union, viz:—A. E. Peck, Scarborough;

ACTIVE SERVICE MEMBERS.—The following members of the Union are known to be either on active service abroad, or have enlisted for such service, viz:—Prof. J. H. Priestley, Dr. A. R. Dwerryhouse, Dr. E. Amyott, Dr. Wheelton Hind, B.Sc., F.G.S., Mr. C. W. Mason, Mr. A. J. Stather, Mr. E. W. Taylor, Mr. E. W. Morse, Mr. J. R. Stutley, Mr. H. D. Cheavin, F.R.M.S., F.S.E., and a large number of Associates.

VERTEBRATE ZOOLOGY SECTION.

EAST RIDING REPORT.—Mr. E. W. Wade writes:—The season has been on the whole a good one for the birds. The early breeders were late owing to the cold weather in April, and as a rule not so prolific as in 1914; while some of the marsh-haunting species, *e.g.* the Sedge Warbler, have been noticeably scarce.

The spring migrants were unusually late in arriving—a week to a fortnight behind the date noticed for the previous three seasons, with the exception of the Swift, which arrived eight days earlier than last year.

Swallows and Martins have had a good year and their numbers have again increased.

There has been a most marked increase in the number of Swifts in Holderness during the last few years.

The Corncrake has been scarcer than ever before. Except in the Beverley district, where four pairs were heard, the bird seems to have completely disappeared.

Partridges have done well on the high ground, but on the carr land the wet July caused an epidemic of gapes which killed off even old as well as young birds. On some of the large estates Pheasants have not been reared this season, but the wild birds have done well.

The Wild Geese arrived in the Wolds on 21st August, six days earlier than last year.

In the protected area in the Wolds the number of Stone Curlews remains stationary, and there is evidence that occasional birds get shot in the autumn. Only nine birds were seen in a flock before migration, and it is to be feared that there are too many amateur gunners for them ever to increase.

An interesting experiment has been tried by Mr. St. Quintin in liberating three young Ravens on the Bempton Cliffs. It is about fifty years since the birds bred there, and the last breeding place has long since disappeared into the sea. On 2nd July they were penned on the cliff to get accustomed to their surroundings, and on 23rd July to 1st August were liberated one by one. During the first week of September two of them were seen feeding on the land. The fact of visitors being excluded from the cliffs this year is very much in favour of the birds, and

appeals have been issued in the local press to landowners and farmers, to protect them.

NORTH RIDING REPORT.—Mr. T. H. Nelson writes:—The opportunities for observation along the northern coastline have been considerably curtailed. Ducks and wildfowl generally were very plentiful in the marshes, where they were secure from harm. I have never seen so many ducks, nor in such a state of fearlessness as throughout last winter. During the spring nesting has been fairly successful, and young shore birds and other fowl were reported by the middle of July. Terns of three species (Sandwich, Arctic, and Lesser), were off the coast before the end of that month.

WEST RIDING REPORT.—Mr. H. B. Booth writes:—In the spring immigration it is confirmed beyond doubt that for the past two or three years large numbers of Swifts have arrived considerably earlier than formerly—*numbers* being reported in various places on May 1st or 2nd—or even, in one or two instances, on April 30th. The Pied Flycatcher has returned to Bolton Woods this year almost in greater numbers than ever known before. Mr. W. H. Parkin and his friends have again paid special attention to the nesting habits of the Cuckoo. Mr. E. P. Butterfield has recorded the finding of a blue egg of the Cuckoo in a Hedge-sparrow's nest in Bingley Wood. This is the first known record of the Hedge-sparrow as foster parent in this district, although it has occurred further south in this Riding. The blue egg of the Cuckoo is uncommon in Great Britain. When this egg was examined with a lens very faint spots were discernible.

A new heronry has become established at Hubberholme (see *The Naturalist* 1915, p. 301). Mr. Parkin reports that there were nine Herons' nests, and another one being built, on April 26th, in the Wood near to Eshton Hall. Special attention has been paid to the nesting habits of a pair of Grasshopper Warblers by Mr. Sam Longbottom, which has certainly increased our knowledge of the habits and nidification of this species in Great Britain, an account of which will appear later in *The Naturalist*. There appears to be good evidence that two or three pairs of Short-eared Owls have nested on one of our Upper Wharfedale Moors during the last year or two. Mr. A. Whitaker reports that two pairs of Long-eared Owls have nested on the ground amongst bracken in clearings amongst Scotch Pine trees near Barnsley, an unusual situation. The Redshank is very slowly but surely increasing in numbers and in distribution as a nesting species. Most species of birds have had a successful nesting season—including game-birds, although less game-keeping and artificial rearing has been resorted to. Mr. Rosse Butterfield reports that Mr. J. Bartle informs him that the

Turtle Dove has nested in Cottingley Wood this year. If this can be confirmed it will be an interesting record for Upper Airedale. The pair of Stonechats reported by Mr. Bolam as being seen about a mile and a half on the main road south-east of Settle in the week prior to the Y.N.U. excursion to that place (*The Naturalist* 1915, p. 260) was unfortunately not confirmed by any of the members who attended the Union's meeting. The sudden and unexplainable decrease amongst the previously ever-increasing local Starlings, reported two years ago, has not varied much since then. They certainly have not decreased further; probably they are very slightly increasing again. A reference may be made to three 'recovered' Black-headed Gulls (*British Birds*, Vol. VIII., p. 217). One ringed as a young bird near Lake Bala, Merionethshire, was found dead in the breeding season at the Hebden Bridge gully, Blackstone Edge, three years later—i.e., in 1914. More remarkable was a bird of this species ringed at the Egton gully, and found seven months later in the island of Flores, in the Azores. Another bird ringed as a nestling at Ravensglass, was found dead four years and one month later at the Stanedge Moor gully. As the Black-headed Gull is a comparatively recent addition to our West Riding nesting species these data should give a clue to the origin of our gulleries.

Mr. Walter Greaves reports that he examined a female Hen Harrier which had been killed on Langfield Moor on October 13th, 1915; a Manx Shearwater was caught alive at Heptonshall on October 3rd, 1914, and a female Common Scoter was seen on Fly Flats reservoir on July 24th, 1915.

Last year we endeavoured to examine the data of a reported British Black-headed Bunting (*Emberiza melanocephala*) supposed to have been captured near Halifax, and sold by a Halifax bird dealer. This year the same dealer has been caught red-handed in offering a newly-caught Little Bunting taken near Ripon, which proved to be a common South African cage-bird, viz., the Cape Canary (*Alario alario* L.), a species not known in a feral state in Europe. The deceptions of this bird dealer have already been exposed in *The Naturalist*, so that further comment here is unnecessary.

Mr. Thomas Roose informs me that one of the Duke of Devonshire's gamekeepers brought three strange Wild Ducks to the Estate Office at Bolton Abbey. He had shot them on Aked's dam, at West End (Washburndale), in the last week of October. Mr. Roose identified them as Gadwall (*Anas strepera* L.), two ducks and one drake.

Mr. Roose had also watched a solitary Crossbill for some time near to Bolton Abbey on Sept. 30th.

YORK DISTRICT.—Mr. S. H. Smith writes:—A White-fronted Goose was shot at East Cottingwith on Nov. 21st, 1914, being one of a party of six that stayed in Wheldrake Ings for several weeks. Two pairs of Pochards have successfully nested on Skipwith Common; each nest contained ten eggs. At the same place twelve pairs of Shoveller Ducks nested, about half of their clutches being hatched, depredations by foxes accounting for the remainder. Although half the heronry wood at Stillingfleet has been cut down this year, the Herons were in nowise disturbed, as I counted thirty nests during a visit there in May. Mr. H. E. Preston, the owner of the wood, carefully protects these birds, and he informs me there has been a gradual increase during recent years, and that one pair has also nested on his Elvington estate where he is trying to establish another heronry. On the 28th June I saw a pair of Common Buzzards at Poppleton, and after having them under observation for fifteen minutes they disappeared in a N.W. direction. I found the nest of a Green Woodpecker at Skipwith on July 3rd containing young, and was much struck by the peculiar noise made by the young birds, the sustained hissing closely resembling the whirr of an aeroplane. The migrant arrival data obtained by Mr. V. G. F. Zimmerman and myself for the current year are as follows:—Chiff-chaff, April 1st; Willow Warbler, April 3rd; Tree Pipit, April 6th; Lesser White-throat, and Swallow, April 10th; Wheatear, April 12th; House Martin, April 10th; Sand Martin, April 23rd; Turtle Dove, April 22nd; Yellow Wagtail, April 23rd; Sandpiper, April 28th; Garden Warbler, Swift, Landrail, Blackcap Warbler, and Spotted Flycatcher, April 30th; Nightjar and Redstart, May 6th; Whinchat, May 10th; Pied Flycatcher, May 20th.

The first eggs of the Green Plover were reported on March 22nd at Thorganby, and also a party of very late staying Fieldfares in the same neighbourhood on the 13th May. Mr. Zimmerman reports a large flock of Bramble Finches, numbering some hundreds, frequented the vicinity of Skelton village about April 4th. On May 22nd he found a nest of the Nut-hatch about three miles from York, in a hole in a beech tree. It then contained two eggs, and on the 19th June he observed five young fully fledged in the same nest. A nest of the Pied Flycatcher was noted at Brockfield on June 7th containing newly hatched young. Suitable protection has been afforded to the Goldfinches, Bullfinches, and Hawfinches which have been discovered within the York district. Mr. W. H. Parkin reports the finding of a nest of the Long-tailed Tit on May 10th at Chandlers Whin. It was in a V formed by two branches of an ash tree, and about twenty five feet from the ground. The same gentleman during a visit to Knavesmire Wood on March 18th noted a variety of the Common Chaffinch. The bird was

a pale cinnamon colour on mantle, head, neck and lower breast ; upper breast showing the pink flush ; white wing bars fully defined like a male in ordinary plumage ; the beak horn colour.

MAMMALS, REPTILES, AMPHIBIANS AND FISHES COMMITTEE.—Mr. S. H. Smith writes:—A Porpoise was shot on the river Ouse, below Naburn, on Feb. 4th. The river Foss runs by the end of my garden, and in an old willow stump across the water a dog and bitch Otter had their four young ones between April 20th and May 1st, on which date they proceeded higher up stream. I kept close watch upon them whenever possible. The cubs were constantly crying and the shrill whistling of the parents was so loud and continuous at times that I was surprised local attention was not called to their presence.

PISCES.—I have heard that a Trout weighing 4 lbs. 12 ozs. has been caught at Newton on Ouse during August, and at the same place in September, a Barbel weighing 9 lbs.

WILD BIRDS AND EGGS PROTECTION COMMITTEE.—Mr. Johnson Wilkinson writes:—As regards the Peregrines in North Yorkshire, exceedingly good reports have been received ; one clutch of four birds got safely away, three were flying about on July 27th. We have reason to believe the Ravens eggs were taken.

The Peregrines at Bempton were again disturbed, only one egg apparently being laid. A large steamer which went ashore near Filey was blown up, and the charge was so violent as to cause all the birds in the neighbourhood to fly off in thousands, including, no doubt, the Falcons. Remains of the egg were found discarded and forwarded to me.

This season has been a bad one for climbers. One of the men wrote me saying he had in previous years taken more eggs in one week than during the whole of this season.

At Hornsea, Pochards and Tufted Ducks have been very numerous ; they have increased very much during the last three years. Great-Crested Grebes as usual were somewhat late, but the young ones have hatched well.

At Spurn we have been very fortunate in securing an exceedingly good watcher. He kept a daily diary and forwarded the result of his observations at the end of each month. There has been a very good crop of Ringed Plovers and Lesser Terns, but no Shell Duck or Oyster Catchers this season. On May 30th an exceptionally high tide destroyed a great number of eggs.

The Coast from Spurn to Scarborough has been well protected the whole of the season, and no permits were granted to the general public.

The Stone Curlews have done very well.

I am sorry to say the subscriptions and a donation received this season only amount to £16 12s. and expenses £24. Had it not been for balance brought forward we should have been awkwardly situated.

INCOME FOR 1915.

	£	s.	d.
Balance brought forward	16	17	1
Mr. St. Quintin	5	0	0
Mr. L. Gaunt	3	3	0
Mr. J. Atkinson	1	1	0
Mr. Oxley Grabham	1	1	0
Mr. E. W. Wade	1	1	0
Mr. J. Wilkinson	1	1	0
Mr. F. H. Edmondson	1	0	0
Mr. H. B. Booth	1	0	0
The Right Hon. C. G. Milnes Gaskell (Donation) ..	1	0	0
Mr. A. H. Lumby	0	10	0
Mr. S. H. Smith	0	5	0
Mr. W. H. Parkin	0	5	0
Ovenden Naturalists' Society	0	5	0
Refunded	0	15	3
Bank Interest	0	3	0
	<hr/>		
	£34	7	4
	<hr/>		

EXPENSES FOR 1915.

Peregrines, North Yorkshire	3	0	0
„ Bempton	1	0	0
Stone Curlews	2	0	0
Spurn	6	0	0
Hornsea Mere	12	0	0
W. Whiting	0	15	3
Cash at Bankers	7	16	10
Cash in hand	1	15	3
	<hr/>		
	9	12	1
	<hr/>		
	£34	7	4
	<hr/>		

Audited and found correct,

W. E. L. WATTAM, 6th September, 1915.

ENTOMOLOGICAL SECTION.

LEPIDOPTERA.—Mr. B. Morley writes:—Moths and butterflies, generally, have only appeared in normal numbers in the county during the past season. The cabbage-feeding *Pierids* are reported from various parts, however, as having reproduced themselves in great numbers, and autumn broods of larvæ are now feeding in disastrous abundance.

During July *Orgyia antiqua* also was so exceedingly abundant on Barnside Moors near Penistone, that the bilberry foliage was all devoured, while a great majority of the larvæ was still only part grown.

Xanthia aurago larvæ were very common on sycamore in Deffer Wood, Skelmanthorpe, during May.

Mr. W. G. Clutton, of Burnley, took *Emmelesia minorata* at Grassington in August, which is a new record for the county. He also took at the same place and time *Larentia ruficinctata*, *Stilbia anomala* and *Gnophos obscurata*.

Two specimens of *Eupithecia pygmæata* were taken in June at Skelmanthorpe, being an addition to the district list.

A fine specimen of *Sphinx convolvuli* was taken at Barnsley in August.

COLEOPTERA COMMITTEE.—Dr. W. J. Fordham writes:—There have been added to the Yorkshire list since the last report at least thirty species, but this total is not final, as there are still some records to come to hand. One doubtful Yorkshire species has been confirmed, viz., *Patrobis septentrionis* Dj., and an alien species may also be added, viz., *Cryptomorpha desjardinsi* Guér. *Lesteva luctuosa* Fauv. was omitted from the last report as it had not then been definitely identified, but it has been taken again this year. The new species (in addition to the above) are *Bembidium clarki* Daws., *Haliplus immaculatus* Gerh., *Noterus sparsus* Marsh., *Agabus arcticus* Pk., *Helophorus mulsanti* Rye., *Cercyon lugubris* Pk., and *granarius* Er., *Phlæopora angustiformis* Baudi, *Homalota nigella* Er., *linearis* Gr., *succicola* Th., and *indubia* Shp., *Quedius nigrocæruleus* Rey., *Quedionuchus lævigatus* Gyll., *Philonthus nigriventris* Th., *Gabrieus pennatus* Shp., *Lathrobium ripicola* Czwal., *Evaesthetus læviusculus* Mann., *Proteinus macropterus* Gyll., *Euconnus hirticollis* Ill., *Claviger testaceus* Preysl., *Corylophus cassidioides* Marsh., *Cerylon ferrugineum* Steph., *Prisdulcamaræ* Scop., *Cartodere filum* Aub., *Phædon concinna* Steph., *Aphthona nigriceps* Redt., *Hypera alternans* Steph., *Orchestes alni* L., and *Gymnetron beccabungæ* L. Several articles have been contributed to *The Naturalist* and the entomological journals. A full list will appear later including numerous additions to the various vice-counties.

HYMENOPTERA, DIPTERA AND HEMIPTERA COMMITTEE.—Mr. R. Butterfield writes:—Lieut. H. Vincent Corbett is to be congratulated on the results of his studies, although severely handicapped by circumstances, in the neglected order of Hemiptera. Of the sixty-six species of Hemiptera collected in the Doncaster district during the year, twenty-three are new to Yorkshire. He has also paid considerable attention to Homoptera, the details of which will be announced later. Mr. W. Denison Roebuck writes that Mr. J. W. Taylor has noticed a water bug in abundance throughout the season in his artificial pond at Horsforth. Specimens were sent to Mr. E. A. Butler, who stated that the species was *Gerris gibbifer*, of which he had not had a previous example from Yorkshire. Mr. T. Stainforth has also made observations on the order.

Good work has been done in the Aculeate Hymenoptera. April and May were favourable months for investigation, but July and August proved too wet. The reports regarding the prevalence of social bees and wasps are somewhat conflicting, though it is certain that in the hilly portion of the county, social wasps have been abundant. Messrs. A. E. Bradley and A. Hodgson have made observations on bees in the neighbourhood of Leeds. All the British species of *Psithyrus* have been captured with the exception of true *vestalis*. Mr. Bradley captured two queens of the rare bee, *Bombus jonellus*, at Adel in April. *Bombus distinguendus* has been secured by both observers. The occurrence of *Megachile circumcincta* at Roundhay in July, is interesting, inasmuch as none of the members of this genus are recorded for the hilly portion of the West Riding. The Aculeate Hymenopterous fauna eastwards from Leeds to the coast presents a striking contrast with that of the west.

Several Ichneumons have been added to the county list, particulars of which will be published later. Observations have been made or specimens captured by Messrs. W. Denison Roebuck at Leeds; T. A. Lofthouse at Middlesbrough; B. Morley at Skelmanthorpe; S. Margerison and A. R. Sanderson at Ripon; H. Vincent Corbett at Doncaster and the writer at Keighley.

Some progress has been made with Saw-flies, though the material as yet has not been fully worked out. *Sirex gigas* has been recorded for several localities. Two interesting additions to the county list of Diptera are recorded in the November number 1914, of *The Naturalist*, by Mr. P. H. Grimshaw.

Mr. W. H. Burrell writes:—Birch seed in the neighbourhood of Leeds has been infested with the larvæ of the Cecid., *Oligotrophus betulæ*. During the summer months large gatherings have been made at Adel, East Keswick, Aberford, Garforth,

etc., and have been found to be so generally attacked as to suggest that a considerable proportion of the local crop of birch seed is destroyed by this means.

Records of Hymenoptera appeared in the reports of the Union's meetings at Settle and Hebden Bridge.

ARACHNIDA.—Mr. W. Falconer writes:—Coast collecting has been barred, but satisfactory results have been obtained elsewhere. Records of the arachnida taken at the various places visited by the Union or by some member or other of the Arachnida Committee during the year, have already been published in *The Naturalist*: Sawley, July and November; Settle, Bishop Wood, and Hebden Bridge, September. In these lists the rarer species were particularised. With respect to captures not yet reported on, *Lophocarenum nemorale* Bl., ♀ from an old barn at Dean Head, Scammonden, Huddersfield, is new to the West Riding; the false scorpion *Chernes panzeri* C. L. Koch, occurs in a similar habitat at Barrett, Slaithwaite, at an elevation of 1,000 feet. Mr. Stainforth gives Houghton Woods near Market Weighton as a station for the harvestman *Megabunus insignis* Meade, new to the East Riding, and as an additional station in the same division for *Crustulina guttata* Camb., and *Evarcha falcata* Bl., all commonly. Mr. Bayford forwarded a living adult ♀ *Heliophanus cupreus* Walck., taken in a merchant's office in the centre of Barnsley. *Cornicularia karpinskii* Camb., recorded by Mr. Harrison in his paper, "New and Rare Yorkshire Spiders," *The Naturalist*, January, pp. 26-27, is unfortunately an error of designation. The specimens were so named at first by the Rev. O. Pickard Cambridge, but on closer examination were found to be undoubted *C. kochii* Camb., which had previously occurred in the same locality. *C. karpinskii* Camb., must therefore be deleted from our list; the station, too (within the breakwater at Tees mouth) was not a very likely one. The statement in the same paper with regard to the genus *Bathyphantes* in Cleveland is hardly correct. *B. setiger* F.O.P.Cb. has not yet been met with there, or not recorded; and *B. explicatus* Camb. is known only from the type ♂ from Kew Gardens.

The only additions to the county list during the year consist of a number of mites collected by Messrs. Harrison and Winter and myself, several of which are, judging from our present knowledge of them, rare, and one, *Smaridia papillosa* Herm., from Royal Clough, Scammonden, is probably the first British example.

CONCHOLOGICAL SECTION.

Mr. Greevz Fysher writes:—Some excursions have had to be abandoned in consequence of the withdrawal of railway

facilities, but useful investigation has been carried out at Keighley, Hambleton, and other places, results being published in *The Naturalist*. No very conspicuous change in distribution of mollusca fauna has been observed.

MARINE BIOLOGY COMMITTEE.—Dr. J. Irving writes:—For obvious reasons marine work this year cannot be compared with that of former years. The death of the Rev. F. H. Woods, B.D., in March, deprived the Committee of its energetic convener. Many additions to the microscopic mollusca of our coast are due to his periodic and systematic investigation of every available region where the shells of these minute organisms were likely to be found. It was deemed advisable to abandon the week-end meeting which was fixed to take place at Scarborough in September.

In August, at Cloughton Wyke, the remarkable abundance of *Ligia oceanica*, our largest British isopod, was noted. *Lucernaria campanulata*, which appeared in number, locally circumscribed, in South Bay, Scarborough, and in Robin Hood's Bay, two years in succession, is gone. Frequent careful and diligent search has failed to discover a single specimen. On the other hand the sea-hare *Aplysia punctata*, which during these two years was conspicuous by its absence, is this year particularly evident, occupying algæ formerly favoured by Lucernarians. A single female specimen of the vary rare crab, *Pirimela denticulata*, was recently taken alive in South Bay, Scarborough, and recorded, but its habitat is elsewhere. Accidental forces must have driven it on to the rocks.

BOTANICAL SECTION.

Mr. J. F. Robinson and Mr. C. A. Cheetham write:—There has been an increase of energy on the part of those able to attend the meetings, and if the addition of new species is scanty, the careful reports of the rambles help to confirm and bring up-to-date the older records.

The delay in the publication of the supplement to the West Riding Flora is a difficulty to the recording sections for that area. On many occasions a new locality for some species has been announced in *The Naturalist* whereas, possibly, this exact record had been made previously by some other person whose lists had been forwarded for publication in the above mentioned work. Some of the Bryological additions have been recently published in *The Naturalist* to obviate this difficulty, but it is to be hoped that sufficient subscribers will be forthcoming to warrant publication of the supplement.

The Section has always been well represented on the general excursions, and in addition a special meeting was held

in Dewsbury to take advantage of Mr. F. W. Whitaker's knowledge of the alien plants of that locality.

The Sawley meeting was too early for phanerogamic plants, but at Settle, Bishopwood, Saltburn and Hebden Bridge, good results were obtained.

The year opened wet and cold and early spring plants were held back, *Saxifraga oppositifolia* being two or three weeks later than in the previous year; then came a dry spell with east winds which forced on plants on shallow soils such as Rock Rose, Mountain Avens, etc., into early blossoms, these districts being badly burnt up; but on deeper soils plants like the Frog, Clove and Butterfly Orchids were kept back. The wet time following towards the end of June, caused many of the burnt up plants to come forward into bloom a second time.

The trees and shrubs seem all to have fruited well, and with a few local exceptions, there is prospect of an abundant harvest of wild fruits, although perhaps the mountain ash may be an exception to this. The fine weather of autumn gives hope for the coming year.

BOTANICAL SURVEY COMMITTEE.—Dr. T. W. Woodhead writes:—The most important feature of our excursions during the year has been the joint observations made by the geologists and botanists during the meeting at Settle in May last. Mr. J. Holmes was at much pains to point out the outcrops and distribution of the various beds, from the Silurians to the Carboniferous limestones, grits and shales, and observations were made on the changes in the vegetation on the varying soils. Attention was also paid to the development of the Ash Woods of the Limestone Scars and the retrogressive and progressive phases in the vegetation of the limestone pavements. Many interesting problems present themselves in this area, and arrangements have been made to continue the study in more detail during the coming season. The survey of the Molina Moors by the Rev. T. A. Jeffries is making good progress, and the first results were published in the *Journal of Ecology* for June this year. In this he gives a satisfactory explanation of its peculiar distribution and its place in our moorland associations.

BRYOLOGICAL COMMITTEE.—Mr. W. Ingham, B.A., writes:—1915 has been a most successful year for the bryologists.

Mr. R. Barnes of Harrogate has sent important lists of Mosses and Hepatics to *The Naturalist*, March and April, 1915.

Mr. C. A. Cheetham and party at Austwick, found interesting mosses, recorded in *The Naturalist*, February and May, 1915.

Mr. C. A. Cheetham found in Crummock Dale, *Grimmiar Hatmani*, new to Yorkshire. He and Mr. H. E. Johnson added *Dicranum strictum* to Yorkshire.

Mr. G. Webster, of York, found near Rillington *Thuidium Philiberti* var. *pseudo-tamarisci*, new to N.E. Yorkshire.

Mr. J. Mennell found on Skipwith Common two stems submitted to the writer, of *Paludella squarrosa*.

Mr. W. Ingham added *Lepidozia sylvatica* (Strensall Common) to Yorkshire, also *Oligotrichum hercynicum* (Skipwith Common), and *Chiloscyphus pallescens* (Skipwith Common), to the East Riding.

MYCOLOGICAL COMMITTEE.—Mr. A. E. Peck writes:—With the close of the year 1914, Mr. Chas. Crossland retired from the office which he had so long and ably held as Secretary to the Mycological Committee and keeper of the County Records. At the same time Mr. Geo. Masee, V.M.H., retired from the Chairmanship. For report of presentation to Mr. Crossland, see *The Naturalist*, December, 1914, pp. 380-386.

The eighth supplementary list of recently discovered Yorkshire Fungi since the publication of the 'Yorkshire Fungus Flora' appears in *The Naturalist* for March, 1915, pp. 99-103.

Messrs. M. Malone, J. W. H. Johnson, M.Sc., and A. E. Peck represented the Committee at the Sawley Excursion held in April. For report see *The Naturalist* for July, pp. 235-236.

From May 29th to June 1st a meeting of the Committee was held in the Scarborough district with headquarters at Forge Valley. 78 species and one variety were met with, two being new to Yorkshire and three to vice-county N.E. The outstanding feature was the discovery of *Cordyceps capitata* Fr., which so far as has yet been ascertained, would appear to have only three previous British records and these dating back to the years 1786, 1787 and 1803. For report of meeting see *The Naturalist*, July, pp. 222-224.

At the Bishop Wood excursion held on June 19th, the Committee was represented by Messrs. W. N. Cheesman, J.P., and A. E. Peck. Mr. R. Fowler Jones also attended.

For list of fungi and mycetoza found see *The Naturalist* of September, pp. 289-290.

The Autumnal Fungus Foray was held in the Scarborough district (with headquarters at Forge Valley), from September 25th to September 30th, and was attended by eleven members and friends. An account will duly appear in *The Naturalist*.

GEOLOGICAL SECTION.

Messrs. J. Holmes and C. Bradshaw report:—Owing to abnormal conditions, attendance at several of the excursions was below the average. This, however, could not be said of the Settle meeting, at which a large number of members spent

the week-end under ideal weather conditions. Two days were devoted to the Carboniferous limestone tract, and two to the Pre-Carboniferous rocks north of the Craven Fault.

At Hambleton in the Vale of York members had an opportunity of examining the core of a boring made in Brayton Barf. It revealed the geological history of the Barf very clearly.

At Hebden Bridge, sections in the lower beds of the Millstone Grits and Pendlesides were visited, and a discussion took place on the origin of some cavities in the Kinder Scout Grit. These cavities are probably formed by the removal of nodular concretions.

The main object of the Saltburn excursion was to observe the succession of the strata between the top beds of the Lower Lias, and the Moor Grit of the Lower Oolites, the whole of which were exposed within the area marked out for the week-end visit. Coast exposures at Huntcliff were seen to advantage, commencing with the *jamesoni* zone at its base, and continuing through the series to the jet rock. Inland, in the Kilton valley, the sequence was further traced up to the Moor Grit, but the luxuriant vegetation and steep nabs made it difficult to examine at close quarters many of the exposed horizons; the abrupt lithological changes, however, and the very irregular bedding showing the influence of currents, were very noticeable.

The Boulder Clay and its crop of erratics, together with the origin of Cat Nab, came in for discussion, and a visit to Roseberry Topping to see the effects of the great landslip, the plant beds, and the Cleveland Dyke was included in the programme.

JURASSIC FLORA COMMITTEE.—Mr. J. J. Burton writes:—Owing to the accumulation of material awaiting expert study, and also because of the withdrawal by the railway companies of the reduced fares to Societies holding meetings, only individual exploration has been carried on during the past year, and there is nothing of importance to report beyond that which is from time to time given in *The Naturalist*.

GLACIAL COMMITTEE.—Mr. J. W. Stather reports that coast work has been temporarily suspended and that the chief observation made during the year was an important one, viz., a record of the erratics on Brayton Barf, near Selby, particulars of which appeared in *The Naturalist* for September, 1915.

COAST EROSION COMMITTEE.—The sea is still eroding, but for obvious reasons it is not advisable nowadays to take too careful observations on the point.

GEOLOGICAL PHOTOGRAPHS COMMITTEE.—The Hon. Secretary, Mr. A. J. Stather, is serving his country, but we under-

stand that, for apparent reasons, geological photography has been somewhat quiet since the last annual meeting. The Union's albums of photographs are in good order and in the custody of his uncle, Mr. J. W. Stather, F.G.S., pending his return.

THE AFFILIATED SOCIETIES now number thirty-seven, having a total membership of 2,888. The Malton Society and the East Riding Nature Study Association have resigned.

THE MEMBERSHIP OF THE UNION at the close of 1914 (exclusive of the Affiliated Societies), numbered 377. Twenty members have been enrolled during the year. The resignations, deaths, and names struck off the roll total 38, leaving the membership at 359. The following are the newly-elected members, :—

- Mr. W. R. Barker, Grove Street, Barnsley.
- Mr. Charles N. Barr, 15 Chatham Street, Colne.
- Mr. Edward R. Cross, 12 Filey Road, Scarborough.
- Miss Joyce Capper, 32 Waterdale, Doncaster.
- Mr. Thomas Cockerline, 14 Leicester Place, Blackman Lane, Leeds.
- Mr. Sidney H. Couldwell, 18 Clifton Terrace, Beverley Road, Hull.
- Mr. G. Crozel, 17 Chemin des Celestins, Oullins (Rhône), France.
- Mr. D. Fraser Douglas, Stourton Road, Ilkley.
- Mr. H. England, Providence House, Lock Lane, Castleford.
- Mrs. G. Fysher, 78 Chapel Allerton Terrace, Leeds.
- Captain W. J. Farrer, 1 Gloucester Road, Birkdale.
- Mr. Edward G. Gibson, L.D.S., Croft Terrace, Hebden Bridge.
- Mr. James Y. Granger, 16 Leylands Lane, Heaton, Bradford.
- Mr. J. W. H. Harrison, B.Sc., 181 Abingdon Road, Middlesborough.
- Mr. E. Charles Horrell, 23 Victoria Terrace, Bell Vue Road, Leeds.
- Rev. T. A. Jefferies, F.L.S., The Manse, Littleborough.
- Mr. C. B. Newton, Waterworks Engineer, Hull.
- Mr. George W. Roome, B.Sc., F.G.S., 214 Psalter Lane, Sheffield.
- Miss H. M. Robinson, B.A., F.L.S., Central School, Hull.
- Mr. George Sheppard, B.Sc., F.G.S., Sunny Bank, Withernsea.

SOPPITT MEMORIAL LIBRARY.—Dr. T. W. Woodhead reports that the additions to the Library during the year include gifts by Mr. C. Crossland of Halifax, of a collection of 400 packets of Mosses chiefly Yorkshire specimens, many collected on

Yorkshire Naturalists' Union excursions, comprising about 270 species and varieties, each packet bearing the species numbers in Hobkirk's 'Synopsis' (1884) and Dixon's 'Hand-book' (1896). All are carefully labelled with date, locality and collector's name. Accompanying the collection are 18 papers and catalogues relating mainly to Mosses and Hepatics by Hobkirk, Dixon, Salmon, Carrington, Wager, Jameson, Macvicar and Cavers.

Mr. W. Denison Roebuck has presented copies of his papers on the 'Salient Features in the History of the Yorkshire Naturalists' Union.' and 'Jai Singh and his Indian Astronomical Observations.' We have also received Vol. 37 of the Journal of the Derbyshire Archæological and Natural History Society.

BRITISH ASSOCIATION.—Mr. T. Sheppard, M.Sc. represented the Union at the Conference of Delegates from Corresponding Societies held in connection with the British Association at Manchester. Important papers on Provincial Societies and their work, and on Provincial Museums, were given by Sir Thomas Holland and Dr. W. E. Hoyle respectively. Mr. Sheppard's criticisms thereon appeared in the 'Notes and Comments' column in *The Naturalist* for October.

THE NATURALIST has well maintained its status throughout the year, much interesting information concerning the natural history of the County having appeared within its pages.

THE PRESIDENCY.—On the invitation of the Executive the Presidency for 1916 has been accepted by Mr. W. N. Cheesman, J.P., F.L.S., Selby. The Union wishes to record its indebtedness to its retiring President, Mr. Riley Fortune, F.Z.S., of Harrogate, for his services during his year of office.

FINANCIAL STATEMENT.—The following is the Hon. Treasurer's (Mr. Edwin Hawkesworth) Statement of Receipts and Payments:—

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YORKSHIRE NATURALISTS' UNION.

VERTEBRATE SECTION.

President of the Section: **W. H. PARKIN, Esq.**

Two Meetings will be held in Room C7 at the Leeds Institute, Leeds, at 3-15 p.m. and 6-30 p.m. respectively, on Saturday, February 19th, 1916.

BUSINESS:

To appoint Bird Watchers for 1915, and discussion upon other matters in connection with the Yorkshire Wild Birds' and Eggs' Protection Acts' Committee.

Papers (mostly illustrated by lantern slides or specimens) will be given as follows:—

- "Yorkshire Reptiles," Mr. Oxley Grabham, M.A.;
- "Some Freshwater Fishes," Mr. Sidney H. Smith;
- "The Avifauna of some West Riding Reservoirs," Mr. Walter Greaves;
- "Notes on the Extinct Great Auk," Mr. E. Wilfred Taylor.

Any Member or Associate of the Yorkshire Naturalists' Union, is invited to attend, and to bring notes, specimens, lantern slides, etc., and is requested to bring forward matters of interest connected with the work of the Section, and to take part in any discussion.

Will officials of Affiliated Societies notify their members?

Any further particulars from

A. HAIGH-LUMBY (*Hon. Sec.*),

11 Nab Drive, Shipley.

BRYOLOGICAL SECTION.

This Section will meet at Huddlestone Quarry at noon on March 4th. The nearest stations are Micklefield or Sherburn on the N.E.R.

CHRIS. A. CHEETHAM (*Hon. Sec.*)

BOOKS WANTED.

- Naturalists' Journal. Vol. I.
- W. Smith's New Geological Atlas of England and Wales. 1819-21.
- W. Smith's Stratigraphical System of Organised Fossils. 1817.
- Frizinghall Naturalist. Vol. I., and part 1 of Vol. II. (lithographed).
- Illustrated Scientific News. 1902-4. (Set).
- Journal Keighley Naturalists' Society. 4to. Part I.
- Cleveland Lit. & Phil. Soc. Trans. Science Section or others.
- Proc. Yorks. Nat. Club (York). Set. 1867-70.
- Keeping's Handbook to Nat. Hist. Collections. (York Museum).
- Huddersfield Arch. and Topog. Society. 4 Reports. (1865-1869).
- First Report, Goole Scientific Society.
- The Naturalists' Record. Set.
- The Natural History Teacher (Huddersfield). Vols. I.-II.
- The Economic Naturalist (Huddersfield). Vol. I.
- The Naturalists' Guide (Huddersfield). Set.
- The Naturalists' Almanac (Huddersfield). 1876.
- "Ripon Spurs," by Keslington.

Apply—Editor, The Museum, Hull

NOTES AND COMMENTS.

THE VASCULUM.

The December number of *The Vasculum* (part 4) apparently completes the first 'volume,' though there is no title page. It contains pages 97-128. Among the more important items are A List of Birds of the Outer Farnes, by E. Miller; A New Rose (*Rosa emimens*) [*Rosa Eminens*, in the 'Contents'] by J. W. H. Harrison; 'Plant Galls,' by R. S. Bagnall and



H. S. Wallace; 'Uncommon Birds in North Tyne,' by A. Chapman; 'Northumberland Lakes,' by H. Jeffreys; 'Vespa austriaca' [*V. Austriaca* in 'Contents'], by J. W. H. Harrison; 'Snout Mites in Durham,' by J. E. Hull, and 'The Ruff in Durham,' by C. E. Milburn. We are not quite sure whether Mr. Harrison has made out a case for a new form of rose (the illustration of which we are kindly permitted to reproduce) as there is extraordinary variation amongst the wild roses, but at any rate he gives a detailed description of it. In his notes the Rev. Hull describes two more species of Snout Mites, viz., *Bdella lacustris* and *B. calva*, 'Yoskshire,' (p. 125), savours of the far east; there is much broken type; the photo

of the nest of the Reeve by T. H. Nelson is very poor ; and the ' Index to Vol. I. ' which occupies less than ninety entries on one page, is not a worthy one. Though the magazine is ostensibly devoted to Northumberland and Durham, it includes Cumberland and Westmorland ' and parts of all other counties bordering on Northumberland and Durham,' in this way closely resembling the area covered by *The Lancashire and Cheshire Naturalist*, which, in turn, seems to have chosen almost the area covered by *The Naturalist*. Anyway, there is nothing in the index to Vol. I. of *The Vasculum* to show which, if any, counties are referred to in the notes, nor are any author's names, nor localities given.

NOMENCLATURE.

In a recent number of *Nature*, Dr. Chalmers Mitchell draws attention to the fact that Mr. G. S. Miller has recently described plaster casts of the famous remains of early man from Piltown, and he considers that the lower jaw has no connection with the remains of the skull. Without having seen the actual specimen he describes it as *Pan vetus*, so that according to Mr. Miller, the object described by Dr. Smith Woodward, and in his charge at the British Museum, should be cited as the type specimen of *Pan vetus* G. S. Miller, this being an extinct Chimpanzee !

FOSSIL ZONES AND GEOLOGICAL TIME.

At a recent meeting of the Cambridge Philosophical Society, Dr. J. E. Marr read some notes on ' Fossil Zones and Geological Time.' An attempt was made to estimate the time required for the accumulation of the fossiliferous rocks by taking the case of chalk, comparing its rate of accumulation with that of the modern globigerinous ooze, and then calculating the number of fossil-zones in the chalk and in the whole of the fossiliferous strata. The result obtained suggests a minimum period of not fewer than 21,000,000 years for the formation of the fossiliferous strata. The controlling factors are too uncertain to permit much stress to be laid on this estimate, which is probably much too low, but according to it the evolution of organisms from the beginning of Cambrian times onwards need not have occupied a period of time greater than that which on various grounds is granted to geologists by followers of other sciences. The method may be applied with nearer approximation to accuracy, in estimating the relative importance of different groups of strata ; thus the number of zones in Palæozoic and Mesozoic rocks respectively indicates that the period during which the former were being laid down was not necessarily much longer than that required for the accumulation of the latter.

HABITS OF BLACK-HEADED GULL.

At a recent meeting of the Linnean Society, Mr. T. A. Coward read a paper on 'A Change in the Habits of the Black-headed Gull.' Owing to the remarkable increase in its numbers since the Wild Birds' Protection Act of 1880, this Gull has extended its range inland, and it is now an inland as well as a shore bird. This increase, in North Cheshire, has resulted in a noticeable change of habit, secondary to the change mentioned above, for within the last few years the bird has been roosting nightly on the waters of Rostherne Mere during autumn, winter and early spring. Normally, the roosting and feeding hours of a bird which feeds upon the coast are regulated by the tides, but these Cheshire birds retire to roost like any other diurnal bird, about sundown. The area which these regular diurnal feeding and nocturnal sleeping Black-heads frequent, is contiguous to an area where others of the same species feed and sleep according to the constantly changing hours of the tide in the neighbouring Mersey estuary.

PLANTS AND LIGHT.

Dr. Harold Wager's evening discourse delivered before the British Association at Manchester on the behaviour of plants in response to the light, is printed in *Nature* for December 23rd. It is illustrated by a remarkable series of photographs showing the effect of light upon leaves, etc. In accounting for this, Dr. Wager says: 'We may imagine that in the plant the action is as follows:—The light is absorbed by, and excites, certain photo-active substances in the cells of the sensitive region. A stimulus is thus set up which is conveyed through the cytoplasmic fibrils of the protoplasts to the motor region. A further impulse is then set up which acts upon the cells in the motor region, by which it is probable that changes in the permeability of the protoplasts are effected; the turgor conditions of the cells are thereby differentially altered, and the result is a motor response. We have here, in fact, a very simple type of reflex act taking place through the agency not of highly specialised nerve-cells, but of ordinary protoplasm and of the delicate protoplasmic fibrils which extend from one cell to another.'

SUSSEX BIRDS.

We think the above would be a better title for our ornithological contemporary, *British Birds*, as the first part in the new year is almost entirely occupied with Sussex records 'seen in the flesh,' and several are 'new to the British list.' They are 'Moustached Warbler in Sussex' (shot); 'Olivaceous Warbler in Sussex' (shot); 'North African Black Wheatear in Sussex' (shot); 'Cape Verde Little Shearwater in Sussex'

(one picked up, caught, and kept alive for two days); 'North Atlantic Great Shearwater in Sussex' (washed ashore); 'Grey Rumped Sandpiper in Sussex' (shot); 'White Winged Lark in Sussex' (seen, and apparently allowed to live, this by a lady); 'Kildeer Plovers in Sussex' (two were 'obtained' but a third, 'being very wild has so far escaped the guns of the lookers'); 'Greater Yellowshank in Sussex' (shot); 'Mediterranean Black-headed Gull in Sussex' (in this case the bird was seen, and, thank heaven, the writer 'is glad to say that no shooting is allowed along the front at Hastings and St. Leonards, so that I hope this bird may be allowed to remain unmolested and not meet with the fate that unfortunately happens to any rare birds which visit this neighbourhood'). Bravo, Mr. T. Parkin, and bravo, editor of *British Birds* for printing his observation. We don't, of course, suggest that any of the six new additions to the list of British birds 'seen in the flesh' in Sussex, are at all on a par with the well-known Ripon 'new record' which we recently exposed. We can only wonder! At any rate our Sussex friends are apparently as confiding as they are vigilant.

—:o:—

BIBLIOGRAPHY OF YORKSHIRE GEOLOGY (C. Fox-Strangways' Memorial Volume). *Proc. Yorkshire Geol. Soc.*, Vol. XVIII. By T. SHEPPARD. 8vo. London, Hull and York: A. Brown and Sons, Ltd. 1915 (Dec.), xxxvi. + 629 pp. Price 15s. net.

Yorkshire geologists are in a fortunate position. For many years they have been favoured with annual lists of the writings on this subject, and Mr. Sheppard has completed Fox-Strangways' manuscripts, collected together all previous lists, revised the whole, consolidated it from 1534 to 1914 and provided a colossal index by means of which the reader can find anything he desires. The test of such a work as this can only be proved by constant use. Here we can merely draw attention to its publication and its utility, to the time it is bound to save to the geological reader, and to the ease with which an interleaved copy can be annotated. The index seems as near completion as an index should be. We note one is able to find a paper under the author, the subject upon which he writes, and the locality he deals with. We even find subjects indexed under the preceding adjective, e.g., 'Figured specimen, York Museum,' a refinement usually considered unnecessary. But no one ever grumbles at an extra entry in an index. We thank Mr. Sheppard for the care he has bestowed on Fox-Strangways' manuscripts, and the labour he has spent in adding to and completing other lists. His reward can only be in the quiet knowledge that he is helping others and the rarity of the thanks he will receive from those who use his work.—C. D. S.

THE PROTECTION OF WILD LIFE IN YORKSHIRE.*

R. FORTUNE, F.Z.S

It has frequently been said to me that it is not necessary to trouble about the question of the protection of wild life in our county, as wild creatures generally are able to look after themselves, and are in no danger of extermination. With this view, however, I differ entirely. There are species in these islands which are rapidly disappearing and when once they have gone, nothing can replace them. It is the duty of the present generation to preserve our fauna in its entirety as a solemn task, and to pass on to future generations the safety of our wild creatures.

No one man or no body of men should be allowed to bring any species of mammal or bird to a danger point of extermination, because for the moment they interfere with some matter in which they are concerned, either from a sporting or economic point of view. If allowed to do so they will rob thousands of individuals of the present and future generations of the pleasure that would be derived from personal knowledge of the species destroyed.

We can have no better illustration of how quickly a species can be stamped out absolutely, than that of the American Passenger Pigeon; the last example of which died of old age in the Cincinnati Zoological Gardens on September 7th, 1914, after being in captivity, I think, about 27 years. This bird used to flourish in the United States in extraordinary numbers. Even twenty years ago it was abundant in certain parts. With mysterious rapidity it has become extinct.

The Cough might perhaps be cited as an example of a species which is in great danger of disappearing entirely from the British Isles.

There are a lot of influences at work at the present day which help to bring about the destruction of our wild life. The 4,000 or so members and associates of the Yorkshire Naturalists' Union have a reputation, not a common one I am sorry to think as far as naturalists in general are concerned, for doing their utmost to protect, not only the mammals, birds and other vertebrates of the county, but the plant life too. Their exertions have also had excellent results in the preservation and the prevention of the destruction of many of our beauty spots and pathways.

*The Presidential Address to the Yorkshire Naturalists' Union, delivered at Keighley on December 4th, 1915.

Through the efforts of the Wild Birds' Protection Committee of the Union, the Wild Birds' Protection Acts, so far as they relate to Yorkshire, have been greatly extended, and the three Ridings have been brought more into line with each other. There is still room for great improvements in these Acts. The names of many species might with advantage be deleted altogether, as they do not breed here, in fact have never nested with us and are not likely to do so. Confusion arises also through species being mentioned several times under different names, names by which they are never known in the county.

When, some years ago, I was asked to attend upon and advise the Committee of the West Riding County Council in these matters, with a view of extending the list of protected species in the Riding. I pointed out the absurdity of keeping this list of names on the schedule, and suggested they should be deleted, but I was told, 'we will put any name on the list you think ought to go on, but we will take nothing off.' I was too much concerned in obtaining the additions I wanted, to trouble unduly about the others.

There are, as I have previously said, many influences at work helping to destroy our wild birds especially. Game preserving is responsible for the destruction of numbers of Hawks, Owls and members of the Crow family, and before it was made illegal their hateful pole traps encompassed the death, often with extreme and prolonged suffering, of many harmless and useful birds. These traps may even now, despite the Act, be found in some of the more inaccessible parts. Cases should at once be reported to our Wild Birds' Committee, or if there should be an objection to this course, and I know circumstances make such a course difficult at times, at least the traps should be destroyed and made useless. Things, however, are not nearly so bad as formerly; many game preservers are only too anxious to protect all the birds upon their estates, and many keepers approach the problems connected with them in a judicial manner, anxious to preserve a friendly neutrality, a number being quite good naturalists who study the habits of the creatures closely. It is the ignorant, thoughtless man who is content to destroy those mammals and birds he considers harmful, just because his father and *his* father before him did so, that one would like to deal with. One instance I may mention to show the harm done by men of this class. A large estate in the West Riding changed hands, the owner dying and being succeeded by his brother. Upon this estate all Owls and Hawks have been protected ever since I can remember, and I have had free access over it nearly all my life. With the change of ownership the shooting was let for a time, this brought new keepers, who promptly started

exterminating both Owls and Hawks. I wrote to the owner drawing his attention to this state of things. I received in reply a most courteous letter thanking me for drawing his attention to the matter, which was entirely contrary to his desires, and stating that he had given orders that for the future these birds were not to be molested. The sequel, I regret to say, is not a happy one, a visit paid to some of the old owl trees, did not reveal a single bird at home, so that apparently they are being still quietly destroyed. I could mention other similar cases.

Game preserving has to its credit one good feature. It offers sanctuary and protection to thousands of smaller wild birds, who find secure havens in the quiet woods and coverts devoted to the rule of King Pheasant.

Gardners, farmers and foresters are all to blame for much unnecessary destruction. The gardener, when he sees a bird destroying buds, immediately condemns it to death as a bad character, not troubling to ascertain whether the buds are sound ones or have, as is usually the case, a nice juicy grub in their centre. The farmer will shoot the Owls which are preying on the mice and rats about his ricks, also the Starlings, Rooks and Lapwings, which are doing their best to rid his land of 'leather-jackets' and other noxious larvæ. The forester will destroy the Woodpeckers, being usually ignorant of the fact that these birds do not attack sound trees. These statements may appear rather sweeping. There are, of course, many members of these classes whose numbers are steadily increasing, who have studied the facts carefully for themselves, and instead of destroying do all they can to protect birds of economic value.

One of the evils to contend with are Sparrow clubs. If they confine themselves to their legitimate object of keeping the numbers of Sparrows and Rats within reasonable bounds, no objections would be raised against them; but as at present constituted they are simply a curse and ought to be stamped out as unclean things. Boys and loafers are encouraged for the sake of small rewards, in the destruction of small birds and their eggs, so much per dozen being paid for eggs and the heads of their victims.

Unfortunately there are several of these clubs in the county and they are increasing. Many of them do not confine their activities to Sparrows and Rats, but accept the heads of all small birds, consequently there is probably a larger proportion of useful insect eating Finches and Warblers destroyed than Sparrows. If these clubs cannot be ended, they should at least be under efficient control, so that the senseless slaughter of useful birds may be stopped.

There are agencies at work, aiding in the destruction of

bird life, altogether unsuspected by the general public. One of these is the increasing use of poisonous weed destroyers, worms and larvae destroyed by these chemical preparations come to the surface to die, and are often devoured by birds, with fatal results to the birds. Of late quite large numbers of sea birds and ducks have been found dead and dying along the shores of the East coast, their feathers and wings clogged with thick oil, so much so, that it prevented them diving, and obtaining their food. The substance was said to be oil from submarines. Whatever the cause it appears that even the birds have to suffer from German 'frightfulness.'

Cats, with an absolute contempt for the law, destroy an enormous number of young birds, especially cats kept near woods and coppices and about gardens which afford nesting sites for Thrushes and other small birds. When a cat runs wild and takes to the woods permanently, it is a terribly destructive agent. This summer I had three disappointments through an animal of this character. I had three Wood Warblers' nests under observation. I was anxious to obtain some photographs, and in order not to unduly disturb the birds, I delayed my operations until the young were nearly ready to fly. I spent an hour or two with them one morning, but as the light was rather poor, the results were not altogether satisfactory, so I decided to try again the following day, which was nice and bright. Invariably when approaching the nest the parent birds were at once in evidence, their anxiety great, and their calls incessant. This morning as I drew near the silence was ominous, I knew things were not as they should be. Investigation showed that the young had disappeared, and the inner lining of the nest had been torn out. Proceeding to another nest close at hand I was very disappointed to find the same fate had overtaken it and from a bush close by, a large tortoise-shell tabby cat darted away.

Bird catchers do a great amount of harm. The new clause in the Protection Acts, prohibiting bird catching on Sundays, has, however, curtailed their activities to a considerable extent, as Sunday has been their principal day for operations.

Formerly large numbers of Gulls and Terns were destroyed on the coast; at one time huge quantities were shot to supply the demand of the feather and millinery trades. I remember once seeing seventeen dozen Terns, the result of a Sunday afternoon's shooting in Bridlington Bay, hung up in the engine house at the Spa. They had been shot by the engineer employed there at that time, a Harrogate man I am sorry to say. He told me he sold them to the agents of the millinery houses for 7s. 11d. per dozen. It is an easy matter to obtain any quantity of these birds, for when shooting into a flock from a boat, if one or two are injured and flop about on the surface

of the sea, the remainder of the flock will circle about them, showing evidences of great distress at the predicament of their fellows, thus offering the easiest of shots to the murderer. Many were also shot from the sands. I always considered this slaughter of Terns on the Yorkshire coast particularly abominable, for a little further north a party of bird lovers among them, I am pleased to say, several members of the Yorkshire Naturalists' Union, combine to protect all the birds nesting on the Farne Islands. Great numbers of Terns were reared there in security only to meet their doom as they move southwards on the Yorkshire coast. Most of the areas about our coast towns are now closed to this class of work I am glad to say, and in the future I trust it will be impossible to witness such sights as the slaughter which occurred during an extraordinary flight of Great Skuas along the Yorkshire coast line.

The last destructive agent, and not the least, I shall mention, is the collector.

I have much sympathy with a collector of birds' eggs if he is a naturalist and content to take eggs in a strictly limited number for his own collection, and by his own efforts, at the same time studying the habits of the birds. Unfortunately it generally happens that when a man starts to form a collection, with this limitation, he speedily strays away from the course set and begins to desire series, taking every clutch which differs slightly from the ones he already has. Then he begins to take more clutches to exchange with friends and correspondents for species he does not possess. After a time he finds that certain sets which he has had for some time are beginning to be a bit faded, so they must be replaced by fresh ones, and so on, until there is no end to his activities. I knew one collector in the north, who had an enormous collection, he imported large boxes full from Iceland and other places, using them to exchange with, and this man was not a naturalist; he knew practically nothing about the birds and their habits. Quite a contrast was another who used to charter a steamer to go into the Arctic in the nesting season to find and take the eggs and study the birds himself. He told me once that he had about 12,000 eggs in his cabinets and they had cost him quite £1 per egg to obtain.

Then we have another class of collector, that of bird skins. He comes to the Yorkshire coast or other parts on the north-east coast, often from London and other south country districts. He 'blazes away' into flocks of small birds, killing and maiming dozens, in the hope of picking up amongst them something rare, or, perhaps, a new sub-species. One, a well-known man collecting further north than Yorkshire (he has done more than his share here), asked some sportsmen staying in the same place, to shoot all the Marsh Tits they came across. The

object of this vandalism was the hope of by chance securing a specimen of the so-called Willow Tit.

A number of present day leading ornithologists, as *they* consider themselves, have had the colossal impudence to take upon themselves, unasked, the revision of the nomenclature of British birds and have, after considerable labour, thrust upon the public an undesired list.* In doing this they have placed the old order of things at sixes and sevens and have constructed a number of unnecessary sub-species. I may point out that the inventive genius of these revisions is of such an order, that the only scientific name they can invent for our poor little Jenny Wren, formerly known as *Troglodytes vulgaris* is *Troglodytes*, *troglodytes*, *troglodytes*, and other species are named in a similar manner. What a perfectly ridiculous example of misplaced energy!

I do not wish to dwell upon this, but to point out one unfortunate result of their labours. Formerly their disciples were content to have type skins of certain species; now numbers of individuals of these particular species must be shot, in the hope of securing now and then one of the sub-species. Ringing birds, a practice which has assumed large proportions, is responsible for a good deal of destruction and suffering. Birds are shot to obtain the rings, and I have seen birds, Lapwings and others, that through an accumulation of clay or mud on the rings, have caused sores and festers to form upon the leg until it has cankered and at length dropped off.†

We may congratulate ourselves upon the fact that mainly through the exertions of the Yorkshire Naturalists' Union, this county will never allow the indiscriminate slaughter which goes on regularly in season and out of season, on the coasts of Kent and Sussex. Records are published almost monthly in that receptacle of obituary notices of rare visitors, *British Birds*, showing that a most careful watch is kept on all parts of these coasts where migrants or casual visitors are likely to land, and *no matter what time of the year they arrive*, they are promptly shot and proudly exhibited 'in the flesh' by the perpetrator of the vandalism or his hireling. It is a standing disgrace and reproach to the authorities in these counties, and one can only hope that they will before long put an end to this abominable state of affairs. The Royal Society for the Protection of Birds, have I think, neglected their duties in that part of the world.

If it were not for the birds our farms and gardens would be

* Since the issue of this List, an authorised one, by the B.O.U., has been published, which is much more acceptable to the general run of ornithologists.—R.F.

† Since this address was delivered, I have had a number of communications confirming this statement.—R.F.

devastated by the grubs of noxious insects, and overwhelmed by the insects themselves. Mr. Fred Enoch told us at Harrogate recently that Professor Huxley had calculated that if a single pair of green flies were allowed to multiply unchecked, their progeny would in a single year equal in weight, in *weight* mind you, the whole of the population of China! He gave us the volume and page of the *Ray Society's Transactions* where this statement is made and published, and how he made the calculation. This in itself is surely sufficient to prove how necessary it is to protect our insect-eating birds. We know too, how soon small mammals can increase and multiply. A rabbit a year old is generally a grandfather, and mice and rats increase even more rapidly. If they were not kept in check by the birds that prey upon them (and we must also give stoats and weasels a good deal of credit in this direction), they would soon over-run the land.

(To be continued).

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YORKSHIRE HAWKWEEDS.

JOHN CRYER.

THE following is an additional list of Yorkshire Hawkweeds to that published in this journal, April, 1909, and February, 1910. I am deeply indebted to the Rev. E. F. Linton, M.A., for his generous help and for his copious and critical notes.

H. anglicum Fr. var. *Brigantum* F. J. Hanb. Linton, Ghaistrills, Bastow Wood, near Grassington. New localities.

H. lasiophyllum Koch. var. *euryodon* F. J. Hanb.—Cronkley Scars, Teesdale. New to North Riding and to Yorkshire. Found by the writer, July 6th, 1913. Mr. Linton says: 'Correct, though slightly different in the clothing of the involucre from other forms of the variety.'

H. britannicum F. J. Hanb. In abundance in Ling Gill. The only other recorded Yorkshire locality is Linton, near Skipton.

H. scoticum F. J. Hanb. Ling Gill and Littondale. This was first recorded for Yorkshire by T. A. Cotton in 1892, who found it at Deepdale in Upper Wharfedale. Two or three plants were seen in Ling Gill, but it was fairly abundant in Littondale, August, 1913.

H. stenolepis Lindeb. Mr. A. Ley in *Supplement of Journal of Botany*, January, 1909, page 5, says: 'No form of *H. stenolepis* appears to occur in Yorkshire.' The writer found several examples of type in Heseldon Gill, June 26th, 1915.

H. pellucidum Laestad. Hackfall Woods, near Tanfield, June 7th, 1913. A new station for it in the north Riding.

H. crebridens Dahlst. There are two distinct forms of this interesting hawkweed—a Scotch form which was taken as type, and an Irish form. The Scotch form grows at Arncliffe and the Irish form at Linton near Skipton. Fine examples of each were gathered in June, 1913. A third form with more cordate leaves which Mr. Linton describes as the 'Yorkshire plant' was found at High Force in Teesdale, June 5th, 1914.

H. sagittatum Lindeb. var. *subhirtum* F. J. Hanb. Winch Bridge, Yorkshire side, Teesdale, June 6th, 1914. A new Yorkshire record I believe.

H. rotundatum Kit. Ling Gill, August 10th, 1912. After careful examination of specimens from Ling Gill, Mr. Linton writes: 'I am much inclined to place this plant to *H. rotundatum* Kit., a Yorkshire form with rather broader leaves and fewer heads than Scotch or Scandinavian specimens usually have. I do not think Yorkshire has been credited with this species, but it might well occur.' This hawkweed has only been recorded for two counties in Scotland—Forfarshire and Perthshire; not hitherto recorded for England.

H. caesium Fr. Mr. A. Ley in *Journal of Botany* (*loc. cit.*) says: 'not detected in Yorkshire.' Mr. Linton unhesitatingly places a series of plants gathered in Bastow Wood near Grassington, June 12th, 1911, under the above name.

H. acroleucum Stenstr. Ling Gill. There are only three stations known in West Yorkshire—Ribblehead, Shipley, and above.

H. mutabile A. Ley. Heseldon Glen, August 11th, 1913. First record for Yorkshire. Since found in Ling Gill, Gordale, and in Bastow Wood.

H. orarium Lindeb. Heseldon Glen, June 26th, 1915. New to Yorkshire; a first record.

H. maculatum Sm. Heseldon Glen, Bastow Wood, Ling Gill. New localities.

H. rigidum Hartm. var. *Friesii* Dahlst. Near Grassington. A 'rare' Yorkshire hawkweed. Confirmed by Mr. Linton.

H. crocatum Fr. Abundant in Ling Gill. A new locality.

The writer of these notes is very anxious to make as complete a record as possible of Yorkshire hawkweeds, and would be glad to co-operate with any Yorkshire botanists who are interested in this difficult yet interesting genus. Any communications addressed to 182 Bradford Road, Shipley, will receive immediate attention.

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We should like to offer our congratulations to Sir Archibald Geikie, who has just celebrated his 80th birthday.

The Geological Society has awarded its Murchison medal to Dr. R. Kidston, whose work on the Fossil Flora of the Yorkshire Coalfields is well-known to our readers; and the Lyell medal to Dr. C. W. Andrews of the British Museum.

NOTES ON SOME DANISH MOLLUSCA.

HANS SCHLESCH.
Hellerup, Denmark.

Helix (Helicella) candicans Ziegler, and *Helix (Theba) carthusiana* Müller, in Denmark.

SOME time ago, Mr. Niels Petersen, of Copenhagen, who for several years has assisted me in the collecting of mollusca, sent me a small box containing living examples of land-shells found near the fortress of Jaegersborg near Copenhagen. To my great pleasure they proved to be *Helix candicans* and *H. carthusiana*, which have not hitherto been found in Denmark. Both these species may be seen in my collection in the Hull Museum.

Helix (Helicella) candicans Ziegler, varies considerably in size, form and colour. The variety *anomala* of Westerlund is very common, while the variety *usta* of Held is rarer. A Swedish malacologist, Mr. Harald Muckardt, found a single specimen in 1907, at Helsingborg (Scania), in Sweden, and it was noted more than fifty years ago by Dr. Poulsen and Von Martens near Frederiksvaern in Norway. Mr. Muckardt believes it is carried with foreign turnip seed.

Helix (Theba) carthusiana Müller occurred in two forms, the type and the variety *minor* of Westerlund. This find is very interesting, as it has not hitherto been recorded from Scandinavia. Even in Germany this characteristic South-European species is found only in few places, invariably on chalky soil. According to Clessin, the species lives only in climates which are softened by the gulf-stream. This explains its occurrence in Great Britain.

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***Pupa arctica* Wallenberg.**—Since my note on the distribution of *Pupa arctica* Wallb.,* I have learned that this arctic species is found in the Val d'Hérens (Valois), in Switzerland, at an elevation of 1700 m., and in the Sudeten at an elevation of 1600 m.† Mr. Plaget says that it also occurs in the Faroe Islands, but it is not yet recorded for this locality, though it might very possibly live there as well as at high altitudes in the British Isles.—HANS SCHLESCH, Hellerup, Denmark.

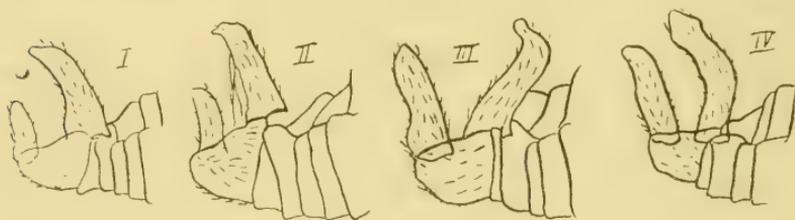
* *The Naturalist*, Aug. 1914.

† Plaget 'Un Mollusque Arctique habitant les Alpes Suisses,' *Feuille des jeunes Naturalistes*, Jan. 1914.

PSYLLA BAGNALLI (HARRISON) : A NEW SPECIES OF PSYLLID.

J. W. HESLOP HARRISON, B.Sc.
Middlesbrough.

IN the main the genus *Psylla* (Geoffroy) is very homogeneous but even in it are some small but well marked groups of closely allied species; these, however, are not sufficiently distinct from the main groups to be dignified with even subgeneric rank. Such a minor group is formed by the subject of the present paper, *Psylla bagnalli* (mihi) and the three species *Ps. melanoneura* (Forster), *Ps. nigrita* (Zetterstedt), and *Ps. subferruginea* (Edwards). In addition to these, I possess a fifth species, provisionally named *Ps. proxima*, allied to *Ps. melan-*



Male caudæ.

Fig. I.—*Ps. bagnalli*.

„ II.—*Ps. subferruginea*.

Fig. III.—*Ps. melanoneura*.

„ IV.—*Ps. nigrita*.

oneura, but differing from it in thoracic pattern and, more particularly, in the genal cones which, instead of being approximated and darkish, diverge widely and have somewhat knobbed whitish tips. This I refrain from describing as up to the present I have only taken specimens of the female sex. Judging from the food plants, the group is northern in origin for *Ps. nigrita* and possibly *Ps. melanoneura* feed on *Pinus*; *Ps. subferruginea* on birch, and *Ps. bagnalli* on rush.

PSYLLA BAGNALLI (sp. n.).

Length of body 1·8-2 m.m.; wing length, 2·25 m.m.; width of head 0·75-0·8 m.m. General colour reddish orange. Vertex broad, twice as broad as long, pale in colour, tending to white centrally. Genal cones palish, almost white, yellowish at the base, pubescent, not divergent, rounded at the tip, about four-fifths as long as the vertex. Eyes, blackish in front, then sharply rust coloured and posteriorly white. Front ocellus reddish orange. Antennæ one and a half times as long as breadth of head, joints 1, 2 and 3 fuscous, 4, 5, and 6 black at apex, fuscous at base, 7, 8, 9, and 10 black, 9 and 10

forming a slight club. Mouth parts blackish. Pronotum outlined in black anteriorly, pale (almost white) behind with a fine black line terminally; praescutum reddish orange; scutum the same, thoracic pattern much the same pattern as in *Ps. melanoneura* but very indistinct.

Wings smoky fuscous, clearer in the two basal cells and near the veins. Pterostigma pale, appears white in some lights; veins brownish black.

Legs rather stout, palish, claws blackish; spur at base of tibiae obsolete but two or three black-bluntish spines at apex; claws blackish. Abdomen paler, in some cases even greenish.

GENITALIA—MALE.—Anal valve longish but quite typical, finely hairy as are also the forceps which are rather small, sinuate or thumb-like in outline; forceps one half the length of valves.

FEMALE.—Genital segment very long, as long as the rest of the abdomen. Dorsal valve long, slender pointed, longer than the ventral valve.

HABITAT.—Taken by Mr. R. S. Bagnall, after whom I have named it, on rushes on Blanchland Common, Northumberland.

The nearest ally of the present species is *Ps. subferruginea*, but it is readily distinguished from that form by its size, for it is only about two thirds of the size of *P. subferruginea*. Structurally, the two are easily separated in the male sex by the genitalia. The genitalia of *Ps. bagnalli* bear much the same relation to those of *Ps. ferruginea* as do those of *Ps. submelanoneura* to those of *P. nigrita*.

The males of the four allied forms can be easily recognised by the following table, and when once the males are known the females are just as readily separated on general characters:—

(1) General colouration of insect, reddish brown or orange; forceps one half the length of the anal valve (2).

Insect dark in tone; forceps two-thirds or more the length of the anal valve (3).

(2) Insect smaller; outer edge of forceps sinuate, *Ps. bagnalli* (mihl).

Insect larger; outer edge of forceps concave, *Ps. subferruginea* (Edw.).

3. Outer edge of forceps distinctly sinuate, *Ps. melanoneura* (Forst.).

Outer edge of forceps basally straightish, concave toward the tip, *Ps. nigrita* (Zett.).

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Mr. C. B. Moffat writes on 'The Crossbill and its Diet' in *The Irish Naturalist* for January.

RECENT WORK ON PREHISTORIC MAN.

The remarkable impetus given in recent years to the study of prehistoric man, largely due to the wonderful discoveries at Piltdown, Sussex, by Messrs. Dawson and Smith Woodward, has resulted in the publication of quite a number of books on the subject, some of which have already been referred to in these pages. Different authors, interested in the discussion upon *Eoanthropus dawsoni*, have made a re-survey of previous important discoveries; result—books. The first of those before us, 'THE ANTIQUITY OF MAN,' by PROF. A. KEITH,* is obviously a direct result of the controversy he had with Dr. Smith Woodward as to the proper significance of the Piltdown remains. Nearly half the book is occupied by detailed descriptions of the Sussex specimens. Prof. Keith points out that most books on prehistoric man approach the subject from the point of view of the geologist. He therefore deals with it from the anatomist's standpoint. This accounts for the importance Prof. Keith gives to the 'Ipswich Man'; geologists, with their knowledge of the deposits in which the remains occurred, are of opinion that he is comparatively modern. The same may be said for other remains which, had Dr. Keith possessed the geological knowledge which is so essential in deciding matters of this sort, he would doubtless have treated differently. Though generally very interesting, the book is at times a little technical and difficult to follow; some amends are made, however, by the wealth of illustration.

In 'PREHISTORIC MAN AND HIS STORY.'† PROF. G. F. SCOTT ELLIOT covers an enormous field. In fact the ground covered is so great and so varying that it naturally follows now and again that it gets a bit unstable and swampy, and while we will not go so far as to say that the author gets out of his depth, yet at times he seems to get along with some difficulty. The following are the headings to one chapter:—'Embryonic Reasoning and Germs of Morals in Animals—Intelligence of Paramœcium, Crayfish, Tortoises and Birds—Emotional Possibilities in Birds—Ants which grow Corn and Fungi—Puzzle Boxes—Lemurs and Monkeys which throw Sticks and Stones—Oran-Utan—Aye-Aye—Peter and the Blackboard—Nest-building among Lemurs and Apes—Sociability and good and evil qualities of Monkeys—Appreciation of the Sun—Essential Differences of Lowest Man and Highest Animal Intelligence and Capacity of Brain—Unsatisfactory Figures—Weights of Brains—Size of Hat and Wealth—Growth of Skull in Gorilla and Man—Effect of Jaw and Neck Muscles—

* London: Williams & Norgate xx. + 519 pages. 10s. 6d. net.

† London: Seeley Service & Co., 398 pages, 7s. 6d. net.

Possible Assistance of peculiar arrangement in Man—Growth in Breadth—Effect on Jaws—Chin—Brow Ridges—Crested Skulls—Teeth—A Threatening Prospect—Eyesight—Language—Tactfulness—The Great Steps—Monogenist—Polygamist.’ This chapter is, not inappropriately, headed ‘The Limit of Humanity,’ and as there are twenty-seven chapters, it will be seen that Professor Elliot covers *some* ground! He has some elaborate tables, and is fond of figures—‘Oligocene, 3,200,000 years ago,’ etc.; impressive, but not convincing. Speaking of Ice-Ages, the author admits ‘the question is really one of geology, and as James Geikie, Penck, Bruckner and Sollas (an unusual quartette!) agree as regards the general scheme of four Ice Ages, their opponents ought to shew wherein their geology is wrong.’ Personally we thought this had often been done. ‘Boyd Dawkins, Lamplugh, and other anthropologists in this country’ object to the arrangement! On the question of pigmy-flints the author seems to be under the impression that they were all made by ‘the pigmy flint people who belonged to the Mediterranean race.’ He admits ‘it is very difficult to understand how they got to Australia.’ Quite so, and in recent times the Australian aborigines used stone axes almost identical in type with those found in Yorkshire, but nobody suggests that the people of East Yorkshire in neolithic times migrated to Australia? There are not many aspects of the subject neglected by Professor Elliot, and as he gives an enormous number of references to publications, the student of any particular subject can refer to these. Among the illustrations are reproductions of the restorations of the different types of pre-historic man, by Professor Rutot, though these all seem to bear a strong family likeness.

In ‘AN INTRODUCTION TO THE STUDY OF PREHISTORIC ART,’* Mr. E. A. PARKYN gives a remarkable series of illustrations of the artistic efforts of early man during the Palæolithic, Neolithic, Bronze and Early Iron Ages. There are also chapters on ‘Late Keltic Art,’ etc. Mr. Parkyn has gathered together an enormous number of representations of extinct animals, as drawn by palæolithic man on bone, ivory, on the walls of caves, etc., but on examining them one wonders whether all the pictures really represent the work of primitive man. And similarly, though Mr. Parkyn states his case with caution, we should be inclined to think that many of the pieces of pottery ascribed to the Neolithic or new Stone Age, should really be looked upon as of the Bronze Age. That is certainly our opinion with regard to the East Yorkshire pottery mentioned. The Art of the Bronze Age, Early Iron Age, etc., is dealt with very clearly and very fully, and examples

* Longmans, Green & Co., 349 pages, 10s. 6d. net.

are illustrated from various parts of the country, and abroad. There are over 300 illustrations to the volume. Mr. Parkyn will find more information in reference to Yorkshire Chariot Burials in *The Yorkshire Archæological Journal*, part 76, 1907.

'PREHISTORIC LONDON, ITS MOUNDS AND CIRCLES,' is a somewhat remarkable book by E. O. GORDON.* It is dedicated to Sir Melville and Lady Beachcroft, 'The latter the lineal descendant of Beli Mawr, King of All Britain and Wales, B.C. 132.' The author begins by telling us that 'Ammeu Pob Anwybod,' i.e., 'Everything Unknown is Doubted,' which seems reasonable enough. Presumably Lady Beachcroft's pedigree is known. As a frontispiece is a plan showing some hills around London viz. (a) Llandin (llan=sacred, din=eminence), this being Parliament Hill; (b) Penton (Pen=head, ton=sacred mound); (c) Bryn Gwyn (Bryn=hill, Gwyn=white or holy), where the Tower of London now is, and (d) Tothill (Tot=a sacred mound), Westminster. All this is probably new to most Londoners. The name London itself is the 'Llandin'—welsh for High Place of Worship, or, if we wish to have an alternative derivation, we can have Llyn=the welsh for Lake. The author then takes us to the Isle of Man and shews us the Tynwald Hill; to Stonehenge and Silbury Hill, to Glastonbury, and, as we expected he would, to Wales, and we are told about the Gorsedd, the Eisteddfod, the Maen Logan, etc. And he ends up with 'Duw a Digion' (God and Enough), to which we say Amen!

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In the *Scottish Naturalist* for January is an article by Miss L. H. Huie, on 'The Habits and Life History of *Hylemyia grisea* Fall; an Anthomyiid Fly new to the Scottish Fauna.'

We learn from *Bird Notes and News* that 'from the Spurn Lighthouse come records of the perches having been used this autumn by, among other species, Larks, Wheatears, Blackbirds, Starlings, Chaffinches, Norwegian Crows, and a Merlin.'

Dr. F. Cavers writes on 'The Inter-Relationship of Protista and Primitive Fungi,' in the December *New Phytologist*. This is one of the so-called 'double numbers,' but as it contains only forty-eight pages and one plate, the price of 4s. seems quite sufficient.

The Lancashire and Cheshire Naturalist for December contains papers on 'Marram Grass and Dune Formation on the Lancashire Coast,' by W. G. Travis; 'Derbyshire False-Scorpions,' by R. Standen; 'Gall Midges and Gall Mites at Grange-over-Sands,' by R. S. Bagnall.

In *The Zoologist* for December, a letter dated March 25th, 1692-3, is quoted, as under: 'There is a great whale com a shore in lincornshire of a prodigious bigh so that a man of six feet hiy may stand uprite in his mouth & it is sold for a thousan pound.' It is considered to have been either a Sperm or a Right Whale.

* London: Elliott Stock, x. + 212 pages, 10s. 6d. net.

26,500 entries relating to Yorkshire, published between 1534 and 1914. In future the lists for Yorkshire only, will be published by the Yorkshire Geological Society; the lists appearing in *The Naturalist* will refer to the other northern counties.

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YORKSHIRE NATURALISTS' UNION : ENTOMOLOGICAL SECTION.

THE annual meeting of this Section was held on October 30th, 1915, at the University, Leeds. The president, Dr. Fordham, was in the chair. The following Lepidoptera were shown:—*Abraxas grossulariata* var. *lacticolor* by Professor Garstang; and vars. *nigrosarsata* and *hazcleighensis* of the same species from Clayton West district by Mr. T. H. Fisher and Mr. W. Dyson. Dr. Corbett showed a case of common lepidopterous insects, species arranged to show how they harmonized in colour with their surroundings when at rest.

Mr. B. Morley showed many striking asymmetrically marked specimens, including a series of *Tephrosia biundularia* bred from parents taken near Wakefield, the male being of the extreme dark form, the female being very pale. The moths shown were intermediate in colour but very irregularly splashed and streaked with pale markings.

Dr. Corbett also showed a case of very large orthopterous insects introduced into this country with foreign fruit.

The exhibits of Coleoptera were numerous, and were by Messrs. M. L. Thompson, H. H. Corbett, J. W. Carter, T. Stainforth and Dr. W. J. Fordham.

The following is additional to the report for Lepidoptera which has appeared in the Annual Report.

Mr. T. Ashton Lofthouse reports *Coccyx vacciniana* and *Clepsia rusticana* in Westerdale at Whitsuntide; *Cemiostoma spartifoliella* in Wilton Woods; *Cemiostoma walesella*, *Grapholitha subocellea* and a single specimen of *Gnophos obscurata* at Saltburn on the occasion of the Yorkshire Naturalists' Union's meeting; *Ebulca croccalis* at Linthorpe and *Eupithecia albipunctata* and its var. *angelicata* from the same district.

From the West Riding Mr. B. Morley reports *Amphysa prodromana*, Penistone Moors, April 21st, plentiful; May 24th on Bolderstone Moors *Phoxopteryx myrtillana*, *Gelechia longicornis*, *Saturnia pavonia*, *Acronycta menyanthidis* and *Hadena glauca* were plentiful; May 25th, *Gelechia scalella*, common in Haw Park; *Phlæodes tetraquetra*, May 26th, and *Eupæcilia maculosana*, June 6th, Deffer Wood; *Ephippiphora pflugiana*, June 5th and *Micropteryx calthella*, June 17th at Skelmanthorpe.

Larvæ found in ash buds in June produced *Prays curtisellus* in July, and others found in hogweed, *Depressaria angelicella* in August, Skelmanthorpe. Cocoons found on beech trunks in Cawthorne Park Wood gave *Harpipteryx xylostella* in July. At Barugh on July 24th *Hydrocampa nymphæalis*, *H. stagnalis*, and *Xanthosetia zoegana* were taken.

Ephippiphora tetragonana, June 14th; *Scardia granella*, August 1st; *Glyphipteryx fuscoviridella*, June 5th; *G. thrasonella*, July 21st; *Scoparia murana* and *S. mercurella* both abundant July and August, were taken at Skelmanthorpe.—B. MORLEY.

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In Memoriam.

J. R. STUBLEY.

WE deeply regret to record that since the publication of a list of the members of the Yorkshire Naturalists' Union on active service, in *The Naturalist* for January, J. R. Stubley has died for his country. For the past year he has been driving his car for the First Convoy of the British Ambulance Committee attached to the French Red Cross. About five weeks ago he contracted pneumonia, and after a serious illness, passed away on Monday, December 27th.

He was a keen entomologist, and when there was a lull in the fighting in the Vosges, where he was stationed, and consequently few wounded to be brought in, he would continue the pursuit of natural history and rear caterpillars at his billet.

He was also keenly interested and had a considerable experience in the culture of orchids, and being an expert photographer, made a fine series of photographs illustrating their fertilisation.

In other country pursuits, he was an enthusiastic motorist and tennis player. A first-class game shot, it is pleasant to record that he would never kill any rare creature or destroy life wantonly. His manly qualities and unfailing good nature made him very popular, and he will be greatly missed by all who knew him. Mr. Stubley was a nephew of Mr. Walter Bagshaw, of Batley.—R. F.

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The Rev. E. A. Woodruffe Peacock writes on 'Eyes and Ears,' though he does not say much about them, in *The Selborne Magazine* for January. He explains how to use them.

The Journal of Conchology for January contains a note on 'The Discovery of *Hygromia umbrosa* in England' (at Margate), by J. W. Taylor, and 'Additions to the Land and Freshwater Mollusca of Jura, Colonsay with Oronsay and Islay,' by J. F. Musham. We notice under *Helix memoralis* 'two colonies (Staff-Surgeon Jones and myself)'

Among the additions to the St. Helens Museum recorded in the recent report, we notice 'a fine copy of Raphael's celebrated masterpiece, the "Madonna della Seggiola."' The report goes on to say that 'the frame is in English gilt, is of a very elaborate design, and is also an exact facsimile of the original.' A case of ptarmigan and a case of butterflies and moths form the natural history additions for the year.

FIELD NOTES.

FUNGI.

Cordyceps capitata.—In the Annual Report of the Yorkshire Naturalists' Union (*The Naturalist*, January, 1916, p. 44), reference is made to the re-discovery of *Cordyceps capitata* 'which so far as has yet been ascertained would appear to have only three previous British records, and these dating back to the years 1786, 1787, and 1803.' In a list of Fungi, contributed to Mason's 'History of Norfolk' (1884), the late Dr. Plowright wrote: '*Torrubia capitata* . . . was found at Holt by the lady of the Rev. Robert Francis, and sent to Sowerby, by whom it was figured in his "English Fungi," which was published in 1779-1809. No specimen was again seen of it in Norfolk until 1879, when the Rev. Canon Du Port met with a specimen in Hockering Wood.' Another occurrence is recorded by Phillips and Plowright in *Grevillea* (New and Rare British Fungi, No. 145*): 'magnificent specimens of this very rare *Torrubia* were found October, 1878, by Miss L. M. S. Pasley in Hampshire.' Further search would probably reveal other records. In 1902, in company with Dr. Plowright, I saw numerous examples of this fungus in a locality near London, which I understood was well-known to mycologists in general as a habitat of this species.—T. PETCH.

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BIRDS.

A Yorkshire (?) Sooty Tern.—On the 21st of last Sept., while visiting a patient, Mr. Sanderson, Doncaster, my attention was drawn to a stuffed bird in his house. On examining it I saw it was a Tern of a species unknown to me. Mr. Sanderson said, 'If that is any use to you at the museum, you can take it away with you.' This of course I did. On looking it up I saw that it was a Sooty Tern. The next time I saw Mr. Sanderson I asked him whether he could give me any history of the bird, and he furnished the following details. G. Wiles, of Nelson Street, Doncaster, was a well-known poacher, who died about twenty-five years ago. Wiles shot the bird at Rossington, and had it stuffed by Blythe of Cleveland Street. Sometime later Wiles's poaching got him into trouble and he was sentenced to a term of imprisonment 'with the option.' His wife, in order to raise funds to pay the fine, sold some cases of stuffed birds, and Sanderson bought two of them, one being the Sooty Tern, and the other, which he also gave to me, containing two Redwings. It does not seem likely that a dull coloured and inconspicuous bird, such as the Sooty Tern, would be sent home from 'foreign parts' as a curiosity; neither is it probable that such a bird

would be kept alive in an aviary and escape thence, and although the evidence is not conclusive, I think that the probability is great that we have here a genuine Yorkshire specimen of *Sterna fuliginosa*.—H. H. CORBETT.

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BOTANY.

Hybrid *Epilobium* in Cheshire.—On August 4th last, while at Helsby, about seven miles from Chester, on the swampy edge of a long narrow sheet of water near the station, I found an *Epilobium* that was new to me. It had the flowers of *hirsutum* and the leaves of *palustre*. I sent it to the Rev. E. T. Marshall, who wrote to me as follows:—‘I feel sure that it is *E. hirsutum* × *palustre*. The capsules are mostly short and shrunken as is usual in these hybrids. The comparatively large petals and the sepals point clearly to *E. hirsutum* as does the pubescence of the capsules, foliage and stem. The leaves closely approach *E. palustre*, of which they have the general appearance and the *revolute edges*, but the tothing, though a good deal suppressed, especially in the lower leaves, is due to the influence of *E. hirsutum*. This is a new hybrid for Britain and probably new altogether.’

Haussbrecht in his Monograph, p. 63 says:—‘I have not seen any example of this alleged combination, nor has the description convinced me of its existence.’

It was described in *Bot. Zeitung*, 1875, p. 522, from material gathered near Petrograd. Professor Haussbrecht informed me during our correspondence (many years ago) that he had received a specimen and that it was *Epilobium palustre* × *parviflorum*.

In a further letter from Mr. Marshall, he says:—‘Your hybrid is apparently “new to science,” and not only new to our country, as the plant previously supposed to be this combination proved to be something different.’—CHAS. WATERFALL.

————: o :————

There is a note on ‘The Turnip Gall Weevil,’ with illustrations, in *The Journal of the Board of Agriculture* for December.

Prof. G. F. Atkinson favours us with a memoir on ‘Morphology and Development of *Agaricus rodmani*,’ reprinted from the *Proceedings of the American Philosophical Society*.

In the *Transactions of the Halifax Antiquarian Society*, the former owners of Bolling Hall, Bradford’s new museum, are referred to as ‘the Boiling Family.’ We trust it is only a misprint, and is not a supposition!

Punch draws attention to the following example of ‘Journalistic Modesty’: ‘The Neanderthal man, we know rude as he was, made fires, and has left indications that he had reasons to suppose his relatives continued beyond the grave. His brain case, though not like ours, was quite capacious.—*Daily News*.’

REVIEWS AND BOOK NOTICES.

Junior Botany. By **F. Cavers, D.Sc., F.L.S.** W. B. Clive, 1915, pp. xii. + 288, 2s. 6d. This work is intended to meet the requirements of students taking the junior local examinations of Oxford and Cambridge. The first sixty-six pages, by means of a series of well selected experiments, deal with physics and chemistry, which are essential to a proper understanding of the problems presented in a study of plant life. The rest of the book is devoted to the study of plant forms and functions on the thoroughly practical lines already familiar to our readers in the author's deservedly popular books on plant biology and the life-histories of plants. There are 140 clear and helpful illustrations.

All About Leaves. By **F. G. Heath.** Williams & Norgate, pp. ix. + 228, 4s. 6d. net. The author of this work is well-known for his delightful descriptions of our wild plants, e.g., his 'Woodland Trees,' 'Fern World,' etc. Unfortunately he did not live to see his latest work through the press. The introductory chapters deal with the beauty, mystery and fabric of the leaf, and in the remainder of the volume we have descriptions, in the popular and attractive language characteristic of the author's writings, of the leaves of thirty-seven shrubs and trees and twenty-five herbaceous species. These are well illustrated by eighty photographs from nature, and four in colours from the excellent drawings by Miss M. Schroedter, are of the horse-chestnut, common ash, hazel and larch.

Determinative Mineralogy with Tables. By **J. Volney Lewis.** 2nd edition. New York: J. Wiley & Sons; London: Chapman & Hall, 155 pages, 6s. 6d. net. The first edition of this work was noticed in *The Naturalist* for 1913, page 435. The present edition differs from it 'in the full restatement with each section of the tables of the classificatory characters and tests leading up to it. This adds much to the convenience of the tables for reference, since the complete description of a mineral, both physical and chemical, will now be found in one place. The supplementary tables at the end have also been adapted to a wider use by the inclusion of specific gravity and composition, in addition to luster, crystallization, and hardness; so that they may be used for the rapid determination of minerals by means of their physical properties, even in the absence of crystals.'

Typical Flies: A Photographic Atlas of Diptera, including Aphaniptera. By **E. K. Pearce.** Cambridge University Press, xii. + 47 pages. Price 5s. net. This work consists of a series of plates reproduced from photographs of the more typical, or common British Diptera, of which about 130 species are illustrated, in many instances the sexes being shown separately. It is issued as a cheap book for beginners, to whom it will be helpful. The photographic illustrations, rendered with fidelity an important dipterous character—the venation of the wings and the shape and general appearance of the insects. Beneath each figure is given the size, and a short account of the habits and distribution of the species. In many cases it would have been useful if the colouration of the forms had been briefly referred to. In the preface the author describes the best methods and most suitable times and places for collecting. Brauer's classification of the families of Diptera is given, and there is an index to the species illustrated.

Market Gardening. By **F. L. Yeaw.** Chapman & Hall, 1915, pp. vi. + 102, 3s. 6d. net. At the present time, when so much attention is directed to increasing the productivity of the land, the possibilities of market gardening deserve special notice. The author of this small volume has had a wide experience and is thoroughly conversant with all the important aspects of his subject. No words are wasted on non-essentials and he has succeeded in giving a large amount of information in very

small space. Throughout, the work is thoroughly practical, and the descriptions are given in terse and simple language. Although written for American readers, English growers will find it of much value, as most of our common vegetables are dealt with. Of the eight chapters in the book, the first seven deal with location, cultivation, fertilizers, hot-beds, sowing, transplanting, irrigation, home and school gardens, and storing and packing. The last chapter deals with the cultivation, harvesting and marketing of twenty-three special crops. The work is well illustrated by clear line drawings and a number of excellent photographs.

Soils and Manures. By **E. J. Russell, D.Sc.** Cambridge Press, 1915, pp. ix. + 206. 3s. 6d. net. Dr. Russell's work on Soils is too well-known to need special notice here, and it is fortunate he is able to spare time from his duties at Rothamstead to give students the benefit of his wide knowledge and experience. The present volume is thoroughly characteristic of his work and is not only a careful and able exposition of the difficult problems associated with soils, but is written in such clear language that it may be easily followed by the average reader. As the author points out, the farmer is dependent 'in the last instance either on his own soil or somebody else's,' and to be successful he must understand the principles of soil management. It is to save the heavy cost of acquiring this knowledge solely by experience, that the work has been written as a quicker and more scientific guide to the solution of the problems, with which every farmer has to deal. In Part 1 is considered the needs of the plant, the composition of the soil and the effect of climate on soil and on fertility. Part 2 deals with cultivation and the control of soil fertility; while the final chapters are devoted to a careful consideration of the properties and values of fertilizers. Simple but suggestive experiments are freely introduced and many useful tables given of results obtained under various conditions. A useful appendix deals with methods of soil analysis. There are thirty-three illustrations.

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It is reported in the daily press that 'Phewitts' are on the increase in the York district this year. Help!

We regret to record the death of the Rt. Hon. Sir Henry E. Roscoe, the famous chemist. He was born in London in 1833. Also of Sir John Rhys, Professor of Celtic and Principal of Jesus College, Oxford. He was born at Abercaero in 1840.

We notice the Director of one of our museums is advertising a six-penny pamphlet, written by himself, as 'A Unique Christmas Present.' Personally we do not receive many Christmas presents in these days, but if someone had sent us one, of these pamphlets we should probably have found a more descriptive word than 'unique.'

At a recent meeting of the Lancashire and Cheshire Entomological Society the exhibits were as follows: By Mr. F. N. Pierce, an army biscuit completely riddled by a small beetle (*Ptinus*, sp. ?); Mr. R. Wilding, series of the very local sand-hill beetles *Anisotoma ciliaria* and *A. furva*; Mr. W. Mansbridge, a long series of *Lyocena icarus* from Delamere and the Crosby sand-hills, including var. *icarinus* and under-side variations with enlarged and confluent spots.

We much regret to record the death of Dr. Arthur Vaughan, at the early age of 47. The Yorkshire Geological Society is much indebted to him for his investigation of the zones of the Carboniferous rocks. We also notice the announcement of the death of W. Rupert Jones, who was born in 1855. He was the son of T. Rupert Jones, and was for forty years assistant librarian of the London Geological Society. He had a wonderful knowledge of geological literature which was always available to workers.

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NOTES AND COMMENTS.

ECONOMISING BRAINS !

The scientific world has recently had two surprises: an unpleasant one and a pleasant one. The first was the announcement that, with the object of economising, most of the London museums and art galleries are to be closed. The second surprise has been the extraordinary outburst of appreciation of the value of museums and art galleries which came as a result of the Government announcement! The scientific world knows full well what the educational value of museums is, but never before has there been such evidence of appreciation from all sorts and conditions of men, as there has been during the past few days. The columns of the leading newspapers of the world have been remarkably full of protests at the Government's action; leading articles have been published by their respective editors, and the illustrated press has voiced public feeling by numerous caustic cartoons.

LETTERS IN THE PRESS.

True, there have been a few supporters of the Government's action; but they have been exceedingly few, and for the most part the names are of people unknown in scientific, literary or other circles. And their arguments have been as weak and powerless as their names. On the other hand protests have been raised by Lords Morley, Bryce, Grenfell, Sudeley and Sydenham, Sir Richard Temple, Sir F. Treves, Sir Thomas Barlow, Sir E. Ray Lankester, Sir Edward Fry, Sir Harry Johnston, Sir Henry H. Howorth, Dr. A. E. Shipley, Dr. Gregory Foster, Prof. Boyd Dawkins, Mrs. Creighton, Mrs. J. R. Green, Mrs. Strong, Messrs. Halsey Ricardo, Walter Sichel, Frank Brangwyn, G. W. Prothero, Arnold Bennett, E. Rimbault Dibdin (the President of the Museums Association), as well as past-presidents and other officials of that Association, and others whose words carry weight.

THE SAVING.

According to the estimates of the Committee appointed by the Government, the saving in cash by the closing of the national museums will be about £50,000 per annum. The estimate made by Lord Morley, and the heads of the national museums, who are as well able to judge, is a considerably less figure. Assuming the former is correct, the saving in twelve months will be sufficient to pay for the war, at its present daily cost, *for a quarter of an hour*; according to Lord Morley's figures, the annual saving will pay for the war *for three minutes*. All will admit that economy is essential at the present time; but surely this small amount, this "flea-bite" (a word to

which Mr. Asquith strongly objects; 'flea-bites,' as Sir Ray Lancaster agrees, being 'disagreeable') is nothing compared with the great loss which the closing of the museums means. The good work that museums accomplish is not to be reckoned by turnstile-records alone, but the mere number of visitors is some indication of the way in which the museums are appreciated. It has been said that there has been a falling off in the attendance since the war started. This certainly was so immediately after war was declared, but recent figures show that the numbers are on the increase, and certainly in a great proportion of the provincial museums the attendances are now greater than ever.

OUR WOUNDED SOLDIERS.

There is another aspect of the case. Visitors to London at the present time are sorrowfully impressed by the enormous number of wounded soldiers who are everywhere to be seen. For the most part those came from our colonies in every part of the globe. Their enforced detention in the greatest city in the world—the central home of the arts and sciences—gives them the opportunity to spend their long, long hours in fulfilling what is to most of them, their heart's desire, examining the records of ancient and modern civilizations which are preserved more completely than anywhere else in the globe—in our national museums. This one solace is denied them by our 'flea-biting' Government; a Government which spends as much as it saves in closing the museums, in the salaries of two of its Law Officers of the Crown alone; a Government which spends five times as much a year than this proposed saving, in paying the self-imposed salaries to its members.

SUPERVISION.

It has been stated that the closing of the museums would release 'hordes of policemen' who are at present supervising the collections. The actual facts are that such police are either over military age or medically unfit. But even if their release for any other purpose, were desirable, there are plenty of wounded soldiers who are sufficiently convalescent to take their places, even if they took it in turns to give their services one day a week, and this they would willingly do. Further, as has been pointed out to the Prime Minister, it would be quite an easy matter to find volunteers to carry out these duties. Another argument in favour of closing the museums has been that they might be useful to the Government for the purposes of offices, etc., in connection with war work. This, we believe, was actually a consideration when the recommendations were first made, but it was soon found that the suggestion was impracticable. But, supposing they were suitable, surely

it would be most inadvisable? If, and we give every value to that word 'if,' our museums were put to military purposes, it would certainly offer every inducement to the enemy to bombard such buildings by air-craft. And such bombardment has been shown to be possible. We are not at all sure, notwithstanding what has been said by a brilliant writer in *The Museums Journal*, that the enemy would respect our museums and art galleries; still they might, but we could not expect them to do so if parts of the buildings were used for war purposes; and plenty of accommodation could, if it would, be found in many of the Clubs in the vicinity of the War Office, which are much more suitable for War Office purposes.

' MUSEUMS AND THE WAR.'

On the other hand, most of our museums, metropolitan and provincial, have arranged special educational collections of value to the soldiers and others in the present crisis. This is especially so in the British Museums. In a series of articles in *The Museums Journal*, on 'Museums and the War,' Dr. F. A. Bather has shown that in many ways our collections are of help to the soldiers. In the Natural History Museum at South Kensington special exhibits are shown which are of great value to our soldiers at the front, as there they have many minor friends and enemies of 'natural history' interest! Mr. J. W. Lowther, one of the few supporters of the Government who have written to the press, gives us an idea of his knowledge of museum work by opining that the museum staff is engaged in 'deciphering hieroglyphics or cataloguing microlepidoptera.' This apparently belittling suggestion of the nature of the work of museum officials is particularly unfortunate, as it is the knowledge of the life-history of the micro-lepidoptera which has proved of such incalculable service to this country during recent wars, in preventing their ravages among our food supplies, ravages which, without the help of those who 'catalogue microlepidoptera' would have proved as disastrous as the worst engagement yet fought.

THE MORAL EFFECT.

Another important point which must not be overlooked is the moral effect the suggestion will have on our allies and on neutral countries. If, with the reputation we hold for the help given to the arts and sciences, we close our store-houses of knowledge for a comparatively trifling saving, the action must be commented upon in other countries. And such comment can hardly be favourable. Another aspect is well put forward in a letter to the press by Miss May Morris. She states:—' Shall we allow the generations to come to remember this of us: that, during the great war, we left open our public-

houses and closed our national museums? In the record of our struggle, full of single-hearted labour and of splendid tragedy, it may be counted among our lesser mistakes, but all the same it will be a fact for those that follow us to wonder over.'

WHAT THE ENEMY THINKS.

But the unkindest cut of all comes from *The Cologne Gazette*, under an article headed 'The Closed English Museums.' It is there stated:—'In the land of the barbarians, who in other respects are more ready to submit to restrictions in their way of living than the island people which has been so spoilt by fortune, it is regarded as an entire mistake to practise economy which blocks up important sources of education and pure enjoyment without saving really considerable sums. Of course, it must be remembered that many Londoners who consider themselves educated, visit the British Museum once in their lives out of a sense of duty, and then never visit it again. We knew a London lawyer in a distinguished social position who had never crossed the threshold of the museum, and was proud of the fact.'

THE MUSEUMS ASSOCIATION.

A few days ago the present writer had the honour and privilege of taking part in a deputation, which was personally received by the Prime Minister at 10 Downing Street. This was in response to the following appeal addressed 'To the Right Hon. H. H. Asquith, K.C., M.P.':—On behalf of the Museums Association, a society including in its membership the leading museums and art galleries in the United Kingdom, the Colonies, France, and America, we desire to lodge a protest against the closing of national museums and art galleries by the Government and to ask that the whole matter be reconsidered. Those in charge of provincial institutions are in a position to realise with especial clearness the great growth in public use and appreciation of museums and art galleries during recent years, and we feel very strongly that in times like the present anything which tends to promote rational public relaxation should not be the subject of retrenchment without weighty and sufficient reasons. Museum officials yield to none in the matter of patriotism and in their desire for the successful prosecution of the war, but we respectfully submit that none of the arguments advanced in favour of the proposed closing by members of the Government indicate the attainment of advantages in any degree commensurate with the loss to the public, to students, to the cause of education, and to the institutions themselves. The Museums Association respectfully requests you to receive a deputation with the object of demonstrating the great and increasing part museums and art galleries

play in the life of the nation, and especially of discussing ways and means by which these institutions can be rendered still more valuable in the present crisis.'

A DEPUTATION.

Though the announcement in regard to the deputation was only made in the press on the day before it occurred, besides the Museums Association, there were also representatives from the National Art Collections Fund, the Royal Asiatic Society, the Art Workers' Guild, and the Imperial Arts Guild. It included:—Lord Sudeley, Sir W. Wallis (curator of the Birmingham Art Gallery), Sir Martin Conway, Sir C. Waldstein, Prof. W. Bateson, Mr. David Murray, Mr. R. Ross, Mr. R. Witt, Mr. G. Protheroe, Mr. P. Gardner, Mr. W. R. Colton, Mr. H. Speed, Sir E. Ray Lankester, Mr. E. Rimbault Dibdin (President of the Museums Association and Curator of the Walker Art Gallery, Liverpool), Mr. E. E. Lowe (Curator of the Leicester Museum, and Secretary of the Museums Association), Dr. W. E. Hoyle (Curator of the National Museum of Wales), Mr. Thomas Sheppard (Curator of the Hull Museums), Dr. Herbert Langton (Hon Treasurer of the Museums Association, and Chairman of the Brighton Museum Committee), Mr. F. R. Rowley (Royal Albert Museum, Exeter, and Vice-President of the Museums Association), Mr. W. Ruskin Butterfield, Hastings. Colonel Hall Walker introduced the deputation. The views of the deputation were presented to the Prime Minister (who was accompanied by the Hon. E. S. Montagu) by Sir Sidney Colvin, Mr. Witt, and Mr. Prothero on behalf of the National Art Collections Fund; by Mr. Dibdin, Sir Ray Lankester, and Dr. Hoyle, on behalf of the Museums Association; and by Mr. Colton on behalf of the Imperial Arts League. Mr. E. E. Lowe also presented a petition signed by Mayors and Provosts of our large cities, Principals of Universities, University Professors, Officials of Scientific Societies, etc. Though there had only been two days in which to get the signatures together, there were over 800 obtained.

OBJECTIONS TO CLOSING.

Sir S. Colvin, referring to the wide and weighty body of expert and general opinion which was opposed to the closing of museums, gave extracts from letters of protest written by the Presidents of the British Academy, the Royal Society, the Society of Antiquaries, the Geographical Society, and the British Association. A memorial against the proposal had also been signed in the course of a single day by eight heads of colleges, 27 University Professors and Readers, and 21 College Tutors and Officers. He estimated that the utmost saving that could be made by shutting the two branches of

the British Museum would be £12,000 a year, against which must be set some £3,000 at present received from the sale of official publications. If the closure were part of a general measure for the protection of the treasures of the nation from air raids, they would all acquiesce. But no such great and comprehensive measure was in contemplation, and the only effect of the closure would be to render the museums useless at a time when they were doing a most useful work, and to proclaim our disregard for the things of the mind.

OTHER SPEAKERS.

Mr. R. C. Witt quoted the statement of an enemy newspaper that the closing of the museums was 'a declaration of moral bankruptcy, throwing a strange light on the economic conditions of England.' He emphasised the importance of the museums and art galleries as the intellectual workshops of the nation. Mr. G. Prothero dwelt on the desirability of giving students and scholars engaged in historical and archæological research continued access to the Manuscript Room at the British Museum. Mr. Dibdin declared that, having regard to the necessity for heating and cleaning and the continuance of rates and salaries, the closing of municipal and other museums in the provinces would not materially reduce their cost. The estimated saving in Liverpool would be only £1,355. On a recent occasion over eight per cent. of the visitors to the Liverpool Art Gallery were soldiers. To close the museums would be to deprive the public of intelligent and inexpensive distraction from the present stress of life and to cripple the advance of art and science. Sir Ray Lankester also argued that the economy effected would be extremely small and out of proportion to the injury done to the public. The museums, like the cathedrals, were places of rest and reflection. It was unwise to lump them all under one regulation. The saving that would result from closing the Natural History Museum would be less than £2,500—a mere flea-bite. Similar protests were made by Dr. Hoyle, Mr. Lowe and Mr. Colton.

MR. ASQUITH'S REPLY.

Mr. Asquith in reply, said he was sure they would not suspect him of any want of appreciation of the invaluable work of the museums and art galleries in the promotion of culture, the development of scientific research, the application of the arts and sciences to industry, and the provision of the most wholesome of all forms of recreation and relaxation. Under normal conditions he would have been the last person to assent to any curtailment of the national expenditure on such institutions, still more to any restriction of the facilities of the public for visiting them. But we were at war.

THE NATURAL HISTORY MUSEUM.

The Committee recommended that all museums and galleries which were a national charge, with the exception of the Reading Room of the British Museum, should be closed to the public. The Government did not adopt that proposal. They thought it right to keep open the National Gallery and Victoria and Albert Museum. He agreed with Sir Ray Lankester that the case of the Natural History Museum was in some respects exceptional. Those parts of it which were representative of natural history in the popular sense—the parts in which were exhibits of animals, birds, etc.—were very much resorted to by Colonial visitors and wounded and convalescent soldiers and sailors, and it so happened that this museum was in the centre of a district in which were a large number of hospitals. He had therefore come to the conclusion that it would be desirable and expedient that those parts of the museum should remain open. The same arguments did not apply to the geological parts, but facilities would continue to be afforded to students and persons engaged in research to prosecute their studies there. Colonel Hall Walker, on behalf of the deputation, thanked the Prime Minister for his speech, especially as it indicated that in the closing of museums and picture galleries no hard and fast line need be drawn. That fact would be a valuable hint to authorities in the provinces when they considered how far they should follow the example of the Government.

CONCESSIONS.

The deputation had the satisfaction, therefore, of learning that, in addition to the Reading Room of the British Museum, the National Gallery and the Victoria and Albert Museum, which are to remain open, the more popular parts of the Natural History Museum, South Kensington, are to remain open; the ancient MSS. and other works of reference at the British Museum are to remain available to students (in addition to the Reading Room); and that it was not the intention of the Government to interfere with the work of serious students at the Science Museum and other museums.

PROVINCIAL MUSEUMS.

From the point of view of the provincial museum the result of the deputation is quite satisfactory. In the original report of the Parliamentary Committee a hint was given that the lead on the part of the Government might prove of value to the provinces. It was clearly demonstrated however that, in the provinces, the cost of the upkeep of museums was usually at a minimum, the actual expenses of administration being trivial. Further, that if closed, the necessary cost of heating,

cleaning, rent, rates, taxes, insurance, interest on sinking fund, and the supervision that would be essential in view of the preservation of the specimens, would leave the actual saving so small, that the actual loss, from the point of view of the public, would be greater than the amount gained by closing down.

PUBLIC BENEFACTORS.

From the National Museums down to the smallest provincial collection it is, of course, a fact that many of the most valuable specimens are gifts made by one or other of our public benefactors. Now and again an entire building and its contents are presented to the people—a number of such instances might be quoted. In these cases especially the cost of the necessary supervision is small. If museums are closed it is not likely to encourage generosity of this sort, as if valuable collections are to remain under lock and key they are better in the hands of private individuals.

' PUNCH.'

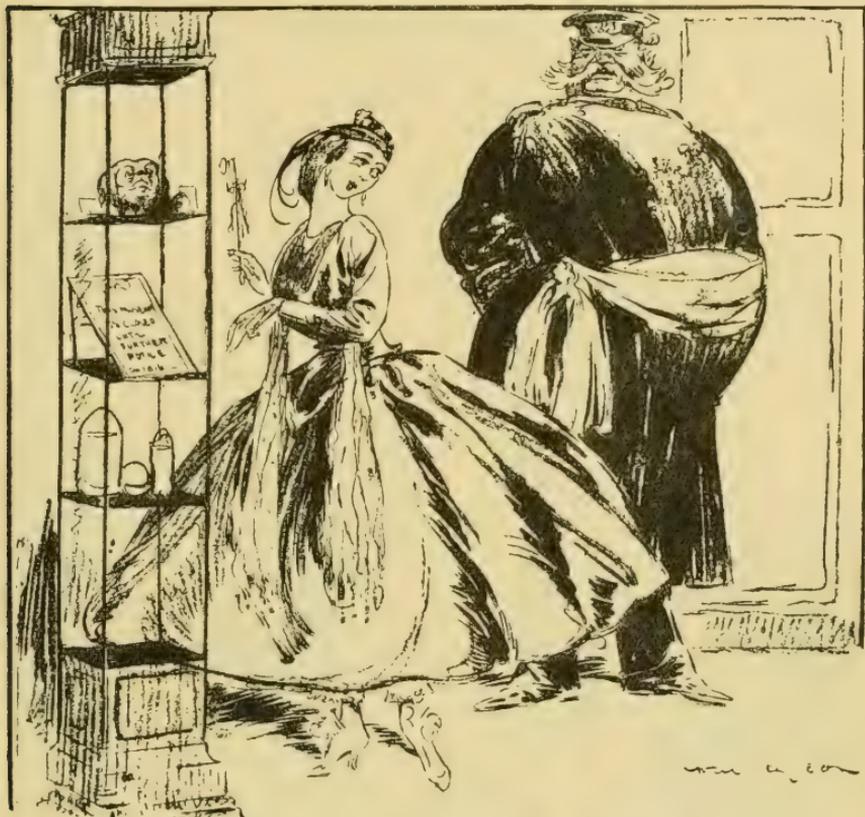
Punch has a full-page cartoon on the subject in its issue of February 9th; we regret we are not permitted to reproduce it. Two wine-filled Philistines in 'boiled shirts' have just dined at a fashionable hotel. They are enjoying liqueurs and big cigars; the empty champagne bottle is still on the ice; 'fashionable' ladies are in the distance. It is called 'Economy in Luxuries.' *First Philistine*: 'I'm all with the Government over this closing of museums. I never touch 'em myself.' *Second Philistine*: 'Same here. Waiter get me a couple of stalls for the Frivolity.' In the same issue the editor has some verses on 'Intellectual Retrenchment. [The annual expenses that will be saved by the closing of the London Museums and Galleries amount to about one-fifth of the public money spent on the salaries of Members of Parliament].' The closing lines read:—

' And when her children whom the seas have sent her
Come to the Motherland to fight the war,
And claim their common heritage to enter
The gate of Dreams, to that enchanted store,
To other palaces we'll ask them in,
To purer joys of "movies" and of gin!

But let us still keep open our collection
Of curiosities and quaint antiques,
Under immediate Cabinet direction—
The finest specimens of talking freaks,
Who constitute our most superb Museum,
Judged by the salaries with which we fee 'em.'

' THE DAILY SKETCH.'

Another telling cartoon which occupies a full page appears in *The Daily Sketch* :—

**ECONOMY AND OUR MUSEUMS—YEAR 1990.**

“ Official notice of closing of museums has been issued.”

Museum Attendant of the Future: “ That document, Madam?—a Relic of our Great War when our Museums were closed in keeping with the Spartan economy of the period.”

Fair Thing of the Future: “ But the dear little doggy ?”

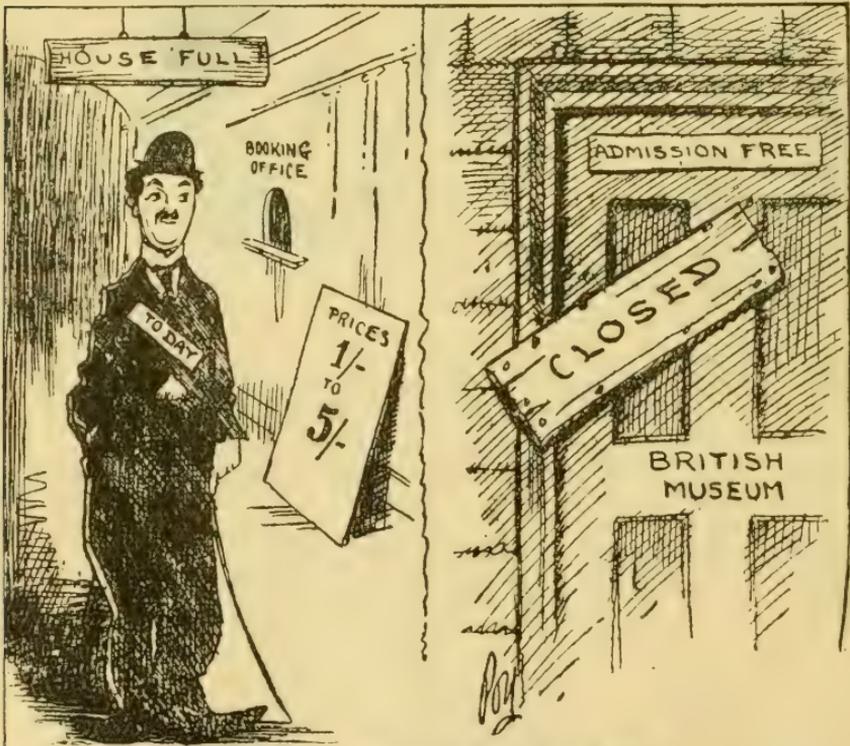
M.A.O.F.: “ That, lady, is a lap-dog sold in the same year for 500 guineas !”

Reproduced, by permission, from a full-page cartoon in *The Daily Sketch*.

' THE EVENING NEWS.'

In a leading article *The Evening News* deals with ‘ Charlie Chaplin and the British Museum.’ It deplores that while our public houses, picture palaces, and other ‘ places of entertainment’ are open and in full swing, the museums and art galleries, which are free, should be closed. ‘ One is almost

tempted to wonder why it has not occurred to practical economists like the Government to use the museums as a source of revenue. There are in nearly all such institutions, large apartments, which, for a trifling expenditure on carpentry and hire of chairs could be turned into really excellent theatres where Charlie Chaplin films (selected) might be exhibited at great profit to the State. Apart from the greater stars, the cost of dumped American films is small and the public will always flock to see them when they can get nothing else. To ask a Government as full of grim resolution as our present rulers to reconsider its decision and to keep the museums and picture galleries going as usual, would doubtless be a waste of breath, and we doubt if even a Note from President Wilson on behalf of neutrals resident in London would have the desired effect, but still we would ask all those who feel interested in the question to make an effort to save us from an 'economy' which only makes us ridiculous in the eyes of the world.' The same paper gives the following cartoon:—



A CHARLIE CHAPLIN WAR ECONOMY.

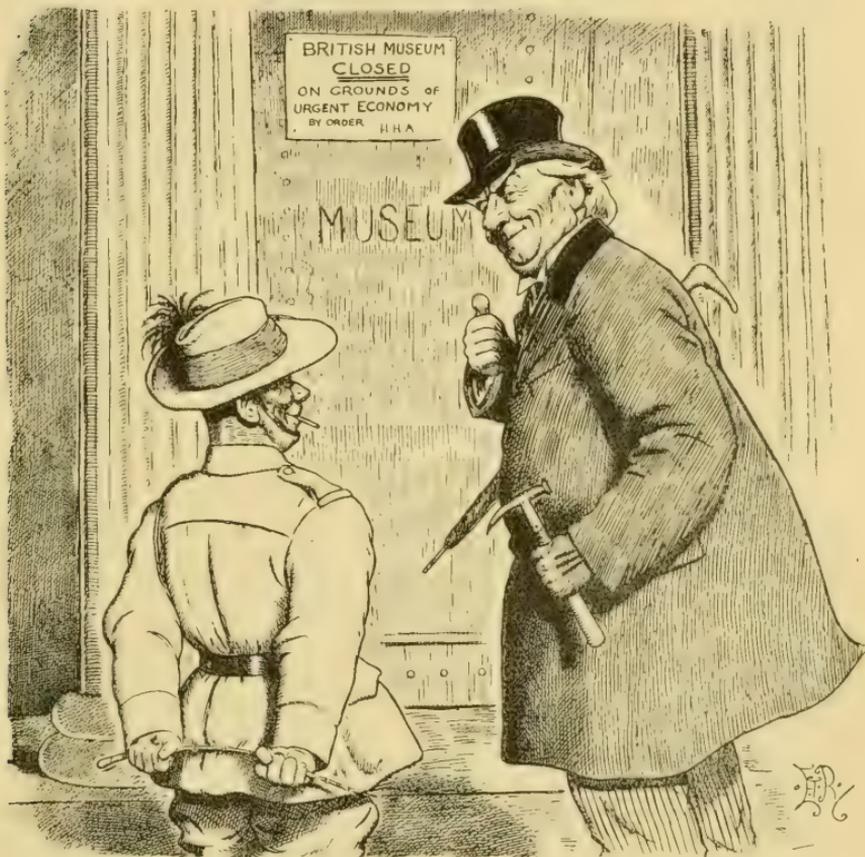
It is estimated that by closing the museums the nation will save £50,000.
This would pay for the war for *very nearly a quarter of an hour!*

Reproduced, by permission, from *The Evening News*.

Naturalist,

'THE PASSING SHOW.'

The Passing Show gives 'A Nasty One' on its first page for Feb. 12th, which we are kindly permitted to reproduce:—



A NASTY ONE.

The Prime Minister:

"M'yes, most interesting—in peace time. Full of ancient survivals and funny old relics of bygone times, but a most expensive and extravagant luxury in time of war, you know!"

Colonial (in London for the first time):

"I see, Sir,—*very much like the House of Commons, eh?!*"

PHOTOGRAPHS OF WILD LIFE.

Referring to the notice in our Notes and Comments column in the January issue (p. 2), Messrs. Virtue & Co., the publishers, 7 City Garden Row, City Road, London, have agreed to forward, free of charge, particulars of many photographs of various phases of bird life to any reader of *The Naturalist* interested in the subject, on receipt of a postcard with the sender's name and address clearly written thereon.

THE PROTECTION OF WILD LIFE IN YORKSHIRE.

R. FORTUNE, F.Z.S.

(Continued from page 59).

I do not know whether I have given sufficient credit to our Yorkshire Wild Birds' and Eggs Protection Committee or not, but they have performed very efficient service in obtaining increased protection for our birds, and will do more in the future. By employing keepers in certain localities they ensure the safety of a number of our rarer birds, especially at Hornsea Mere and Spurn. Mr. St. Quintin, the President of the Committee, is indefatigable in his endeavours in this direction. He has just had, at his own cost, bird perches erected round the lighthouse at Spurn Point, which by enabling the birds to rest upon them when attracted by the light, will save many thousands of their lives. I regret that owing to Spurn now being a military area, it is impossible to show you a photograph of this contrivance, which is very popular and effective in Holland.

There is in existence at the present time, though its activities are at present suspended owing to the war, a commission to deal with the Bird Protection Acts. We were asked to give evidence, and Mr. St. Quintin and I formulated certain recommendations, which briefly are that all birds shall be protected, but that power shall be given to the county authorities to withdraw protection, for a time, from any species which perhaps, owing to its becoming too numerous is consequently harmful upon the advice of a small permanent committee of naturalists and horticulturists elected for that purpose and that lists *only* of those *not* protected be issued.

Egg collecting I would prohibit altogether, for when all is said that can be said in its favour, we cannot get away from the fact that it serves little useful purpose, but is often simply a collecting mania which might equally as well be expended upon stamps or parcel post labels.

I will now briefly draw attention to those mammals and birds which have become extinct in our county, to those whose numbers are becoming scarcer year by year, and to those which have increased, and to some general remarks in connection with our vertebrate fauna. I do not propose to go so far back as the days of the Cave Lion, Mammoth, Rhinoceros or Hippopotamus, nor even to a much later date when probably the Brown Bear, Wild Boar and Wolf, roamed over the county. Within quite recent times the Red Deer ranged wild over our broad acres, inhabiting the moorlands and fells as well as the forest lands. No doubt, too, the Fallow Deer, though probably of comparatively recent introduction, roamed in a wild state

through our extensive forests, whilst the Roe was at one period extremely abundant. They have all long since ceased to exist in a wild state. Red and Fallow Deer are still to be found in a semi-domesticated state in many parks, some of the herds being particularly fine ones. It seems a great pity that a purely woodland species like the Roe could not be introduced once more into its old haunts, as apart from the sentimental consideration, they would provide a valuable food supply. Herds of the old Wild White Cattle were kept at Gisburn and Burton Constable, but in both cases continual inter-breeding caused them to die out.

Species which have ceased to exist in the county within 'living memory' are the Wild Cat, the last known specimen of which was killed about 1840 in the Hanbleton Hills, and about the same time the Common Seal, which formerly bred in considerable numbers at the Tees mouth, ceased, chiefly owing to the rapid growth of Middlesbrough, to inhabit that locality. They are frequently seen on our coast at the present day, and at times enter the Humber and penetrate up the Ouse as far as Naburn Lock. The Marten which at the date of the publication of Clarke and Roebuck's Handbook, was stated to be extremely scarce, and restricted to one or two localities, probably ceased to exist about 70 years ago, although one was caught in a trap at Scugdale, Swainby, in 1900, one was caught near Hebden Bridge in May, 1912, and the remains of perhaps another were found in Littondale some time previously. These were probably escapes, or wanderers from the Lake District, where they still exist in small numbers. A lady friend of mine obtained two young ones there this year. Clarke and Roebuck state also that the Polecat is irregularly distributed, extremely rare and fast becoming extinct. As a matter of fact it was extinct then and probably disappeared about the same time as the Marten. I have had individuals reported to me at various times, but they have invariably proved to be Polecat-ferrets. These three last species are extremely destructive, and in the nature of things it is impossible for them to exist in a cultivated county like ours.

The last to disappear is one which has only of recent years been recognised as a member of the county's fauna. Its recognition has also unfortunately proved its doom. I allude to the Lesser Horse-shoe Bat. A colony of these Bats was found established in a small cave called Ned Hole, near Eavestone Lake, close to the high road leading from Ripley to Pately Bridge. A close examination of the cave during the Union's visit to Grantley this year, did not reveal any specimens or even signs of any. Their disappearance is stated to have been brought about through the action of the boys at Grantley taking a number of specimens from the cave and

liberating them in the church during the service. This caused the Vicar to have the mouth of the cave walled up, with the consequent destruction of its inhabitants. I do not, however, place much credence in this tale, as I am afraid the colony has been destroyed by collectors, one in particular.

The native Black Rat, often called the old English Rat, practically disappeared, but, no doubt, reinforced by individuals from the Continent brought over in ships, it still maintains a precarious existence in some of our sea-ports. In Hull especially it is fairly common.*

The Squirrel is still fairly common in many parts of the county, and is, perhaps, in no immediate danger of extermination; yet I am quite sure it is not nearly as plentiful as it was in my younger days. Its bad habit of nipping off the leading shoots of newly planted trees, frequently brings it into disgrace and trouble.

In Clarke and Roebuck's Handbook, three species of Bats are stated to have been recorded only once for the county; which have since proved to be fairly numerous. They are the Whiskered Bat, a specimen of which I remember, once dropped out of a tree on to a table round which the members of our Vertebrate Section were seated, listening to the report of the work done during the day at one of the Grassington excursions. Natterers, or the Reddish Grey Bat which is particularly fond of woodland districts, where it is often found in the company of the Whiskered and Long-eared Bats.

Leislars or Hairy Armed Bat, is so much like the Noctule as to leave no doubt in my mind that it has frequently been mistaken for that species. Daubenton's Bat had not even one record to its credit. It is now recognised as a member of our county fauna. It is sometimes called the Water Bat from its habit of flying over water in search of its food. It may easily be overlooked as it flies so low, frequently just skimming the surface of the water. Investigation will probably show these Bats are much more plentiful than we at present realise, and other species will no doubt be added to the list. To the researches of Mr. Whitaker, of Barnsley, we are greatly indebted for our increased knowledge of the Bats of the county. His papers have appeared in *The Naturalist*.

The Varying Hare has been introduced into Yorkshire, and is now extremely plentiful in certain localities, notably in the Marsden Moor district, as reported by Mr. H. B. Booth.

The present craze by Zoologists for splitting up families and species into sub-species has given us an addition to our local fauna. The Yellow-necked Mouse, a variety really

* Specimens are still often caught in the premises of one of the museums
—ED.

of the Long-tailed Field Mouse, is easily distinguished by its size and the yellow on its neck. Observers state that they do not mate with the ordinary species.

In Clarke and Roebuck's Handbook, the Harvest Mouse is stated to be scarce and very irregularly and thinly distributed. I question whether it ever inhabited the county. In my younger days I frequently found the nests of some species of mouse intertwined amongst the corn stalks, without doubt the Long-tailed Mouse, and possibly this habit has caused the nests to be recorded at times as those of the Harvest Mouse.

The Dormouse is an interesting creature which appears never to increase in the county. Judging from my experience in keeping them in captivity, there must be a great mortality amongst them during the hibernation season. They invariably die, though I have fed them up well beforehand and have kept them during their long sleep in as natural conditions as possible.

One of the most interesting and ancient inhabitants of the county is the Badger, and one which I am glad to believe, is gradually gaining ground and extending its range. Nocturnal in his habits, it is really a harmless creature. In its wanderings it follows the same line of ground with the utmost regularity, rarely straying from it. Extremely cleanly in its habits, it frequently acts as engineer in forming large earths, occupied conjointly by families of its own and foxes. A pack of hounds in the county recorded that they had hunted and killed over 100 badgers in a season. Hardly what one would call sport I think, hunting a creature like the Badger with a pack of hounds.

This incident is on a par with the conduct of another set of sportsmen who cheived an Otter with a pack of hounds, up and down and round a small lake in Wharfedale, for seven hours before they encompassed his destruction. Otters are far more abundant in the county than most people imagine. I am nevertheless eager to know how a writer in a recent number of the *Shooting Times* is able to fix the Otter population of Yorkshire at 1,000. Otters are not nearly so destructive to game fish as they are made out to be, they destroy far larger quantities of eels, themselves great enemies to fish preservation, and coarse fish generally, besides large numbers of Water Voles, Field Mice, etc. They are also extremely fond of the large Swan Mussel. In fact their diet is very extensive and varied. I am quite certain that the extended period over which they are allowed to be hunted by hounds might with advantage be considerably curtailed. Motor cars, when travelling by night, are responsible for the death of many mammals and birds. At our last Vertebrate Section meeting, Mr. Sidney Smith reported that a motor car had run over and killed an Otter on the high road near York.

(To be continued).

FIELD NOTES.

BIRDS.

Kingfisher at Slaithwaite.—I have just seen a Kingfisher which has killed itself against an electric cable near the baths at Slaithwaite, and am further informed that there are 'several' about. May they escape the gunner!—CHARLES MOSLEY, Lockwood.

Water Rail at Marsden.—In November last a Water Rail was brought to me, which had been picked up on the railway embankment that crosses at the bottom of Drop Clough, Marsden. Its skull was broken in as though it had collided against something in its flight, possibly the telegraph wires. In April, 1912, a bird of the same species was shot on the moors at the head of this same Clough, and reported in the annual publication of the Huddersfield Naturalist and Photographic Society for 1911-12. This latter record has been referred to elsewhere as 'said to have been,' as though open to the possibility of mistake, and no mention whatever is made of it in the recently published 'Birds of the Huddersfield District,' although an earlier record of a Water Rail at Marsden is quoted from the *Zoologist* for 1884. Marsden is described as 'a very strange place for this kind of bird'; nevertheless, both these records are absolute genuine. I handled both birds myself, and careful enquiry as to date places their accuracy beyond question.—CHARLES MOSLEY, Lockwood.

LEPIDOPTERA.

Antler Moth Larva in February.—Yesterday I saw a larva of the 'Antler' Moth (*Charæas graminis*) lying on the snow at Skircout Green, the insect was about full fed and seemed very inactive. This is unusual, as these insects hibernate during winter.—L. ALDERSON.

BOTANY.

Coltsfoot in Flower in January.—On January 30th in a walk with my father on the other side of the river Wharfe (Denton), I gathered two flowers of the Coltsfoot. They were in full bloom, and of the usual size; but I noticed that the stalks were rather shorter than usual. No doubt their very early appearance is due to this exceptionally mild mid-winter.—MARY BOOTH, Ben Rhydding.

Cumberland Hepatics.—I gathered the three following species of Hepatics in the neighbourhood of Netherby and quite close to the Scotch border, in June, 1912: *Nowellia curvifolia* (Dicks.) Mitt. This beautiful plant was found on the trunk of a Scotch Fir tree in a wood. *Ptilidium ciliare* (L.) Hampe. Also found on a tree trunk in one of the woods. *Frullania dilatata* (L.) Dum. In considerable quantity, including male plants with catkins, on the trunk of a Birch tree.—JAS. MURRAY, Carlisle.

ALEUROPTERYX LUTEA (WALLENGREN): A NEUROPTERON NEW TO BRITAIN.

J. W. HESLOP HARRISON, B.Sc.

IN May of the past year I had the pleasure of discovering a new British Neuropteron, *Conwentzia pincticola* (End.) of the family *Coniopterygidae*, a fact which stimulated me to further investigations in this somewhat neglected group. While working larches and birches at Wolsingham, co. Durham, I beat amongst the crowd of *Coniopteryx tineiformis* Curtis, another species belonging to the present group, but obviously differing from all the known British forms. This, on subsequent examination, proved to be *Aleuropteryx lutea* Wallengren, a northern insect recorded from Sweden, Finland, Northern Siberia, and also from subalpine districts in Austria. Its distribution, therefore, was such as to warrant the expectation of its discovery in Scotland or the North of England and this anticipation, as has been seen, was justified.

All these obscure insects have been, in the past, lumped together under the generic name *Coniopteryx* in much the same way as all butterflies formerly rejoiced in the name *Papilio*, all hawkmoths were *Sphinx*, and so on.

The present insect was no exception to the rule in spite of its great structural distinctness, and when first described by Wallengren in 1871 (*Skand. Neuropt. Första afdelningen. Neuroptera Plannipennia*, p. 81), he called it *Coniopteryx lutea* in which he was followed by McLachlan (*E.M.M.* Vol. XVII., p. 21).

In 1885, however, Low (*Beit. zur Kenntniss der Coniopterygidien. Sitzungsber. Math.-Naturw. Classe der Akad. d. Wissensch. in Wien* Bd. XCI., Abth. I. p. 73), quite correctly erected the genus *Aleuropteryx* to receive it, and in this position the matter rested until, in 1906, Dr. Günther Enderlein (*Zool. Jahrb.* XXIII., Abt. f. Sys.) perceived that the species differed so greatly from the commoner forms that it was worthy of forming the type of a new sub-family *Aleuropteryginae*, basing his action on the three jointed maxilla lobe and the paired series of ventral sacs on the abdomen.

Unfortunately, at the same time, he quite unnecessarily split the genus into the two genera *Aleuropteryx* and *Heliconis* on the rather trivial grounds of differences in neuration.

Details of neuration in the present group, when the same insect may differ in its two sides, are not of generic value. I have one specimen of *Coniopteryx tineiformis* differing in its forewings to a greater extent than do these two so-called genera of Enderlein's. On these grounds, therefore, I reject

Enderlein's *Helicoconis* and describe the insect under Löw's name of *Aleuropteryx lutea*.

Aleuropteryx lutea Wallengren.

Wing expanse 5.7 to 6 mm.

Head slightly narrower than the thorax; whole body covered with a whitish secretion slightly dingier than that of *Conwentzia psociformis* Curt. Antennæ 24-27 jointed, of a yellowish colour, somewhat more intense near the joints. Palpi dull grey. Legs similarly coloured to the antennae; tibiae thinnish, sub-cylindrical.

Forewings radial ramus* simple; media dividing into three branches; radial ramus connected with media by two cross nervules, one near the base of the radial ramus and the other near the base of the second fork of the media.

Hindwings radial ramus arising near the base of the radius and like the media breaking into two forks.

Taken at Wolsingham, co. Durham, at about 1,000 feet July, 1915.

There is some mystery attached to the specific name 'lutea' given to this insect. Wallengren described the insect as covered with a yellowish grey mealiness from which he evidently obtained the 'lutea,' but, very early (1880), McLachlan pointed out that the name was not justified, suggesting that Wallengren had before him old specimens, and this was probably the case for the species is not yellowish. As a matter of fact, O. M. Reuter (*Fört. och Besk. öfver Finlands Neuropterer, Acta Societatis pro Fauna et Flora Fennica IX. No. 8*), who probably has had through his hands more specimens of this insect than anyone else, describes the insect thus: 'Hela kroppen täckt af ett hvitt mjöligt sekret,' practically the same formula as he uses in describing *Semidalis aleurodiformis* Steph., and my insect exactly agrees with this description, as evidently did McLachlan's. From this we must conclude that Wallengren's insects were old as McLachlan surmised.

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We much regret to record the death of Sir Clements Markham, K.C.B., the well-known geographer, which occurred as we went to press with our last number. He was in his 86th year. Sir Clements was engaged under Captain Austin in the Franklin Search Expedition of 1850-51. He visited Peru to inquire into the remains of the old Inca period, and arranged for the transmission of valuable Cinchona plants from South America to India. He was for twenty-five years the secretary of the Royal Geographical Society, and then for twelve years its President, and was largely responsible for the success of the National Antarctic Expedition. He was a Fellow of the Royal Society. Sir Clements died as a result of burns received while reading in bed with the aid of candle light.

* I have adopted Enderlein's nomenclature for the veins of the wings because Bagnall (*Ent. Rec.*, Vol. XXVII., page 242), used it.

THE TERRESTRIAL ISOPODA (WOODLICE) OF YORKSHIRE.

F. RHODES,
Cartwright Hall, Bradford.

THE Woodlice have been somewhat neglected by Yorkshire Naturalists. The following notes are intended to form a nucleus on which to base future records, and also to induce fellow naturalists in other parts of Yorkshire to take some little interest in this much neglected group of animals, so that we can form some idea of their distribution. Some few species appear to be distributed throughout the greater part of the British Isles. Others are local, probably from geological, climatic, or other causes. The reason for their absence or presence in a given locality is one of the things which should be worked out.

Collecting Woodlice is a very simple and easy task, all it is necessary to have are a few small bottles containing a little weak spirit. Mr. R. Standen, of Manchester, advises 30 per cent. spirit to which has been added a little glycerine, in the proportions of a teaspoonful to four ounces of the spirit. This kills them, and at the same time keeps them limp, and they can afterwards be taken out and straightened, then placed in stronger spirit. I have found this formula to work admirably.

I should take it as a very great favour if anyone would take the trouble to collect and forward me specimens from other parts of Yorkshire not mentioned in the following list, or otherwise get them identified and record them in *The Naturalist*. Specimens sent to me would be returned, if required, with the name affixed. All that is necessary in posting them is to take them out of the spirit and place them in damp cotton wool in a small tin box, or otherwise in a small glass tube placed in a box.

Woodlice are to be found in many and varied places, but chiefly in damp situations, under stones, logs, garden refuse, in greenhouses, in damp woods, under the bark of old trees, among fallen leaves, under moss and creeping plants, at the roots of grass, and on the top of old walls, also among the shingle along river and stream sides.

FAMILY LIGIIDÆ.

Genus LIGIA Fabr.

LIGIA OCEANICA L.—This is the largest of our British Woodlice, measuring from 20 to 30 mm. It is to be met with all along our Yorkshire coast wherever it can find a convenient hiding place. It may be looked for on wooden piers, on groynes, and under the shingle and refuse at high water mark.

Saltburn, August, 1908; Bridlington, August, 1908; Flamborough, August, 1909; Scarborough, August, 1913.

Genus *LIGIDIUM* Brandt.

Ligidium hypnorum Cuvier.—Up to the present, this species has not been found in the north of England. British records so far are from Essex, Surrey and Warwickshire, but seeing that it occurs in Sweden and Denmark; there is no reason why we should not find it in Yorkshire, especially seeing that we have many suitable places for it. Its habitat is wet moss, so I should like to ask our moss men to keep a sharp look-out for any Woodlice, when collecting on boggy moors or damp and wet woods.

This species is distinguished from *L. oceanica* by its smaller size, and its abdomen being much narrower than the body. It most resembles *Philoscia muscorum*, both being about the same size, 9 mm., and both having the abdomen narrower than the body. There is, however, a marked difference in the tail appendages, in *L. hypnorum* both the tail appendages are alike in shape, while in the *P. muscorum* the outer divisions of the tail appendages are broader than the inner ones, and in the former species the flagellum of the antennæ consists of about ten joints, whilst in the latter there are only three.

FAMILY TRICHONISCIDÆ.

Genus *TRICHONISCUS* Brandt.

TRICHONISCUS ROSEUS Koch.—The colour of this species varies from pale rose to deep coral red, with generally a yellow mark down the middle of the back. Specimens taken in the open are deeper in colour than those obtained from greenhouses. It is to be found in most gardens, especially on rockeries under creeping plants and loose stones, on hedge banks, under dead leaves and sticks, in old quarries, under stones, old wood, or rubbish. This is one of the species that seems to require a certain amount of moisture for its existence. It is not at all uncommon and is undoubtedly an endemic species.

Dowley Gap, Bingley, October 1909; Lister Park, Bradford, November, 1908; Calverly, S. Margerison, April, 1908; Knaresborough, October, 1908; Gisburn, J. Beanland, September, 1910; Harewood, Yorkshire Naturalists' Union Meeting, May, 1911; Elks Wood, Ingleton, June, 1912; Canal Banks, Bradford, Bingley, Keighley, and Kildwick, May, 1913; Bolton Abbey, August, 1911; Bellbusk and Seattle, May, 1914; Castle Hill, Scarborough, August, 1913; Collingham and Boston Spa, July, 1915; Aberford, September, 1915.

TRICHONISCUS PUSILLUS Brandt.—This is one of the commonest of our British Woodlice, and is to be found in many

and varied places, at the roots of grass in the open fields, under dead leaves in damp places, under stones along stream sides, among moss in wet woodlands or boggy places, it is also common on rockeries, and in most gardens under creeping plants, etc.

It would be useless to give a list of the places from which I have obtained this species, sufficient to say is, that it occurs commonly in Airedale, Wharfedale, Ribblesdale, Lunedale, Nidderdale, Calderdale, Scarborough and Bridlington districts. Mr. R. S. Bagnall found it on the cliffs at Whitby, and Dr. G. S. Brady records it for the Sheffield district.

T. PUSILLUS var. *VIOLACEUS* Schobl.—This is a beautiful form of a violet colour. I found three specimens in Grasswood, and one at Linton, on the Yorkshire Naturalists' Union Excursion, 1913, and four in Hackfall Woods, April 1914.

TRICHONISCUS PYGMÆUS G. O. Sars.—This is one of the smallest endemic species, and is apparently widely distributed. It was discovered by Alex. Patience in the Clyde area, and also in the North of England by Mr. R. S. Bagnall, almost simultaneously in 1906.

Mr. R. S. Bagnall found it under deeply embedded stones on the cliffs at Whitby on March 20th, 1912, and he informs me that he has taken it recently at Ravenscar, and Rombaldskirk. I have obtained about twenty specimens from my own garden in Bradford, from under Saxifrages, and from a cold frame in which I wintered violas during 1913-14. Most of the specimens taken in the frame, were obtained under slices of raw potato put there as snail traps.

Trichoniscus stebbingi Patience.—This species has been taken in greenhouses in Northumberland and Durham and also in the open in the Clyde area. Up to the present time I know of no Yorkshire records for it.

Genus *TRICHONISCOIDES* G. O. Sars.

TRICHONISCOIDES SANSI Patience.—This species was first recorded as British by R. S. Bagnall in *The Zoologist* for April, 1912, from a specimen obtained under deeply embedded stones on the cliffs at Whitby on March 20th, 1912. He informs me that he has since taken it on the cliffs near Whitburn, County Durham, thus further establishing it as a British species.

TRICHONISCOIDES ALBIDUS Budde-Lund.—Up to the present the only Yorkshire records for this species that I am aware of are:—Eccleshall Wood, Sheffield, by Dr. G. S. Brady in the British Association Hand Book (Zoology) Sheffield meeting, 1910, and under stones on the Whitby Cliffs, Mr. R. S. Bagnall, March, 1912 (*Zoologist*, April, 1912).

Genus HAPLOPHTHALMUS Schobl.

HAPLOPHTHALMUS MENGII Zaddach.—This small Woodlouse was first recorded for Yorkshire by Mr. R. S. Bagnall, from specimens taken at the same time and place as the two former species. I have since obtained a number of specimens from under deeply embedded limestone boulders on the river side at Grassington in May and June, 1914, and under the stones of the first weir below Settle Bridge in May, 1914.

This species appears to frequent the burrows made by worms and other creatures found under stones. It is pure white with longitudinal ribs on each segment of the thorax.

Although rare, this species appears to be widely distributed. It has been taken in Derbyshire, Cheshire, Lancashire, Northumberland, Durham, and eight counties in Ireland.

HAPLOPHTHALMUS DANICUS Budde-Lund.—The Rev. T. R. R. Stebbing added this species to our Yorkshire fauna from specimens obtained at Naburn Hall on the occasion of the British Association's visit to York (Victorian County History of Yorkshire). Mr. R. S. Bagnall, also found it on the cliffs at Whitby on March 20th, 1913 (*Zoologist*, April, 1912). I have obtained a single specimen in a cold frame in my garden in April, 1914, and two specimens in a greenhouse at Lister Park, Bradford, November 25th, 1915.

FAMILY ONISCIDÆ.

Genus PLATYARTHURUS Brandt.

PLATYARTHURUS HOFFMANNSEGGII Brandt.—The Rev. T. R. R. Stebbing found this interesting little Woodlouse at Naburn Hall (Victory County History, Yorks.).

Mr. F. Booth and I found it very common in ants' nests under large stones, while looking for *Acicula aciculoides*, a small land snail, on the roadside from Linton Common to Wetherby, September, 1908, Mr. F. Booth and Mr. T. Stringer also found it in a similar situation at Milnthorpe in April, 1910.

Mr. R. Standen, of Manchester, has some interesting notes on this species in the *Lancashire Naturalist* for November, 1909.

Mr. T. Stainforth gives some further interesting notes on this species in *The Naturalist* for December, 1915, in a paper on 'The Guests of Yorkshire Ants.'

(To be continued).

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The Forty-fifth Annual Report of the Libraries, Art Gallery and Museums Committee of Bradford shows that much attention has been given to Coleoptera, and wild flowers, during the year. A collection of 600 fossils and minerals has been given by the family of the late John Pickles.

THE HARVESTMEN AND PSEUDOSCORPIONS OF YORKSHIRE.

WM. FALCONER,
Slaitwaite, Huddersfield.

THERE are still districts in Yorkshire which have not yet been investigated or only imperfectly, especially in vice-county 65, but it does not seem probable that any more kinds of harvestmen or pseudoscorpions will hereafter be added to its list, or if any of the latter, one or two at the most, for those which have not yet been met with, are, so far as at present known, either more southerly or westerly in their range. They are in several instances distributed discontinuously—(it may be that this conclusion is based more on lack of observation than anything else)—over the older rock formations, which compose the western side of Britain, a few of them having been observed as far north as Argyllshire and Ross-shire. The moment therefore seems opportune to collate and publish the records which have accumulated, and which will indicate not only what is at present known of the occurrence and distribution of both orders in the county, but also what is as important, how much remains to be done, and where investigation is most needed.

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THE HARVESTMEN.

The late Dr. R. H. Meade, of Bradford, was one of the first English naturalists of note to study harvestmen, and from his pen there appeared in the *Ann. and Mag. of Nat. History*, series 2, vol. XV., pp. 393-416, in the year 1855, a 'Monograph on the British Species of Phalangiidæ or Harvestmen,' which he afterwards (in 1861) supplemented with a short paper in the same journal, Series 3, Vol. VII. Of his sixteen species, one has since been disallowed, while another is doubtful and may be deleted. In 1890, the Rev. O. Pickard Cambridge published his standard 'Monograph of the British Phalangidea or Harvestmen,' in the 'Proc. Dorset Nat. Hist. and Antiq. Field Club,' Vol. XI., in which he described and figured twenty-four species. One of these, *Platybunus triangularis* Herbst., is now generally recognised as the immature form of *P. corniger* Herm., and it is the opinion of Professor Kulczynski* that *Sclerosoma romanum* L. Koch, bears a similar relationship to *S. quadridentatum* Cuv., (the Rev. O. P. Cambridge does not subscribe to this ruling),† and *Oligolophus cinerascens* C. Koch. to *O. alpinus* Herbst., which is itself merely an alpine form of *O. morio* Fabr., so that the above total will be correspondingly still further reduced. The last addition to the British list was recorded by Mr. Cambridge in the 'Proc. Dorset Field Club, 1907.' Thus twenty species occur in the British Isles, and of these fifteen and one variety have been met with in Yorkshire, nine being recorded in the above-named works, one in the 'Trans. of the Hull Scientific and Field Naturalists' Club, 1908,' and the rest in a paper by the writer, 1906. In 1907, the harvestmen of the county as then known with summary of localities, were noted in the Victoria County History

* 'De Opilionibus' (1904), pp. 79-80.

† On Rare and New Br. Arachnida. 'Proc. Dorset Field Club,' Vol. XXXV., 1914.

of Yorkshire, the specimens therein named having been collected by Dr. Meade, C. Mosley and the present writer.

The five remaining British species are much outside our limits, the nearest being *Oligolophus meadii* Cambr., at Delamere Forest and Penrith.

In the following lists, the entries, except in my own case, are distinguished by the initials of the collector's name, or their origin indicated thus:—

R. H. M.	= Dr. Meade.	S. M.	= Mr. Margerison.
R. B.	= Mr. Rosse Butterfield.	E. A. P.	= Mr. Parsons.
F. B.	= Mr. F. Booth.	T. P.	= Mr. Petch.
H. C. D.	= Mr. Drake.	F. R.	= Mr. Rhodes.
F.	= Mr. Forrest.	T. St.	= Mr. Stringer.
H. M. F.	= Mr. Foster.	T. S.	= Mr. Stainforth.
J. F.	= Dr. Fordham.	R. A. T.	= Rev. R. A. Taylor.
J. G.	= Mr. Greenwood.	G. B. W.	= Mr. Walsh.
J. W. H.	= Mr. J. W. Harrison.	H. W.	= Mr. Wilson.
C. M.	= Mr. Mosley.	W. P. W.	= Mr. Winter.
V. C.	= The Watsonian Vice- Counties..	Y. N. U.	= Union Meeting at that particular place (<i>vide</i> Bibliography, p. 103-105).

(*To be continued*).

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Mr. W. Evans writes on 'Birds and Aeroplanes' in *The Scottish Naturalist* for February.

Mr. H. Donisthorpe contributes 'Myrmecophilous Notes for 1915' to *The Entomologist's Record* for January.

In *The Entomologist* for February, Mr. J. W. H. Harrison has a paper on 'The Genus *Eunomos*, with an account of some of its Hybrids.'

Mr. Mottram's report on the Yorkshire and North Midland Division, under the Metalliferous Mines Act, for 1914, appears in *The Quarry* for February.

In *Lincolnshire Notes and Queries* for January is an excellent portrait of the late Edward Peacock, F.S.A., and a biographical notice, contributed by his son, the Rev. E. A. Woodruffe Peacock.

We see from *Nature* that Mr. J. Reid Moir, who has made such extraordinary discoveries among old flints, is said to be the Curator of the Ipswich Museum. On enquiry at Ipswich, however, we find our old friend Frank Woolnough is still in charge.

Besides the notes continued from the previous issue, *The New Phytologist* for December (published January 21st, received February 2nd), contains a note, 'Is *Pelvetia canaliculata* a Lichen?' by A. L. Smith and J. Ramsbottom; a short note on 'Type Slides,' and an obituary notice of Ernest Lee.

Dr. J. W. Evans has a lengthy paper on 'The Determination of Minerals under the Microscope, by means of their Optical Characters,' in *The Journal of the Quekett Microscopical Club*, No. 77. Other notes are, 'An Addition to the Objective,' by M. A. Ainslie; 'Diatom Structure,' by A. A. C. E. Merlin; 'Slides of Fissidentaceae,' by G. T. Harris; 'Cultivation of Plasmodia of *Badhamia utricularis*,' by A. E. Hilton; '*Hydrodictyon reticulatum*,' by J. Burton; 'Insect Structure,' by E. M. Nelson; 'Five New Species of *Habrotrocha*,' by D. Bryce. There is also an excellent portrait of the late Professor E. A. Minchin.

CUMBERLAND COLEOPTERA.

F. H. DAY, F.E.S.

THE extended drought of late spring and early summer probably shortened the careers of some species of insects, but the heavy and persistent rains of August invested the parched ground with new life, and in autumn, insects were more or less abundant.

The Coleoptera of Cumberland have been closely studied during the last twenty years. Nearly 1,800 species have been noted as occurring in the county.

Most of my observations in 1915 were in the immediate neighbourhood of Carlisle. I saw no *Geodephaga* which call for comment. A few water-beetles, however, may be mentioned. *Haliphilus fulvus* F., a local species here, occurred in the Nature Reserve at Kingmoor. *Hydropori* were common, including *H. nigrita* F., abundant very early in the season, scarcer later on; *H. pictus* F., *H. lepidus* Ol., *H. lineatus* F., in ponds of clear water; *H. umbrosus* Gyll., *H. tristus* Payk., in bogs; *H. rivalis* Gyll., *H. septentrionalis* Gyll., in streams; and most interesting of all, a specimen of *H. obsoletus* Aubé, was taken from flood refuse by the River Eden at Wetheral, at the end of December. This is only the second specimen I have taken in Cumberland, the first occurring under similar circumstances in the autumn of 1903 in the same locality. *Hydrobius picicrus* Thoms., occurred in late autumn on the site of a dried-up bog pool, where it was found by scraping away the humid vegetable detritus, with other aquatic species such as *Helochares griseus* Fab. (*punctatus* Shp.) and *Philydrus minutus* F. *Laccobius nigriceps* Thoms. was found in flood refuse; *P. alutaceus* Thoms. and *P. minutus* L. in clay ponds in the Nature Reserve, where also I again met with *Helophorus dorsalis* Marsh. (*4-signatus* Bach.). Other species of *Helophorus* to be taken were *H. arvernicus* Muls., common on the sandy margins of the River Caldew, and *H. affinis* Marsh., in clear water. *Hydrochus*, a scarce genus in Cumberland, was represented by *angustatus* Germ. The only other species I have met here is *H. brevis* Herbst., but not for some years now. Three species of *Ochthebius* were obtained by swilling round the edges of ponds, viz.:—*O. impressus* Marsh. (*pygmaeus* Payk.), *O. bicolor* Germ. (*rufimarginatus* Steph.), and *O. impressicollis* Lap. (*bicolon* Steph.).

Numerous *Staphylinidae* were met with. *Aleochara diversa* J. Sahl (*moesta* Brit. Cat.) occurred several times. It is always a much scarcer species than *A. sparsa* Heer. (*succicola* Thoms.), with which it was formerly confused in British collections. Several species of *Oxyptoda* occurred, the best being *O. annularis*, Mann. and *O. brachyptera* Steph., the former in moss, the latter on the sandy banks of streams. *Ocalea badia* Er., *O. pictata* Steph. (*castanea* Er.) and *O. rivularis* Mill. (*latipennis*

Shp.) were taken in flood refuse in December. Of *Atheta* I took a number of species, mostly still undetermined. Mention may be made however, of *A. soror* Kr. *A. cavifrons* Shp. *A. pallens* Redt. and *A. pygmaea* Grav. all from flood refuse. In fungi in late autumn I got a short series of *Gyrophæna fasciata* Marsh., hitherto accounted rare in this district. One of the better fungus-frequenting species was *Tachinus proximus* Kr., which preferred absolutely putrid, almost liquid, fungi, a circumstance which made its capture a rather unpleasant business. *Quedius lateralis* Grav., and *Philonthus puella* Nord., inhabited the same pabulum and also preferred it in the same filthy state. The prevailing *Quedius* in flood refuse was *Q. attenuatus* Gyll. In addition to the *Philonthus* already mentioned I took *P. albipes* Grav., in meadows recently 'scaled' with manure, *P. longicornis* Steph., not uncommon in my garden in a heap of cut grass, this being the first season in which I have taken more than a single specimen. *Staphylinus erythropterus* L., was picked up on roads. *Stenus pallitarsis* Steph., *S. pubescens* Steph., and *S. rogeri* Kr., were swept. For several seasons I have been on the look out for *Oxytelus fairmairei* Pand., examining dozens of the ubiquitous *O. tetracarinus* Block. (surely the commonest of all beetles), and this season had the good fortune to take one fine specimen on the wing. I got two *Trogophæus arcuatus* Steph., in Dec., a species I have not seen for a number of years. *Ancyrophorus omalinus* Er., was, however, common as usual in flood refuse. In the early spring I took a nice *Homalium tricolor* Rey., in a dried up rabbit's skin, and among the numerous examples of *Protiennus* the latter harboured, found one *P. limbatus* Mäkl.

Among the *Clavicornia* I found few species. Almost the only *Liodes* (*Anisotoma*) I met turned out to be *L. curta* Fairm., new to the county. The specimen occurred in marsh hay in August. *Rhizophagus ferrugineus* Payk. was common under fir bark with others of the genus.

In view of the numerous recent additions to the British list in the genus *Cryptophagus*, many species were taken, but nothing really noteworthy was seen, unless an at present undetermined example from flood refuse turns out to be something of interest. In my heap of cut grass in the garden several species occurred, among them *C. pilosus* Gyll. *C. dentatus* Herbst. was taken in boleti on birch, *C. pallidus* Sturm. in haystack refuse; of the two the latter is much the commoner in Cumberland. *Pullus* (*Scymnus*) *testaceus* Mots., not before recorded hence was beaten from Scotch Fir in August, although I have specimens taken a few years ago. My insects are referable to the var. *scutellaris* Muls. In June I swept up a specimen of *Aspidiphorus orbiculatus* Gyll., near a pond. Previously I have taken it sparingly in moss.

One of the most interesting skipjacks in Cumberland is

Corymbites pectinicornis L., of which several were taken in June among long grass on the edge of a wood. *Sericosomus brunneus* L., occurred on various trees, and was also swept up amongst rough herbage in wood rides, with other commoner species of the family. *Longicornia* are not numerous here although several interesting species are in the county list. *Saperda populnea* L., was noted in its old locality among aspen where the bushes are much stunted by its depredations. A little beetle I was very pleased to see again was *Zeugophora subspinosa* F. I took one in 1898 and now again found a single specimen. Both came from aspen in the same field, so apparently there is a colony in the vicinity. It is a rare species in the North of England, judging from the absence of records. *Phyllotreta flexuosa* Ill. occurred rather freely on various low plants. It is well established in the Nature Reserve on water-cress.

In the same interesting locality I found *Apion scutellare* Kirb. sparingly on furze, but *A. genistae* Kirb. was again abundant on the Petty Whin. From flood refuse in spring I got *Ceuthorrhynchus euphorbiae* Bris. and in December a fine specimen of the striking *Liocoma deflexum* Panz. var. *collaris* Rye. In June *Magdalis carbonaria* L. was found on sallow sparingly, and *M. phlegmatica* Herbst. came from cut fir tops. Although never common here, this 'Scotch' species may be taken almost any season in the plantations where recent felling has taken place. I got a specimen of *Anthonomus rubi* Herbst. in September, which is the second I have taken in Cumberland, but the smaller *A. comari* Crotch is invariably abundant on various low plants, especially *Potentilla*. I see, however, that the latter is given as an aberration of the former in the list of Newbery and W. E. Sharp just published.

In the Penrith district I found a few interesting insects on the single occasion I visited it at the end of September. *Hydraena britteni* Joy, was present in its old locality in mossy pools. *Cercyon tristis* Ill., and *Chaetarthria seminulum* Herbst. were shaken out of moss with such species as *Myllaena dubia* Grav., *Quedius maurorufus* Grav., *Philonthus corvinus* Er., *P. nigrita* Nord., *Stenus argus* Grav., *S. melanarius* Steph., *S. niveus* Fauv., and *Xylodromus depressus* Gr. (*Homalium deplanatum* Gyll.). A quaint little species *Hypocyptus ovidum* Hern. was a welcome capture. Some little time was spent in this locality in searching for *Pselaphus dresdensis* Herbst., but although some half dozen Pselaphids were captured and duly set, only one proved to be that species, the others being *P. heisei* Herbst. In addition to the characters mentioned by Fowler, *dresdensis* may be readily separated from *heisei* by having the apical joint of the palpi smooth instead of being sprinkled with minute black tubercles. Sweeping produced little but *Longitarsus succineus* Fond. and *Meligethes viduatus*

Sturm, the latter from the water areas. *Galeruca tanacetii* L. was a conspicuous object on Devil's bit scabious and black knapweed. I saw none of its reputed food plant, tansy, in the vicinity. This is the first time I have met with the species in any numbers in Cumberland, my only previous acquaintance with it being limited to two specimens captured in flood refuse a long while ago on the banks of the River Caldew.

On the coast towards Ravenglass *Cicindela hybrida* L. was abundant on Whit Monday. Among the higher sandhills this fine insect is difficult to catch, owing to the irregularity of the ground, but where the smaller hills shelve down to the beach it may be readily marked down with the eye when it settles on the sand after a flight, and if stealthily approached may be caught with a long-handled butterfly net when it rises again on the wing. Its powers of flight diminish in the late afternoon, and it becomes less wary. On sunless days it is seldom seen. A few *Harpalus neglectus* Dej., were taken under stones with *Amara lucida* Duft., and other commoner species of both genera. A colony of *Bembidion saxatile* Gyll. was noted in a damp place where the sand was mixed with clay. In this locality I once took a few *Saprinus rugiceps* Duft. (*S. striatus* Hoff.), so careful search was made for more, with however only partial success, as I could not find more than one example. Numbers of sandhill species were observed such as *Notoxus monoceros* L., *Melanimon* (*Microzoum*) *tibiale* F., and *Phylan* (*Heliopathes*) *gibbus* F. Two fine specimens of *Phytonomus fasciculatus* Herbst. were taken at the roots of *Erodium*. Under seaweed *Homalum rugilipenne* Rye and *H. riparium* Thoms. were common. In the lanes behind the sandhills *Gymnetron labile* Herbst. was abundant on black knapweed, while general sweeping produced, among others, *Subcoccinella 24-punctata* L., *Hippuriphila modeeri* L. and *Tropiphorus tomentosus* Marsh.

In 1915 about two hours on Saddleback entirely covered my collecting in that delightful country. It was a beautiful day in autumn, but insects were very scarce on the lower slopes. A few *Carabus catenulatus* Scop. strayed across the path. Many specimens of *Geotrupes* of the commoner species hustled one another round the droppings of sheep in which *Aphoaius lapponum* Gyll was present in numbers, but otherwise there was little to be seen. In some sphagnum pools about 2,000 feet up, which was as high as I got, were a few *Agabus congener* Payk., *Hydroporus tristis* Payk., *H. obscurus* Sturm, and *H. morio* Dej., also the two bugs *Gerris costae* H.S. and *Corixa praeneta* Fieb.

The nomenclature of the Coleoptera mentioned in this paper is that of the new exchange list compiled by Messrs. E. A. Newbery and W. E. Sharp and published in 1915.

REVIEW.

An Exchange List of British Coleoptera. E. A. Newbery and W. E. Sharp. Plymouth: J. H. Keys, 1915. Price 6d. This list of British beetles is based on the European catalogue of 1906. Though at first sight the changes introduced in many instances appear to be extremely revolutionary, it is advisable that our nomenclature should be brought into line with that used by Continental entomologists. The majority of the new names have already been given as synonyms by Canon Fowler in his standard work, and if some familiar names are renounced in favour of others, it is to be hailed as a distinct advance towards the goal of final stable nomenclature, based on the law of priority wherever possible. The last catalogue of British coleoptera was published in 1904 by Professor T. Hudson Beare and Mr. H. St. J. Donisthorpe, and since that date large numbers of species have been added to our list and these are incorporated in the catalogue under review. Several instances in which confusion may arise owing to a reciprocal alteration of names may be briefly mentioned, in addition to the example cited by Mr. Stainforth (*The Naturalist*, 1915, p. 403), as regards our British species of *Noterus* Clair (both of which are Yorkshire insects). Thus the name *Bembidium littorale* Oliv. should rightly be applied to *B. paludosum* Panz. and the species known by British coleopterists as *littorale* should become *ustulatum* L. *Philhydrus melanocephalus* Ol. becomes *4. punctatus* Herbst. and *Enochrus bicolor* Payk. becomes *Philhydrus melanocephalus* Ol. The insect formerly called *Öchthebius rufimarginatus* Steph. is sunk in *bicolor* Germ. and our insect known as *bicolor* Germ. becomes *impressicollis* Lap. The very common large *Cercyon* which Canon Fowler calls *haemorrhoidalis* Herbst. ((Fab.) Beare and Donisthorpe), is now known as *impressus* Sturm, and the almost equally common but smaller *flavipes* Fab. (of Fowler and B. & D.) is now *haemorrhoidalis* Fab. (nec. Herbst.), *Cercyon obsoletus* Gyll. becomes *lugubris* Ol. and *C. lugubris* Pk. becomes *convexiusculus* Steph. *Stilicis affinis* Er. (Fowler and B. & D.) is sunk in *orbiculatus* Pk. and *orbiculatus* Er. (Fowler), Pk. (B. and D.) becomes *erichsoni* Fauv., *Sphaeroderma testaceum* F. is now *rubidum* Graells and *S. cardui* Gyll. becomes *testaceum* Gyll., *Cassida equestris* Fab. becomes *viridis* L. and our old *viridis* Fab. (Fowler) L. (B. & D.), is now *rubiginosa* Mull. These are the most noticeable instances in which confusion is likely to occur for some time, but if coleopterists in recording will always add the name of the author of the species there should be no doubt as to which insect is meant. A large number of beetles noted in this catalogue have the suffix Brit. Cat. and this is a distinct advantage in shewing at once that there is considerable doubt at this time to what author the species should correctly be referred; for example, there is no doubt that our *Cryptopleurum atomarium* should be called *minutum* F., but it is by no means certain whether it is the *atomarium* Muls. (of Fowler) or *atomarium* Ol. (of B. & D.). Many varieties have had to be omitted, as explained in the editors' note, and this is not of any serious moment as far as mere colour aberrations are concerned. However, in the case of well defined varieties it is in some cases uncertain whether the variety should be sunk in the type (as is done in the *Eur. Cat.* with the var. *procera* Er. of *Aleochara spadicea* Er.), or whether they are omitted for economy of space only, without any doubt of their value as varieties; e.g., *Scymnus suturalis* Thun. var. *limbatus* Steph., *Aphodius depressus* Kug. var. *nigripes* Steph., *Chrysomela orichalcia* Mull. var. *hobsoni* Steph. and *Anthicus floralis* L. var. *quisquilius* Th., all of which are Yorkshire insects. With regard to *Bembidium andreae* F. and its var. *bualei* Duv. (*anglicanum* Sharp), it is the latter which occurs on the Yorkshire coast, and again with *Elmis maugei* Bed. var. *aeneus* Mull., the type does not appear to occur in the county. Two interesting varieties added to the list are *Rhantus exoletus* Forst. var. *nigriventris* (n. var.) based on specimens taken at Askham Bog by Mr. W. E. Sharp in March, 1895 and *Cafius xantholoma* Gr. var. *variiegatus* Er., taken at Bridlington by Mr. W. E. Sharp in 1909, and by Mr. J. H. Keys at Plymouth. The use of the dagger

is rather too comprehensive, but perhaps under the circumstances it was impossible to use a variety of symbols. Several insects recorded from Yorkshire are so graced, notably *Ophonus calceatus* Stm. (the Bridlington example remaining unique in the British list), *Myllæna græca* Kr., and *Mycetoporus forticornis* Fauv. One has to know the insect thus marked to be certain whether it is to be classed as an extinct true native, a species becoming established (denizen) an occasional visitor, a cosmopolitan, a doubtfully true species, or a myth.—W. J. FORDHAM.

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NORTHERN NEWS.

'Plant Diseases in England and Wales,' is the title of an article in *The Journal of the Board of Agriculture* for January.

'The Government is going to close Museums and Picture Galleries to the public. No one shall accuse us of being Apostles of Culture.'—*Punch*.

The Editor of one of our journals asks: 'Who will lend a hand in giving the Journal a big boost in the early part of 1916? Come along all.' In Yorkshire it would be spelt 'bust!'

We see from the daily press that the Brighton Art Gallery 'has been regarded by rival municipalities as a model to imitate.' The note immediately follows with 'Brighton lives by advertisement.' The same article tells us that 'the total cost of the museum at Hastings does not exceed £200 a year.' Yet it is called the 'Brassy' Institute!

In a pamphlet entitled *The Meaning of Life*, Mr. Robinson writes on 'Who Made God.' We are afraid we must admit we are not very much enlightened by its perusal. Possibly our readers may have better luck than we have; anyway, the concluding sentences may satisfy: 'Who Made God?'; 'Who Created the Creative Force,' has no strength because it has no basis. It wanders round in an empty little circle, answering itself.

From Mr. J. E. Clark we have received his valuable 'Report on the Phenological Observations from December 1913 to November, 1914,' reprinted from the *Quarterly Journal of the Royal Microscopical Society*, No. 176. Among the additional observing stations during the year we notice a few Yorkshire localities, but there should be more. Mr. Clark also favours us with a copy of his report of the Botanical Committee, reprinted from the *Croydon Natural History Society's Report*.

The 53rd Quarterly Record of Additions (*Hull Museum Publications*, No. 107), contains the following items: 'A Yorkshire Dene Hole,' 'Record Work of Photographic Societies,' 'Five Unpublished Seventeenth Century Tokens of Yorkshire,' 'A New Seventeenth Century Token of Lincolnshire,' by T. Sheppard; and 'The Guests of Yorkshire Ants,' 'Notes on Some Yorkshire Coleoptera,' 'Megabunus insignis,' a Harvestman New to the East Riding,' by T. Stainforth. It is well illustrated, and sold at one penny.

The Report of the Corresponding Societies' Committee and Conference of Delegates held at the Manchester Meeting of the British Association (35 pages, 1s.), has been issued. It contains Sir Thomas Holland's address on 'The Organisation of Scientific Societies,' and Dr. W. E. Hoyle's address on 'Local Museums,' already referred to in the pages of *The Naturalist*; some remarks by Mr. W. Whitaker on the publication of papers, and a paper on 'Colour Standards,' by Mr. J. Ramsbottom. There is also a useful 'Catalogue of the more important papers, especially those referring to Local Scientific Investigations, published by the Corresponding Societies during the year ending May 31st, 1915.'

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RILEY FORTUNE, F.Z.S.

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Efforts recently renewed have added another ten subscriptions, but this is not enough by quite a hundred to warrant the publishers in commencing to print the work. A substantial guarantee—not necessarily from one friend—of £100 is suggested by the publishers in consultation with Mr. Thomas Sheppard, of the Hull Museum. Anyone feeling in any degree interested in seeing the book a work accomplished, will perhaps communicate with

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February, 1916.

We must apologise to our contributors for several valuable papers held over by considerations of space.—ED.

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NOTES AND COMMENTS.

DR. ALFRED HARKER, F.R.S.

From the 'Abstracts of the Proceedings of the Geological Society of London,' No. 987, we notice, 'February 23rd, 1916—Dr. Alfred Harker, F.R.S., President, in the chair.' In this way we learn that a former editor of *The Naturalist* now holds the highest position the chief geological society of the world can give him, and the further fact that our one-time frequent contributor is now LL.D. We sincerely congratulate him upon both events! It will be remembered that Dr. Harker formerly took a great interest in the Yorkshire Naturalists' Union and conducted the excursions of the Geological section. He occupied the Union's presidential chair in 1911. He is the author of many memoirs and books on petrological subjects; his 'Introduction to Petrology' having passed through a number of editions, while his 'Natural History of Igneous Rocks' has a world-wide reputation; and, Dr. Harker is a Yorkshireman.

THE RINGING OF BIRDS.

The publicity given to Mr. R. Fortune's presidential address to the Yorkshire Naturalists' Union, now appearing in our columns, caused a letter of protest to appear from Mr. H. W. Robinson, who is 'perhaps, the greatest exponent of bird-ringing.' He says, 'Mr. Fortune states that many people shoot birds in the hope of finding rings upon their legs. This statement is untrue, for in the returns of marked birds the large majority have been found dead from natural causes; moreover, the percentage of returns is a very small one indeed. I am writing, not from my imagination, but with the tabulated returns of the chief species so ringed before me, the method of recovery being given in every case. Can Mr. Riley Fortune quote any cases where such ringed birds have sustained any damage from being ringed? I doubt it, for in no single case of returns made had there been any damage done to the leg that bore the ring.'

MR. FORTUNE'S REPLY.

In the course of his reply Mr. Fortune stated:—'For some years this matter has been freely mentioned at the meetings of the Vertebrate Zoology Section of the Yorkshire Naturalists' Union, and, generally, universally condemned. Members who are thoroughly qualified to know have made statements, of which I, too, have personal knowledge, that gulls are regularly shot on the Yorkshire Coast for the sake of the rings. To-day a gentleman in this town, who has seen the letter of Mr. Robinson in your columns,* came to me and said: "You are quite

* i.e., *The Yorkshire Post*.

right: I have seen men at Scarborough shooting gulls, and have heard them compare notes as to the number of rings they have obtained." Thank goodness that, under present conditions, the slaughter of harmless birds on the coast has, for the present at any rate, been stopped! There was another point I mentioned in my address to the Yorkshire Naturalists' Union, which your reporter did not mention. I said that a certain number of cases had been brought to my notice where birds living on clayey land had suffered cruelly through these rings. Mud or clay had got on to the wings and underneath, had hardened, and had caused wounds and sores to form, which had eventually caused the leg to canker and the bird to die. Two cases of lapwings dying in this manner have come under my own notice. I have heard of a partridge suffering in a similar manner. Another case I may mention is that of a linnet. Some shreds of wool had caught in the ring on the bird's leg. The wool then caught in a branch of gorse; the bird was held fast, and could not escape, the result being that it died a lingering death, and was found hanging head downwards near its nest.' We may add that we have seen correspondence by qualified naturalists who bear out Mr. Fortune's contention.

BIRD PHOTOGRAPHERS.

Mr. Robinson again enters the lists, and after indulging in personalities and making inaccurate statements, writes:—'Mr. Riley Fortune is a bird photographer, and, judging by the frequency of his pictures in the Press, makes a living out of his craft. I am a bird ringer in the cause of science, and at my own expense, without any monetary reward. Mr. Riley Fortune does not figure well as a protector of rare birds, considering the fact that he and some of his fellow bird photographers were responsible for almost the whole of the eggs of the rare Sandwich Tern at Ravenglass being destroyed in one season, by rigging up their "hide tents" right in front of the colonies, thereby keeping the parents away, and allowing the black-headed gulls to destroy the eggs in their absence. This is admitted by one of the bird photographers in a letter to *Country Life* (August, 1912), in which he states that the gulls came and broke the eggs before his eyes, while he was in his "hide-tent." One colony alone, undiscovered by these people, hatched their eggs; in all the others the whole hatch was destroyed. So serious was the outlook that in the following year all bird photographers were forbidden, including Mr. Riley Fortune. Hence, I suppose, that gentleman's anger against the bird ringers, who still enjoyed the privilege.' Mr. Fortune was able to show in his reply that his permission had not been withdrawn, and that there were other inaccuracies in Mr. Robinson's letter.

THE CRAZE FOR DESTROYING WILD BIRDS.

In a further letter Mr. Fortune states:—' I should like to suggest an antidote for this craze of destroying rare birds. It is not a nasty one, like many medicines which are given to cure disease, (and the collecting mania is a disease), but a very pleasant one. It is to take up the practice of photography in connection with the study of wild things. It is almost an absolute cure for the other state. Very many years ago I used to collect a little myself, although I was never very keen about it, always having a distaste for taking the life of beautiful creatures. I found, however, that when I started photographing, and I believe I was about one of the first to practice natural history photography seriously, all desire for collecting passed away, and many of my friends, kindred spirits, who were formerly more or less fond of the gun, confess to the same result. They have now no desire to take the life of any wild creature. The practise of photography is infinitely more sporting, and the resulting pleasure is immeasurably greater and lasting. One comes into intimate contact with the rarest and wildest of our birds and animals; the pleasure of watching their home life at the range of a few feet cannot be realised until experienced. No elaborate outfit is necessary, a small square tent as a "hide," with a cover not too glaring in colour, is every bit as efficacious as the most elaborately constructed artificial tree trunks, stuffed oxen or sheep. I would, however, suggest that photographers who have no genuine interest in natural history, and no sympathy or love for wild life (and there are far too many of this class about, who have been attracted to the work by the pretty pictures they sometimes obtain), should abstain from the practice, as they at times, from their lack of knowledge and sympathy, do considerable harm, in addition to bringing disgrace upon the genuine naturalist, as the general public cannot always discriminate between the two. Photography should be subservient to the real study of the habits and ways of wild things.'

A LEGITIMATE EGG-COLLECTORS' SOCIETY.

With the above title the editor of a natural history leaflet suggests the formation of a society with an annual subscription of 6d. per annum. The aim of the society is to 'unite those who are interested in the study of birds' eggs,' who must 'exclude from their collections all specimens which have been obtained by robbing harmless birds' nests.' It is, perhaps, a little difficult to understand how a 'collector' can progress if he keeps to this rule, but we learn that 'one member of the society, for instance, might come into possession of an abandoned pheasant's nest containing more than a dozen eggs.

Keeping one for his own collection, he would have all the rest to exchange with other members. Such collections might grow very quickly.' Quite so; and no doubt they would. But everybody would not rest satisfied with pheasant's eggs even for 6d. a year, and there are not many other kinds that he would find 'more than a dozen of,' which had been 'abandoned.' Theoretically, egg collectors may be honest; possibly some are; practically, we know many who are not. To an 'enthusiastic' collector, particularly if he is getting good prices for rare eggs, there is just a temptation to be rather hasty in judging whether eggs are 'abandoned' or not. If the bird is not on the eggs when the 'legitimate egg collector' puts his hand upon them, they may be said to be 'abandoned.' Possibly in most cases they then are! No. We are inclined to follow the lead of Mr. Riley Fortune in his address and to look upon egg collecting as a dangerous habit. For this reason we consider a 'legitimate egg collectors' society,' notwithstanding its ideals, is likely to do more harm than good. After a while a 'collector' will want more than eggs of pheasants, hens and ducks, and he will become more like the particular eggs he is seeking—'abandoned.'

'SPORT.'

We have recently been reading an article on 'Sport in the Hampshire Chalk Dells' in a contemporary, which, we should say, was written by a very young contributor. For instance we learn that 'Tis then Reynard finds his cosy corner in the old dells and frequently when least expected, that Lynx-eyed whips "Tally Ho, forward away" breaks the monotony as he views the quarry breasting yonder hill. What a crash for a few seconds, necks are strained, reins tightened, the straight ones for the post and rails, the crooked for the nearest gate. What a merry burst 40 minutes a regular cracker for men and horses. The huntsman's whoops ending in the death of a good straight naked Fox. Long may the old dells respond to the call in providing a good fox for those that are well wishers for all kinds of sport. The gun every month brings its different variety for the sportsman; to the pigeon shooter the old dells are ideal resorts. When these pests of the farmer are feeding on the newly sown corn, clover, or turnip tops where birds resort thither to rest and digest the greedy repasts their capacious crops contain.'

RABBITS.

And again:—'A wounded one means trouble (ah, many a time have I cursed my chums miss) for shattering Jimmy's binder leg, which generally ends in a long wait for a ferret, as I have previously stated a great many of the earths are impregnable to spade, at the same time the latter should always

be carried. On these occasions a good trained dog is an invaluable acquisition, either a well broken spaniel or a small wired-haired terrier, the writer's preferences goes for the latter, and if "up-to-date" being very active and small, with the former quality he will recover your wounded and being small, will do likewise with those that have crawled in the burrow a distance of two or three feet.' We are inclined to agree with a further remark made by our author, viz., 'Silence is the keynote of success.'

SAFETY OF MUSEUMS DURING THE WAR.

In the *Museums Journal*, the official organ of the Museums Association, suggestions were recently made that our museums should mark their roofs by a protecting sign (a black and white panel) because at the Hague Convention this suggestion was made, as a protection against bombardment; the assumption being that the 'enemy' would respect buildings so marked!

OTHER PROTECTION.

To this suggestion a 'Provincial Curator' replied that: 'Having regard to the great reverence the Germans have already shown for "specified buildings" including museums, surely the one thing we should not do in this country would be specially to mark museums with a so-called "protective sign," as such a "protective sign" would certainly be looked upon as a target for the air raiders. The present writer "somewhere in England," has probably seen more results of air raids than most curators, and he certainly has reasons for suggesting that in our own interests it would not be wise to distinguish buildings in this character. Possibly the writer of the note in *The Museums Journal* was inspired by some such notice as the following, which appeared in the press, via Amsterdam; personally I look upon it as a delicious piece of irony: "A telegram from Brussels states that the German Society for the Protection and Preservation of Monuments has held a session at Brussels, under the presidency of General von Bissing, when a number of German and Austrian speakers expressed their thanks to the German military authorities for the care the army had taken of the monuments of Belgium, France, and Galicia during the operations of the war. The function ended with an excursion to Louvain, Malines, Lierre and Antwerp." The members would then doubtless form an idea of the way in which the Germans would respect the monuments and art treasures in Britain, had they the chance.'

AN EDITORIAL REPLY.

To this, the editor, who is the curator of the 'Brassey Institute,' Hastings, replies:—'As the wisdom of indicating museums by a protective sign—the black and white panel—

is here called in question, we may as well state the reason why the matter has been referred to on more than one occasion in these pages. It is as follows: supposing an unindicated museum were seriously damaged by the enemy, the very first question the townspeople would ask would be, "Did the Curator take the necessary steps to safeguard the building and its contents?" Now if, in these circumstances, the Curator had acted on his own responsibility, he would, we imagine, find himself in an unenviable position. Whether a museum be marked or left unmarked, it is important that the Curator should safeguard himself; and the obvious thing to do is for him to consult his committee, and to leave the decision and the responsibility with that body.'

THE 'PROVINCIAL CURATOR' AGAIN.

To this the 'Provincial Curator' naturally replies:—'In case the editorial footnote to his previous letter gives the impression (as it well may do) that "Provincial Curator" is neglecting necessary precautions for the protection of the building or buildings under his charge, let him say that he has already consulted his committee, which has decided not to show any distinguishing marks, such decision being regarded as in the interests of safety by the committee, which consists of prominent citizens, broad-minded business men. Perhaps for the guidance of other provincial curators you would not mind telling us, Mr. Editor, what our national museums have done in the way of marking their buildings by "protective signs." Has the suggestion been adopted at your museum at Hastings?' To this question no reply is given, from which it is fair to assume that the editor of *The Museums Journal* not only insinuates that those not carrying out his suggestions are neglecting their duty, but shows that he does not back up the advice he so kindly gives to others by carrying out the suggested methods of protection which he advocates. We hope his committee won't hear about *his* 'neglect of duty'!

THE PILTDOWN REMAINS.

At a recent meeting of the Manchester Literary and Philosophical Society a communication was given on 'New Phases of the Controversies concerning the Piltdown Skull,' by Prof. G. Elliot Smith, M.A., M.D., F.R.S. He considered the different views that had been recently expressed; (1) that the canine belonged to the upper and not the lower jaw; (2) that the mandible was not human, but that of a hitherto unknown species of chimpanzee, which by some unexplained means made its way into England in the Pleistocene period; (3) that the features differentiating this mandible from that of modern man had been unduly exaggerated; (4) that the canine tooth

could not have belonged to the same individual as the skull and the jaw because it differed from them in age, according to one authority being definitely *older*, and to another distinctly *younger*, than the other fragments. These widely divergent views tend to neutralise one another.

AN IMPROBABILITY.

In considering the possibility that more than a hitherto unknown ape-like man, as well as a hitherto unknown man-like ape expired in Britain side by side in the Pleistocene period, and left complementary parts the one of the other, the element of improbability is so enormous as not to be set aside except for the most definite and positive anatomical reasons. The evidence submitted in support of each item of the arguments for the dissociation of the fragments was examined; and it was maintained that none of it was sufficiently strong to bear the enormous weight of improbability which these hypotheses imposed upon it. The author called special attention to the implied inference that the cranium itself was not sufficiently simian to be associated with the jaw; and emphasised the fact that the skull itself revealed certain features of a more primitive nature than any other known representative of the human family.

LIVERPOOL GEOLOGISTS.

With the Lake District and North Wales, and the interesting counties of Lancashire and Cheshire within its field of operations, the Liverpool Geological Society has ample scope for the work of its members, and of this every advantage seems to be taken. Two parts of their familiar pink-covered publications have recently appeared. The first contains W. A. Whitehead's Presidential Address, 'The Formation of a Sandstone'; J. W. Dunn writes on 'Skiddaw and the Rocks of Borrowdale'; H. W. Greenwood on 'An Example of the Paragenesis of Marcasite, Wurtzite, and Calcite, and its Significance,' and a 'Note on a Boring at Vauxhall Distillery'; T. A. Jones on 'The Presence of Tourmaline in Eskdale Granite'; F. T. Maidwell on 'Some Recent Excavations at West Bank Dock, Widnes,' and on 'Some Sections in the Lower Keuper of Runcorn Hill,' the latter with microscopic notes by J. E. Wynfield Rhodes; H. W. Greenwood and C. B. Travis write on 'The Mineralogical and Chemical Constitution of the Triassic Rocks of Wirral.' This part is edited by E. Montag. The second publication is the 'Cope Memorial Volume,' and is a lengthy memoir on 'the Igneous and Pyroclastic Rocks of the Berwyn Hills (North Wales)' by the late T. H. Cope. It is edited by C. B. Travis, and sent out with the compliments of Mrs. Cope. Both publications contain results of sound work,

are well illustrated, and reflect every credit upon our Liverpool friends.

THE GRASSINGTON MINES.

We learn from *The Yorkshire Observer* that it is stated the historic lead mines at Grassington are to be re-opened. Almost at any time during the past fifteen years a rumour to this effect has been current, but in the present instance something like solidity is given it by the additional particulars that the mines have been let to a wealthy company, who will forthwith begin to work them on modern lines. Probably never since the mines were closed nearly half-a-century ago has the moment been more opportune for their re-opening, for with lead at £30 per ton they should prove a paying concern. It was the discovery of surface lead ore in Spain which chiefly brought about the closing of the dale mines and also led to the scattering of the population which inhabited the dale villages. The mines, of course, are not confined to Grassington. They stretch along the hills to Pateley Bridge, as the disused shafts and mills still to be seen on the moorland prove. There are also abandoned and disused mines in Arkengarthdale and Teesdale. Should the story of their re-opening prove correct, there will be one or two little problems to face both for the company and the local authority, for with the development of Grassington as a holiday resort the question of housing accommodation will have to be dealt with.

PUNCTATION OF THE BRACHIOPODA.

At a recent meeting of the Manchester Literary and Philosophical Society, Mr. F. G. Percival read a paper on 'The Punctuation of the Brachiopoda.' The shells of the Terebratulaceæ are perforated by thousands of little pores, through which pass tube-like processes of the mantle. The number of these punctæ per sq. mm. varies in different species, and this variation has been used as a means of distinguishing between different species. Unfortunately, an examination of large numbers of individuals belonging to one species shows that the variation within a single species is so great as to render the character useless as a means of distinction, e.g., 166 individuals of *Terebratula biplicata* Brocchi, were examined and found to range from 39 to 129 per sq. mm. Similarly, 367 specimens of *T. punctata* Sow., showed a total range from 66 to 240 per sq. mm. All the readings were taken at approximately the same distance from the umbo, because the number per sq. mm. increases with the distance from the umbo. These two species alone cover the greater part of the total variation possible from the group, and the variation in number is therefore almost useless as a means of specific distinction.

THE TERRESTRIAL ISOPODA (WOODLICE) OF YORKSHIRE.

F. RHODES,
Cartwright Hall, Bradford.

(Continued from page 102).

Genus ONISCUS Linne.

ONISCUS ASELLUS Linne.—Common everywhere.

Genus PHILOSCIA Latreille.

PHILOSCIA MUSCORUM Scopoli.—This species is recorded by the Rev. T. R. R. Stebbing as occurring at Naburn Hall (Victoria County History of Yorks.).

I find it to be generally distributed and common in suitable localities. Its favourite habitats are in damp woods, on hedge banks, among moss, dead twigs, and fallen leaves. It is not uncommon on the grassy margin of the canal banks; under the decaying leaves of herbaceous plants on railway banks, and in the open fields.

This species is variable in colour; in the woods on the mountain limestone districts it is generally light grey with yellow, pink, or red markings, while on the Millstone grit areas of the west Riding, it is generally very dark grey with almost obscure darker markings.

Wharfedale, T. Stringer, May, 1909; Ben Rhydding, May, 1909; Canal Banks, Keighley, 1909; Castle Hill and Grimbold's Crag, Knaresborough, August, 1910; Gisburn, September, 1911; Harewood, Yorkshire Naturalists' Union visit, May, 1911; Addingham, September, 1911; Stecton, Bingley and Saltaire, August, 1911; Elks Wood, Ingleton, May, 1912; Whitby Cliffs, R. S. Bagnall, March, 1912; Malham, May, 1912; Forge Valley, Lady Edith's Drive, and Castle Hill, Scarborough, August, 1913; Canal Side, Wakefield, 1913.

PHILOSCIA MUSCORUM var. OBSCURA Scopoli.—This is the most common form on the Millstone grits of the West Riding.

PHILOSCIA MUSCORUM var. FLAVA Bagnall.—I have taken a yellow form with grey markings in Elks Wood, Ingleton, which may be referred to this variety.

Genus PORCELLIO Latreille.

PORCELLIO SCABER Latreille.—*Porcellio scaber* is one of the common species, and is to be found in any suitable place. It can adapt itself to very varied conditions, either in very damp places or on the top of dry limestone walls.

It would be useless to give localities for this species, as it seldom fails to turn up when one is out collecting. I have

taken it on Fountain's Fell and Horse Head Moor, and near the top of Ingleborough.

PORCELLIO SCABER var. *ALBIDA*.—I obtained a pure white adult (not newly moulted) under loose limestone rubble at Grassington, May, 1914.

PORCELLIO SCABER var. *RUFA* Bagnall.—Grassington and Keighley, May 1907.

PORCELLIO PICTUS Brandt and Ratzburg.—This species seems to be able to exist with the least moisture of any of the Terrestrial Isopods. It is common on the tops of the dry limestone walls of the Craven Highlands. It is a very finely marked creature and has one, sometimes three dark bands down the back, which is also more or less mottled with bright yellow. The head is black, hence one of its synonyms, *melanocephalus* (Schnitzler). It is a rather lively creature and when the stones on the wall tops are moved, one has to be quick to catch it.

Malham, T. Stringer, June, 1909; Common on wall tops, Gargrave, June, 1909; Sedbergh, F. Booth, June, 1909; Dibb Scar, Grassington, August, 1910; Ingleton, July, 1909; Addingham, R. Standon, August, 1911; Forge Valley, Scarborough, September, 1913.

PORCELLIO DILATATUS Brandt.—I have found this species in very many greenhouses around Bradford, but very seldom in the open country.

Sedbergh, F. Booth, June, 1909; Malham, in rubbish from old gardens, September, 1913; Manningham, H. Maltby, April, 1913; Bowling, November, 1913; Buckden, June, 1914.

P. laevis and *P. rathkei*.—These two species have both been taken in Northumberland, so that there is no reason why they should not turn up in Yorkshire.

Genus *METOPONORTHUS* Budde-Lund.

METOPONORTHUS PRUINOSUS Brandt.—This is a common creature in many greenhouses in the Bradford district, but it does not appear to be found often in the open, and then it is in the vicinity of gardens. I have taken it in an old chalk quarry near Worthing golf links, Sussex, in company with *P. laevis*, both being common, and again in the open at Silverdale, Lancashire.

Lister Park, greenhouses, and on rubbish tip from gardens, frequently since 1908; Bowling, 1912; Rock-garden, Harewood Hall, May, 1911.

Genus *CYLISTICUS* Schnitzler.

CYLISTICUS CONVEXUS De Geer.—*Cylisticus* like the true pill-woodlice *Armadillidium*, is able to roll up into a ball, but with the antennae exposed.

This species is fairly common in the mills and dyeworks,

especially in the yards amongst the refuse. It also occurs in many cellars of old houses about Bradford and district. Like *M. pruinosis* it frequents most of the greenhouses in the district, but it is by no means uncommon in the open.

Heaton, in cellar, September, 1908; Lister Park greenhouses, Bradford, November, 1908; Heckmondwike, T. Castle, April, 1909; Gisburn, September, 1910; Harewood, May, 1911; Eldwick, near Bingley, September, 1912; Scarborough, August, 1913; Gargrave, September, 1913; Selby, 1914.

FAMILY ARMADILLIDIIDÆ.

Genus ARMADILLIDIUM Brandt.

ARMADILLIDIUM VULGARE Latreille.—Although this species is considered common, I do not find it so. Up to the present time we have not a single record for it in the district for which the Bradford Natural History Society is responsible. This comprises the drainage areas of the Yorkshire portions of the rivers Lune and Ribble, the Aire from its source to the Leeds city boundary, and the Wharfe from its source to the Washbourn. It is not uncommon in Nidderdale and on the coast.

Harrogate, Castle Hill and Grimbolds Crag, Knaresborough, October, 1908; Scarborough, May, 1909, F. Booth; Cliffs from Bempton to Bridlington, August, 1909.

ARMADILLIDIUM NASATUM Budde-Lund.—This species is generally found in greenhouses in the North of England, most probably it is an endemic species as it occurs in the open and away from habitations in the south.

Greenhouses, Lister Park, Bradford, frequently since October, 1908.

ARMADILLIDIUM PICTUM Brandt.—It is of great interest to be able to include this species in our Yorkshire list, as it has only been recently added to the British fauna. It was first taken in April, 1913, at Arnside, by Mr. G. S. Spence (*Lanc. Nat.*, July, 1913), Mr. R. Sanderson found it under a log in Ling Ghyll, Ribbleshead, November 1st, 1915.

Armadillidium pulchellum Brandt.—This pretty little creature is very like the preceding species, and often occurs in company with it; up to the present I have not found or heard of it in Yorkshire, although I have collected it in Westmorland, Lancashire and Derbyshire, it appears to favour a limestone district.

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The Lancashire and Cheshire Naturalist for January has a useful 'Guide to Current Literature,' in which the headings of articles of the principal journals likely to interest its readers, are given. Dr. A. R. Jackson writes on 'Some Arthropods Observed in 1915'; Mr. F. J. Stubbs writes on 'The National Neglect of Peat,' and there are other shorter notes.

THE PROTECTION OF WILD LIFE IN YORKSHIRE:

R. FORTUNE, F.Z.S.

(Continued from page 95).

The most recent addition to the mammalian fauna is that of the N. American or Grey Squirrel, an animal not quite as handsome as our native squirrel. He has the reputation for being very destructive, not only to trees but to birds, their eggs and young. On Mr. St. Quintin's estate where they were first introduced, and where they flourished, they have had to be destroyed, as they were causing so much damage amongst the trees on the estate. Many complaints have been made from various directions, and fears were openly expressed that they would soon spread over the land and clear out our native species, just as the Hanoverian Rat, as Waterton called him, dispersed our native Black Rat. These fears we learn are evidently groundless, from a curious fact that was revealed a couple of years ago. Enquiries were made at the Zoo from a certain estate to see if they could supply them with some female Grey Squirrels, as all they caught upon their own place were males. In the Zoo and in Regents Park there are great numbers at liberty, and they have become very tame. A quantity were caught up in the hope of supplying the required females, but strange to relate, all that were caught proved to be males, and the same state of things seems to prevail in other parts. It appears as if nature will regulate the supply and prevent their numbers getting to be excessive. In Regents Park where they are very tame, they were at one time mysteriously disappearing. Eventually it was found that one of the unspeakable Germans living in town, was trapping them and selling them.

Before passing on to a consideration of the birds, I should like to say a good word for two small animals, almost universally persecuted. The Stoat if kept within bounds is a most useful little animal, preying to a large extent on small animals and upon the Brown Rat in particular. This latter is the creature which does more harm to the game preserver than all his other so-called enemies put together. We all know how hedgerows which have hitherto been infested by rats, are suddenly evacuated by the whole tribe, not a rat left in the neighbourhood. This sudden exodus is the result of a visit of a stoat or party of stoats, they are deadly enemies of the Rat and will not leave the hedgerow while there is a rat living there. The little Weasel preys principally upon the mice,

and by helping to keep these creatures in check, makes himself worthy of our consideration. It is a mistake for any keeper to wage a war of extermination on the Stoat or Weasel, and they deserve a better fate than the one usually meted out to them.

Turning our attention to the avifauna, we have to deplore the extinction of quite a number of interesting birds. The Golden Eagle, judging only from certain place names, was probably once an inhabitant of Yorkshire, but owing to the increasing population and the accessibility of its haunts it would as a natural consequence be driven beyond our borders. It probably lingered in Cumberland and Westmorland much later than with us.* The Kite was formerly abundant and did not deserve to be wiped out, as it was a useful species. It still maintains a precarious hold in Wales and, I believe in Scotland, but every nest has to have individual watch kept upon it, if it has to escape from the raids of collectors.

The Harriers, owing to their habit of nesting on the ground, on account of their conspicuous size, and the fact that they are hawks of a kind, could hardly be expected to survive. The three species nested with us; the Marsh Harrier, amongst the reeds surrounding marshy ground and meeres; Montague's Harrier on the moorlands and sand-dunes and the Hen Harrier in similar localities. The latter is reported to have nested in the county only a year or two ago, but I am afraid that, despite the fact that they are comparatively harmless, there is little chance of their ever again becoming permanent members of our bird fauna. Individuals of most of the Harriers are shot almost every year. Another class of birds has been banished, mainly through the drainage of their breeding haunts. Their edible qualities probably assisting in no inconsiderable degree. The Ruff and Reeve have recently nested on the Durham side of the Tees and in Norfolk also, and seeing that they are abundant on the Continent opposite us, there appears to be no real reason why they should not nest again in our county. The Black-tailed Godwit, another toothsome bird, formerly much esteemed as a table delicacy, hence their banishment. There are several localities in Yorkshire, typical breeding grounds, corresponding exactly with the Dutch haunts of these birds where both they and the Avocet are still very plentiful. One experiences a great want and a deep regret in passing these places as they seem lost without the birds which are a common and familiar sight in Holland. The Spoonbill, no doubt, also nested in the county. From records we have of Spoonbills in

* The slides of the Golden Eagle, which were shown when the address was given, are from photographs kindly supplied to me by Mr. H. A. Macpherson, author of 'The Home Life of the Golden Eagle.'

England, we find their nesting habits differed somewhat from those in Holland at the present day, where they nest amongst the reeds in the midst and surrounding the meeres and lagoons. In England they were said to nest in tall trees like the Common Heron. The Black Tern, essentially a marsh loving bird, has too, been driven from its haunts. The fact of its being a regular visitor in spring and autumn induces one to believe there is always a chance of its returning to nest. There is another bird which is also a regular visitor from the coasts opposite. Unfortunately they almost invariably meet with a hostile reception. The Common Bittern, which might, if left unmolested, nest amongst some of our extensive reed beds, if not in Yorkshire, at any rate in Norfolk. The note of this bird has been likened to several sounds, notably the bellowing of a bull; to me it resembles very closely the noise made by a ship's fog horn.

A recent departure is that of the Dotterel, a most charming bird, which formerly nested on some of our highest hills. Its confiding nature and the demand for its feathers, which are highly prized for making fishing flies, were the causes of its passing as a breeding species with us. The tragedy of the whole affair is that feathers fulfilling the same purpose may be obtained from the common and abundant starling. The last pair I know which attempted to nest, some fifteen or more years ago, was destroyed by a keeper for the feathers. I am afraid the bird is rapidly decreasing all over our islands.

That magnificent bird the Great Bustard formerly inhabited the Wolds in great numbers. The last of the race was killed at Hunmanby about the year 1830. Much as we deplore the passing of such a fine species, we must recognise the fact that it is almost impossible for it to exist in its old haunts under the present system of cultivation.

We can quite imagine, although we do not appear to have any definite records of the fact, that the White Stork at one time nested at least in the East Riding where conditions would be particularly favourable for birds of their habits.

In addition to the birds which have already disappeared as breeders we have unfortunately a formidable list of species which are decreasing in numbers, some of them rapidly and in an unaccountable way. Indeed, I am afraid the first I shall mention, the Common Buzzard, has for some years ceased to nest in the county. This is a matter for deep regret. It is a fine bird and practically harmless, but being a hawk, and a big one, it must be destroyed by the unthinking gamekeeper. When I was younger, I could in one part of the county, go to half-a-dozen nests in a day. A few years ago I searched regularly for several years in all likely places without finding a nest. Collectors of eggs are also greatly to blame for the

disappearance of the Buzzard. The Peregrine Falcon has a very insecure hold, and it is necessary for our Protection Committee to subsidise the farmer or keeper on whose land the eyre is situate to the extent of £1 for every young bird leaving the eyrie, in order that any of the two or three pairs which still nest in the county may rear their broods in safety. The pair we have under our protection in the Bempton Cliffs do not seem favoured with the best of luck in their family affairs. This year a steamer was stranded, only slightly injured, broadside right under the cliff and close to the Falcon's eyrie. Blasting operations proceeded all through the breeding season in order to clear the rocks away and allow the steamer to slide down into the open water once again. These operations were successful, but the explosions drove the Falcons from their eggs, which were upon the point of hatching, consequently there were no young birds this year.

Ravens, too, have practically disappeared. Unfortunately they resort to the same crags year after year for nesting. These haunts are well-known to collectors, consequently they have little chance of rearing broods, as the eggs are persistently taken. We can only hope that the experiment of turning down some young birds in the old haunt of the species in the Bempton Cliffs will result in their being able to firmly establish themselves there after an absence of 50 years.

At the last meeting of our Vertebrate Section Mr. Booth recorded the establishment of a new heronry, and Mr. Smith of another, but I am afraid these are only the result of a decrease elsewhere. Generally speaking, Herons are decreasing, slowly I think; of course they are not nearly as abundant as in olden times, but we still have one or two very flourishing heroneries in the county. It is a great pity that such a picturesque bird should be slaughtered in the manner he is, because, generally, I am afraid, unskilful angler is jealous of the bird's fishing powers. They do not recognise the fact that fish forms only a portion of his diet, and the fact that his levying toll on the small trout in the moorland and hill brooks, helps to make the size of those left more takable and acceptable; as a rule in these streams there are more trout than there is food for them.

A common species like the Mistle Thrush would hardly be considered to be decreasing in numbers. In my own district and in others with which I am familiar, it is not nearly so abundant as formerly, when almost every likely tree held a nest. Now-a-days one only finds three or four nests in a season. The reason for this decrease I cannot fathom, indeed, it is impossible to account for the great decrease which has taken place in the numbers of many of our common birds, both resident and migrant.

The Long-tailed Tit is a species of which I could at one time

find half-a-dozen nests in a day ; now I hardly find more than one or two in a season. In the winter months family parties were to be regularly met with flitting along the hedgerows in their characteristic busy manner, now several winters may pass without encountering a party. The last lot I saw was just outside the railway station at Harrogate. Whinchats, formerly abundant, their peculiar note being heard all over our countryside, and along the railway embankments in particular, have decreased in an alarming manner, and the Redstart, whose form we were familiar with in almost every country lane, is sadly diminished in numbers. The causes for this cannot lie in our own country. I think it may partially arise from the continual netting of small birds during the migration season, which is persistently carried on in some of the continental countries in the lines of migration.

Of course the numbers of other migrants vary from year to year ; in some seasons they are abundant, in others comparatively scarce, but this is only the natural order of things, and they do not show the steady lessening in numbers as do the species referred to. Pied Flycatchers too, are missing from many of their old haunts. I am pleased to say that they have, however, returned to one of their old breeding spots, not so very many miles from Keighley, in greater numbers than usual this year. Reed Warblers, with possibly the exception of Hornsea Mere, have been on the down grade for some time. In one other locality they have, after rapidly decreasing, rather more than maintained their numbers in recent years. In my district Yellow Hammers are not anything like so numerous as they used to be, and this applies to many other districts. I think the present system of uprooting all the bush-wood on the country road sides, where Yellow Hammers nested freely, in some measure accounts for the diminution. We have just had an example of this rural vandalism near Harrogate. There is a beautiful country lane leading from Birk Crag to Fewston, locally called the rough road ; each side was fringed with a delightful tangle of bramble, and other bushes ; a favourite spot for picnics. In summer it was a delight to wander along it. This year the Knaresborough Rural District Council have taken it into their heads to stub up all this vegetation. If they persist in their vandalism, it will have the result of converting a delightful and picturesque lane into a long dreary and uninteresting road to be avoided by everyone.

Common Buntings, or Corn Buntings, as I prefer to call them, have decreased I think, very considerably on our coast line. Like Stonechats, they are essentially, in Yorkshire, birds of the coast, though they are found inland in much greater numbers than the Stonechat. On my last visit to Spurn, I

could not help being struck with what appeared to be a great scarcity of these birds from Withernsea to Spurn Point, a district in which they were formerly very abundant. It is curious to note what a prolonged breeding season Corn Buntings have. I have found nests with fresh eggs well into September.

Bird catchers are greatly responsible for the decrease in the ranks of the Linnet, one of the most charming of our finches. The clearance of many waste grounds has also had some influence in their departure. Both causes too, have helped to deplete the numbers of Lesser Redpolls. The most unfortunate fact in connection with the wholesale trapping of our wild birds, is that comparatively few of them survive capture beyond a few days. A popular linnet-cage measures only about 6 inches by 9 inches by 3 inches. One can imagine the effect upon a wild bird when it is cribbed and confined to such a narrow space. To scan the advertisements in the papers devoted to the cage-bird fancy is very sad reading. Scores of advertisements are there, offering Linnets from 1s. 6d. per dozen, and many other species of British birds at the same rates. Some offer twenty-four mixed seed eaters for 1s. 6d., better ones at 1s. per dozen. Traffic of this kind is abominable and should be prohibited by the laws of the land.

The Bullfinch, partially from the same cause, and partially from his habit of attacking the buds of fruit trees, has sadly diminished in numbers. Investigation would in many cases prove that most birds condemned on account of this habit, were really not after the bud, but for the grub contained therein, which in any case would prevent its development.

Partridges have for some time been on the down grade, the cause of their decrease being without doubt the increasing quantity of arable land that has been laid down as pasture. One result of the war may be that an increased acreage of land will possibly be brought under cultivation for corn, with a corresponding increase in the Partridge population. Quails were at one time not uncommonly met with nesting here, now they very rarely do so. The netting of thousands of them on their migration routes is responsible for the decrease. Most of us remember that years ago almost every meadow held a pair of Corn Crakes, and their peculiar call could be heard on all sides; now one can almost go through a whole summer without hearing them. Mr. Wade says they have disappeared entirely from Holderness. The universal use of reaping machines which destroy not only the nests but the birds themselves, is the cause of this lamentable decrease. Many Corncrakes and other birds also are destroyed annually by dashing against the telegraph wires which now run like net work over the land.

Black Game were at one time so abundant in some parts of the county, that according to Sir Ralph Payne Gallwey, a

former President of the Union, the haymakers at Blubberhouses rebelled at being so often served with Black Game pie. They have little chance of doing so at the present day. It is pleasing to know that a brood were hatched off this year not far from the old haunt mentioned.*

The Stone Curlew, inhabiting the same district as did the Great Bustard, still holds on in greatly diminished numbers. Probably not more than half-a-dozen pairs now nest in the county. Our Birds' Protection Committee is doing its best to preserve them, but I am afraid that owing to the enclosure of their ancient breeding haunts, there is very little chance of their numbers increasing. The Rock Dove, formerly so plentiful in the Yorkshire cliffs, is now much depleted in numbers, indeed, I very much doubt if there is a really genuine pure pair to be found. Dove cote pigeons frequent these cliffs in numbers, and have so interbred with the genuine wild species, that it is more than likely that all the existing examples are more or less tainted with the cross. Rock Doves are at times reported nesting inland, but they invariably prove to be Stock Doves.

A bird which has unaccountably lessened in numbers very considerably in the Harrogate district is the Tree Sparrow, *the* gentleman of the Sparrow tribe. Many of its ancient haunts are now deserted, and I have only been able to discover one new and small colony. I do not know if this decrease is general. There is, I may say, a flourishing colony of these birds in the Bempton Cliffs. Another finch, the Twite, always a very local bird in Yorkshire, has in most of its old breeding haunts, diminished in numbers; probably the cause of their decrease is the depredations of the bird catchers amongst the flocks when they frequent the lowlands during the winter months.

We have several species that were decreasing or had decreased almost to vanishing point, but which have, apparently, taken a new lease of life, and are now steadily regaining their lost ground. The most notable are Goldfinches which through the actions of bird catchers mainly, helped perhaps to a small extent by many waste areas being brought under cultivation, had practically ceased to breed in the county. They are now found nesting in various parts in annually increasing numbers. The fact that they are now protected all the year round to a great extent accounts for this pleasing fact. Kingfishers for the same reason are regaining their lost ground. There is still, despite the Protection Acts, a lot of illegal destruction going on almost daily, their bright plumage being a great temptation to vandals who desire to have their dead bodies

* It was reported to me during the meeting that a Grey-hen had been obtained recently near Keighley.

stuck in unnatural attitudes in glass cases. Now-a-days they are not used for hat trimming as they were formerly. It would be a great pity if these two species, our most brightly plumaged birds, were not allowed to increase and multiply in peace.

The Little Tern had almost vanished. The policy adopted by the Union's Protection Committee, of keeping a watcher on the breeding ground at Spurn during the whole of the nesting season, has had very happy results. Unfortunately, natural causes frequently handicap the colony severely. We had an instance this year when on May 30th a tidal wave swept over the breeding ground, destroying every nest. Sand storms are also a great danger, and frequently bury the eggs under a considerable layer of sand. Despite these drawbacks, the colony is flourishing and increasing, and another one has re-established itself in another part of the county. As it is the only Tern nesting in Yorkshire, no efforts should be spared to ensure its safety.

The Committee are also responsible for the great increase which has taken place in the Kittiwake colonies. They had been practically cleared out of their usual breeding haunts by gunners, there being at one time a great demand for their skins for millinery purposes. They are once again found frequenting the cliffs in normal numbers. One of the most delightful of birds, the charm of their breeding haunts is beyond any powers of expression.

House Martins had at one period considerably decreased in our midst. I know scores of buildings that used to harbour numbers of nests under their eaves, many in Harrogate, which have for years been deserted. I am thankful to say they are now on the upward grade, and many old haunts have been occupied again. In their natural habitats among the cliffs at Bempton they return regularly in large numbers, also to that inland resort of theirs the great cliff at Kilnsey in Wharfedale. Numbers are destroyed by bird catchers on their migration routes in the south of Europe, and their ranks were decimated in this country several times by the extremely inclement weather experienced soon after their arrival here.

(To be continued).

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The John Dory (*Zeus faber*) at Redcar.—A specimen, 18 inches in length, was washed ashore at Redcar on the 18th March. It was alive when found. This is the first example of this fish that I have seen here, but two others are known to have been taken within the past twenty-five years.—T. H. NELSON, Redcar, 22nd March, 1916.

THE LICHEN FLORA OF HARDEN BECK VALLEY.

THOMAS HEBDEN.

AN account of the Lichen Flora of a portion of South-West Yorkshire (V.C. 63) may be useful as a comparison with that of V.C. 59 and V.C. 63 described by Messrs. Wheldon and Travis.* The district I am best acquainted with in V.C. 63 is that of Harden Beck Valley, which is within about ten miles from V.C. 59, and very similar in geological, climatic and industrial conditions.

Harden Beck Valley may be compared to a little green oasis surrounded by a zone of constantly increasing industrial activity, and nowhere more than four miles from Bradford, Shipley, Saltaire, Bingley, Keighley, Worth Valley, Oxenhope, Denholme and Thornton, thus completing the circle of smoke-producing conditions, the only free portion being to the S.W., but even from there the smoke cloud from the Calder Valley and Lancashire often reaches this district.

Harden Beck Valley itself contains the four villages of Harden, Wilsden, Cullingworth and Denholme, each with its factories and cottage chimneys, adding to the already drifting smoke-cloud from the surrounding district.

Geologically, the eastern side of the valley is the outlying portions of the Lower Coal Measures; the western side being Millstone grit. The summits of the hills, capped with isolated blocks of rough sandstone, often peat covered, rising to an elevation averaging 800 to 1,000 feet above sea level; the valley being nowhere more than three to four miles wide from the summits of the watershed. The lower third of the Valley is well wooded, oak and birch predominating. Several highways intersect the valley, mostly limestone repaired, which encourage calcicole species, yielding aliens of very interesting character. All the Lichens found in the district are in a more or less depauperate condition, mostly dwarfed and so much smoke-begrimed that it is a difficulty to recognise some species. I have never yet succeeded in finding a single corticole specimen except an occasional *Lecanora varia* or *Parmelia physodes*.

In comparing results with that of Messrs. Wheldon and Travis's list, it is necessary to eliminate their sea-side gatherings and also their collection from the district north-west of Colne, owing to the geological difference in both cases.

The species in the following list have all been collected within a radius of about ten square miles, nearly every square

* 'List of the Lichen Flora of South Lancashire' (V.C. 59 Watson), *Linnean Society's Journal*, Vol. XLIII., October, 1915.

yard of which has been repeatedly searched during the past few years.

Lempholemma chalazanodes Nyl.—On calcareous mud and mosses in niches of walls, roadsides, Wicken Cragg; roadside Harden to Bingley, and other places. Common in suitable places.

Lempholemma confertum Nyl.—On calcareous mud and mosses in niches of walls, roadsides, Wicken Cragg. Only two specimens seen. Quite distinctive from above with its turgid cyathoid squamules.

Collema pulposum Ach.—On calcareous road scrapings, not plentiful. On roadsides in several places.

Collema pulposum form *compactum* Nyl.—On calcareous roadsides amongst moss; roadside Manywells to Flappet. Scarce.

Collema glaucescens Hoff.—On calcareous roadsides, among short grass; roadsides in several places. The commonest *Collema* of this valley.

Collema cheileum Ach.—On sandy soil, sandstone walls, Cullingworth, Harden, Flappet, Hallas, Wicken Cragg. Common.

Collemodium turgidum Nyl.—On calcareous road scrapings, among moss in wet places, Wicken Cragg. Plentiful.

Leptogium tenuissimum Koerb.—On Sandstone debris on walls; roadside Cullingworth to Manywells. Only one specimen seen in well fruited condition.

Leptogium humosum Nyl.—On hard calcareous mud, roadsides, in short grass, Ives Bridge, Ryecroft Road, to Keighley. Plentiful.

Solorina spongiosa Nyl.—On vertical faces of sandstone rock, amongst algæ; in fine condition, with numerous apothecia. I prefer not to give the exact locality of this scarce Lichen, only one locality, and not plentiful.

Peltigera canina Hoff.—On ground, woodland footpaths. Goat Stock Woods. Not common.

Peltigera rufescens Hoff.—On ground (sandstone), Flappet, Cullingworth, Harden. Common.

Peltigera spuria Leight.—On quarry tips, amongst small stones, plentiful and usually well fruited, Harden Moor, Wicken Cragg.

Peltigera spuria form *erumpens* Tay, *Journal of Botany*, 1847, p. 184.—On quarry footpaths, amongst small stones, plentiful in one locality, but sterile, Harden Moor.

Peltigera polydactyla Hoff.—On wall tops (sandstone), level with grass field, in fine condition and numerous apothecia. Only in one locality, roadside Harden.

Peltigera horizontalis Hoff.—On grassy bank, one locality only, now probably extinct, Hill End Farm, roadside, Harden.

Cetraria aculeata var. *hispida* Cromb.—Under Ling, spreading in loose large sheets, very common in places, Harden Moor, Catstones Moor, Black Moor.

Platysma glaucum Nyl.—Wall tops under trees, commonest Lichen in the district, Goit Stock Woods.

Everina furfuracea Fr.—On wall tops under trees, not common, Cullingworth, Manywells, Flappet.

Evernia furfuracea form *ceratea* Nyl.—On wall tops under trees, common, widely distributed in Goit Stock Woods.

Parmelia saxatilis Ach.—On wall tops, very common, general throughout the district.

Parmelia saxatilis form *furfuracea* Sch.—On wall tops under trees, not common, Ryecroft, Flappet, Harden Deep Cliff.

Parmelia omphalodes var. *panniformis* Ach.—On sandstone rocks, in shade, common, Goit Stock Woods, Harden Deep Cliff.

Parmelia mougeotii Sch.—On pavement sandstone blocks at highest elevations, scarce, Harden Deep Cliff; Mr. Ferrand's private grounds near monument. This very scarce Lichen may now be considered almost obsolete, only three specimens known to be intact. (Occurs more plentifully on Riveoak Edge, Rombalds Moor).

Parmelia physodes form *labrosa* Ach.—On wall tops, twigs of Larch, on the ground. Generally common throughout the district.

Xanthoria parietina Th. Fr.—On walls, subject to limestone dust from repaired roads, on walls about farm buildings, Wicken Cragg, Harden to Bingley. Not common.

Xanthoria tenella Nyl.—On wall tops, Ryecroft road, Cullingworth. Very scarce.

Xanthoria caesia Nyl.—On bridge coping, Ives Bridge, near Cullingworth. Only one specimen seen.

Xanthoria ulothrix var. *viridula* Cromb.—On walls, mostly near farm buildings, Flappet, Harden. Scarce.

Squamaria saxicola Poll.—On walls, roadsides, garden edgestones, almost everywhere throughout the district. Very common.

Placodium decipiens Arn.—On sandstone walls under influence of limestone repaired roads; only seen at Wicken Cragg. Scarce.

Calloporisma vitellinum Sydow.—Wall tops in crevices, old posts, widely distributed throughout the district. Not common.

Calloporisma epixantha Nyl.—On cement pointing, on dead mosses, Ives Bridge. Scarce.

Calloporisma pyraccum Nyl.—On cement pointing, Ives Bridge. Scarce.

(To be continued).

THE HARVESTMEN AND PSEUDOSCORPIONS OF YORKSHIRE.

WM. FALCONER,
Slaithwaite, Huddersfield.

(Continued from page 106).

LIST.

CLASS : ARACHNIDA.
ORDER : PHALANGIDEA.

FAM. : PHALANGIIDÆ.
SUB. FAM. : PHALANGIINÆ.

Gen., LIOBUNUM C. Koch.

L. ROTUNDUM Latr.

One of the most abundant and widely spread species seen in autumn running swiftly over the grass and herbage, or stationary under coping stones and in crannies of walls: sometimes in masses on the under surface of projecting rocks, beams, etc.; often in damp ground or near streams in woods and fields. Easily recognised by its very long and exceedingly slender legs.

1st Record: Bradford, R.H.M.

V.C. 61.—Hesslewood, Sutton Drain, Cherry Cob Sands, E.A.P.; Skipwith Common, North Cave, Kelsey Hill, Thorngumbald, Bielsbeck, Hornsea Mere, Meaux, Haltemprice Lane (Cottingham), Houghton Woods, Folkton, T.S.; Bridlington, H. C. D.; Rillington, Scampston.

V.C. 62.—Kirby Moorside, H.C.D.; Falling Foss and Ayton Village, W.P.W.; Scarborough and district, Ringingkeld, Cloughton, Hayburn Wyke, Levisham, Boulby, Kilton, Upleatham, Redcar, Marske, Saltburn.

V.C. 63, 64.—Basins of (1) *Don*, Askern, Deffer Wood; (2) *Mersey*, Greenfield; (3) *Calder* and *Colne*, Slaithwaite and Marsden districts, Honley district, Armitage Bridge, Almondbury, Storthes Hall, Outlane, Ripponden, Hardcastle Crags, Crimsworth Dene, Mirfield, Coxley Valley; (4) *Aire*, Bradford, R.H.M.; Keighley District, R.B., W.P.W.; Shipley District, Harden, Cottingley Wood, Skipton, Rylstone, Baildon Green, W.P.W.; (5) *Wharfe*, Ilkley, R.B.; Wetherby, J.G.; Bolton Woods; (6) *Ribble*, Stainforth Force; (7) *Lune*, Ingleborough, Austwick, W.P.W.; (8) *Ure*, Hackfall; (9) *Ouse*, Bishop Wood, Selby.

V.C. 65.—No records.

L. BLACKWALLII Meade.

Local and much less common in Yorkshire than the preceding species but usually abundant where it does occur; in woods and wild heathy places. I have not seen an example from the county, but the following were named either by the Rev. O. Pickard Cambridge or Dr. Jackson.

1st Record: T. Stainforth, Hull, 'Trans. Hull Sci. and Nat. F. Club,' 1908.

V.C. 61.—River Hull bank, T.S.; Humber Bank East, H.C.D., T.S.

V.C. 63.—Beckfoot, near Bingley, two or three examples, W.P.W., R.B.

Gen. PHALANGIUM Linn.

P. OPILIO Linn.

Abundant and widely dispersed in the British Isles and on the Continent, amongst grass and vegetation on waste ground, woods, etc. In Yorkshire the species is most plentiful on or towards the coast, thins out inland and is either absent or exceedingly scarce in the more westerly portions. The falx of the male develops a strong pointed slightly curved horn, variable in size and strength, according to age or season. Adult, August and September.

1st Record: R. H. Meade, Bradford.

V.C. 61.—Spurn, Kelsey Hill, T.S., E.A.P.; Speeton, Sand-le-Mere, Bielsbeck, Birkhill Wood (Cottingham), Patrington Haven, Ryehill, Saltend, Cherry Cob Sands, timber yard, Aire Street, (Hull), South Cave, Flamborough, Bridlington, North Burton, Welwick, Hessle, Barmston Drain (Hull), Weedley Springs, T. S.; Rillington.

V.C. 62.—Kirby Moorside, H.C.D.; Rosebery, Gt. Ayton, Egton, W.P.W.; Scarborough district, Ringingkeld, Cloughton, Hayburn Wyke, Staithes, Boulby, and other places along Cleveland Coast, Levisham, Goathland.

V.C. 63.—Harden Clough, Meltham, 1 ex., W.P.W.; Bradford, R.H.M.; Shipley, Calverley, W.P.W.; Guisburn and Bradford, J. Beanland; Whetley Hill. F.

V.C. 64.—Ilkley, R.B.

V.C. 65.—No records.

O. PARIETINUM De Geer.

Usually affects a different situation from the last named, being found in outhouses, wall crevices, etc., or wandering over the walls or floors of buildings, but not absolutely confined to them. Widely distributed at home and abroad. Isle of Man, 1908. Adult, Aug. and Sept.

1st Record: R. H. Meade, Bradford.

V.C. 61.—Humber Bank East, H.C.D., T.S.; New Joint Dock, Hull, T.S.; Welton, E.A.P.

V.C. 62.—Middlesbrough district, 'common,' J.W.H.; Scarborough, R.A.T.

V.C. 63.—Bradford, R. H. M.; Saltaire, Calverley, Seven Arches (Bingley), W.P.W.; Todmorden, Miss Leah; Gipton, (Leeds), Slaithwaite and Huddersfield.

V.C. 64.—Howden Ghyll (Keighley), W. P. W.; Bishop Wood, Selby.

V.C. 65.—No records.

P. SAXATILE C.¹ L. Koch.

Smaller and without the false articulations in the metatarsi of the first pair of legs, which characterise the last two species; roots of grass and herbage and beneath stones. Most abundant near coast and in limestone and chalk districts. Adult in autumn.

1st Record: the Author, Scarborough, August, 1905.

V.C. 61.—Beverley, F. J. Lockyear; Kelsey Hill, E.A.P.; Hedon, Humber Bank East, Sutton Drain, Hessle Cliffs, North Cave, T.S.

V.C. 62.—Plentiful on the Coast, Scarborough, Marske, Redcar, Coatham, Tees Mouth.

V.C. 63.—Bingley Woods, W.P.W., R.B.; Askern.

V.C. 64.—Malham, Y.N.U.

Gen. PLATYBUNUS C. L. Koch.

P. CORNIGER Herm.

A distinct species, common amongst grass and vegetation, and in woods amongst fallen leaves and moss, on herbage and low trees. The male as in *P. opilio* Linn. develops a hornlike projection on the falx, but of much smaller size and on a different part of the joint. Adult in May and June. *P. triangularis* Herbst. once regarded as a totally different species, is now known to be the immature winter form, and is more abundant than the adult.

1st Record: the Author, Roundhay Park, Leeds, 1905.

V.C. 61.—Numerous Stations in the East, South and Centre of the Riding, T.S., E.A.P., J.F., W.F.

V.C. 62.—Eston, J.W.H., G.B.W.; Scarborough, Cayton Lane and Forge Valley, R.A.T.

V.C. 63.—Saltaire, Keighley, Shipley, Bingley, W.P.W.; Calverley, S.M.; Earby, F.R.; Huddersfield, C.M. (V.C.H.); Loversal, H. V. Corbett; Askern, Leeds and district, and less frequently Hebden Bridge, Slaithwaite, Helme, Stocksmoor, Honley Old Wood.

V.C. 64.—Winterburn, R.B.; Newby Moss, Ingleborough,

Burley in Wharfedale, W.P.W. ; Y.N.U., E. Keswick, Harewood Park, Woodhall ; Adel ; Knaresborough and Bishop Wood ; Chandler's Whin, Askham Bog, Hackfall, Bolton Woods, Grass Woods.

V.C. 65.—Y.N.U. Middleton in Teesdale.

Gen. MEGABUNUS Meade.

M. INSIGNIS Meade.

A widely distributed and striking phalangid ; among moss, debris, and on tree trunks. Isle of Man, 1908. Adult July and August.

1st Record : R. H. Meade, Bradford.

Widespread but not numerous in the county.

V.C. 61.—Houghton Woods, near Market Weighton, T.S.

V.C. 62.—Eston, J.W.H. ; Langdale End, R.A.T.

V.C. 63.—Bradford, R.H.M. ; Hurst Wood (Shipley), Marton, Cottingley, W.P.W. ; Keighley, R.B. ; Huddersfield district at Woodsome, Mollicar Woods, Armitage Bridge, Upper Stones Wood (Stocksmoor).

V.C. 64.—Malham, T. St. W.P.W. ; Rylstone, Shipley Glen, W.P.W. ; Y.N.U., Knaresborough ; Grass Woods, Washburn Valley.

V.C. 65.—Y.N.U. Upper Teesdale. Mickleton ; Rawthey Valley, F.B.

Gen. OLIGOLOPHUS C. Koch.

O. MORIO Fabr.

This species and the next are most abundant and widely distributed, and occur in all the varied situations which harvestmen affect. Isle of Man, 1908. Adult, late summer and autumn.

1st Record : R. H. Meade, Bradford, sub *Phalangium urnigerum* Herm.

In V.C. 61, 62, 63, 64, *O. morio* has turned up wherever any investigation at all has been made, so that a list of stations would be a very lengthy one.

V.C. 65.—Y.N.U., Upper Teesdale. This division has not yet been worked.

Var. ALPINUS Herbst.

Distinguished from the type by numerous strong spines beneath the tibiae of the first pair of legs. It is an alpine form and has been noticed on the summits of mountains in Wales, Scotland, Cumberland and the Isle of Man, as well as at lower elevations in hilly districts.

1st Record : the Author, Butternab Wood, Huddersfield.

V.C. 62.—Scarborough Cliffs, Raincliff Woods, R.A.T. ; Airyholme Wood, Cleveland, W.P.W. ; Eston Moor.

V.C. 63.—Keighley, Marley, Shipley, Bingley, Cottingley,

W.P.W. ; Wilsden, R.B. ; Holme Moss (S.L. Mosley) ; Slaithwaite and district, Dean Head, Drop Clough, Clowes Moor (Marsden), Butternab Wood, Crosland Moor, Storthes Hall (Huddersfield), Dunford Bridge, Denby Dale, Hebden Bridge, Crimsworth Dene.

V.C. 64.—Ingleton, Grassington, Bolton Woods, Morton Moor, Rombald's Moor, W.P.W. ; Y.N.U. Malham ; Giggleswick, Stainforth, Ingleborough on the summit, and the ascent via Clapdale.

V.C. 65.—How Gill, W.P.W.

O. AGRESTIS Meade.

Adult late summer and autumn.

1st Record : R. H. Meade, Bradford.

V.C. 61, 62, 63, 64 as abundant and ubiquitous as the last, and stations even more numerous.

V.C. 65.—How Gill, W.P.W.

O. HANSENI Kraepel.

A rare phalangid, first discovered as a British species near Edinburgh, by Mr. W. Evans in June, 1906. It is now on record for Notts, Northumberland, Sussex and Cumberland. Abroad the only locality is Hamburg.

1st Record : the Author, Scarborough, August, 1905.

Only a few examples have been found in the county.

V.C. 61.—Hedon, T.S., 'Trans. Hull Field Club, 1908.'

V.C. 62.—North Bay, Scarborough, one example.

V.C. 63.—Hurst Wood (Shipley), Harden Moor, W.P.W. ; Butternab Wood, Huddersfield, two or three examples.

O. PALPINALIS Herbst.

Another of the more uncommon phalangids now reported from Dorset, Cheshire, Northumberland, North Wales and Edinburgh ; amongst dead leaves, moss, and roots of herbage in woods. Adult late summer and autumn.

1st Record : the Author, Slaithwaite, July, 1905.

Nowhere abundant in the county.

V.C. 61.—Melton, E.A.P. ; Bridlington, Bielsbeck, Kelsey Hill, South Cave, T.S. ; bank of river at Selby.

V.C. 62.—Beast Undercliff, Staintondale, T.S. ; Ringingkeld Bog, Oliver's Mount, R.A.T. ; Goathland.

V.C. 63.—Y.N.U. Cawthorn, Deffer Wood and Harden Clough, (Meltham), Hurst Wood (Shipley), W.P.W. ; Bottoms Wood (Slaithwaite), Crosland Moor, Armitage Bridge, Woodsome, Storthes Hall, Hey Wood (Horley), Lepton Great Wood, all near Huddersfield ; Coxley Valley.

O. TRIDENS C. L. Koch.

A common species in many places amongst moss, grass, rushes, etc., débris, often in wet ground. Adult August and September, some surviving the winter and re-appearing in spring.

- 1st Record: the Author, Scalby Mill, August, 1905.
- V.C. 61.—Hessle Cliffs, South Cave, Sutton Drain, Dunswell Lane, Humber Bank East, Hedon, Leconfield, Houghton Woods, T.S. ; Hessle Wood and Bentley Woods, E.A.P.
- V.C. 62.—Ringingkeld Bog, Oliver's Mount, Scarborough, R.A.T. ; Scalby Mill, sub. *O. ephippiatus*.—*The Naturalist*, November, 1906 ; Boosbeck.
- V.C. 63.—Calverley, S.M. ; Shipley, Harden, W.P.W ; Ainley Place (Slaithwaite), Lepton Great Wood and Hopton Wood near Huddersfield, Adel near Leeds, Deffer Wood (Cawthorn).
- V.C. 64.—Ilkley, R.B. ; Gargrave, Saltaire Park, Shipley Glen, Broughton (Skipton), W.P.W. ; Collingham Ridge, J.G. ; Boston Spa, Bolton Woods, Washburn Valley.
- V.C. 65.—Rawthey Valley, F.B.
- O. EPHIPIATUS C. L. Koch.
- An abundant species in many parts of England and Wales ; in meadows and pastures, at the roots of grass, and in woods amongst low plants, grass and herbage. Isle of Man, 1908. Adult in summer.
- 1st Record: R. H. Meade, Bradford.
- Widespread in Yorkshire and in several localities abundant.
- V.C. 61.—Bielsbeck, Bridlington, Hornsea Mere, Withernsea, Patrington, Humber Bank East, New Joint Dock (Hull), Birkhill Wood (Cottingham), Pulfin Bog, and Houghton Woods near Market Weighton, Barmby-on-the-Marsh, Skipwith Common, Folkton, Flamborough, King's Mill Marsh (Driffield), Welwick, Sutton Drain, T.S. ; Kelsey Hill and Riplingham, E.A.P. ; South Cave, E.A.P., T.S.
- V.C. 62.—Falling Foss, W.P.W. ; North Bay (Scarborough), Cayton Bay, Hayburn Wyke, Boosbeck, Kilton Woods, Saltburn, Marske.
- V.C. 63.—Bradford, R.H.M. ; Hurst Wood (Shipley), Cottingley Wood, Keighley, R.B., W.P.W. ; Deffer Wood (Cawthorn), Coxley Valley, Ainley Place (Slaithwaite), Crimsworth Dene.
- V.C. 64.—Ingleborough, Grassington, Saltaire, Shipley Glen, W.P.W. ; Guisburn, Collingham, F.R. ; Chandler's Whin (York), Bishop Wood (Selby), Spa Gill and Picking Gill (Sawley), Scarcroft Hill near Leeds, Stainforth Force.

(To be continued).

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The Museums Journal, 'the Organ of the Museums Association,' for March, does not contain a detailed report of the interview with the Prime Minister, as the interview was given 'at an hour too late for it to be possible for us to give a detailed report.' A detailed report appeared in *The Naturalist* for March.

YORKSHIRE ZOOLOGISTS.

A MEETING of the Vertebrate Zoology Section of the Yorkshire Naturalists' Union was held in the Leeds Institute on February 19th, 1916; Mr. W. H. Parkin in the chair.

The chairman reported a Hoopoe having been obtained near Thirsk on October 15th, 1915; also a White Fieldfare. The last Hoopoe reported in Yorkshire was by Mr. W. H. St. Quintin, who gave details.

Mr. J. Wilkinson announced the arrangements with the Watchers proposed by the Wild Birds' and Eggs' Protection Acts' Committee for this year.

Mr. H. B. Booth exhibited a fully developed Trout Ova taken from an 8-inch fish in the Wharfe on July 4th, 1910, lent by the Ilkley Angling Club. As Trout are winter-spawning the question as to whether the above was a premature or a retarded case, led to a considerable discussion. Mr. Booth also remarked on the greater percentage of Ptarmigan now to be found in game shops. Formerly very few Ptarmigan were to be found among the hosts of Willow Grouse offered for sale, but since the war began fewer Willow Grouse and more Ptarmigan appeared to be the case, so far as local game shops are concerned.

Mr. St. Quintin suggested some explanation might be found in the continued slaughter of all the Raptors in Norway, and the possible increased shooting of the Ptarmigan as a sporting bird, in contra-distinction to the Willow Grouse which are usually snared. Mr. S. H. Smith remarked on the increased cost of food in Germany and its probable effect on the scarcity of Hazel Grouse. Mr. St. Quintin reported Redwings in greater numbers in East Yorkshire this winter, which does not agree with the observations made in the West Riding.

Mr. W. H. St. Quintin enquired if a plague of Short-tailed Field Voles had been noticed in other parts of the county; in the neighbourhood of Malton, he had had an extensive plantation of Scots Fir and Corsican Pines half ruined by their depredations. Peculiarly enough they had entirely disappeared apparently simultaneously, in a few weeks' time, evidently by death, as no increase had been noticeable in the immediate surroundings, whether this was by disease he could not say, and no extraordinary increase of the native Owls had been noted.

Mr. E. W. Wade stated the Barn Owl had been very numerous in Holderness; quite a large number, shot by the farmers with their usual sagacity, had come into the hands of the local bird-stuffers.

The chairman exhibited material taken from Kingfishers' nesting-holes in Airedale and Wharfedale, with data from

observations made during 1906-7-8. Undoubtedly in Aire-dale the staple food is the Three-spined Stickleback, but in the neighbouring valley where the Minnow predominates, practically no bones of the former were to be found.

Mr. W. Wilson had a pair under observation from a hiding-tent and noticed that not a single Stickleback had been brought to the young. Do the parents feed on these, which, owing to the spines, they refrain from offering to the young?

Mr. Oxley Grabham referred to a reported record Roach taken in Hornsea Mere weighing 2-lbs. 15 $\frac{1}{4}$ -ozs.—the official British record being 2-lbs. 5-ozs. Mr. Proctor had no doubt the fish was a Roach-Rudd hybrid which are not uncommon, and attain higher figures than the Roach.

Dr. Corbett exhibited a stuffed specimen of the Sooty Tern—a southern hemisphere breeder, obtained near Doncaster some years ago by a local gamekeeper.

In the absence of Mr. E. W. Taylor, who is serving with His Majesty's forces, his paper, 'Notes on the Extinct Great Auk,' was read by Mr. Proctor who successfully deciphered the hieroglyphic MS. into an exceedingly interesting report or resumé of all that is known of this once abundant species—the Garefowl or Great Auk.

The prevalent idea that the bird was an arctic species was refuted by the fact that not even a casual occurrence had been reported from the arctic circle, and its most northerly breeding station was the Geishyl Rocks on the Iceland coast, 63/64° N.

All the known breeding stations were enumerated with many particulars of the few last survivors, most of which are well-known specimens in various collections. The recent history of these, together with records of the authentic eggs, were detailed, and the interest of the paper was enhanced by the exhibition of the coloured plate, the property of Mr. Hewett, depicting two of the best specimens of eggs, and two lantern slides of the bird.

Mr. Oxley Grabham gave a delightful lecture on 'Yorkshire Reptiles,' illustrated by numerous slides on the lantern. From personal observation made of the various species of reptiles and batrachians in the wild state and in captivity, a most comprehensive life history of each was related.

Mr. E. W. Wade mentioned the vitality of the Adder and the resuscitation of an apparently long dead specimen hung up by the tail as a trophy. Mr. Wade also drew attention to the presence of frogs in many of the higher tarns in the Lake District.

Mr. S. H. Smith, who has been working assiduously in photographing our Yorkshire Freshwater fishes through the medium of an aquarium, shewed the result in a fine series of slides. The lecturer drew attention to the marked difference

between fish in the natural state and mounted trophies of the angler, both in contour and poise, and explained the position and action of the fins when swimming. The lantern slides also included many typical haunts of the various species, with patient Isaak at work (or play). Both from the view point of natural history and of angling the lecture was equally valuable and interesting.

Mr. Chislett shewed a series of slides devoted to the Dipper, with observations covering the whole period of the nestling state, i.e., twenty-one days.

Professor Garstang delivered a lecturette on 'The Development of Song Birds' and suggested some connection between the scales on the tarsus and the capabilities of the particular bird as a songster. With the aid of diagrams the scaling of various groups or families of birds was shewn, and the evolution of the 'passerine group,' which includes the most musical species. The theory propounded led to a discussion which, however, owing to the late hour, was deferred until a later date.

A hearty vote of thanks to the lecturers and to Mr. Graham for the use of the room was carried unanimously.

A. HAIGH-LUMBY.

— : o : —

We notice that Mr. J. R. Davidson has a paper in the *Transactions of the Liverpool Engineering Society*, on 'Some Dam Failures.'

We have received from Mr. R. W. Goulding a pamphlet on 'Louth Chronology' (20 pages). Various events in the history of Louth are arranged in datal order, beginning at 1086 and ending with the year 1500.

Among the contents of Vol. VIII., part 4, of 'Old Lore Miscellany,' issued by the Viking Society, we notice: 'The Medieval Church in Caithness and Sutherland (1136-1445)'; 'Rare Orkney Birds'; 'The Capture of Shetland, 1667'; and 'A Visit to Shetland in 1832.'

The Memoirs and Proceedings of the Manchester Literary and Philosophical Society, Vol. LIX., part 3, include 'The Place of Science in History,' by Prof. J. MacLeod; and 'John Dalton's Lectures and Lecture Illustrations,' by Prof. W. W. H. Gee, Dr. H. F. Coward and Dr. A. Harden.

At a recent meeting of the Lancashire and Cheshire Entomological Society, Captain A. W. Boyd exhibited a box of Micro-lepidoptera collected at Rostherne, Cheshire. The following species new to that locality were included: *Aciptilia pentadactyla*, *Peronea comariana* var. *potentillana*, *Sciaphila virgaureana*, melanic var., *Choreutes myllerana*, *Lampronia rubiella*, *Swammerdamia combinella*, *Cerostoma costella*, *Cecophora lambdella*, *Chrysoclysta aurifrontella*, and *Gracilaria alchemiella*.

We much regret to record the death of Sir Laurence Gomme, well-known for his long official association with the local government of London, and for his antiquarian and folklorist researches. He was 63 years of age. His two best known works on the City are 'The Governance of London' and 'The Making of London,' and in addition he found time to edit the *Antiquary*, *The Archaeological Journal* and the *Folklore Journal*. Sir Laurence was knighted in 1911. Lady Gomme, to whom he was married at the age of 22, and who survives him, shared his archaeological tastes, and is the authoress of 'Traditional Games of Great Britain.' They had seven sons.

In Memoriam.

JOHN W. JUDD, C.B., F.R.S.

(1840—1916).

WE much regret to record the death of Prof. John Wesley Judd, which took place on March 3rd. Born at Portsmouth; he was, as a young man, master of a school at Horncastle; later he held the post of analytical chemist at Sheffield, where he made the friendship of Sorby. In 1867 he joined the Geological Survey, and later was employed in the Education Department. After considerable field work in Scotland, which resulted in many important papers, Judd visited various volcanic regions, and these excursions resulted in his well known work on 'Volcanoes.' He was Secretary of the Geological Society for eight years, and its President for two years. He received the degree of LL.D. from the Aberdeen University in 1895. He was created C.B., and in 1913 was made an Emeritus Professor of the Royal College of Science. Prof. Judd was remarkable for the extraordinary variety of his memoirs, all of which were exceedingly well done. Referring to East Yorkshire, his paper 'On the Speeton Clay' (*Q.J.G.S.*, 1868 and 1870) is a classic. In 1871 he described some curious growths of oysters from the Yorkshire Cornbrash; in 1888 'The relation between Central and Local Scientific Societies [Yorkshire Geology]'; in 1908, Obituary Notice on Sorby. His 'Geology of Rutlandshire' is one of the gems of the Geological Survey Memoirs. He took a considerable interest in the early Geological maps of Wm. Smith and other workers, and these he described in a series of papers in the *Geological Magazine*. In connection with this subject the writer had a letter from Prof. Judd, dated so recently as Feb. 4th. He twice revised Lyell's 'Elements of Geology,' and also wrote a book on the 'Coming of Evolution' for the Cambridge Press. Prof. Bonney gives an account of Judd's work in *Nature* for March 9th.—T.S.

—: o :—

British Birds for March contains no records of new British birds seen in the flesh in Sussex.

In *The Entomologist's Record* for February, Mr. G. T. Bethune-Baker writes on 'The Synonymy of *Zygaena*, *Adscita* (*Procris*), and *Amata* (*Syntomis*).'

The Entomologist, No. 632, contains 'Some Additions to the list of British Plant Galls,' by H. J. Burkill, which include records for Yorkshire and Derbyshire.

The Lancashire and Cheshire Naturalist for February contains a portrait and memoir on Christopher Johnson, a bygone Lancashire botanist, by A. A. Dallman.

In *The Zoologist* for February Prof. C. J. Patten writes on 'Icterine Warbler on Migration on Tuscar Rock,' with remarks on the status of this species in the British Isles,' with a plate.

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YORKSHIRE GEOLOGY

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JOHN W. TAYLOR, M.Sc.,
RILEY FORTUNE, F.Z.S.

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The publication of much additional matter has caused some delay in the appearance of the book. It is illustrated, and contains a complete history of the scientific publications issued in the various Yorkshire towns. It contains the following:—

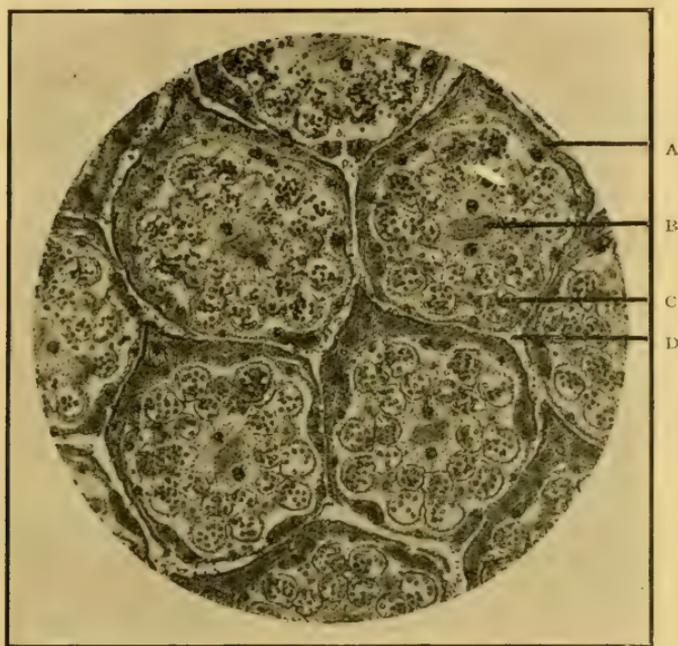
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NOTES AND COMMENTS.

'THE MICROLOGIST.'

The Micrologist, Vol. III., Part 3, for April (Flatters, Milborne & McKechnie, Ltd., Manchester, 1s. 6d.) is to hand. There is an excellent plate as frontispiece showing details of an entire longitudinal median section of a mouse; Mr. Abraham Flatters has a well illustrated article on 'The Sunflower; its



Transverse section through four disc flowers of the Sunflower.
 A.—Tubular petals. B.—Style, with a pair of vascular bundles shown as black dots. C.—The five anthers containing pollen. D.—Interfloral spaces.

development and structure.' and there are hints on manipulation, and 'notes from workers.' We are kindly permitted to reproduce one of the illustrations herewith.

PROFESSOR BONNEY ON 'CERTAIN CHANNELS.'

It will be remembered that in his Presidential Address to the British Association at Sheffield in 1910, Professor T. G. Bonney dealt with 'Ice Work in Western Europe,' which was noticed at some length in *The Naturalist* at the time. In connection with that address we are now informed that he examined a part of Yorkshire in which Professor Kendall had asserted the existence of overflow channels from lakes produced by the obstruction of ice-sheets. In 1912 Prof. Bonney

spent a further ten days in the district, and in 1913 he spent a week in the district around Black Combe, Cumberland, where similar features had been described by Mr. Bernard Smith. A later visit was paid in 1914. The result of these visits was an accumulation of notes which did 'not contain enough new matter for the *Journal of the Geological Society of London*, and is much too long for the *Geological Magazine*.' The notes therefore appeared in pamphlet form.*

TRIBUTE TO PROF. KENDALL.

In view of the warmth of the discussions which at one time occurred between Prof. Bonney and his following of 'Submersers,' and Prof. Kendall and the 'land-ice' men, it is of interest to note the following tribute paid to the value of Prof. Kendall's work. Prof. Bonney states (p. 8):—'Proceeding now to a discussion of those parts of the Cleveland district which I have examined, I wish to remark at the outset that, while I differ entirely from Prof. Kendall in his interpretation of their phenomena, I am none the less sensible of the value of his investigations. His paper, with its admirable map and sections, is a model of careful and indefatigable work, and its value will remain, as a record of facts, whatever be the fate of his hypothesis. Speaking in general terms, I accept his facts, but interpret them very differently; indeed, to use a homely phrase, we not seldom reverse the position of cart and horse.' In short, the rev. gentleman will have none of the dammed lakes, but considers the features exhibited represent an ancient system of drainage.

PROFESSOR BONNEY'S CONCLUSIONS.

Prof. Bonney concludes: 'I regard the West Cumberland channels as relics of an ancient drainage system; perhaps pre-triassic, but the absence of Carboniferous Limestone from this district makes it impossible to make a nearer approximation; those, however, of Cleveland must be Post-Jurassic, if not Post-Cretaceous. The Ringstead Channel must obviously be the latter, and is probably of the same date as the earlier valleys of East Anglia; that is to say, distinctly anterior to the Ice Age. Our choice, in fact, lies between regarding these so-called overflow channels as relics of ancient, sometimes very ancient, valley systems, or, with the geologists whose views I have been combatting, as quite modern features (in a geological sense). I have endeavoured to show that the latter hypothesis involves difficulties of the gravest kind; one being that we should have to attribute so many of the more important features of Britain

* 'On certain Channels attributed to Overflow Streams from Ice-Dammed Lakes,' by T. G. Bonney, Sc.D., LL.D., F.R.S., etc. Cambridge: Bowes and Bowes, 44 pages, 1s. net.

to post-glacial sculpture, while its mountain regions, like those of Scandinavia and the western half of Europe, indicate that little has been changed since the final retreat of the ice, except in districts when the rocks yield easily to other agents of denudation, and even in these the larger features, the broad outlines of the hills and valleys, are pre-glacial. So I am unable to believe that these curious channels have been cut by overflows from ice-dammed lakes, notwithstanding the ingenuity of the hypothesis and the industry of its supporters.'

PROFESSOR KENDALL'S REPLY.

In the *Geological Magazine* for January and February, Professor Kendall replies to Prof. Bonney's pamphlet, but in such a mild manner that one is led to think that each of these champions of their respective schools has substituted a hair brush for his tomahawk, and instead of slashing at his opponent right and left, which process some of us once watched with childish joy, the greatest 'damage' now seems to be for one or other to have his hair, or what is left of it, parted in the wrong place! *Sic transit.* Prof. Kendall states that Prof. Bonney's 'whole paper is so moderate, and the author's appreciation of my work so generous, that I must break through my self-imposed rule of silence,' thirteen years having elapsed since his 'Glacier Dammed Lakes' paper appeared.

PROFESSOR KENDALL'S CONCLUSIONS.

After dealing with the various points raised by Prof. Bonney, Prof. Kendall gives the following summary of the principal objections to Prof. Bonney's explanation of these remarkable channels as relics of a very ancient drainage system, possibly antedating the Cretaceous period:—(1) Their restriction to the glaciated parts of our country; (2) Their railway cutting contours prove them to have been produced by large volumes of water; (3) The evidence of their production at a very recent epoch; (4) The way in which they traverse watersheds and their indifference to the geological structure of the country; (5) The continuity of the direction of their fall through wide tracts of country; (6) The discontinuity of the slope where wide gaps occur in the sequence; (7) The occurrence of aligned sequences along the face of escarpments and along both sides of a river valley; (8) The occurrence of many parallel channels trenching in a single spur; (9) Their occurrence in glacial deposits, though this goes more against the date than the mode of formation; (10) The rarity of any infilling of boulder-clay.'

'THE SUBMERGENCE.'

'On the contrary hypothesis that these channels were produced, by the outflowing waters of temporary lakes upheld by an ice-barrier, all these phenomena find an explanation,

and the lakes themselves could in most cases have been predicted from the positions of the ice-margins that were deducible from other classes of evidence. I do not overlook the fact that there are two fundamentally antagonistic explanations of the "Drift" phenomena—the land-ice theory and the "Great Submergence," but which ever of these interpretations be the right one, neither is compatible with the "river-trespass" hypothesis. On the other hand, I have long thought that the study of these "certain channels" did administer the merciful and much needed *coup de grace* to the "Great Submergence."

CONTROL OF RIVER CHANNELS.

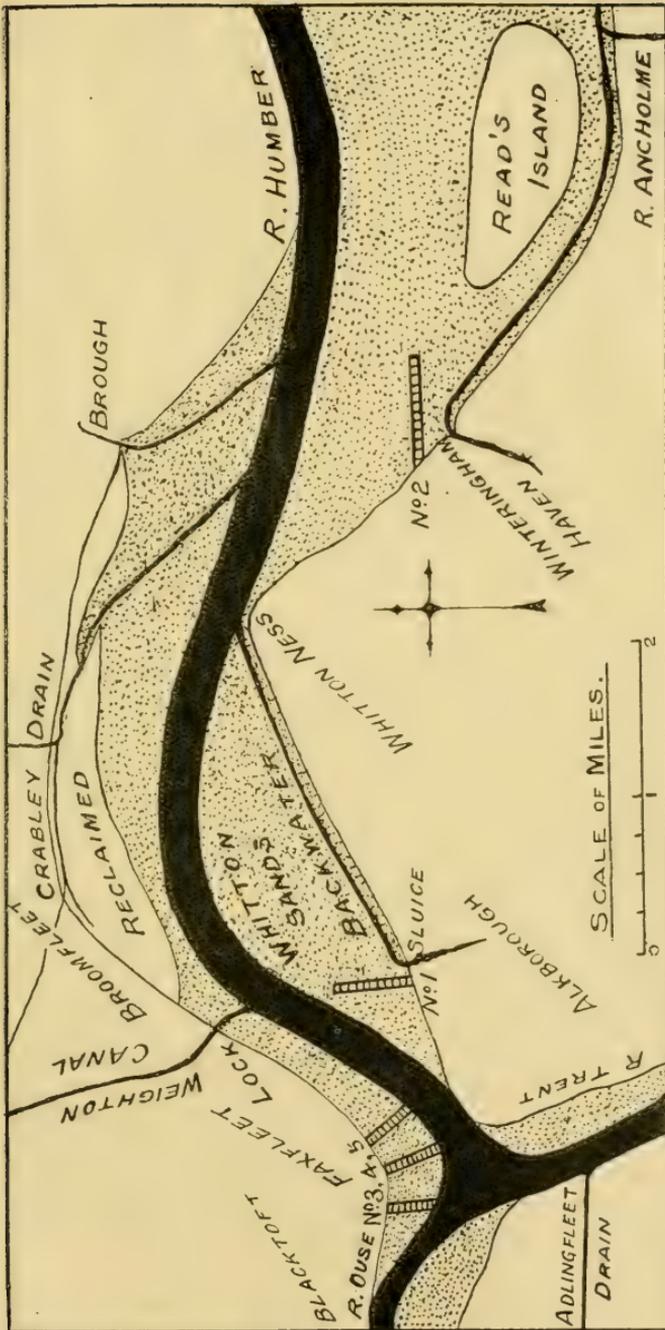
In the Proceedings of the Cotteswold Naturalists' Field Club (Vol. XIX., part 1) recently issued, Mr. T. S. Ellis has a paper on 'The Control of River Channels.' In this he refers to the channels of the Humber and the various suggestions which have been made for confining the present changing navigable channel to a definite course. He illustrates his remarks by a sketch which we are kindly permitted to reproduce. Mr. Ellis states that

THE HUMBER

'is really an estuary common to the Ouse and to the Trent, which unite at Trent Falls. The part shown in the figure is divided into three sections. The first, which is directed north-east, is expanded in the middle and encloses a large shoal, the Whitton Sands. The second is directed south-west in a single channel. The third branches from a line of the second, and is directed to the east; it encloses, with a continuation of the second section, an island, formerly a shoal—Read's Island. Thus is described a roughly shaped figure-of-eight, bent in the middle and enclosing in the two loops the two shoals. Taken as a whole, there is an elongated double curve having tributaries flowing in on the convexities. Each section illustrates the law that when a river's bed is too wide for its requirements at low-water, a shoal will form. This may be on either bank, but if tributaries fall in on both sides in sufficient number or size to keep open a channel, the shoal will be in island form. Of the two alternative channels neither is likely to be quite satisfactory, or to be permanently the better of the two.'

THROUGH CHANNELS.

'Both of the channels mentioned are necessary—each has to take the land drainage on its own side of the river. There is, however, no need that both should be through-channels. The question which of them may be closed at the upper end has been settled already. Although the southern channel gives the more direct route from Trent Falls to Brough, the requirements of the Weighton canal make the upper one necessary,



SUGGESTED LOW-WATER LINE IN RIVER HUMBER.

so it must be kept open. The southern might be closed by a groyne, shown as No. 1, directed from a point a little above the

sluice at Aldborough towards another point opposite the canal lock. This would perpetuate the direction of the stream against the north bank. The stream is not at all likely to have caused much of the damage, but the tide, coming up in a long line from the south side of Read's Island, must impinge on this bank and would be likely to damage it. If, however, the southern channel were closed by a groyne, shown as No. 2, I feel sure that the river would assume some such line as that shown in the figure.' At different times the Humber Conservancy Board has considered various costly schemes in connection with controlling the waters of the Humber. This of Mr. Ellis's seems to be new and is worthy of thought.

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YORKSHIRE'S CONTRIBUTION TO SCIENCE: WITH A BIBLIOGRAPHY OF NATURAL HISTORY PUBLICATIONS. By T. SHEPPARD. 8vo, London, 1916, 223 pp. Price 5s. net.

As President of the Yorkshire Naturalists' Union, Mr. Sheppard struck out a new line in his Annual Address by making an effort 'to indicate the various sources of information likely to be of service to a student in his work on any branch of natural science' dealing with the county of Yorkshire. In carrying out his idea he has brought together a large amount of information previously inaccessible, and has produced an example of Bibliographic work which may well be imitated by others for their own counties. For it is precisely by labour-saving devices of this kind that the greatest services are rendered to students and to science generally.

Speaking of the volume itself one is first struck with the astonishing number of publications issued in the county. Many of them mere ephemerals it is true, but all must have a beginning, and only the lucky ones survive. The history of *The Naturalist* may be taken as typical of the method and care of the compiler, and forms exceedingly interesting and instructive reading. Other local publications are fully dealt with for the first time.

Passing away from local things, Mr. Sheppard has reviewed those publications which have printed matter relative to Yorkshire; and there is a lengthy index, which, running all into one alphabet, enables one to refer with ease to the topographical arrangements adopted for the local portion.

The book is well and clearly printed, and forms an invaluable addition to the literature of Yorkshire.—C.D.S.

—: o :—

We are glad to see that *A History of British Mammals*, by Barrett-Hamilton and Hinton, is still progressing; Pt. XVIII being recently to hand (Gurney and Jackson, pages 551 to 600, 2s. 6d.). It deals exhaustively with the Harvest Mouse and the Black Rat. Among the plates, there is an excellent one, in colours, of British Muridæ.

THE PROTECTION OF WILD LIFE IN YORKSHIRE.

R. FORTUNE, F.Z.S.

(Continued from page 131),

I am afraid that my review so far, has been somewhat of a depressing nature, with the exception of the better news relating to the last five species. As a set off we will now consider a dozen or so species which have increased considerably in numbers or are entirely new as nesting species. Swifts not only arrive in increased flocks, but show a decided tendency to reach this country at an earlier date than formerly. Hawfinches are decidedly more numerous throughout the county. They are extremely shy birds and not often seen by the casual observer. Gardeners profess to dislike them because they eat their peas and destroy the buds of the fruit trees. They certainly do a little damage amongst the peas, but I am perfectly sure they never attack the buds. They are very fond of the kernels of the holly berries and hawthorn. We had to deplore a decrease in our bonny brown Partridge, as a set off we find the Red-legged or French Partridge has extended its range considerably. It is a very handsome bird, but of no great repute by sportsmen. It does not rise so freely or offer such sporting shots as the English birds; instead of taking wing, it runs away in front of the dogs and beaters, and is only with difficulty induced to rise. A keeper last year took me to identify a strange nest in his garden. It proved to be a Red-leg's with sixteen eggs, placed under a rhubarb plant. A Woodcock's nest was once considered a great find in Yorkshire, but they have spread so rapidly during the last few years that they are now found nesting in every part. As a rule two broods are reared. The first eggs being deposited in March, the second in June or July. Redshanks are without doubt more numerous and more widely distributed than formerly. We do not have the really large colonies one finds in some localities, but small parties are now found resting in practically every portion of the county. The remaining species are all water birds, and to their habit of nesting in quiet and generally strictly preserved districts, we may account for their increase.

The Tufted Duck, a sprightly diver, has established himself on most of the sheets of freshwater in the county, and breeds freely. He is often mistaken for the Golden Eye, a winter visitor, which, by the way, is recorded very doubtfully, I venture to say, as having nested in the West Riding. A young one, in down, was preserved as evidence. Owing to the habit of my friend, H. B. Booth, of taking nothing for

granted, it was decided to investigate this record. After some difficulty the duckling was unearthed. Several of us examined it carefully and were convinced that it was nothing but a young Mallard! In order to make assurance doubly sure it was sent to the natural history museum at South Kensington, where our identification was confirmed. The Shoveler duck, too, is much more numerous and would be more so, but for its unfortunate habit of nesting some distance from the water, and very often in perfectly open places which causes many of them to be destroyed by foxes.

The Pochard, too, another handsome duck, has increased rapidly, especially on Hornsea Mere, and in one or two other localities, which for the present shall be nameless; 'somewhere in Yorkshire,' shall we say? The Great-crested Grebe now frequents most of our fresh water lakes in the breeding season. Unfortunately many of their young, and young ducks also are destroyed by Pike. I have noticed a curious feature for some years in connection with a large sheet of water which acts as a reservoir for one of our big towns. A pair of Grebes regularly nest there, and usually have occasion to construct several nests owing to the first ones being left high and dry by the receding water, as the reservoir is lowered by the water being drawn off. Little Grebes suffer the same way.

The Black-headed Gull is now to be found in many parts of the county chiefly in small colonies. A fairly large one is established at Skipwith Common. They have been accused of destroying the eggs and young of other birds on the moors, but this is quite a mistake, as far as our county is concerned. Wandering Lesser Black-back or Herring Gulls are usually the culprits.*

A bird we can offer a genuine welcome to is the Turtle Dove. It has nested in small numbers in the southern parts of Yorkshire for a long time. Its frail nest, consisting of a few, a very few slender twigs, may now be seen in our woods and coppices in annually increasing numbers.

An undesirable introduction into the ranks of our bird

* A good deal of ridiculous information is nowadays imparted by the press of this country with regard to natural history matter, but I think this extract from *The Shooting Times*, a paper which ought to know better, will take some beating. After giving the Black-headed Gull credit for doing a lot of good in devouring solid matter on the Sewage Farms of West Yorkshire, they go on to say: 'We hear of a pair of these birds which made themselves very objectionable by visiting the shrubberies of a Yorkshire admirer of birds and devouring all the young blackbirds and thrushes as they hatched out.' Comment is needless. The same paper recently gravely discussed the questions as to whether a Mistle Thrush could sing or not, the editor evidently being sure it could not. The question as to whether the upper jaw of a Badger could move independently of the skull was also discussed, and it was astonishing to find how many asserted that it did.

fauna is that of the Little Owl, a bird which is now turning up in various parts. They are more interesting than welcome, as unfortunately they hunt equally well by daylight and dusk, and are consequently extremely destructive to small birds, therefore not deserving of encouragement. In quite a different category is the introduction of the Bearded Tit. An extensive experiment has been tried with these birds at Hornsea Mere, at first it promised to be a great success, as the birds nested and reared their young for a season or two, and were increasing nicely in numbers. They have now, I am sorry to say, apparently disappeared. The ground is a typical haunt, exactly similar to what one sees of their habitats on the broads and on the Continent; I am however, afraid the area is not sufficiently large for them, and as a consequence they have wandered away. Another factor which may have made them uneasy in their new home and have helped to drive them away is the immense number of starlings which roost in the reeds during the autumn and winter months, battering and breaking them down and fouling the whole area as only Starlings can.

The Willow Tit has been added to our list. Personally I consider it a very poor species. In order to distinguish it from the Marsh Tit, it is necessary to handle it, and even then the differences are so fine, as to make identification uncertain. If a specimen is desired, it is necessary to shoot a great number of Marsh Tits on the off chance of securing a specimen. This procedure was carried out in order to secure the Yorkshire specimen.

There are certain birds whose numbers always appear to be stationary. They are not at any time too numerous, and despite the fact that most of them are able to nest and rear their young in safety, they do not increase, neither do they decrease. The Grey Wagtail for instance, has as its only enemy the egg collector. I know scores of nesting places, which are occupied with the greatest regularity year after year; most of them, I am glad to say, bring off their young safely, yet it is very seldom indeed one finds a fresh nesting place. Goldcrests too, despite the fact that their ranks are reinforced every autumn by considerable immigrations from the Continent, never seem to increase in numbers. With so frail a bird, its total weight is only about 70 grains, the annual mortality must be very great, effectually preventing any superabundance. Nightingales regularly nest in small numbers, in the south of Yorkshire, yet their numbers never increase. Almost annually individual pairs penetrate into fresh parts of the county, but the experiment seems to be very rarely repeated. It was quite a record to have a pair nesting in three successive years at Harrogate. It is one of the birdland mysteries still to be solved, why this species should rarely

stray from a certain distinct range. There has, however, been a tendency evinced by Nightingales of late years, to advance beyond their usual boundary in a westerly direction.

The Grasshopper Warbler is a most uncertain bird, at no time very abundant. In some seasons it appears to be very thinly and evenly distributed over the county, and then for several years in succession hardly a bird is to be seen or heard. It is a very shy and retiring bird, but its peculiar reeling note, is sufficiently distinctive to prevent their being overlooked. The Nuthatch probably reaches its northern limit in Yorkshire ; it is another bird whose home life is seldom disturbed, but whose ranks never gain any additions. In the Harrogate district I know about half-a-dozen nesting haunts, where they are never or very seldom interfered with, still for some unexplained reason they do not increase. The same remarks apply equally as well to the Tree Creeper, certainly much more numerous than the Nuthatch, and frequenting the same haunts. Probably they do not increase for the same reason I suggest with regard to the Goldcrest.

The Nightjar, one of the latest of our summer visitors to arrive in Britain, is probably if anything scarcer than it used to be, it is certainly not more plentiful. Like all birds nesting on the ground, it is accessible to many enemies, which no doubt causes its numbers to remain at the best, stationary. On some of our highest hills the Dunlin nests. It is a charming and confiding little bird, found on the Humber mud flats in immense flocks during the autumn and winter months. These flocks however, are composed entirely of visitors from the Continent, our own birds probably going further south. One would naturally expect some few out of these great flocks to remain and nest, but such is not the case, the few pairs nesting on the hills never increase. Indeed, I really ought to have included the Dunlin in the ranks of those birds which are disappearing entirely from the county as nesting species. One old breeding haunt, the Tees mouth, has been entirely deserted by them.

(To be continued).

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P. G. Ralfe contributes Manx Ornithological Notes to *British Birds* for April.

The Zoologist for March contains some lengthy 'Observations on the Feeding Habits of the Purple-Tipped Sea Urchin,' by H. N. Milligan, and 'the Yellow-Necked Mouse in Shropshire,' by Frances Pitt.

The Entomologist for March contains : 'Notes on Aphididae found in Ants' Nests' ; 'The Genus *Ennomos*, with an account of some of its Hybrids,' by J. W. H. Harrison ; 'British Orthoptera,' by W. J. Lucas ; '*Ectopsocus briggsi*, *Psocoptera*,' by T. A. Chapman, and 'The Larva Stage of *Ancylics siculana*,' by W. G. Sheldon.

THE HARVESTMEN AND PSEUDOSCORPIONS OF YORKSHIRE.

WM. FALCONER,
Slaithwaite, Huddersfield.

(Continued from page 140).

FAM. : NEMASTOMATIDÆ.

Gen. NEMASTOMA C. Koch.

N. LUGUBRE O. F. Müll.

A very common species, sluggish in its movements and obtainable throughout the year; in various habitats on the ground; easily recognised by its black colour and the two large distinct yellowish spots on the fore part of the body. In the male, an obtuse extension of the first joint of each falx projects over the second joint. Isle of Man, 1908.

1st Record: R. H. Meade, Bradford.

The most widely distributed species in the county and usually plentiful. V.C. 61, 62, 63, 64.

V.C. 65.—Y.N.U. Upper Teesdale.

N. CHRYSOMELAS Herm.

A small pretty species, widely distributed in Britain and on the Continent, amongst dead leaves, moss and débris, in woods and hedgerows and under stones, and much less frequently met with than *N. lugubre*. In the male the first two joints of each falx project at the ends contiguous to each other. Adult in late summer and autumn.

1st Record: R. H. Meade, Bradford.

With a wide range in the county, but infrequent and in small quantity.

V.C. 61.—Hessle Cliffs, T.S. 'Trans. Hull Sci. and Nat. F. Club,' 1908; South Cave beech woods (1915), T.S.; river bank at Selby.

V.C. 62.—Eston, J.W.H., G.B.W.; Egton, W.P.W.; Levisham.

V.C. 63.—Bradford, R.H.M.; Saltaire, Harden Clough (Meltham), W.P.W.; Deffer Wood (Cawthorn); Bot-toms Wood, Ainley Place and Clough House Wood (Slaithwaite), Drop Clough (Marsden), Armitage Bridge (Huddersfield), Hey Wood (Honley).

V.C. 64.—Ingleton, F.B.

THE PSEUDOSCORPIONS.

Early in the 19th century, Dr. W. E. Leach in the 'Zoological Miscellany,' Vol. III., pp. 48-53 (1817), named and described the eight British species which came under his notice. Two of them have since been discovered to be identical with the older *Chernes cimicoides* Fabr., 1793, and their names have sunk into synonyms. In 1892 the Rev. O. Pickard Cambridge issued his 'Monograph on the British Species of Chernetidea or False Scorpions,' in the 'Proceedings of the Dorset N. H. and Antiq. Field Club,' Vol. XIII., pp. 199-231 (three plates), in which twenty species, two of them new to science, were described and figured. Subsequent discoveries necessitated the dropping of five of these from the British list, four being referred to other species already thereon, and one determined to be an introduction and not British at all. On the other hand seven species have been added, a net gain of two, giving a present total of twenty-two species. This great advance in our knowledge of the British pseudoscorpions is due to Mr. H. Wallis Kew, whose close and systematic study of these creatures, extending over a considerable number of years, has resulted in his excellent 'Synopsis of the False Scorpions of Britain and Ireland,' 'Proceedings of the Royal Irish Academy,' Feb., 1911, Vol. XXIX., Section B., No. 2, pp. 38-64.

Very few kinds of false scorpions are so abundant as to obtrude themselves upon one's notice, and most are never seen unless special search is made for them in their obscure hiding places. Although they are more abundant in the south than further north, and are little sought after, fifteen species are now on record for the northern counties. Seven of these already alluded to but not by name, as being mainly southern (two being western) in their range, have occurred to the west of the Pennine Range in Lancashire (inclusive of Furness District). Two of the seven, *Chernes godfreyi* Kew, and *Obisium maritimum* Leach, have been met with also in Argyllshire or Ross-shire, or both; a third, *Chernes cancrooides* Linn. at Glasgow; while a fourth, *Chernes wideri* C. L. Koch, at Sherwood Forest, closely approaches the southern border of the county. Of the eight Yorkshire species, six have been recorded in *The Naturalist* at various times, one in the 'Transactions of the Hull Scientific and Field Naturalists' Club, 1901,' and one, *Chernes dubius* Camb. in the present paper (see p. 192). For the benefit of those who may undertake a much needed investigation, it may be well to indicate briefly here the kinds of habitat which will best repay research, and what means should be taken to secure examples of those pseudoscorpions, which, from their nearness to us,

may possibly be eventually found in our area. Some conceal themselves beneath the bark of old, dead or dying oaks and beeches and old willows, even in some cases if close fitting and difficult to detach. *Chernes cyrneus* L. Koch, *C. wideri* C. L. Koch, *C. chyzeri* Tom., *C. cimicoides* Fabr. Some cling to the legs of flies—*Chernes godfreyi* Kew., *C. chyzeri* Tom.; such may generally be obtained without labour or special search by exposing flypapers (the old-fashioned sheets are most convenient), in suitable places, shops, stables and even houses near by. One, *C. cancroides* Linn., frequents old buildings, corn mills, bakeries, stables, lofts; in Lancashire taken from the débris of an old haystack. Others find shelter in manure and refuse heaps—*C. godfreyi* Kew and *C. subruber* Sim.; from the former they may be obtained by confining flies, from which a wing has been removed to prevent flight, under a bell glass placed on the heap. If present, they will in time attach themselves to the legs of the flies. At least this method has proved successful abroad. *C. cyrneus* L. Koch and *C. wideri* C. L. Koch have been met with in Sherwood Forest; the latter also and the remainder in Lancashire.

LIST.

CLASS: ARACHNIDA.

ORDER: CHERNETIDEA.

SUB-ORDER: HEMICTENODACTYLI Batz.

Group I. Eyes 4.

FAM.: CHTHONIIDÆ.

Gen. CHTHONIUS C. Koch.

C. RAYI L. Koch.

Common and abundant in the British Isles and on the Continent. In a variety of situations; under stones, amongst fallen leaves and débris in woods, in the open, in farm buildings, under pieces of wood, etc., in cellars of houses, chalk pits, old quarries, etc.

1st Record: H. Wilson, Aysgarth, April, 1903 (H. W. Kew), *The Naturalist*, August, 1903.

V.C. 61.—Tansterne near Aldborough, under sticks, T.P. (*The Naturalist*, 1903, p. 460); Leconfield, H.M.F.; Bridlington, H.C.D.; Sand-le-Mere, South Cave, Skidby Chalk-pits, Spurn, Humber Bank East and West of Hull, Saltend Common, Hessle Cliffs, Whitecross (Leven), Cottingham, Hedon, Welwick, T.S.; Hesslewood, E.A.P.

V.C. 64.—Boston Spa, amongst leaves on river bank ;
Thorp Arch, in a ditch.

V.C. 65.—Aysgarth, under stones, H.W.

C. TETRACHELATUS Preyss.

Widely distributed in the British Isles and most abundant near the sea, less frequent further inland, occurring amongst leaves and moss in woods and beneath stones, often in greenhouses and old gardens. The Irish records of *C. orthodactylis* Leach, are referable to this species. (*Irish Naturalist*, December 1909, pp. 249-50).

1st Record: the Author, Slaithwaite, June, 1908.

V.C. 61.—Humber Bank, near Marfleet and at Saltend, T.S. *The Naturalist*, August and October, 1908. Spurn at base of sea buckthorn.

V.C. 63.—Saltaire, behind ivy on a house wall, two examples, W.P.W. ; Mr. Weaving's greenhouse, Bottoms Wood, Slaithwaite, on the under surface of the boards, many examples. *The Naturalist*, July, 1908, p. 288.

FAM. : OBISIIDAE.

Gen. OBISIUM Leach.

O. MUSCORUM Leach.

The commonest of the Yorkshire pseudoscorpions ; abundant also in most parts of the British Isles and the Continent ; amongst fallen leaves, moss, grass roots, and beneath stones, in woods and in the open, ranging from our highest hills to the coast.

1st Record: the Author, Slaithwaite, July, 1899.

V.C. 61.—Beech wood at South Cave, Houghton Woods near Market Weighton, Swine, Welwick, Riplingham, Beverley Long Lane, Hornsea Mere, T.S. ; Skipwith Common ; Rillington and Scampston.

V.C. 62.—Numerous stations in the Cleveland, Scarborough and Whitby districts, G.B.W., J.W.H., R.A.T., W.P.W., W.F.

V.C. 63 and 64.—In the basins of the Colne, Calder, Aire and Wharfe, *O. muscorum* has been taken wherever search has been made, and stations are too numerous to mention individually. S.M., W.P.W., R.B., W.F. Basin of (1) *Trent*—Maltby, Y.N.U. ; (2) *Don* and *Dearne*—Cawthorn and Deffer Wood ; (3) *Mersey*—Saddleworth and Greenfield ; (4) *Lune*—Ingleborough and district ; (5) *Nidd*—Knaresborough and Pateley Bridge, W.P.W., W.F. ; (6) *Ure*—Sawley, S.M., W.F. : Mickley, Hackfall.

V.C. 65.—Upper Teesdale, Y.N.U. ; Aysgarth, H.W.

(To be continued).

THE LICHEN FLORA OF HARDEN BECK VALLEY.

THOMAS HEBDEN.

(Continued from page 134).

Lecanora irrubata Nyl.—On cement pointing, Ives Bridge. Scarce.

Lecanora galactina Ach.—Stone walls and mortar, Cullingworth. Scarce.

Lecanora dissipata Nyl.—Stone walls, cement, lime pointing, very common throughout the district.

Lecanora urbana Nyl.—Always associated with *Placodium decipiens* Arn., Wicken Cragg. Scarce.

Lecanora crenulata Nyl.—Common on mortar of walls, and Calliard sandstone.

Lecanora Hageni Ach.—On decorticated Oak. Only one specimen seen, roadside Harden to Bingley.

Lecanora varia Ach.—On Ling stems, young branches of trees, stone walls. Common.

Lecanora polytropha Sch.—On stone walls, rough sandstone outcrops. Common.

Lecanora badia Ach.—On walls of rough sandstone, Harden, Black Moor. Only two specimens seen.

Acarospora fuscata Nyl.—On rough sandstone at base of walls, Cullingworth, Harden, Flappet. Common.

Acarospora rufescens Nyl.—On rough sandstone, on micaceous laminated sandstone, roadside Ryecroft, Harden. Not common.

Acarospora smaragdula Nyl.—On micaceous, laminated sandstone. Frequent throughout district at highest elevations.

Acarospora Lesdain N.S.—On vertical faces of stone walls, laminated sandstone, roadside, Ryecroft to Guide Stoop on Harden Moor. Plentiful. This species easily mistaken for *A. smaragdula* Nyl., but different re-action and size of spores. Sent to M. Boulay de Lesdain, of Dunkirk for verification, who sent it to Abbe Harmand, Docelles, Vosges, and named by him in honour of M. Boulay de Lesdain. No published description yet, owing to war.

Acarospora pruinosa form *nuda* Nyl.—Buried in mortar of wall tops, Harden, Cullingworth, generally distributed. Common.

Gyrophora polyphylla T. & B. form *congregata*.—On rough sandstone blocks, always on inclined plane, Harden Cliff, Harden Moor, Catstone Moor. Not common.

Gyrophora polyrrhiza Kœrb.—On rough sandstone rock,

on inclined plane. Only on one particular rock, plentiful until 1913 in company with *P. mougeotii* and *G. polyphylla*. Since entirely destroyed by 'children' using the rock face as a slide. No other habitat known.

Bacomyces rufus D.C.—On rough sandstone blocks in river, Goit Stock Woods. Plentiful and in fine condition.

Bacomyces rufus var. *subsquamulosus* Nyl.—On rough sandstone wall tops under Hawthorn, Eller Carr, Cullingworth. Not common.

Stereocaulon evolutum Graewe.—Very small and in a depauperate condition, rough sandstone blocks and quarry tips. Only seen from two places, widely apart and very scanty, Mr. Ferrand's private grounds, near Monument, quarry tips Cat Stones Moor.

Cladonia pyxidata Fr.—Common on peaty ground, on all the hill tops.

Cladonia pyxidata var. *lophyra* Coem.—In fine condition and well fruited, Harden Moor under Ling. Common.

Cladonia pyxidata var. *chlorophaca* Flk.—Among moss base of walls, roadside Harden. Not common.

Cladonia fimbriata Fr. var. *simplex*.—On peaty soil. Common on all the moors among ling.

Cladonia fimbriata var. *prolifera* Ach.—On peaty soil, occasionally found, but not common.

Cladonia sobolifera Nyl.—In niches of rough sandstone blocks, substratum peat, Harden Moor, Cat Stones Moor. Not common.

Cladonia degenerans form *pleiolepilea* Nyl.—On bare peat, in damp places, on all the highest moors in the district. Very common.

Cladonia coccifera var. *stematina* Ach.—On bare peat. Not common.

Cladonia coccifera var. *phyllocoma* Flk. (synom. *C. cornucopoides* Frfil.)—On peat, under Ling, sides of moorland paths, on all the highest moors. Very common.

Cladonia coccifera var. *extensa* Ach.—On peat; mostly under Ling, on the highest moors. Not common.

Cladonia incrassata Frfil.—On wet spongy peat, among stones, Harden Moor. Only two specimens seen. Scarce.

Cladonia bellidiflora var. *ventricosa* Ach. (Wainio, Vol. I., p. 205).—On peaty soil, base of stone wall, northern aspect, well fruited, Harden Moor. Only one specimen seen.

Cladonia digitata Hoff.—Among moss, in fine condition, Goit Stock Woods. Common.

Cladonia digitata var. *brachytes* Nyl.—On peat under Ling, in fine condition, Harden Moor. Not common.

Cladonia macilenta Hoff.—On rotten stumps, Goit Stock Woods. Not common.

Cladonia macilenta var. *ostreata* Nyl.—Vertical face of sandstone blocks, shady places under trees, Goit Stock Woods. Scarce.

Cladonia flabelliformis var. *coronata* Nyl.—Among moss in woods, Goit Stock. Common.

Cladonia bacillaris Nyl.—Peaty ground, under Ling, Harden Moor. Common.

Cladonia floerkeana var. *trachypoda* Nyl.—Peaty ground, among stones, Harden Moor, Cat Stones Moor. Very common.

Cladina sylvatica var. *scabrosa* Leight.—Among Sphagnum in wet places, and under Ling, Goit Stock Woods. Not common.

Racodium rupestre Pers.—Vertical face, sandstone blocks, very fine and in good condition, Goit Stock Woods, Harden Cliff. Plentiful.

Lecidea coarctata var. *elacista* Cromb.—On soft sandstone, garden edgings, gate posts, etc., throughout the district. Common.

Lecidea granulosa var. *escharoides* Sch.—On peaty soil, among Ling, on all the moors, not well fruited usually. Common.

Lecidea uliginosa Ach.—Peaty soil, on all the moors. Very common.

Lecidea sanguineoatra Ach.—On mossy rocks, sandstone, Black Moor. Scarce.

Lecidea contigua Fr.—On all kinds of sandstone, and in many varieties throughout the district. Common.

Lecidea sorediza Nyl. On rough rock, Harden Moor. Only few specimens seen.

Lecidea lithophila Ach.—On rough sandstone, Ives Bridge, Black Moor. Not common.

Mycoblastus sanguinaria Ach. (sterile).—Sandstone walls, rough sandstone blocks, Goit Stock Woods, in fine condition. Very plentiful.

Bilimbia sabulosa Mass.—Niches of wall tops, among dead moss, Bell Horse Lane, Harden, Cullingworth. Not common.

Bilimbia sabuletorum B. & R.—On dead moss, wall tops, throughout the district. Common.

Bilimbia sabuletorum var. *septenaria* A.L.S.—On dead moss, wall tops, Hunter's Hill, near Harden, distinguished by brighter coloured apothecia and seven septate spores. Scarce.

Bilimbia lignaria Mass. On living moss on walls, roadside Harden to Keighley. Not common.

Rhizocarpon geographicum var. *atrovirens* Koerb.—On rough rock among bracken, Harden Moor. Not common.

Rhizocarpon viridiatrum Koerb.—On micaceous fissile sandstones on wall tops, Benty Lee, Harden Moor. Not common.

Rhizocarpon confervoides D.C.—On sandstone wall tops, Benty Lee. Scarce.

Rhizocarpon obscuratum Mass.—Sandstone wall tops, Harden Moor. Not common.

Verrucaria hydrela Ach.—On submerged stones in stream, Cullingworth, very similar to *V. aquatilis* but larger spores. Plentiful.

Verrucaria macrostoma var. *aphanostoma* S. & H.—On mortar, wall tops, sandstone, Cullingworth, Manywells Road. Not common.

Verrucaria muralis Ach.—On mortar, wall tops, sandstone, in all the district. Common.

Polyblastia intercedens Söm.—On mortar, wall tops, sandstone, Manywells Road near quarries. Common.

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Pond Problems. By **E. E. Unwin.** Cambridge University Press, 120 pages, 2s. This is one of the Cambridge Nature Study Series edited by Mr. Hugh Richardson, and contains a number of interesting chapters, prepared for the use of scholars, and the volume is well illustrated. Among the subjects dealt with are: 'How to obtain specimens'; 'What is an Insect'; 'Breathing Water Beetles and Water Boatmen'; 'Diving Tubes and a Diving Bell'; 'Locomotion'; 'Life Stories'; 'From Egg to Imago.'

Essays Towards a Theory of Knowledge. By **A. Philip.** London: G. Routledge, 126 pages. The author asks: 'When we find Science, which has done so much and promised so much for the happiness of mankind, devoting so large a proportion of its resources to the destruction of human life, we are prone to ask despairingly: "Is this the end?" If not, how are we going to discover and assure for stricken humanity the vision and the possession of the Better Land?' and he deals with the subject in four chapters, the headings of which are: 'Time and Periodicity'; 'The Origin of Physical Concepts'; 'The Two Typical Theories of Knowledge'; 'The Doctrine of Energy.'

The Determination of Sex. By **L. Doncaster.** Cambridge University Press, 172 pages, 7s. 6d. net. In this work Dr. Lancaster brings together some information which he intended to include in a second edition of his *Heredity in the Light of Recent Research*. As time went on, however, advances in knowledge altered his plan. The present book discusses the more important lines of evidence which bear on the problem of sex-determination, and he illustrates each with representative examples. Full reference to literature enables the reader desiring further information on any given point to readily obtain it. The work deals entirely with the question so far as it relates to animal life. The frontispiece is an excellent coloured plate of a Gynandromorph Bullfinch, and among the other 22 plates we notice the following: 'Life Cycle of the Gall Fly'; '*Abraxas grossulariata* (Currant Moth) and its variety *lacticolor*'; 'Sex-limited Transmission of barred pattern in Fowls'; 'Pedigrees of Sex-limited Affections in Man (Colour-blindness and Haemophilia)'; 'Spermatogenesis of *Ascaris*'; 'Spermatogenesis of the Hornet'; 'The Parasite *Sacculina* and its Effects on its Host'; 'Gynandromorphic Moths produced by crossing two species of the genus *Lymantria*'; and Chromosome Cycle in the worm *Rhabdonema*.' These titles alone give an idea of the far-reaching character of the book.

THE GEOGRAPHICAL DISTRIBUTION OF THE MOTHS OF THE SUBFAMILY BISTONINAE.

J. W. HESLÖP HARRISON, B.Sc.

I.—INTRODUCTORY.

This family, in the main, is one characteristic of the Holarctic region although, here and there, overflows occur into neighbouring areas; independent of these overflows, we have possibly one or two outlying species in more or less detached localities.

In the present paper, it is proposed to deal more particularly with the centralised forms, but, at the same time, to account for the distribution of the outliers as far as possible.

The family can readily be sub-divided into two sections, one of which may be regarded as the true family stock in spite of the fact that the genus which gives its name to the sub-family belongs, unfortunately, to the other section. The latter non-typical portion passes insensibly into the *Boarmiinae* with which sub-family all of its species are distinctly related; it may therefore be known as the Boarmioid group, as distinct from the other or Non-Boarmioid group, which shows no such clear relationship.

Characterised as the sub-family is by the presence of species with apterous females and of species with fully winged females, one might reasonably expect that this highly important character would be the basis of the division proposed; such, however, is not the case, the divisions containing unequal but large percentages of forms with apterous or subapterous females. The characters on which the sub-division is based are of greater or less value, but those which are of most importance, are those displayed by the male, and, to a less extent, by the female genitalia.

This separation into two groups, although rather of phylogenetic importance, still has its zoogeographical value, for we find that, whilst the two parts overlap in most of the areas of their distribution, in spite of that fact, each is characteristic of, i.e. reaches its greatest development in, certain definite geographical areas.

The Non-Boarmioid fraternity, save for two outliers in the Nearctic regions and one or two on the Pacific coast of Siberia and in Japan, is centred in Europe and the Boarmioid portion, whilst obviously of Asiatic origin, is found, in addition, although in sparse numbers, in Europe, N. America and Africa.

The genera of the first section will be treated first.

II.—THE GENUS LYCIA. HUB.

Lycia hirtaria. (Cl.) Distribution :—North and Central Europe (excluding the Polar Regions), Central Italy, Balkan Peninsula, Turkestan, Asia Minor, Algiers, Tunis.

Lycia ursaria (Walk.) Distribution :—In North America in the Northern portions of the Appalachian region, around the Great Lakes westward through Manitoba to Alberta, Labrador.

As is clearly indicated above, the present pair of closely allied, although perfectly distinct forms are widely separated geographically, one species occurring in the Western portions of the Palearctic area and the other in the Eastern parts of the Nearctic region. Undoubtedly, we are here concerned with a pair of what are generally termed representative species, i.e. species restricted to different geographical areas and which have diverged and become species by reason of their long geographical isolation—a statement which implies that at some period, these species were connected or occupied a continuous area of distribution. This, as can be seen from the range of the two species as given above, is not the usual Holarctic range of species which have, for the most part, originated in Asia and have spread westward into Europe and eastward into America, for the group, other than as obvious overflows, does not exist in Asia. The connection then must have been between Europe and North America, either across the North Atlantic or *via* some long submerged Arctic continent far to the north. Judging from the northern character of the present group, in no point more strongly emphasised than in the proneness of the pupæ to lie over for several years, in all probability, the connection they used was in high Arctic latitudes, a probability which of course does not exclude a possible land bridge by way of Iceland, Greenland and Labrador.

Granting that the former bridge was that used, then we have a further proof if that were necessary, that the average annual temperature of the North Polar regions during Miocene and far into Pliocene times, was much higher than that which obtains at the present time. In all probability, Nova Zembla, Franz Josef Land and Spitzbergen are the sole existing relics of this connection for their former continuity can be shown most beautifully from a consideration of their surviving Bryophytes.

A land bridge having been shown a logical necessity to bring the present forms into contact, we are now face to face with the problem of the centre of dispersal of the genus. Three possibilities are open, (1) that the genus originated in America; (2) that it is of Arctic or Boreal origin; (3) that it came into being in Europe. The first supposition can readily be dismissed when one considers that the whole Non-Boarmioid group of *Bistonina* has only two American representatives, one of which, *Pocillopsis*

rachelae (Hulst), is a specialised form, derived from *Lycia*, but not closely related thereto, and having three distinct congeners, *Pocillopsis pomonaria* (Hb.) *P. lapponaria* (B.) and *P. isabellae* (Harr.) in Europe. Two choices are then left as the home of the genus. If the present geographical distribution is to be the standpoint from which to decide then, from the occurrence of *Lycia hirtaria* in Algiers and in the Abruzzi, and from the great development of the whole section in Europe, with the presence of the third species *Amorphogynia necessaria* (Z.) in Asia Minor, we seem irresistibly forced to the conclusion that the group is European. If the great number of distinct species occurring in, or near, a given area can be used, as seems logical, to determine the point of origin of the group, then the genus *Lycia* and its satellites originated in Pliocene or earlier times in the Northern and more mountainous portions of the Balkan Peninsula. This conclusion, however, takes no account of climatic oscillations in the past and it seems clear that all that has been proved, is that the Balkan area has once been a centre of dispersal of the various genera comprised in the group. From phylogenetical grounds, and from the Boreal (as distinct from Arctic) nature of the group, in addition to a consideration of the paucity of its representatives in America, their true home was in all probability in the old Arctic continent at some point much nearer Europe than America, or in areas from which the various species, except for outliers in the Arctic Archipelago, could more readily retreat, when the southward march began, to Europe. From this centre of origin, the single species, which then represented *L. ursaria* and *L. hirtaria*, worked its way westward and south eastward, but, as it marched, climatic conditions were deteriorating in its northern home and the species was forced slowly southward, part pressing south to our continent and the remainder passing to America. Coincident with, or just subsequent to it, in late Pliocene times, extensive subsidences occurred both in the North Atlantic and in the more easterly portions of "Arctica" and finally, the American branch of *Lycia palæohirtaria* (if one may coin a name for the theoretical original species) was effectually severed from that invading the European area.

Conditions, however, did not ameliorate; in both continents, matters moved inexorably to their climax in the Glacial Period and further geographical divergence of the two contingents occurred until, in America, the species which had never penetrated far to the west of Greenland and Labrador, was wedged between the Appalachian Mountain system and the coast, any possible movement north of the Great Lakes and thence southward, being squashed by the early development of the Keewatin Ice Sheet. In this home of refuge, this division slowly developed in Pleistocene times into *Lycia ursaria*. Similarly, the European migratory stream would pass southward but, undeterred by the

general trend of the mountain ranges, would spread fanwise, until all suitable localities in north and central Europe were occupied. But the ice gave it no respite; soon the huge ice sheets of northern and western Europe buried the land and, except in favoured areas,* all life was banished and forced southward and eastward, following the great river valleys and the general direction of the Central European mountains and our species reached (if even in more favourable times, there had not been outposts along the foothills of the Carpathians) the Balkan area, where it took refuge and finally completed its development. That the Balkans formed the centre of dispersal of the species, we now know as *L. hirtaria* is absolutely certain, because every line of migration, whence it occupied its present station, radiates from that point as a centre, as even a casual glance at the map will show.

But why was the Balkan Peninsula the last refuge of the species, might be asked? And why did the species not pass eastward into Siberia? That it did reach Asia Minor is clear from its present stations in Pontus and Bithynia, from which we glean that, when the species reached its maximum south easterly extension, such difficult passages as the Dardanelles and Bosphorus were non-existent. If it could make progress in the difficult country of Asia Minor, why did it not pass into Siberia, to the north of the Caspian Sea and occupy the whole of the land, in an all conquering mass, instead of the narrow wedge which strikes now across the Uralsk to Lake Issi Kul? Simply because the Turkestan colony is recent and, when the species was retreating before the oncoming ice, it met a barrier which effectually forbade its passage into Asia through the gap between the Ural Mountains and the Caspian Sea, and that barrier was a long arm from the Arctic Ocean, which, flanking the Ural Mountains, connected the Arctic Ocean with the united Caspian and Aral Seas. This arm of the sea explains the occurrence of so many Arctic species or species 'representative' of Arctic species in the Caspian Sea.

(To be continued).

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The New Phytologist, published on March 25th., contains the following papers:—On the structure and origin of 'Cladophora' Balls, by Elizabeth Acton; Carbon Assimilation, by Ingvar Jörgenson and Walter Stiles; Notes on the Corolla in the Composite, by James Small; Marine Fungi Imperfecti, by Ceo. K. Sutherland.

* It must not be assumed that I believe in the wholesale stamping out of animals and plants demanded by 'whole hogger' glacialists. Our Lusitanian and American elements (and still more the 'Atlantean' elements present in the mosses and liverworts) must have survived. Besides, where, at the present day, do we find any area devoid of animals and plants?

NOTES ON THE NESTING OF THE GRASSHOPPER WARBLER IN THE WEST RIDING.

H. B. BOOTH, M.B.O.U., F.Z.S.

IN the first place it is necessary to state that I can only speak with any degree of authority for the north of a line drawn east and west through Wakefield. The Grasshopper Warbler is the rarest, and most erratic, of the summer warblers visiting this area of the West Riding, and its life history during the period it is with us is less known and described than in the



Photo by]

[J. H. Priestley.

Grasshopper Warbler's Nest, July 30th, 1915.
Young nine days old.

case of that of any regular summer immigratory bird. I only know of one spot in this large area (*viz.* Austwick Moss) where one could expect to find the species with any degree of certainty during that period of the year that it spends with us. At other places it turns up rarely and unexpectedly, and the chosen spot of one season is no guidance that it will ever come there again. In stray years—as in 1911—a few more birds of these species arrive in the district, but hitherto we have not been able to learn very much of its habits and life history, during its sojourn with us.

1916 May 1.

Several botanical members of the Bradford Natural History and Microscopical Society reported that they had heard strange bird notes near to the top of Bingley Park, on May 8th, 1915, which I immediately recognised as those of the Grasshopper Warbler. I communicated with Mr. Sam Longbottom, of Bingley,—whom I knew to be *par excellence* as a bird-watcher, and more particularly so for a man who has his daily bread to earn. In the meantime Mr. Longbottom had discovered the bird, and had commenced his watching, and I must acknowledge that I learned more of the life history of this species from his notes than I had gathered from all reading and from personal observations together. For instance, I particularly asked Mr. Longbottom to note the times of 'reeling,' together with any other notes uttered during incubation, and during the feeding of the young. It will be seen that the male 'reeled' vigorously on arrival, and until he procured a mate; when it ceased. It occurred again after the first brood had safely left the nest, and until a second nest was arranged, and finally in a weaker form, after the second brood had safely got away. Now compare this with the behaviour of a bird at Ben Rhydding in 1911, that 'reeled' continuously for two months. I spent the latter half of May, 1911, in Holland; so I cannot say when the bird first arrived; but on my return home I immediately detected the note of a Grasshopper Warbler several hundred yards away on the edge of the moor. Its 'reeling' each evening was continuous until I retired to bed, and a friend who lived nearer to its haunts than I did, was greatly concerned as his dog would keep barking throughout the night because of 'some strange and unknown noise.' At the time I believed that the bird had nested, and searched all around for its nest, or a sign of its young; but without any success. Now I am convinced that its continual 'reeling' until the middle of July was the call for a mate that never came. In the same year another bird was behaving in exactly the same way near to Cononley, in Airedale. From Mr. Longbottom's observations I feel certain that neither the Ben Rhydding nor the Cononley bird nested at all—unless on the very unlikely chance of obtaining stray hens at the end of their long spell of calling. On this line of argument there may very easily be slightly more nesting pairs in any district than ornithologists believe to be the case; for from the evidence adduced we learn that a Grasshopper Warbler having obtained a wife and commenced nesting, practically ceases to 'reel' and thus becomes almost unobservable excepting at close range; whilst the bachelor Grasshopper Warbler still 'reels' incessantly and becomes noticeable, notorious and *is recorded*. But the chief value of Mr. Longbottom's observations is the proof that this species is double-brooded, and with concise

dates of each nest. In any literature on birds that I have read I never remember seeing anything definite on this subject. There are numerous vague and bare statements that this species is — or 'is sometimes,' etc., double-brooded; or that nests found late in the season were probably a second brood; but no such clear evidence has, as yet been produced equal in value to the observations of Mr. Longbottom. The two nests were within forty yards of each other, and with an Elder-bush from which the male most usually 'reeled' in an indirect line between them. In confirmation of the above facts I may say that I visited the first nest containing six eggs on June 3rd, and the second nest with six young about three days old on July 24th. It was curious to note on the latter date that the female continually brooded the young, and if flushed, immediately returned and without any 'feed.' This kept the male very busy



Photo by]

[H. B. Booth.

General view of the site of the Grasshopper Warbler's
Nests after the second brood had left.

feeding the family, and on one occasion he returned with a fairly large moth that looked quite out of proportion for such tiny babes. It may have been broken up or may have been food for the female. On Aug. 28th, some time after the second brood had left the nest, together with Mr. Longbottom, I thoroughly, but unsuccessfully, searched around in the hope of seeing young or old Grasshopper Warblers, and with the remote possibility of discovering a third nest. The dense undergrowth was then up to—and even over—our heads. Anyone familiar with the mouse-like movements of this species in dense undergrowth can well afford to smile at two humans endeavouring to hunt Grasshopper Warblers in such a situation—more especially with a lumpy and holey bottom; but we

did our best, although I must admit it was something akin to elephants chasing fieldmice in a jungle! As a result of the successful nesting of this pair of birds there was a possibility of up to fourteen birds leaving for their winter quarters. It will be interesting to note if any will return to such a secure nesting spot; or will they behave in their usual manner, and 'give it a miss?' Time will soon show. I must pay a compliment to the local ornithologists. The first nest was visited by almost every lover of birds in the Bradford district, and was never disturbed in any way; although the ground just around was nearly worn bare. When the second nest was found I asked Mr. Longbottom to keep the matter quiet, as now we could learn something of value.

In publishing these notes it was at first thought better to keep the place of nesting secret; but later we decided to give full particulars; as that part of the park is semi-private. In case any of the birds should return this season arrangements have already been made by the Wild Birds' and Eggs' Protection Acts Committee of the Yorkshire Naturalists' Union to see that they are not disturbed, and anyone caught interfering with either the birds or their eggs, will not receive either sympathy or leniency. I have to thank Mr. J. H. Priestly for the use of a photograph of the actual nest. For the remainder I will leave Mr. Longbottom's notes (extracted from his note-book under three headings) to speak for themselves:

(To be continued).

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The *Transactions and Proceedings of the Perthshire Society of Natural Science*, Vol. VI., part 2, contains among other items a well illustrated paper on 'The Evolution of Plant Life on a Haughland,' by H. Coates. There is also an excellent portrait of the late A. M. Rodger, who was Curator of the Perth Museum from 1895 to 1914.

The *Annual Report and Transactions of the Manchester Microscopical Society* for 1914 have just been issued. Among the contents we notice the President's address by Prof. F. E. Weiss on 'Aquatic Plants.' Other items are: 'A Note on Simulium,' by Henry Garnett; 'Odd Thoughts from a Naturalist's Note Book,' by F. G. George; '*Peripatoides orientalis*,' by Harry Yates; 'Spiders,' by H. G. Willis; and some notes on 'Micro-Organisms found in Manchester Corporation Drinking Water,' by E. Batty. A number of valuable plates accompany the report, which is sold at 1s. 6d. (84 pages).

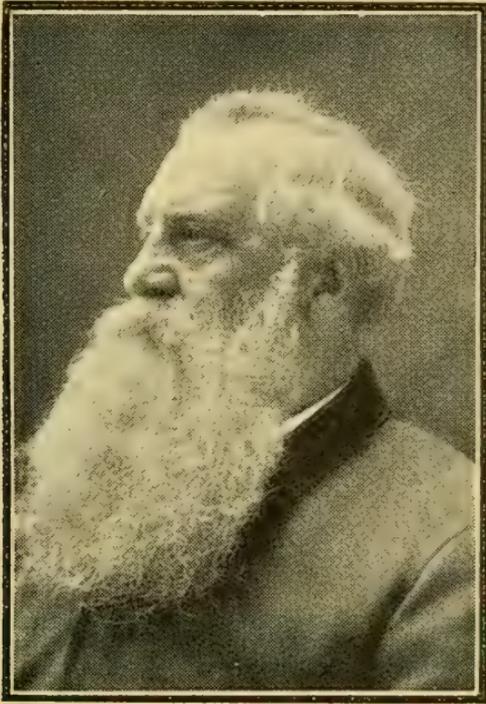
Volume XVI., part 1 of the *Transactions of the Hertfordshire Natural History Society and Field Club* is entirely devoted to an elaborate and well illustrated paper on 'Roads and Travel before Railways in Hertfordshire,' by Sir Herbert G. Fordham. Part 2 contains papers on 'Cultivation and Manufacture of Wood, and Manufacture of Gun Flints,' by Charles Oldham; '*Rhyssa persuaoria*, the Ichneumon of the Giant Saw-fly,' by A. E. Gibbs; 'Skulls of the Wild Boar from the Roman Level at St. Albans,' by G. E. Bullen; and papers on Birds, Plants, Butterflies, Geology and Meteorology of the county.

In Memoriam.

THOMAS STEPHENSON.

Born 1833, Feb. 12th; died 1916, Feb. 19th.

It was a distinct advantage to students of National History in Yorkshire, that there should have been resident for so many years on the coast, in a place like Whitby, a man of the calibre and attainments of Mr. Thomas Stephenson, in a position—



locally as regards his residence in close proximity to the port and the fish markets and to the local museum—and mentally as regards his qualifications as a naturalist and a gentleman. For to this fortunate combination of circumstances, are we indebted for the rescue from oblivion of innumerable instances of the occurrence of local fishes and birds, and their preservation in many instances in the Museum.

Mr. Stephenson was a good ornithologist, and has been the means of placing on record many birds, some indeed as first records for Yorkshire.

But it was more particularly as a keen student of the numerous fishes brought into the port by the fishermen, to whose

willing and eager co-operation he was much indebted, that Mr. Stephenson did the greatest service to science. It was scarcely possible for anything remarkable to reach Whitby without attracting his keen attention, and the fact that he kept detailed and careful memoranda of all that he saw, added immeasurably to the value of his work.

To him, the authors of the 1881 Handbook of the Vertebrate Fauna of Yorkshire are under an everlasting sense of gratitude for the value of his assistance, and later on, he kept this journal supplied from time to time with additional records. Other journals, too, he wrote in, and the more recently published Birds of Yorkshire includes much information originally supplied by him. His ichthyological researches also led to his taking interest in the local crustacea and preparing specimens of them for the local museum.

He was also much interested in dialect study and folk-lore; he assisted materially the compilers of local glossaries and was a correspondent of the English Dialect Society. In early life, he was a good all-round sportsman, a fearless rider to hounds, a skilful angler and a good shot, and became a member of the Old Whitby Volunteer Corps when it was founded.

By profession a solicitor, he was the oldest practising in Whitby at the time of his death. His connection with the Whitby Literary and Philosophical Society was long and intimate. He joined it in 1861, joined the committee in 1876 and became an honorary curator in 1880, in conjunction with the late Martin Simpson. In 1864 it was decided to form a local collection in the Museum, and for the perfection of this Mr. Stephenson laboured all the rest of his life.

He was born at Whitby on the 12th February, 1833, and his education was commenced at Glaisdale, continued at Ormesby, and completed at the famous St. Peter's School at York. It was at Glaisdale and Ormesby that his interest in Natural History commenced, to be continued throughout a long, well-filled and useful life. Never a specialist, he remained throughout the keen and observant student of nature, whose observations were ever at the service of his fellow-students. It was always a pleasure to which to look forward, to call upon him at his residence at the Pier side, or to find him actually on the pier or in the fish-market, to enjoy his genial conversation and to draw upon his never failing store of local knowledge. It was there, at the pier-side, within sight of the quaint old harbour that he loved so well, that he died, at the ripe age of 83 years and seven days, on the 19th of February, 1916. His memory will long be cherished by his friends, and the 'Natural History Notes from Whitby,' which have appeared in this journal, and the local collections in the Whitby Museum, will be his enduring monument.—R.

BIRDS.

Little Auk in Wharfedale.—A little Auk was picked up near here (in Barden) on March 1st, by Mr. W. Inman, gamekeeper; a male in good plumage and condition.—T. ROOSE, Bolton Abbey.

Shelduck near Hebden Bridge.—A mature drake was killed at Withens, Cragg Vale, on March 24th. The specimen is being preserved for the Morley museum, on whose water-works it occurred. The few previous known occurrences suggest that this is one of the rarest members of the Anatidæ on fresh water here.—WALTER GREAVES, Hebden Bridge.

ARACHNIDA.

Cumberland Arachnids.—In *The Naturalist* for March, pp. 103-105, Mr. Wm. Falconer gives a Bibliography relating to the Spiders, etc., of the North of England and other areas adjacent to Yorkshire. I do not know how far this is complete, but notice only one reference to Cumberland.

It may not be generally known that the *Arachnid* fauna of this county has really been extensively studied by various naturalists during the last 20 years or so. The late F. O. P. Cambridge collected in both Cumberland and Westmorland during the period he was resident in Carlisle, and published a list in *The Naturalist* for 1895, pp. 29-48. Later (1901) he gave a list for Cumberland only in the Victoria History of the county, which included numerous records by Dr. Randall Jackson who was a frequent visitor to the Lake District.

But all previous work was much extended and amplified by Mr. H. Britten, who was an assiduous and successful collector in Cumberland prior to his removal to Oxford, and who, in 1912, in the *Trans. of the Carlisle Nat. Hist. Socy.*, pp. 30-65, catalogued over 300 species of Spiders, Harvestmen and Pseudoscorpions, with localities and notes. This publication was briefly noticed in *The Naturalist* for 1912, p. 263.—F. H. DAY, Carlisle.

MAMMALS.

Abnormal (?) Fox reported killed near Bingley.—In the Natural History column of *The Field* for March 5th (and also in the local press about the same date), a correspondent records the death of an abnormally huge dog Fox, at "The Upwood," near Bingley—the residence of the late Mr. Mitchell. It was reported to have turned the scales at 28 lbs. 14 ozs. !—an easy record, I should think, for the British Isles or elsewhere. Through the kind inquiries on my behalf, by Mrs. Cooke, (house-keeper at "The Upwood,") I found it to be a made-up story; concocted and circulated by a local "stonewaller" (a calling that is now fast dying out), who fills in his time with many odd jobs—including yarnning! The Fox

was certainly killed (poisoned) by the local gamekeeper; but it was just an ordinary Fox, and at his (the gamekeeper's) estimate, would certainly not weigh 20 lbs. I am sorry that my investigations should have robbed the district of the record weight Fox for probably all time: but facts are stubborn things.—H. B. BOOTH, Ben Rhydding, April 6th, 1916.

INSECTS.

Imported Insects at Sheffield.—Mr. C. W. Hinksman, the manager of a firm of wholesale druggists in Sheffield, recently



Brachycerus cinereus. ♀.

sent me a number of interesting weevils which were infesting a consignment of garlic received by them. The garlic was such as is commercially known as 'Spanish garlic,' but exactly whence it comes Mr. Hinksman is not able to say. The accompanying photograph has been kindly taken for me by my brother (Mr. F. O. Mosley, F.R.M.S.). The beetles eat into and hollow out the garlic bulbs.—CHAS. MOSLEY, Lockwood.

Specimens have been submitted to Dr. Guy Marshall and Mr. C. J. Gahan, of the British Museum (Natural History), who report that they 'seem to agree very well with the description of *Brachycerus cinereus* Oliv., given in Bedel's Monograph of the Mediterranean Species.'—ED.

NEWS FROM THE MAGAZINES.

In *The Irish Naturalist* for April, there are two notes on 'The Crossbill and its Diet.'

In *The Entomologist* for April, Mr. J. W. H. Harrison writes on New Hybrids in the Bistoninæ.

The Entomologist's Monthly Magazine for April is a record of *Bembidium varium* Ol., for County Durham.

The Studio for March contains an illustrated account of the Hall-i'-th'-Wood, Museum, Bolton, which is now a Folk-Museum.

Dr. J. H. Askworth contributes a note on the Hybernation of Flies, and Mr. P. H. Grimshaw one on the study of Diptera, to *The Scottish Naturalist* for April.

Camping (the official organ of the Amateur Camping Club) for March, which is issued gratis to members, contains an account of the doings of this Club, with particulars of favourite localities for camping, etc.

We feel flattered to find that the Editor of *The Entomologist's Record* in his March number quotes two of our paragraphs on the 'Naming Mania' in extenso; and he opines that our criticism is clearly justified.

The *Irish Naturalist* for March contains a portrait and memoir of the late Robert Warren, together with a long list of his papers. In the same journal the Rev. Hilderic Friend writes on 'Are White Worms Injurious?'

The Scottish Naturalist for March contains papers on 'Bird Parasites and Bird Phylogeny'; 'Movements of the Gannet as Observed at the Butt of Lewis,' by Robert Clyne, and 'Observations on the Hatching of *Stenopsocus cruciatus*,' by Miss I. H. Huie.

The Vasculum for March includes the following items:—Flowering Plants of an Upland Dale; Upper Swaledale, by H. Preston; Talks about Plant-Galls, by R. S. Bagnall; The Trichoptera or Caddis Flies, by J. W. H. Harrison; On the Slopes of the Cheviot, by J. E. Hull; The Garganey in South East Durham, by C. E. Milburn.

In *The Entomologist's Monthly Magazine* for March we notice a paper on 'The Correct Names of some Common British Diptera,' by F. W. Edwards; on 'The Distribution of *Miris holsatus* F., in Britain,' by Mr. A. E. Butler (in which Yorkshire, Lincolnshire and Nottingham specimens are mentioned); and Mr. J. Murray contributes a note 'Cumberland Hemiptera Heteroptera.'

British Birds for February has a report on its bird marking scheme for 1915; notes on 'The Lapwing Bunting on the Yenesei River,' by Maud D. Haviland, and 'Moults of Buntings,' by H. F. Witherby. Among the shorter notes is one on a Western Black-throated Wheatear shot in Sussex, and records of Rough-legged and Common Buzzards in Lincolnshire, one of which was shot.

Among the contents of *The Glasgow Naturalist* for 1915 (Vol. VII., parts 1-4, pages 128), we notice 'The "Hydroid" stage of *Lar sabellarum*,' by J. F. Gemmill; 'Lochlomond Microfungi,' by D. A. Boyd; 'The Spanish Chestnut in the Clyde Area,' by J. Renwick; 'Parasitic Fauna of West Scotland,' by J. Ritchie; 'Faunistic Notes,' R. Elmhurst; '*Goodyera repens* in Scotland,' J. Renwick; 'Alpine Louseworts,' R. Brown; 'Banffshire Flowering Plants,' L. Watt; 'Visit to Source of River Fallock' (Botanical), J. R. Lee; 'Clyde Microfungi,' D. A. Boyd; 'Mute Swan at Possil Marsh,' W. Rennie; 'Birds of Islay,' A. Ross; '*Claytonia sibirica* in Clyde Area,' by A. Shanks. There are also shorter notes, records of excursions, proceedings, etc.

NORTHERN NEWS.

We regret to see announcements of the deaths of Geoffrey Meade-Waldo, and John Hill; both well known entomologists.

The *Journals of the Northants. Natural History Society and Field Club* for 1915 contain an account of the Leper Hospitals of Northamptonshire; Northamptonshire Spas, the birds of Northamptonshire, the fortifications of Northampton, the Snail and its name, and on 'making sections of shells'; the last being Mulluscan, not munition.

We see from the report of the Manchester Museum for 1914-15 that during the year a donation of £1,368 has been received, anonymously, in order to pay off the debt on the new museum buildings. The museum has also received a legacy of £48 for the Geological department, and a further bequest of £500 from another source. Items of this sort are distinctly encouraging, and are some indication of the public feeling towards museums as compared with that of the Government.

We regret to record the death of Sir William Turner, K.C.B., LL.D., D.C.L., D.Sc., F.R.S., etc., Principal of the Edinburgh University. Sir William was a native of Lancaster, where he was born in 1832. He was President of the British Association at the Bradford meeting in 1900, and he had occupied the presidential chair of the Museums Association. He was the author of numerous works on anatomy and physiology, had a considerable reputation as an anthropologist, and to naturalists was perhaps best known for his memoirs on whales.

The *Journal of the East Africa and Uganda Natural History Society* for March (61 pages, Longmans Green and Co., 5s. 4d.) contains the following interesting papers, most of which are well illustrated; together with shorter notes:—African Lung Fish, by Sir F. J. Jackson; The Alleged Desiccation of East Africa by C. W. Hobley; Experiments in Hawking, by W. F. B. Bryant; Rearing and Taming of Wild Birds by Dr. V. G. L. Van Someren; The Organic Cell, by E. Winstone-Waters; On the Spiny Mice of British East Africa, with a description of a new Species from Magadi, and two New Pigmy Gerbils from British East Africa, both by Guy Dollman.

From the British Museum, Natural History, we have received *The Report on Cetacea stranded on the British Coasts during 1915*, by Dr. S. F. Harmer (4to, with map, 12 pages, 1s. 6d.). Conditions prevailing during the past year have resulted in fewer records having been received by Dr. Harmer than in previous years. His excellent map at the end shows at once when and where whales were washed up on our coast. The only records for the area covered by *The Naturalist* are, Porpoises at Whitby, Ulrome, Skegness and Sutton-on-Sea; a common Rorqual at Amble; a lesser Rorqual at Ulrome, and a White-beaked Dolphin at Skinningrove. Full details as to the dates, measurements etc, are given in the report.

At the recent annual meeting of the British Ornithologists' Union, a resolution was passed in favour of admitting ladies as ordinary members of the Union. This question has been brought up at several previous annual meetings. On the last occasion—as a recompense—it was decided to elect not more than ten honorary lady members. It almost looks as though there has been some feminine influence behind this continuous agitation, and it will be interesting to note who is the first lady ordinary member to be elected. At the same meeting there were 'ructions' respecting the membership of King Ferdinand of Bulgaria. In his younger days, he was both a good ornithologist and a good entomologist. The trouble was not so much on a question of honour as on a point of order. A small clique of members, in their enthusiasm to erase the name of this traitorous monarch from the list of members, had transgressed the rules of the Union. Later the motion was put into order; a special General Meeting was called; King Ferdinand banished, and all ended well.

Books for Sale.

(Mostly from the Library of a Yorkshire Naturalist, recently deceased. The books are as new, and the prices asked are, in most cases, less than half the published price).

- WHITE'S NATURAL HISTORY OF SELBORNE. Coloured Illustrations by Collins. 6/-.
THE HUMBLE BEE. Sladen. 6/-.
LIFE OF MACGILLIVRAY. 6/-.
THE MAKING OF SPECIES. Dewar and Finn. 4/-.
MODERN MICROSCOPY. Cross and Cole. 3/6.
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NATURAL HISTORY OF SOME COMMON ANIMALS. Latter. 3/-.
THE GANNETT. Gurney. 13/-.
BIRDS OF ISLE OF MAN. Ralfe. 8/-.
HOME LIFE OF OSPREY. Abbott. 2/6.
BIRDS OF KENT. Ticehurst. 5/-.
WITH NATURE AND CAMERA. Kearton. 2/3.
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THE NATURALIST.

A MONTHLY ILLUSTRATED JOURNAL OF
NATURAL HISTORY FOR THE NORTH OF ENGLAND.

EDITED BY

T. SHEPPARD, M.Sc., F.G.S., F.R.G.S., F.S.A. Scot.,
THE MUSEUMS, HULL;

AND

T. W. WOODHEAD, Ph.D., M.Sc., F.L.S.,
TECHNICAL COLLEGE, HUDDERSFIELD.

WITH THE ASSISTANCE AS REFEREES IN SPECIAL DEPARTMENTS OF

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JOHN W. TAYLOR, M.Sc.,
RILEY FORTUNE, F.Z.S.

Smithsonian Institution
JUN 15 1916
National Museum

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*(Based upon the Presidential Address to the Yorkshire
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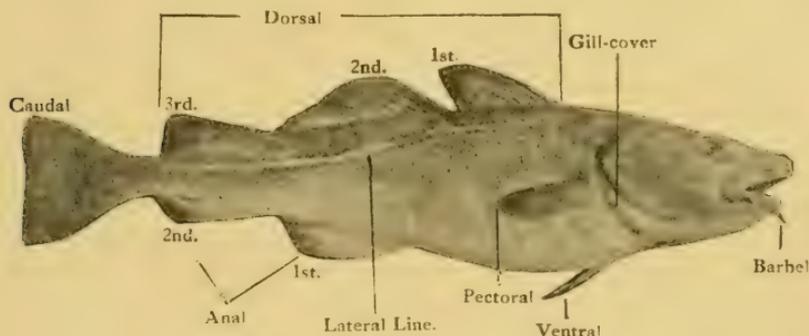
NOTES AND COMMENTS.

ANIMALS AND FUNGI.

Mr. Somerville Hastings, whose photographs of toadstools are well known, contributes to *Knowledge* a paper which he and Mr. Mottram have written on the results of observations and experiments as to the eating of fungi by animals. Squirrels and rabbits appear to be the creatures which most commonly feed on fungi. In early autumn, when the food is plentiful, few specimens are devoured; but in frosty weather, when things are different, very many species of fungi are eaten. Only in the case of the buried false truffle do the animals appear to assist the fungus by distributing the spores by which it reproduces itself.

BRITISH SEA FISH.

'British Sea Fish,' by Harold Swithinbank and G. E. Bullen, London, Simpkin, Marshall, Hamilton, Kent and Co.,



Ltd, 35 pages, 2s. net, is an interesting handbook in which the authors give a very useful and elementary summary of the principal edible fishes to be found round our coast. After the introduction dealing with Methods of commercial Fishery and a useful table showing comparative values of the principal Marine Fishes, the various species are dealt with under the headings of 'usual extreme length,' 'description,' 'range' and 'remarks.' An excellent illustration of each species is given, one of which we are kindly permitted to reproduce.

ROMAN CAMP AT STANWICK.

In an article on 'Roman Piercebridge,' in *The Yorkshire Archaeological Journal*, part 92, Mr. Edward Wooler states that 'Stanwick Camp encloses an area of about 800 acres and covers a larger space of ground than has ever been discovered in one encampment in Britain. The length of the outward ramparts is 8,070 yards, of the outside works 3,183 yards,

and that of the internal works 2,334 yards. . . . On the assumption that there was a wooden stockade at the top from behind which the men fought, the construction of the works at the present day would have cost £35,751 at 11d. per cubic yard.'

SUBURBAN COLLECTING.

At a recent meeting of the Lancashire and Cheshire Entomological Society, Mr. W. Mansfield read a paper on 'Suburban Collecting.' Principally with the object of showing how much useful work can be done in the immediate neighbourhood of one's own home, the author instanced many local insects which can still be found in the suburbs of our large towns, in the old gardens and parks, on the railway banks and in the old lanes which, in many places, still exist as vestiges of a vanished countryside. The melanic variations of *Odontopera bidentata*, *Polia chi* and *Hemerophila abruptaria*, are good examples of this phase of variation and practically confined to suburban localities; while anyone with access to an old garden can obtain many prizes in the scarce forms of *Abraxas grossulariata*, as well as, from a scientific point of view, contribute to our knowledge if he cares to breed from selected parents. In lanes bordered with the old hawthorn hedges, the common, but variable tortrices, *Peronea variegana*, *Tortrix ribiana* and *Teras contaminana*, often absolutely swarm and furnish many beautiful examples for the cabinet. Among the warehouses of our manufacturing towns, many species are to be obtained in profusion, and scarcely in any other way. Many of the genera *Ephestia*, *Blabophanes* and *Tinea* are thus to be found; and where electric lamps can be worked, such are a veritable mine of insect wealth as at Chester, where some time ago, a species new to science, *Scoparia vafra* Mey., was so captured. At the present time, however, such a method as collecting at light is practically out of the question, yet it is surprising to what a small light moths will sometimes be attracted.

A PREAMBLE.

We are asked by Mr. W. R. Butterfield, of the Hastings Museum, who is the editor of *The Museums Journal*, and who reminds us that he is a 'tike,' to give the same prominence to the following letter that we gave to the remarks about the safety of Museums, which appeared in our April issue. We are not quite sure whether we are treating Mr. Butterfield kindly in carrying out his wishes, but at his request, we sheath the editorial blue pencil, and quote his missive as written. He says:—

RELAXATIONS.

'We need in these harassing times all the reasonable relaxations we can get, and if attacks upon myself afford any

amusement to the Editors of this journal, or to its readers, well, I suppose I ought to submit thereto with the best grace I can; though I confess I know not why this particular butterfly should be chosen for breaking on the wheel. As a Yorkshireman (long exiled, alas!) one of my earliest memories is that of poring over the pages of *The Naturalist*. The green, insect-haunting woods of Grassington; the purple masses of autumn moorland seen from my native village; the ferny Upper Wharfe on a sunny afternoon; the well-remembered faces of the naturalists who were wont to assemble at my father's house; how clearly these and other recollections of dear and far-off Yorkshire days are fixed in the memory!

THE MUSEUMS JOURNAL.

Mr. Butterfield goes on to say, with some truth, 'But I wander from the point—just as do the Editors in the criticisms of myself in the April number. For the most part, so far as these criticisms concern *The Museums Journal* or myself, they are either misleading or wholly unjustifiable. This is why I assume that the comments are intended merely to amuse the many readers of *The Naturalist*, and not to be taken in any serious sense. It is also why I do not give a serious and effective reply, which would, indeed, have been an easy task, if an uncongenial one. My only reason for writing is to beg that the Editors, when next they are in need of a victim upon which to exercise their playful fancy—or fancy playfulness—will have the goodness to leave the inoffensive *Museums Journal* alone, even though they do not exempt myself.'

AND 'TYKES.'

We willingly comply with Mr. Butterfield's request, especially as, for some reason or other, he is quite willing to continue a discussion in *The Naturalist*, which he could not, or would not, continue in his own magazine, the 'inoffensive' *Museums Journal*. He says he is a 'tyke,' that he is a metaphorical 'butterfly,' that he once read *The Naturalist*, that he remembers the insect-haunted woods at Grassington, the purple masses of autumn moorland, and the ferny Upper Wharfe. So do we all; but what on earth has that to do with the matter in dispute? The writer of these Notes and Comments, if not quite a 'Tyke,' has been in Yorkshire sufficiently long to have acquired, he hopes, the Tyke's characteristic of being 'straight.'

SAFETY OF MUSEUMS.

But our criticisms were meant to be serious; there is nothing funny about them, and if Mr. Butterfield thinks the matter amusing, it is more than we do, and we certainly think his treatment of 'The Provincial Curator' offensive, an opinion

shared by many of Mr. Butterfield's museum colleagues. We had thought that the remarks made in *The Museums Journal* were perhaps by one of Mr. Butterfield's colleagues. Apparently we were wrong, and we are therefore on firmer ground. But the matter might never have been referred to in *The Naturalist* at all if 'The Provincial Curator' had received the fair treatment which he felt he ought to have had in the Museums' Associations' official organ; though the safety of Museums concerns naturalists as much as Museum officials. Mr. Butterfield knew the Provincial Curator was dissatisfied, as a letter to that effect was sent to him by his colleague long ago. That was also ignored. And now he says our remarks are 'misleading or wholly unjustifiable.' That is a definite charge, and we challenge it. We leave it with Mr. Butterfield to prove his statement.

PROTECTIVE COLOURATION.

Museum Curators were first told to decorate the tops of their museums for protective purposes. When it was suggested that this might not be wise, it was insinuated that the curators might get into trouble with their Committees for neglect of duty. This was shown to be an improper insinuation, and the editor was asked, as a guide to less important museums, what had been done at his institution at Hastings, and what, if anything, had been done at the national museums. We had good reasons for thinking that no decorations had been made anywhere. To this no reply was forthcoming, nor were we treated to the old gag that it would not be wise to say what had been done. In each case, the Provincial Curator's letters were apparently purposely delayed in appearing; it was certainly not due to considerations of space, nor on account of the lateness of the date at which they were received.

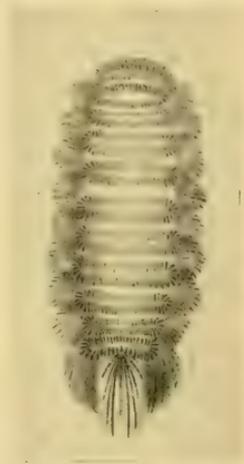
A REPLY WANTED.

However, as we have been told that our remarks in *The Naturalist* were 'misleading' or 'wholly unjustifiable,' we shall be glad to know in what way this was so. Mr. Butterfield says he can give a 'serious and effective reply,' and that such would be 'an easy task, if an uncongenial one.' We hope and trust he will do so, seeing that it will not cause him any trouble. As to the task being uncongenial, that need not worry him at all; it certainly won't worry us. Of course, if he wishes to 'amuse' our readers, all well and good, but we certainly hope there will be more in his uncongenial task than the statement that he knows our insect haunting woods, our purple moors, and the ferny Upper Wharfe, and that he once read *The Naturalist*.

THE BRISTLY MILLIPEDE IN EAST YORKSHIRE.

F. STAINFORTH, B.A., B.Sc.,
Hull.

IN searching among debris at the foot of larch trees in the higher part of Brantingham Dale, East Yorkshire, on Good Friday, I met with numerous examples of the Bristly Millepede, *Polyxenus lagurus*. Besides being one of the smallest of our indigenous millepedes, adult specimens reaching a length of about one eighth of an inch only, *Polyxenus* is peculiar in possessing bundles of bristles on each of its ten body segments, and differs in other important respects from normal Diplopods. So marked are these differences that the Polyxenidæ form a separate sub-class (Pselaphognatha) of the Diplopoda, of which *P. lagurus* is the only British representative. The accompanying illustration, which is reproduced by permission of the Trustees of the British Museum, from the 'Guide to the Crustacea, Arachnida, Onychophora and Myriopoda' (p. 121), gives a very good idea of the appearance of this creature.



The Bristly Millepede
Polyxenus lagurus. × 12.

It is interesting to know that many of the early fossil species of millepedes are protected by bundles of bristles similar to those of the Polyxenidæ, and it is probable that the family is an ancient one. *Polyxenus lagurus* is said usually to occur under the bark of trees. A writer in *Science Gossip*, 1872, p. 31-3, recommends searching under the loose bark of old yew trees, and Dr. A. R. Jackson (Myriapoda of the Chester District, *Lancashire Nat.* 1914, p. 453) records them from under the bark of oak trees, while in an article on 'The Pencil-tail (*Polyxenus lagurus*),' appearing in *The Journal of the Quekett Microscopical Club* for 1870 (p. 110), S. J. McIntire writes that 'pencil-tails inhabit the bark of the willow, the elm, and the apple-tree.' At Brantingham Dale, however, I could not find any under loose bark, though they doubtless occurred in such situations, but specimens were easily found by shaking the debris at the foot of the larch trees, over a sheet of paper, the little animals being readily recognised as they glided briskly along on their thirteen pairs of tiny legs. On visiting the locality again on May 14th, Mr. H. M. Foster and I had precisely the same experience. We could find numerous examples of all ages and sizes among the grass, moss, etc., a foot away from a certain tree, but not one under bark. McIntire writes that he found

a couple under a stone at the foot of a tree near Mickleham, and says it was quite an exceptional case in his experience, as he had never before obtained any elsewhere than on willow, apple and elm trees. He suggests that the two specimens alluded to must have been like the members of the Quekett Club, out for an excursion, when he caught them. Wood, however, in his 'Natural History' (Vol. III., p. 696) writes that *Polyxenus* is to be found under the bark of trees, in clefts of walls, and in moss. The species is sure to be found elsewhere in Yorkshire, and it would be interesting to know in which habitat it occurs. On account of its bristles and scales and small size *Polyxenus* is much sought after by microscopists. Some of the peculiar scales are illustrated in the article in *Science Gossip* and in McIntire's address referred to above. It does not appear to have been recorded hitherto for the county, where, however, little attention has been given to the Myriapoda. It is not included in the short list of Myriapoda of the Sheffield District (*Proc. Sheff. Nat. Club.* Vol. 1, 1910, p. 139) nor in 'The Myriapods of the Derwent Valley.' (Northumberland and Durham) by R. S. Bagnall. (*Trans. Vale of Derwent Nat. F. C.*, 1913, p. 116). Specimens, including a microscopical preparation presented by Mr. H. M. Foster, have been placed in the Hull Museum.

—: o:—

During 1915, I have noticed the following interesting species of Mycetozoa.

- (1) *Badhamia panicca*.—Fruiting among the moss near an old oak stump in Bolton Woods, and also on an elm stump in Esholt Woods, (May).
- (2) *Physarum vernum*.—On dead ivy and straw in Bolton Woods. (September).
- (3) *Cribraria violacea*.—on dead ivy. Valley of Desolation, Bolton Woods. (September). *Cribraria rufa**.—On charred stump in Bolton Woods. (November).
- (4) *Physarum psittacinum*.—Almost completely covering fronds of the male fern in the Valley of Desolation, Bolton Woods. (September).
- (5) *Comatricha elegans*.—On an ash log in Hartlington Ghyll, Wharfedale. (September).
- (6) *Calloderma oculatum*.—On an ash log near Bramhope. (November).
- (7) *Lepidoderma tigrinum*.—On dead wood (hazel twigs) in Ling Ghyll. (November).

3 and 6 are new Yorkshire records; 5 and 7 are new for Yorkshire Mid. W.—A. R. SANDERSON.

* *Cribraria rufa* was first recorded for Yorkshire for Crass Woods, Fungus Foray, 1907. *The Naturalist*, Nov., 1907, p. 399.—ED.

THE PROTECTION OF WILD LIFE IN YORKSHIRE.

R. FORTUNE, F.Z.S.

(Continued from page 154).

From most accounts the Guillemots at Speeton and Bempton remain stationary in numbers, though some of the climbers, and, I think, Mr. Hewitt, aver that they have decreased. I hope the latter view is not correct. The curtailed eggging season allows the birds to get their young away from the cliffs before shooting commences, and as they cannot now be ruthlessly slaughtered on the breeding ledges, as in former times, one would naturally expect their number to increase. A visit paid to the cliffs after a few years absence convinced me that Razorbills had gained much ground and were more abundant than they used to be. Their habit of laying their eggs in a crevice of the rocks, making it more difficult for the climbers to obtain them, may be somewhat of a protection. It will, of course, be understood that there are portions of the cliffs, which owing to their dangerous nature are never climbed for eggs, and in these parts both Guillemots and Razorbills bring forth their young undisturbed.

One or two pairs of Oystercatchers nest almost every year at Spurn, the only nesting place of the species in Yorkshire. The ground is a typical one, but they never seem to make good their hold there, and remain stationary at one or the most two pairs. Unfortunately Carrion Crows frequent the promontory in some numbers during the whole of the year, and their depredations may be the cause of the Oystercatchers never increasing. The same cannot apply to the Shell Ducks, as their eggs are deposited in a burrow, in the sand hills generally, where the Crows cannot very well get at them. It is puzzling why they do not increase. On the west coast, especially in Lancashire and Cumberland, they have of late increased enormously. It would be interesting to know why they prefer the west to the east, for even on the Northumberland coast where there are miles of sand-dunes, typical resorts for this Duck, they are found only in small numbers. I believe they are increasing on one portion of the East Coast, viz., in Norfolk.

I should like to say just a few words about some of our much persecuted birds, in most cases needlessly so. Mr. St. Quintin effectively proved that the Sparrow Hawk is not nearly so bad as the game-keeper paints him, by having several nests upon his estate watched most carefully after the young were hatched, in order to ascertain beyond doubt, what pro-

portion of game birds were brought as food for the young. During the whole season not a single game bird was brought to the nest and this in a first-class game country. I do not want to suggest from this that they never do take the young of game birds, but I do insist that the damage done by them is greatly exaggerated. In a like manner the Kestrel is greatly libelled, the food of Kestrels consists mainly of small mammals and occasionally small birds. Individual Kestrels will at times make raids on the young Pheasants in the rearing fields, though the main attraction there is the number of mice congregated to feed upon the food thrown to the birds. In a case of this kind, one cannot find fault with a keeper for destroying them. He, however, should not damn the whole family because one or two individuals stray from the straight path. Several of our members have of late years spent some time photographing the Merlin at home. A careful scrutiny of the food brought to the young has shown, that seldom, if ever, are young game birds brought. Photographing wild birds from small tents or hides, has helped to dispel many erroneous ideas which had prevailed respecting the habits of birds. The tents are pitched quite close to the nests, as a rule the birds quickly become familiar with them, and the observer is able at his ease to watch and take careful notes of the domestic economy of shy birds, which no other method would allow.

The productive power of Hawks and especially of Owls, is governed to a great extent by the relative abundance of field mice. In a year when they are plentiful, Owls lay larger clutches of eggs and have consequently larger families, and correspondingly smaller ones when mice are scarce. The chief prey of all Owls are small mammals, principally rats and mice. The Tawny Owl will occasionally, like the Kestrel, pay undue attention to the young Pheasants in the rearing field, and consequently deserves the fate meted out to him. The only bird (excepting Terns and Gulls) which ever made an attack upon me was a Tawny Owl. I had taken her single young one from the nest to photograph; the nest was an old one of the Magpie, and situated right on the top of a Scot's pine. Ascending the tree to replace the young one, I suddenly got a severe blow on one side of my face; before I could realise what had happened I got another one on the other side. Her ladyship drew blood on both occasions, but when I tumbled to what was happening, I easily prevented further damage. The nest, I might mention, contained besides the young Owl, three dead rats about three-quarters grown.

The Barn Owl is essentially the farmer's friend. Frequently nesting in pigeon cotes, they never molset the rightful occupants, but in return for their shelter, keep them free from

rats and mice. A farmer ought to be proud to have a pair of these birds residing on his farmstead. They are indefatigable in the pursuit of the small mammals which destroy so much of his corn. Next to the Lapwing they are his best friends. Unfortunately there is a great amount of ignorance and prejudice amongst farmers against them, and they are regularly and wantonly destroyed. Mr. Wade mentions that one taxidermist in Holderness has had upwards of forty of these Owls brought to him this year by farmers. A shameful record. There is a tale of one farmer who was brought to task by the Vicar of his parish for shooting a pair of Barn Owls. He made the excuse that he did not know what they were; he had seen the white things flying round his house and he thought they were angels, so he brought out the gun and shot them.

The Long-eared Owl has not so many sins to answer for, and as a rule is not so much molested by game-keepers. These birds are much attached to certain haunts, and I know a number of small plantations on the moorlands which have held a pair of these birds ever since I can remember. By the way, Long-ears seem to be developing a habit of nesting on the ground, like the Short-eared, a number of such nests having been reported of late years in the county.

Short-eared Owls are very scarce, and nest more or less irregularly. A plague of mice generally causes an influx of these Owls, though how they get the information is a mystery. I know one place in the county where they nest pretty regularly, and where the keepers have had instructions not to molest them. They keep to the letter of these instructions but not to the spirit, for I heard of one of the keepers saying that he took good care to put his foot into any nest he came across. The Short-eared Owl differs from our other native Owl by always nesting on the ground.

All the Woodpeckers, the Green, a very large and handsome species, the Great Spotted and the Lesser Spotted, are deserving of every protection; they rid the trees of many noxious insects and their larvae. Ants they are very fond of, and the Green Woodpecker especially, may often be seen raiding an ants nest. One fact is certain, they never attack and bore into sound trees. The only fault I have to find with our Common Starling is that he persecutes the Woodpeckers very greatly, and when a nesting hole has been excavated, it is quite a common occurrence for a pair of Starlings to eject the owner and take possession themselves. The ranks of the Great Spotted Woodpecker are regularly reinforced by immigrants from the Continent.

The Lapwing is probably one of the most useful birds existing. He has absolutely no bad habits and spends his life in the service of the farmer. Despite this, it is only within the last few years that much needed protection has been

granted to them and their eggs. The eggs are dainty morsels and were sought for diligently, and the birds themselves affording a toothsome dish, were harried unceasingly by the people who should have protected them. Eventually in many parts their numbers diminished to an alarming extent. They have, however, under protection, again asserted themselves, and have practically recovered their lost ground.

The Water Ouzel is another much misunderstood bird, and has been accused by ignorant anglers and fish watchers of devouring the trout ova in our streams, and many have had to be sacrificed to prove that the charge has no foundation. The Dipper searches the bed of the streams, feeding on the larvae found there, many of which are harmful to the trout ova or alvelins. Apart from any question of harmfulness or not, it passes my comprehension how anyone can find it in his heart to destroy such a charming bird. He is always 'merry and bright,' and it is a delight to hear him in mid-winter perched on a small boulder in the middle of an ice fringed rapid, singing as lustily and cheerily as if the sun was shining and there was no winter or misery in the land.

I should like to put in a word for the Warblers, most of them delightful songsters. The Black Cap and Garden Warblers take a certain toll from the fruit crops, but by destroying enormous numbers of insects and their larvae, they repay a thousandfold any tax they levy; even the Sparrow is not all bad; during the breeding season, which in the case of the Sparrow is spread over a considerable time, they destroy an enormous number of insects upon which their young are mainly fed. I have watched a pair of Sparrows for hours which had a nest in the ivy covering the house, busy clearing the rose bushes of green fly, with which they were feeding their young. It does not do to take appearances for granted. Recently some investigations were being conducted as to the food of Gulls. A flock evidently very busy feeding upon some surface fish, it was thought they would prove fine examples of the general damage done to the fish fauna by these birds, and a number was shot. The result was that it was shown they had not been feeding on fish at all, but upon the brittle starfish, itself a great enemy to fish life.

The Stonechat is a much misunderstood bird; references are continually being made as to their abundance in certain inland localities. Confusion arises from the fact that in many districts the Wheatear is called the Stonechat. The Stonechat in Yorkshire is essentially a coast bird, and is rarely found nesting inland.

Finally, I should like to make an appeal against the destruction of rare birds which visit our county. Eagles, Ospreys, Rough-legged Buzzards, Bitterns and hosts of others

are shot on sight. In the *Weekly Post* of December 6th there is reference to a visit of a Buzzard at Bolton Abbey with the naive statement that he keeps well away from the man who wants to shoot him. Why should an attempt be made to destroy him? he will do no harm and should be left at peace. The folly of including many rare birds in the list of Yorkshire birds is responsible for much of this destruction. Why, because a bird has once been seen and shot in the county (the American Passenger Pigeon as an absurd example) it should be classed as a Yorkshire bird, is beyond my comprehension. If a rare or unusual bird appears, it is at once shot, the excuse being, unless the shooter is also a collector, 'I did not know what it was.' If this is the case, why not let it go in peace? It does not follow, of course, that because a bird has only been obtained once, that it is the only occasion it has appeared in the county. Thousands may have visited us and passed on undetected.

Last autumn a pair of Peregrine Falcons was shot by a party of sportsmen on a moor near an ancient eyrie in Yorkshire. The usual statement was afterwards made, 'We did not know what they were or we would not have shot them.' If all birds were understood to be protected and the killing of them illegal, it would stop a lot of this senseless slaughter. As a contrast to this last action I may mention that an Osprey frequented the neighbourhood of the lake at Scampston recently. He was not disturbed, and after resting some days, passed on his way. An example of the eastern Black-eared Wheatear was seen, for the first time in Yorkshire on the Cleveland Moors in June of this year. I understand that an application was made to the owner of the estate, asking permission to shoot it for scientific purposes. It is a great pleasure to be able to say that the answer to this request was a prompt and decided refusal. I do not want to dwell too much upon this subject, it is not a pleasant one, but I should like to suggest an antidote for this craze of destroying rare birds. It is not a nasty one like many medicines which are given to cure a disease, and the collecting mania is a disease, but a very pleasant one. It is to take up the practice of photography in connection with the study of the habits of wild things. It is an almost absolute cure for the other state. Many years ago I used to do a bit of collecting myself, although I was never very keen about it, always having a distaste for taking the life of beautiful creatures, I found that when I started photographing, and I believe I was about the first to take to the practice seriously, all desire for collecting passed away, and many of my friends, kindred spirits, who were formerly more or less fond of the gun, confess to the same result. They have now no desire to take the life of any wild creature. The

practice of photography is infinitely more sporting and the resulting pleasure is immeasurably greater and lasting. One comes into intimate contact with the rarest and wildest of our birds and animals, and the pleasure of watching their home life at the range of a few feet cannot be realised until experienced. No elaborate outfit is really needed. A small square tent as a hide, with a cover not too glaring, is every bit as efficacious as the most elaborate tree trunks, stuffed oxen or sheep, and no trouble whatever to cart about. I would, however, suggest that photographers who have no genuine interest in natural history and no sympathy or love for wild life, and there are far too many of this class about who have been attracted to the work by the pretty pictures they sometimes obtain, should abstain from the practice, as they at times do considerable harm, in addition to bringing disgrace upon the genuine naturalist, as people cannot always discriminate between the two. Photography should be subservient to the real study of the habits and ways of wild things.*

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The Rev. Armitage Goodall contributes a valuable paper on the 'Scandinavian Element in Yorkshire Place Names' to Part 17 of the Transactions of the Yorkshire Dialect Society.

Mr. J. Bradley kindly sends us another of his interesting leaflets issued in connection with the Haworth Ramblers, the present being in description of a ramble to Eshton and Newfield Hall on Easter Monday.

The circular issued by the Haworth Ramblers for an excursion to Bolling Hall Museum, Bradford, on Sunday, May 21st, is illustrated by a block of that institution, and contains an account of the building.

Volume XXI. of the Transactions of the East Riding Antiquarian Society contains the following items: East Riding Muster Roll, 1625, by T. Sheppard; Archdeacons of the East Riding, Rev. A. A. R. Gill; Documents at Scampton, Rev. C. V. Collier; Old Wills from Harpham, W. Brown; The Whitby Arms, G. Buchanan; Interior of St. Mary's Church, Scarborough, prior to its restoration, W. Hastings Fowler; St. Marys Church, Scarborough, Rev. C. Cooper; Record work for Photographic Societies, T. Sheppard; a German Raid on Sutton in 1872; and Arthur Francis Leach, an appreciation, by J. Bilson.

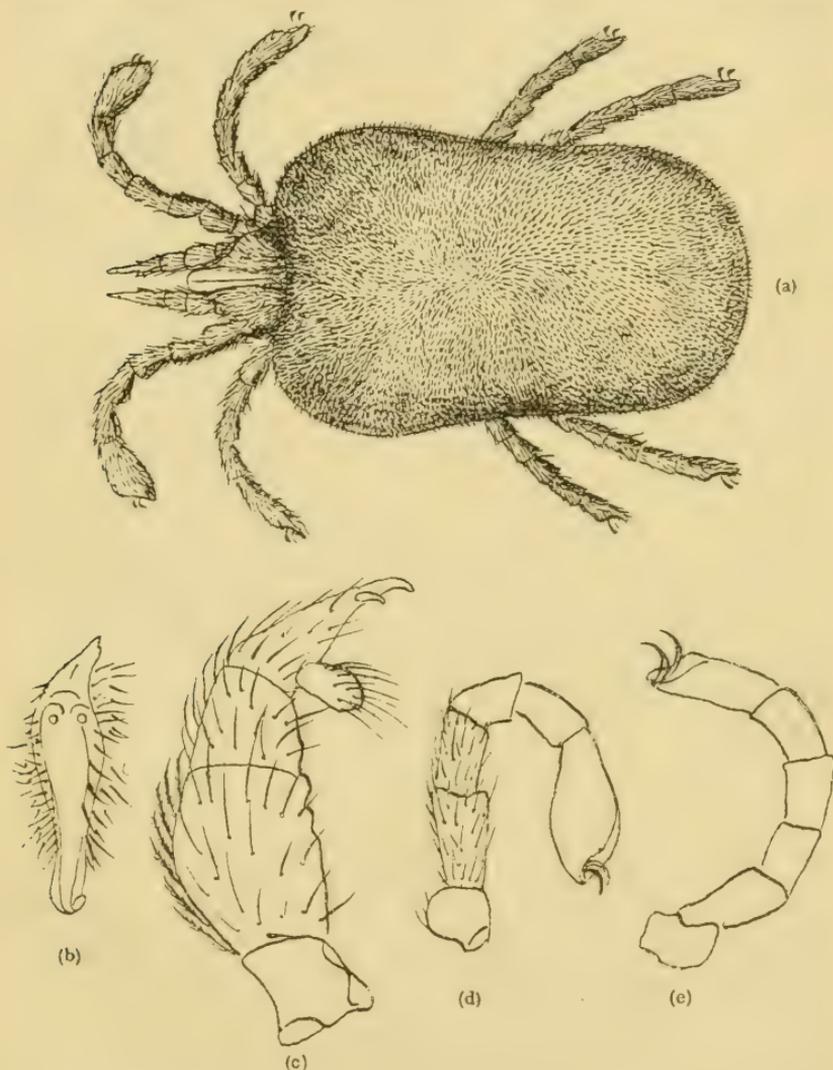
We much regret to record the death of Mr. Alexander Ramsay at Kew recently, in his 77th year. Mr. Ramsay was born at Hampstead, and was educated at the Bluecoat School, then in Newgate Street, and afterwards at St. Andrew's University, Scotland. He was sometime reader at Bradbury and Evans'; afterwards, in consequence of his deafness, he resorted to literature as his occupation. He revised Johnson's *Gazeteer*, and wrote a book on *Mineralogy*, and many articles from *Magazines*. In recent years he compiled and published a remarkable bibliography, called 'The Scientific Roll.' This was commenced in 1880, Vol. I., being entitled 'A Bibliography, Guide and Index of Climate,' Vol. II., completed in 1900, dealt with 'Climate: Baric Condition, 1680-1883.' The next section dealt with was *Bacteria*, and Vol. I. was completed in 1905, Vol 2., also dealing with *Bacteria*, was completed in 1913. He edited *The Garner* and other publications.

* This address was illustrated by photographs of all the species mentioned.

TROMBIDIUM PARVUM, N.SP.

C. F. GEORGE, M.R.C.S.,
Kirton-in-Lindsey.

THIS mite is small for a Trombidium, its body is about 0.88 mm. long, and the average breadth about 0.56 mm. It is probably



a = *Trombidium parvum* n.sp.; b = crista; c = palpus; d = front leg;
 e = hind leg.

not a mature specimen; and the vulva, anus and eyes cannot be made out; it is probably in the pupa stage. Mr. Soar's

figure gives a good idea of its shape, which, however, is possibly somewhat different from that of a mature female. The whole body is covered with hairs, or papillæ (which are beautifully plumose) with the exception of the upper surface of the rostrum, which is bare of hairs; this is quite unusual, but possibly they have been rubbed off, otherwise this may be a very important point. The crista is about 0.26mm. long and differs somewhat from any I have before seen; near the upper, and thicker part on each side, there is a stigma, and another in the skin, about half way down; no stigmatic hairs were observed, they were probably rubbed off.

The palpi have each a secondary small claw on the fourth segment. The first leg, which is the longest, is about 0.62 mm. long, the terminal article of which is remarkably broad and strong. The second leg is about 0.45 mm. long, the third 0.46 mm. and the fourth 0.56 mm. They are all supplied with short hairs.

It is to be hoped that more mature specimens will hereafter be discovered in which the important parts, as the eyes, etc., may be investigated; of course a living specimen would be invaluable for identification. There are, I believe, a good many varieties of *Trombidium*, which have not yet been described. They are most beautiful creatures for microscopic observation. This specimen was mentioned on page 41 of *The Naturalist* for January, 1916, under the name of ' *Smaridia papillosa* ' Herm. This is a mistake, as proved by dissection.

[Dr. George has kindly presented two slides illustrating the anatomical details of this mite, to the Hull Museum, where, with the various other specimens he has described from time to time, they can be consulted by students.—ED.]

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BIRDS.

Black Terns near Knaresborough.—Lord Mowbray, this morning, told me that he had seen two Black Terns flying about the bottom lake at Allerton, on Sunday, May 7th. They were not there on Monday.—R. FORTUNE. 10/5/16.

Local Names for Birds.—On May 6th, 1916, I conducted the Maltby Rambling Club to Roche Abbey, and learnt that the Maltby children speak of a bird called a "Banky Feather Poke." I do not find this name in the "Birds of Yorkshire." At Doncaster, the Willow Warbler is named "Ground Feather Poke," and at Maltby, both Willow Warblers and Chiff-Chaffs are common. Probably the name "Banky Feather Poke" is applied to one of those species, and possibly to both of them.—C. F. INNOCENT, Sheffield.

THE HARVESTMEN AND PSEUDOSCORPIONS OF YORKSHIRE.

WM. FALCONER,
Slatthwaite, Huddersfield.

(Continued from page 158).

SUB.-ORDER : PANCTENODACTYLI, Balz.

FAM. : CHELIFERIDÆ.

Group II. Eyes 2.

Gen. CHIRIDIUM Menge.

C. MUSEORUM Leach.

The smallest British pseudoscorpion, generally distributed and abundant in Great Britain, only noticed at Dundrum in Ireland. Occurs in a great variety of situations, in old houses, stables, barns, haylofts, etc., behind boards, among debris, under stones on the floor, in crevices of woodwork; beneath the bark of trees, and in nests of birds in walls and hollow trees.

1st Record: T. Petch, Aldborough. *The Naturalist*, 1903, p. 460.

V.C. 61.—Thorp Garth, Aldborough, in a glass of water, T.P.

V.C. 63.—Almondbury, Huddersfield, a dozen examples under pieces of wood lying on the floor and in the neglected cupboards of a tradesman's cellars (*The Naturalist*, March, 1908); in the store room of the same building during alterations, an equal number, September, 1909, without special search being made for them.

Gen. CHELIFER Geoff.

C. LATREILLEI Leach.

In this country always found near the sea, hiding beneath pieces of wood on the sand, or in old sheathing bases of marram grass, etc. It has been observed on the shores of the Firth of Forth, and at several places in the East and South of England, and is usually plentiful.

1st Record: H. E. Johnson, Spurn, 'Trans. Hull Sci. and F. Nat. Club', 1901, Vol. I., p. 228.

V.C. 61.—Spurn, under a log of wood on the sands, H.E.J.; since observed in abundance by other naturalists, T.S., E.A.P., W.F.

Group III. Eyes O.

Gen. CERNES Menge.

C. NODOSUS Schr.

Common and widely distributed in Great Britain but not yet recorded for Ireland. Frequents vegetable refuse, manure heaps and is sometimes seen clinging to the legs of flies and occasionally harvestmen, thus securing dissemination. H. Wallis Kew in *The Naturalist*, 1901, pp. 193-215, discusses this habit and mentions other possible reasons.

1st Record: R. H. Meade, Bradford (Cambridge's Chernetidea).

V.C. 61.—Hull, one example on the leg of a fly, Mr. A. R. Tankard.

V.C. 62.—Falsgrove, Scarborough, R.A.T., one example.

V.C. 63.—Bradford, R.H.M., W. West; on a book, Mr. Haigh Lumby; Leeds, in a book in a library, *The Naturalist*, 1884, p. 103; Leeds, W. D. Roebuck and Armley, H. Crowther (V.C.H.). Professor Miall's book, 'House, Garden and Field,' p. 106, (?) *C. nodosus*: 'Sometimes all the flies in a particular shop (a provision shop) are found to harbour chelifers.' Locality presumably either Ilkley or Leeds.

C. DUBIUS Camb.

Usually under embedded stones in unbroken country and near the sea, occasionally under loose stones and among débris. Noted in the south of England—Kent, Surrey, Sussex, Berkshire, Dorset; in Cumberland and in Ross-shire, Fifeshire, East and West Lothians.

1st Occurrence: F. Booth, Ingleton, September, 1911.

V.C. 61.—Birkhill Wood, Cottingham, 1 example, T.S., 1915.

V.C. 63.—Below Ainley Place Wood, Slaithwaite, one example from humus, April, 1916.

V.C. 64.—Ingleton, under a stone, F.B. Recorded in first instance as next species,* but feeling doubtful of the correctness of the identification, the specimen together with the Cottingham example, was submitted to Mr. H. Wallis Kew, and their correct identity established.

C. PANZERI C. L. Koch (*C. rufecolus* Sim.).

Added to the British list in 1905, from a London granary.

Now known to occur in many widely separated localities in England and Scotland and probably common; not yet recorded for Ireland. Frequents old buildings, barns, stables, etc., beneath stones in the floor and among

* *The Naturalist*, January, 1913, p. 83 and March, 1914, p. 87.

hay and refuse; in old breweries and granaries: in hollow trees and in old nests of owl and starling.

1st Record: the Author, Linthwaite. *The Naturalist*, December, 1907.

V.C. 63.—Broad oak, Linthwaite, Colne Valley, two examples in the cracks between the flagstones of a mistal: in a stable behind Wormald House, Almond-bury, Huddersfield, many examples of all ages, among refuse of hay, oats, etc., 1909; in a barn, Barrett, Slaithwaite, one example, 1915.

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The Fungus Flora of Wirral. By Lt.-Col. J. W. Ellis (84 pages, cloth, price 3s. post free from the author, 18, Rodney Street, Liverpool). Dr. Ellis has acted wisely in reprinting his papers on Wirral Fungi from the *Proceedings of the Liverpool Naturalists' Field Club*, as his notes are now in very handy form for the pocket. The booklet is illustrated by a number of plates from photographs showing haunts of typical Wirral Fungi. Altogether his list includes 818 species, 253 of which are Agarics.

On the thickness of Strata in the Counties of England and Wales, exclusive of Rocks older than the Permian, (Mem. Geol. Survey). By A. Strahan, T. V. Holmes, H. Dewey, C. H. Cunningham, W. C. Simmons, W. B. R. King and D. A. Wray. Royal 8vo, 1916. pp. 172. 4s. 6d.

In 1801, William Smith, the father of English Geology, issued a prospectus of a work of his own, which work never appeared! Had Smith been asked to review the memoir recently published by the Survey, he would probably have used very similar words. They are to the effect that from the book, 'the Philosopher may derive an inexhaustible fund of valuable information. The miner may learn more readily, as well as more certainly, to trace the course of his ore; and, while his ideas are extended a curiosity will naturally be excited, that may pave the way to new and unthought-of discoveries. The various artists employed in building, from the humble Mortar-maker to the enlightened Architect, must all be interested in a method of discovering sand, clay, stone, slate, and other materials, and of selecting with certainty such as are best. Fullers, Founders, Glass-Makers, etc., will learn where to send for earths and sands of the qualities best suited to their respective purposes; and sources of supply will, probably, be opened in places of which they now entertain no idea. Chemists, Colour-men, Vitriol, Alum, and Salt-makers, will learn how to trace the materials they have occasion for; and will be enabled frequently to obtain, at once, the different advantages of more convenient situations, smaller expense, and an improved quality. The Canal Engineer will be enabled to choose his stratum, find the most appropriate materials, avoid slippery ground, or remedy the evil. The Building Contractor may also form his estimates with more certainty to himself, and more satisfaction to his employer, by the experience he has had, and the observations that he will be lead to make on similar works in a like stratum. Brick-makers, Potters, and others, are also interested in a knowledge of the correct Theory of those materials which furnish their sole employment. Indeed, there are but few of the most necessary occupations of life, that may not derive from this Work some useful hint or improvement.' The memoir now before us is of quite a new type. It is arranged under the heads of counties, and the thicknesses of the various beds, from the latest information, are given. This information will be of value to the geological student in a variety of ways, and engineers and other will also derive useful information from it.

THE GEOGRAPHICAL DISTRIBUTION OF THE MOTHS OF THE SUBFAMILY BISTONINAE.

J. W. HESLOP HARRISON, B.Sc.

(Continued from page 166).

We begin now to trace what may be regarded as the history of the modern wanderings of the two species *L. ursaria* and *L. hirtaria* and we shall discuss our own insect first.

As it reached the Balkans and wended its way through that ancient land Dalmatia, it found the passage thence *via* Central and Southern Italy, Sicily to Tunis still open and if, as we surmised, the genus *Lycia* is of northern origin, then we have excellent grounds for surmising that this Dalmatia-Italy-Tunis land passage existed just at the closing stages of Pliocene times, and possibly into early Pleistocene times. At any rate, soon after the insect made the passage, the Adriatic Sea was formed and the land mass which cut the Mediterranean Sea into an eastern and a western section, ceased to exist and left the isolated colonies of *L. hirtaria* stranded in the hill gorges of Tunis and Algiers and in the elevated portion of Abruzzi in Italy, where they remain interned and decadent to-day, just as do similar colonies of other European and African plants and animals at varying points on the broken land bridge.

However, as the climate oscillated, so must we suppose the range of *L. hirtaria* varied, until, at length, the lengthy period of amelioration known as *the* interglacial period to some geologists, and as an interglacial period to others, saw the species migrating in all its vigour northward, westward and eastward, in the two former cases following the line of advancing birches (for birch is the food in nature of the species) along the valleys of the Danube, Rhine, Elbe and Vistula. By flanking the Carpathians to the east, and utilising the Vistula valley, it very early reached the limits of its Scandinavian area, after passing over the dry beds of the Sound, Skagerrack and Cattegat. Even at the present day dredgings from interglacial beds at the bottom of these channels, bring before our eyes the remains of the birches which supplied the conquering hosts with food. By contrasting the ease of the route to Scandinavia with the long and tedious route to Britain, it is clear that the forms which issued from their retreats, joined those which had survived the 'winter of their discontent' in Scandinavia, long anterior to a similar reunion in the British Islands. This, supplemented by the Boreal and Alpine forms which reached Scandinavia at the same period from the East *via* North Russia and Lapland, caused that area to be amongst the first in Europe to have its full complement of Alpine and Boreal forms and explains why certain of such forms failed to

reach the Alps and Pyrenees ; this absence, the usual theory of a South Central home of refuge for such species, and a subsequent northern advance fails, to explain.

Next let us examine the British distribution of the species. We see that it presents in the British Islands, the phenomenon of double distribution ; one British colony occurs in England, extending as far north as the Midlands and, of this colony, the Irish localities are the outposts which managed to reach Ireland by way of the Wales-Ireland land-bridge. Northward, after the Midland localities, there is a broad gap in its range and the species only reappears in the Scottish Highlands, where probably no birch wood fails to produce it. This discontinuity of distribution undoubtedly demands investigation. It obviously arises from a definite cause and is not a matter of chance, for many species, e.g. *Dimorpha versicolora*, *Selenia tetralunaria*, *Anticlea cucullata*, *Thera juniperata*, *Eupithecia debiliata** and others exhibit the same peculiar discontinuity. To account for it, one of two causes must be advanced ; either the areas occupied by these species were once continuous and have broken down since, or the two colonies in our islands are really distinct in origin. Let us consider the former view first. What can we advance to account for the break ? The break might conceivably have been brought about by geological means or by the agency of man.

If caused by geological means, then the only possible one worthy of serious consideration is that of submergence and, if we grant this, then the Irish and Southern English habitats of these various forms, would have been the first to be overwhelmed by the sea and there ought to be lowland Scotch and northern English localities, where the fall in land level, if any, was but small in which they retained their hold. Possible habitats with abundant primeval birch and other necessary food plants are plentiful in many upland valleys and lowland 'carrs' and yet the species are unaccountably absent. We are irresistibly forced to conclude that such a geological explanation fails to fit in with the facts and must, in consequence, be abandoned. There is only left the agency of man to account for the gap ; this may have worked in various ways ; either the firing of the original forest land or intensity of cultivation, or both, have been the agencies at work. Both, however, of these suppositions are untenable, for they are shipwrecked on the rock that the very areas in England in which *L. hirtaria* abounds, are precisely those areas in which the suggested agencies have been longest at work and *vice versa*. We must therefore conclude that the stretch of country between the colony in Scotland and that in England was never occupied and, consequently, that the two

* It is worthy of note that the food plants of all of these, and of insects with similar distributions, are birch and plants usually associated with birch, e.g. *Galium* sp., *Vaccinium myrtillus*, *Juniperus communis*.

colonies are totally distinct in origin. This conclusion necessarily carries with it the corollary that the repopulation of the British Islands, when the ice waned, was not wholly from the South and East as we are generally asked to believe, and this conclusion is backed up by the present distribution of all of the elements of our Flora and Fauna, which are not of general occurrence. Northern species show unmistakable signs of having advanced from the North and are therefore northern and western in distribution, as can readily be perceived from a consideration of such species as the moths, *Larentia caesiata*, and *Cloantha solidaginis*, the spider, *Caledonia evansii*, the plant, *Empetrum nigrum*, chosen at random from a host of similar examples in all groups. In the same way, forms of Southern and Eastern origin are southern and eastern in distribution and it would be but repeating the obvious to select illustrative examples. Without doubt, these phenomena are not matters of chance and, when we meet with this curious circumstance of double distribution, we cannot but conclude that we are concerned with two branches, one of which has advanced with the southern species and another which has accompanied one of the hosts of northern invaders.

That the northern division came last, is proved by the fact that, whilst the southern colony has settlements in Ireland which are bound to have reached Ireland *via* Wales, i.e. by a land connection which broke early, on the other hand, the northern section has no Irish advanced posts, in spite of the long continued existence of the Mull-Islay-Donegal isthmus.

The conclusion is unavoidable that the wave of immigration which gave Britain her northern *L. hirtaria* was set in motion by events to the north of our island, which so lessened the habitable areas in Scandinavia, that a great proportion of the Flora and Fauna of that country had to seek other shores; this factor was the development of that last phase of the Glacial Period, the huge Baltic Glacier, which affected our own islands (if it did affect them at all), but little. The ice, ploughing its way from the Scandinavian Mountains eastward and southward, advanced over the bed of the Baltic Sea, driving in front of it the water to form an arm of the sea which stretched out far across Holstein into the North Sea plain, and incidentally overwhelming Denmark and North Germany. Thus, plants and animals, which had to retreat, were deflected westward, reaching, in the process of time, with many other Boreal forms, the Scotch localities they now possess, occupying them solidly just as the retreat was stopped and climatic and geographical conditions, approximating more or less closely to those of the present day, intervened.*

* From the above line of reasoning it will be seen that I place the origin of the British Flora and Fauna as far as the Boreal forms are concerned, as Interglacial. Again it is well to state that I refuse to believe that the

Such an advance of Northern forms, driven westward and flowing southward in Britain, in the absence of great climatic changes in these islands, I have shown elsewhere to be a possible cause of the curious commingling of northern and southern forms in certain Pleistocene deposits of our own and contiguous areas.

Whilst these events, mainly of local importance, were occurring in the west, almost simultaneously, events of far reaching importance developed in the east. The Arctic-Aralo-Caspian arm of the sea had slowly dried up, opening the way for the pent-up horde of Siberian and other Asiatic forms which streamed westward as an all conquering flood, giving us some of what we regard as our most typical animals and plants. But the removal of the barrier had other effects, for the reduced European Flora and Fauna also used the narrow gateway to gain new ground and a wedge of migrating *L. hirtaria* passed forth to its present Asiatic home in the Issi Kul and Ili districts. With this, we have traced *L. hirtaria* to its present stations and, with the final waning of the Baltic Ice, the various sets of conflicting settlers assumed a state of equilibrium and, with but slight changes, resulting from temporary climatic modifications, have remained so until the present day—as far as the hand of man has allowed them.

Next we must take up the problem of the Nearctic *L. ursaria* left penned up by the ice in the Southern Appalachian region. With the retreat of the wide-spread icesheet, the species pressed slowly to the north, guided along the coast by the ever present and impassable Appalachian Mountain system until it reached what is now the state of New York, where the outflowing species could outflank the mountains over the low-lying land between them and Lake Erie; this a division attempted to do, only to be brought up by the barrier interposed by Lake Erie which caused the stream once more to bifurcate, one branch passing into Canada over the Niagara River and the other moving westward.† Thus access was gained to the broad area of the Great Central Plains to the south of the Great Lakes, and *L. ursaria* was only bound by the climatic conditions which limit its northern and southern trend and

Scandinavian Flora and Fauna were quite extirpated. If so, what was the position of such plants as *Artemisia norvegica* at the period in question?

† Here it is important to note that insects such as *Pieris rapae*, *Phytonomus punctatus* and *Cryptorhynchus lapathi* which have been introduced at various points on the Atlantic seaboard have kept exactly to the lines of advance mapped out here as careful observation has shown. Such observations have been used to predict where and when a given alien pest will reach the state of Ohio. I have not considered the valley of the Big Kanawaka in West Virginia or the Cumberland Gap as giving access to the plains beyond the Alleghanies as no introduced species have ever been observed to use them.

these very successfully prevented any great gain of ground to the south and, of necessity, caused the present range of *L. ursaria* in the United States other than in the New England States, to be very limited.

The section, however, which reached Canada across the Niagara, had no such climatic conditions forbidding its advance and, although possibly delayed by the remains of the Great Keewatin Ice Sheet, gradually skirted the Great Lakes westward and eastward. Augmented in its eastern course by that part of the original column which had not passed westward along Lake Erie, but had colonised the more northerly New England States, Nova Scotia and New Brunswick, and had crossed, after delay, the broad St. Lawrence, it slowly passed into Labrador as the Labrador Ice gave way.

The westward march carried the species across a broad belt of suitable territory right up to the foothills of the Rockies. Thus *L. ursaria*, with possible changes due again to partial recurrences of glacial conditions causing it to retrace its course, attained its present locations.

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We should like to congratulate our old, but ever young friend Mr. W. Whitaker, F.R.S., on having reached his 80th birthday. We trust he may long be spared to continue the excellent work he is always doing.

From Mr. A. C. Dalton, a former contributor to this Journal, we have received the reprint of his paper, "Electric Steel Direct from Ore Fines: Converting Refractory Ores into Pig Steel in an Electric Shaft Furnace using Natural Draft: The Metallurgical Possibilities and Uniform Product," which appeared in the *Iron Age* recently.

At the recent annual meeting of the Leeds Philosophical and Literary Society a statement of accounts, presented by Mr. Richard Wilson, the treasurer, showed an adverse balance of £623. The annual report recorded that the number of visitors to the Museum in the past year was 22,110, an increase of 6,500 over the number for 1914-15, and of nearly 2,000 over the average of the last ten years.

The acting librarian of the Barnsley Public Library has issued a valuable *Bibliographical List of Books, Pamphlets and Articles connected with Barnsley and the immediate District*, compiled by Frank J. Taylor. This will be a very useful guide to students of local history, etc. Naturalists will find much to interest them under the head of Natural Science, Coal-Mining, etc. We cannot find that the Library possesses a set of the Barnsley Naturalists Society's *Quarterly Transactions*, but we trust that some day this publication may be available. We understand the bibliography is on sale at the Library, price 3d.

In case any of our readers should see a reference to an article on 'A very rare bird,' which occupies a column and a half in *Punch* of May 10th, we may perhaps explain that the contribution is a joke, really. It's about a bird 'specialist' who opined that some reed-warblers were nesting in an orchard, on account of the unmistakable note of that bird which he heard. It turned out, as might have been guessed, to be a mistake, and the reed-warbler was the wheel of the gardener's barrow, which required oiling. The joke may be new to *Punch*, but to many of us it is more of botanical interest, and greatly resembles the fruit of *Castanea sativa*, a tree said to be of Spanish origin.

NOTES ON THE NESTING OF THE GRASS- HOPPER WARBLER IN THE WEST RIDING.

H. B. BOOTH, M.B.O.U., F.Z.S.

(Continued from page 170).

DATES OF NESTS, HATCHINGS, ETC.

'Reeling' bird first heard by me, May 9th; first heard by B.N.H. & M.S., May 8th; stated by the park-ranger to have been heard almost a week before 9th May.

Nest found not complete about 8-0 a.m., May 24th, birds busy building.

May 27th, 2 eggs in; May 29th, 4 eggs in at 4-30 p.m.; May 30th, 5 eggs in at 7-45 a.m., and was still sitting on nest at 9-45 a.m., so concluded it had commenced sitting.

May 31st, did not go near nest.

June 1st, full clutch of 6 eggs in; June 11th, 4 eggs hatched out; June 12th, not visited; June 13th, 6 eggs hatched out; June 22nd, one bird jumped out of nest as soon as I went near; June 23rd, all birds left nest; June 25th, park-ranger states bird 'reeling' again in morning; June 27th and 28th, bird 'reeling' well, but not heard after, so probably decided to nest again.

July 18th, found second nest with 6 eggs, evidently several days' incubated; July 21st, 4 of the 6 eggs hatched out; July 22nd, 5 of the 6 eggs hatched out and other chipping; July 23rd, 6 eggs hatched out; July 30th, all birds still in nest; July 31st, all birds now left nest.

Both nests within a radius of 36 yards of the favourite resting perch (an isolated Elder tree).

Bird has a flicking of wings and tail like Hedge Sparrow; walks like a Titlark on ground, and climbs about the bushes, weeds, etc., by long climbing, grasping strides; walks lengthways on the tree boughs like a squirrel; when flying, flies low like a Kingfisher; sings with uptilted head and wide-open mandibles, turning its head slowly side to side during utterance; seldom mounts high except to sing. Has a long slender body and a very graceful outline, which the long fan-shaped tail, long neck and long legs, heighten.

Female broods the young well and constantly, and dives in the herbage expertly when flushed, without note or cry, (reminding one somewhat of the little Grebe diving in water) and creeps, with a faint rustling noise, a little distance away, but is back instantly that the suspected danger is past.

NOTES ON 'REELING,' BEFORE, DURING AND AFTER
NESTING OPERATIONS.

May 9th, Grasshopper Warbler heard 6-30 p.m., 'reeling' persistently; May 11th, 7-0 p.m. to 8-0 p.m. (raining) 'reeling' persistently; May 12th, 7-0 p.m. to 7-30 p.m. 'reeling' persistently; May 13th, passed and within hearing about quarter of an hour, about 9-0 p.m. not heard. May 16th, 6-30 a.m. to 11-30 a.m., 'reeling' persistently during morning; about 9-0 a.m. first noticed it skirmishing about with another bird. I could never get a satisfactory view of both birds together, but gave me impression they were both Grasshopper Warblers. After it had been thus chasing the other bird it commenced to 'reel' spreading out and shivering its wings, showing plainly it was then paying attentions to the female. In the afternoon of the same day the bird was still 'reeling' well, but with much longer intervals (would generally start if a motor cycle or car mounted the hill close by) and in the evening it never 'reeled' once during over an hour's time. From this time onwards, until after the young were fledged and had left the nest, the bird was never heard to 'reel' again. Once, when both birds were together during building operations, I heard a very faint imitation of the 'reel,' more like a 'purr' than a 'reel,' however, of about, at a guess, 8 to 10 seconds' duration; this only heard once. Nor was any call or alarm noticed until the young birds were within a few days of leaving the nest, when the bird used a sharp single metallic 'click' note somewhat resembling alarm note of Tree and Meadow Pipits or 'Sip' note of Thristle or even the metallic note used by the Tits, like them all somewhat, but still possessing a distinct character of its own. I got a very close imitation by placing on my fingers in a cutting position a substantial pair of waistcoat pocket-scissors, and bringing the handles together sharply, the click produced almost exactly resembling its note, differing mostly in one being a tapping sound and the other produced by quick emittance of air, giving a throaty sound like that heard in 'pink' of Chaffinch. After the second brood had just left the nest, the bird, I think the female, was giving another cry, a kind of jarring, rattling series of notes, again like a Thristle will use occasionally; a dull sounding, coarse series of notes, somewhat suggesting the Brown Wren. These it uttered very persistently and was evidently in a high state of excitement. The following are the times I was about the nest and never heard any 'reeling':—

May 21st and 22nd, half hour each.

May 23rd, Five and a quarter hours from 6-15 a.m. to 11-30 a.m. (fine and sunny).

May 24th, three and a half hours, from 5-0 a.m. to 8-30 a.m., (fine and sunny).

May 25th, passed about 10-0 a.m. ; again 8-30 p.m. (fine and sunny).

May 27th, quarter of an hour, evening.

May 28th, 20 minutes, evening.

May 29th, 50 minutes, 3-40 p.m. to 4-30 p.m. (raining).

May 30th, two and a half hours (fine and sunny).

May 31st, half hour.

June 1st, one hour (fine and sunny).

June 3rd, 7-30 p.m. to 8-0 p.m. ; also 9-15 pm. to 9-30 p.m. (fine and sunny).

June 8th, 9th, and 10th, quarter of an hour each evening.

June 11th, one hour, 6-45 p.m. to 7-45 p.m.

June 13th, five hours.

June 15th, quarter of an hour, about 6-45 p.m.

June 16th, 17th, and 18th, quarter of an hour ; 18th, first suspected the metallic note came from them which, in the second nest, proved to be the case.

June 20th, four hours, morning. (Fine and sunny).

June 21st, 22nd, and 24th, quarter of an hour, about 7-0 p.m.

June 26th, one hour, (first heavy rain for some time).

June 27th, one and a half hours in morning. No 'reel,' but '*reeling*' well in the evening.

June 28th, '*reeling*' well from 7-0 p.m. until 9-30 p.m. Not very frequent at first ; later getting very persistent ; stayed another quarter of an hour but it did no more '*reeling*.'

June 29th, twenty minutes, about 7-0 p.m.

June 30th, twenty minutes, about 8-45 p.m.

July 1st, 9-25 p.m. to 9-55 p.m., uncertain whether it did not '*reel*' just as I was some distance away on my arrival, it certainly did none afterwards.

July 2nd, half an hour, (heavy rain).

July 4th, six hours, (raining heavily most of time) 5-30 a.m. to 11-30 a.m.

July 5th, quarter of an hour, about 7-0 p.m. ; quarter of an hour, 8-45 p.m. (clear and sunny).

July 8th, three quarters of an hour, 8-0 p.m. to 8-45 p.m., (some rain).

July 9th, one hour.

July 11th, six hours, 5-40 a.m. to 11-40 a.m.

July 15th, half an hour, about 7-0 p.m.

July 18th, four and three quarter hours, 6-30 a.m. to 11-0 a.m. and 11-30 a.m. to 11-45 a.m.

July 21st, quarter of an hour.

July 22nd, half an hour, about 7-30 p.m.

July 23rd, quarter of an hour, about 7-0 p.m.

July 24th, hour and a half, 3-15 p.m. to 4-45 p.m.

July 25th, four hours, morning.

July 27th, quarter of an hour, 7-0 p.m.

July 28th, half an hour, 8-50 p.m. to 9-20 p.m. (cool, but fine).

July 29th, quarter of an hour; stopped very near nest, with both birds creeping anxiously around. They came very close and after a time used the 'click' note elsewhere described.

July 30th, again stopped near nest: again got note, and later, the 'reel,' suggesting that when very alarmed for safety of nest they will 'reel.' Before, I have been very careful not to unduly alarm them; probably the 'reel' would have become more sustained if I dared have ventured to stay longer.

July 31st: went over in the afternoon. When I was getting over wall near to the nest, female (?) was uttering the rattling notes described elsewhere, but no 'reel' proper: again ten minutes about 7-0 p.m., no 'reel.'

Aug. 1st, 'reeling' again commenced, but only occasionally. Time 7-0 a.m. to 11-30 a.m., four and a half hours: 'reel' not given above eight or nine times. Last time I noticed it had been 'reeling' on top of ten ft. tree and dropped down into a bed of bracken about five yards below first nest here: after staying some time out of sight, he came and perched on a tall weed among the bracken bed and commenced 'reeling,' and spreading and shivering his wings, suggesting he was again paying attentions to the female: surely they cannot be thinking of nesting again?

Aug. 2nd, half an hour, from 6-45 a.m. to 7-15 a.m., no 'reel' heard.

[From this date onwards, until Aug. 29th, Mr. Longbottom paid almost daily visits to the place but neither heard nor saw the birds—nor did he see or hear anything more of them in his still later and more irregular visits after that date.—H.B.B.]

DESCRIPTION OF NESTING SITES OF GRASSHOPPER WARBLER.

Both nests were built on a rough stretch of westward-sloping moorland, very dry and naturally well-drained, the nearest water being a small runnel about 150 yards away. This rough moorland is really part of the Bingley Park, but as yet *unimproved* except by a broad border of close-growing shrubs and a double row of tall-growing trees, which tend to keep out intruders (there are no footpaths in or through), and tend to add to its privacy and seclusion. Here there is an abundance of suitable cover to be found: tall-growing bracken, gorse, broom, heather, bilberry bushes, roseberry growing 7 ft. high in the ghylls with which the place is scored, bramble, wild rasp and the old canes, and under and near the bordering trees are tall-growing grasses. More in the open bent, tormentil and lady's bed-straw: dotted about are solitary elders, mountain ash, sapling, sycamore, silver birch and young oaks.

The first nest was built on the border of a large patch of dead bracken (the new fronds were not up yet) and thistles, and was placed down in the centre of a tussock of old grass of the tall-growing variety and was built of dried grass : later, when the new bracken had come up, was well screened by them. It was overhung by a well-grown elder tree whose lowest branches swept and interlaced with the bracken : this was one of the two favourite approaches to the nest used by the birds, the other approach was from a low, long, straggling bush of gorse, from which it reached the nest by creeping along a slight depression or channel-way among the herbage.

The second nest was in the bottom of one of the numerous small ghylls and was again adjoining a large bed of bracken, this time intermixed with wild rasp, with an undergrowth of old rasp canes and dead bracken. In this instance it was built between a few bracken stalks that formed one of several somewhat isolated clumps from the main bed ; here placed this time on new grown bent, with first the shelter of the dead bracken fronds ; then above the new growth it had placed its nest. The nest differed slightly from the first in having a few oak leaves interwoven round its outside. One of the two favourite approaches to the nest was from a young oak that was growing near, and probably this accounts for the introduction of the leaves. The other approach was from a tall-grown broom from both of which places it reached the nest by creeping stealthily along the main bed of bracken. Both nests had a clutch of 6 eggs which, in both instances, all hatched out, and all the young birds were, when they left the nest, well-grown and hardy looking.

[After the young had left, each nest was taken—the first one for the Keighley Museum, and the second one for the Bradford Cartwright Hall Museum—at which places they may be seen.—H.B.B.]

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The Transactions of the Manchester Geological and Mining Society, issued in February, 1916, contain Mr. L. R. Fletcher's presidential address in which he deals with the question of war and coal mining ; a severe criticism by Dr. Arber of Mr. H. Bolton's paper on the 'Fauna and Stratigraphy of the Kent Coalfield' ; two papers by Dr. G. Hickling, namely 'The Coal Measures of the Croxteth Park Inlier,' and 'The Geological Structure of the South Lancashire Coalfield.'

The Quarterly Journal of the Geological Society, Vol. 72, part 2, for 1915, dated February 23rd, 1916, was received on March 6th. Among the contents we notice the following : Dr. A. Dunlop on 'A Raised Beach on the Southern Coast of Jersey' ; Mr. Clement Reid on 'The Late Glacial Plants of the Lea Valley' ; Mr. S. H. Warren on 'The Late Glacial or Ponder's End Stage of the Lea Valley' ; Dr. J. E. Marr on 'The Ashgillian Succession to the West of Coniston Lake' ; Dr. Stanley Smith on 'The Genus *Lonsdaleia* and *Dibunophyllum rugosum*.'

COLEOPTERA IN YORKSHIRE IN 1915.

W. J. FORDHAM, M.R.C.S., L.R.C.P., F.E.S.

TAKEN altogether the past season has been better than several of the preceding ones, and a noteworthy fact has been the abundance of some species which are usually limited in numbers. Thus Mr. Bayford notes that there appears to have been an unusual abundance of our commoner *Carabi*, *violaceus* and *nemorialis*, while *monilis* has appeared more frequently than usual, but is by no means a common species. Several melanic forms of common species have been noted, in addition to other well-marked varieties.

An innovation in this list is the division of the county into the five vice-counties as outlined in *The Naturalist* for December, 1915, p. 373, instead of into the three Ridings as in previous reports. This brings the work of the Committee into line with that of other sections of the Union, and is a return to the method adopted in the list of the Beetles of Yorkshire commenced in the Transactions some years ago by the late Rev. W. C. Hey.

Species new to a particular vice-county are indicated by an asterisk followed by the number of that division. Additions to the county list are characterised by a dagger.

The initials indicate Dr. H. H. Corbett, Lieut. H. V. Corbett, Messrs. E. G. Bayford, J. W. Carter, T. Stainforth, W. E. Sharp, M. L. Thompson, G. B. Walsh and the writer. Mr. E. W. Morse, being on active service in France, and Mr. E. C. Horrell, owing to business affairs, have been this year unable to add their usual valuable contributions.

To avoid needless repetition the beetles found on the occasions of the Yorkshire Naturalists' Union excursions are not included, but the records of these should be referred to. For the Settle and Hebden Bridge meetings there are no records of Coleoptera, but of the others, for Saltburn (*The Naturalist*, 1915, November, p. 366), Mr. Thompson records forty species; Sawley (*The Naturalist*, 1915, July, 3, 232), four species, and Bishop Wood (*The Naturalist*, 1915, September, p. 287) 148 species were noted (in addition to a few since identified). As with other years the following list includes some insects taken previous to 1915, but only recently identified.

There have been forty-four species added to the County list during the year, and numerous additions to the Vice-Counties, and many additional localities for species already recorded have to be held over till the publication of our County List. The nomenclature of the catalogue of Beare and Donisthorpe (1904) is used in this list, but it is hoped in future to adopt the more recent one of Messrs. Newbery and Sharp (1915).

Various notes have been published by the members of the Committee in *The Naturalist* and *The Entomologist's Monthly Magazine*, and these are noted in the text of the report. In addition however, attention should be drawn to Mr. G. B. Walsh's paper on 'Observations on Some of the causes determining the survival and extinction of insects with special reference to the Coleoptera' (*Entomological Monthly Magazine*, August and September, 1915, pp. 225 and 257), in which many references are made to the beetle fauna of the Humber and the Tees areas.

Dr. Corbett has also a note in *The Naturalist* (June, 1915, p. 209), on 'Undesirable Insect Aliens at Doncaster.'

Carabus arvensis Hbst. Birdsedge; 3-5-1914. B. Morley, *63. (E.G.B., *E.M.M.*, October, 1915, 293). Other previous Yorkshire records are re-called by Mr. Carter (*E. M. M.*, November, 1915, 311), and Mr. Walsh (*E. M. M.*, November, 1915, 311).

Bradycellus collaris Pk. North Cave. G. B. W., *61.
Stanage Moor, 17-9-15, under sod. H.V.C. *63.

Pterostichus oblongopunctatus F. Very abundant and *Amara fulva* De G. Swarms, August, Houghton Woods. T. S.

Pterostichus picimanus Duft. Shirley Pool on flowers of meadowsweet, 26-8-15. H. V. C.

Amara aulica Pz. Unusually common in autumn, not often common round Doncaster. H. V. C.

Amara rufocincta Dj. Eston. One under stone near coast in June. M. L. T. (Very rare in Yorkshire).

Calathus melanocephalus L. var. *nubigena* Hal. Under stones on summit of Nine Standards Rigg, Upper Swaledale in July. M. L. T.

Laemostenus complanatus Dj. Hull Docks. Very common under rubbish, near timber yards and in warehouses and cellars. T. S. *61. This beetle has a wide range over the globe and is evidently distributed by commerce. The only previous Yorkshire record is Middlesbrough (a few specimens at Messrs. Dorman Long's works—not at Grangetown as erroneously quoted by Mr. Walsh in his paper above referred to).

† *Bembidium Clarki* Daws. Skipwith Common, April, in sedge refuse. G. B. W.

Bembidium atrocæruleum Steph. Lonsdale. G. B. W.

Bembidium nitidulum Marsh var. *deletum* Serv. Bridlington, 10-8-12. W. J. F.

Bembidium Saxatile Gyll. Keld, Upper Swaledale. Fairly common on margins of mountain stream. September. M. L. T., *65.

- Patrobis assimilis* Chaud. Keld. Under stones on high moor in July. M. L. T.
- †*Patrobis septentrionis* Dj. Frizinghall, 1889. J.W.C. A fine specimen of this insect confirms a previous record by Mr. E. B. Wigglesworth for the Wakefield district. This latter record was doubted by Canon Fowler as it is an alpine species, but a well-marked specimen of *septentrionis* (as is that taken by Mr. Carter) is very distinct from the common *excavatus* Pk. The Frizinghall specimen shews all its diagnostic features in a marked degree. (See J. W. C. in *E.M.M.*, November, 1915, p. 311). This record is extremely interesting in conjunction with the records for *Agabus arcticus*, *Quedionuchus laevigatus* and *Lesteva luctuosa* noted later, as confirming the theory that what we call the north-western element of our insect fauna was at one time far more extensive than it is at present.
- Pogonus chalceus* Marsh. This species still occurs commonly in its only Yorkshire station. Saltend Common. T. S.
- Metabletus foveola* Gyll. Rombald's Moor. F. Rhodes. *64.
- Halipilus fluviatilis* Aub. Stamford Bridge, 5-7-13. W. J. F. *61. Near Keld, July. M. L. T. *65.
- †*Halipilus immaculatus* Gerh. (nec. Newb.). Skipwith Common, 30-8-13. W.J.F. (kindly verified by Mr. Jas. Edwards). Introduced to the British List in 1911. (*E.M.M.*, p. 9), nearly all previous records are from the South of England. (Fowler, *Brit. Col.*, VI., p. 18).
- Noterus clavicornis* De G. Hornsea Mere. T. S. Escrick, 14-8-15 W. J. F. *61.
- †*Noterus sparsus* Marsh. Saltend Common. T. S. (See 'Notes on some Yorkshire Coleoptera,' T.S. *The Naturalist*, 1915. December, p. 402).
- Laccophilus interruptus* Pz. Barmston Drain. G. B. W. *61.
- Cælabus parallelogrammus* Ahr. Saltend Common near Hull. T. S. (Previously recorded from Marfleet. *The Naturalist*, 1909, p. 352).
- Hydroporus davisii* Curt. Keld. Fairly common in September, in a clear running stream. M. L. T. *65.
- Hydroporus vittula* Er. Skipwith Common, 22-4-1911. W.J.F. *61.
- †*Agabus arcticus* Pk. Keighley, 1915. Mr. Wilman. This insect has hitherto only been recorded from Scotland, Northumberland and Ireland.
- Rhantus exoletus* Först. var. †*nigriventris* Newb. and Sharp. Askham Bog, March, 1895. W. E. S. (see *E.M.M.*, 1915, October, p. 288).
- Philhydrus coarctatus* Gredl. Keighley. Mr. Wilman. *63.

- †*Helophorus mulsanti* Rye. Saltend Common. T.S. (See *The Naturalist* 1915, December, p. 403).
Helophorus arvernicus Muls. Malham. J. W. C. *64.
Cercyon depressus Steph. Bridlington, 23-5-09. W. E. S. *61. The specimen on which this species was added to the Yorkshire list was taken to the north of Filey in sheep dung on the cliffs towards Gristhorpe and therefore in V.C. 62. (See *The Naturalist*, 1915, May, p. 165). It was recorded by Bold for Northumberland but doubted by Canon Fowler (*Col. Brit. Isles*, Vol. I., p. 256), as its other stations are all in the south.
Cercyon hæmorrhous Gyll. Frizinghall and Keighley. F. Rhodes. *63.
†*Cercyon lugubris* Pk. Shirley Pool, Askern. October, 1911. W. E. S.
†*Cercyon granarius* Er. Skipwith in fungus, June, 1914. W. J. F.
Cercyon minutus F. Bubwith on bones. W. J. F. *61.
Aleochara algarum Fauv. Bridlington, 23-5-1909. W. E. S. *61.

(To be continued).

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The Dialect of Hackness (North East Yorkshire) with original specimen, and a word list. By **G. H. Cowling**. Cambridge University Press, 195 pp. 9s. net. This Grammar 'is an attempt to investigate a modern Yorkshire dialect on a scientific plan.' The basis for investigation has been the Yorkshire dialect of the fourteenth century, not old English, 'for in spite of many modern dialect grammarians, no Northern English dialect is derived from old West Saxon.' The author gives examples of many old-world local dialects which he consulted, and he offers many interesting instances of local sound-changes, and no doubt the phonology will be of value to all who are interested in the development of the English language. The dialect on the Wolds and in the vales of north-eastern and eastern Yorkshire is frosty but kindly. Frosty in its naked directness. Frosty in its extreme sobriety of expression. Frosty too, its hatred of diminutives. The volume is a remarkable and scholarly production, and will be of value for all time. Its perusal is most interesting, though the frequent use of the phonetic symbols is confusing until they are mastered. There are samples of Hackness dialect, including a good story of the Hare and the Prickly-backed Urchin. The hare had called t' prickly-backt urchin 'bandy legs,' so the latter challenged the hare to a race along the furrows in a 'tonnep-field.' The urchin put his 'missis' at one end of the furrow, and apparently started to run, with the hare, at the other. By the time the hare reached the far end the 'missis' jumped up and 'malled oot.' 'Here I is.' So the hare raced back and then found Mr. Urchin jump up with 'Here I is.' And the process went on until the hare died of exhaustion, it not having occurred to the hare that there were two urchins. 'T' moral o' this tale is fost, at neabody owt tae think hissen a better chap nor other fowk, and mak fun on 'em. And second, at men owt tea pick wives like theirsens, wives at can help 'em, and be some use tiv 'em. Them at's urchins mun pick an urchin for a wife, and not a fond doe rabbit, nor a bitin' rezzil.'

NEWS FROM THE MAGAZINES.

The Journal of the Board of Agriculture for April contains a report on 'Medicinal Plants in England.'

British Birds for May contains records of a white tailed eagle and rough legged buzzards in Lincolnshire.

The Entomologist's Record for April contains a paper on 'British Races of Butterflies,' by Dr. R. Verity.

The Zoologist for May includes some notes on Yorkshire Birds, including the Stonechat, Redshank, Swift, Woodcock, etc.

In *The Scottish Naturalist* for May, Mr. W. Denison Roebuck writes on 'Easternness: the vice county and its Molluscan Fauna.'

Lincolnshire Notes and Queries for April contains a well-illustrated article on Roman remains at Saltersford, near Grantham, by Henry Preston.

Among the *Leaflets* recently published by the *Board of Agriculture and Fisheries*, we notice No. 57, which deals with the use of Sulphate of Ammonia as Manure; No. 58, White Mustard, and 80, the use of artificial Manures.

Mr. F. A. Lucas's brief report on 'British Neuroptera in 1915,' which includes a few Yorkshire and Lancashire records, appears in *The Entomologist* for May. A further instalment of Mr. Claude Morley's 'Notes on Braconidæ' includes Northern records.

The Micrologist, Vol. III., part 2, contains articles on a method for grinding rock, bone, teeth, etc., by Charles Cottam; The Polyzoa, by H. E. Hurrell; and the Fairy Shrimp. There are several excellent illustrations. The Publication is sold by Messrs. Flatters, Milbourne & McKechnie, Ltd., price 1s. 6d.

The Eighth Annual Report issued by the National Museum of Wales, contains the following interesting items:— 'to specimens £2393, to Library £709, purchases from the Pyke Thompson Fund £333,' and numerous similar items which show that our friends in Wales are not stinting their National Museum, which is not built yet.

In *The Zoologist* for April we notice there are papers on 'Birds seen during the Dardanelles' Campaign,' by Captain A. W. Boyd; 'The Mammals of Flanders,' by Captain P. Gosse, and 'A Diary of Ornithological Observation made in Iceland during June and July, 1912,' by Edmund Selous; as well as a number of bird notes for the Bradford district.

Among the contents of the *Journal of the Derbyshire Archæological and Natural History Society*, Vol. XXXVIII., we notice 'Plant Galls of Thorp and District,' by H. J. Burkill; 'Roman Buxton,' by E. Tristram; 'Wirksworth China,' by T. S. Tudor; 'Chellaston Alabaster,' by Rev. R. L. Farmer; 'Zoological Notes,' by W. Shipton; and 'Lepidoptera,' by H. C. Hayward.

Among the contents of *The Lancashire and Cheshire Naturalist* for March we notice a paper 'On the Pupation of the Fox Moth,' by George Bolam; 'Belinurus lunatus from Sparth, Rochdale,' by Mr. W. A. Parker; 'Arthropods observed in 1915. III.—Hymenoptera,' by A. Randall Jackson. The April number contains a 'Report on False Scorpions and Woodlice,' by R. Standen.

The Journal of the Manchester Geographical Society, Vol. XXXI., Parts 1-4, 1915, dated March 1916, and received on April 20th, is a remarkably good number and well illustrated. Besides numerous articles on Nigeria, Venezuela, Japan, Ceylon, etc., Major H. G. Lyons' presidential address to Section E (Geography), at the British Association meeting, is printed, as well as the president's address to the Manchester Society, by Mr. H. Nuttall, M.P.

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THE NATURALIST.

A MONTHLY ILLUSTRATED JOURNAL OF
NATURAL HISTORY FOR THE NORTH OF ENGLAND.

EDITED BY

T. SHEPPARD, M.Sc., F.G.S., F.R.G.S., F.S.A.Scot.,
THE MUSEUMS, HULL;

AND

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WITH THE ASSISTANCE AS REFEREES IN SPECIAL DEPARTMENTS OF

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NOTES AND COMMENTS.

SOUTH EASTERN NATURALISTS.

The South-Eastern Union of Scientific Societies, modelled after the style of the Yorkshire Naturalists' Union, reached its majority this year, and between May 24th and May 27th held its twenty-first annual Congress at Tunbridge Wells, the place of its birth; in fact the Society is said to have been actually born in the pump-room there! As we in Yorkshire look upon our society as the father of Unions of this description, (the Lincolnshire Union being another healthy child—a 'Midland' Union dying in its infancy), the present writer gladly accepted a kind invitation to join the Congress. And the fact that he received a special vote of thanks from the Council for his attendance, with a request that he might visit them again, is some indication that he behaved himself as a parent should.

THEIR METHODS.

The meetings were presided over by the Rev. T. R. R. Stebbing, M.A., F.R.S., who was the first president of the Union. In some respects the South-Eastern Union's meetings were reminiscent of the early days of the Yorkshire Society. There was not quite the monotonous harmony which sometimes characterises old age. At present our southern friends seem to confine their efforts to an Annual Congress, with very enjoyable picnics in the afternoons; receptions, popular lectures and visits to cinemas in the evenings, and morning sessions for papers and discussions and occasional meetings of delegates. On these occasions the heat with which the delegates indulged in the feast of wisdom and flow of soul was certainly reminiscent of the General Committee meetings, held years ago in connection with the Yorkshire Society.

A COMPARISON.

At present, however, the southern society is still youthful. It likes an enjoyable outing. It is still exuberant. It has not settled down to the serious work by means of various general and special field excursions, and by the formation of sections and committees, that obtains in Yorkshire, though there were certainly signs that the society was 'coming of age,' and more inclined to follow definite lines of research, and one or two committees were formed with that object. After the Congress the various papers and addresses are recorded in the annual *South Eastern Naturalist*, which, last year, appeared with commendable promptitude.

A MINIATURE BRITISH ASSOCIATION.

In a way the Tunbridge Wells Congress was very like a British Association meeting, on a small scale. The men, however were distinctly in the minority, though quite a large proportion had reached their three score years and ten, and not a few had passed their eightieth milestone. These latter might easily have been the youngest in the party, whether

taking part in excursions or in debates. Among them was Sir Henry Howorth; like the holly, evergreen, and fairly bristling with sharp witticisms and good humour. He had apparently forgotten his Glacial Nightmare and his Flood, his Mammoth and his Mongols; and his charming personality and fund of stories were much appreciated. And, of course, there were the ladies, very many, though not plenty of them. Like the British Association, the Congress concluded with the usual 'bread and butter meeting' where everybody was thanked for everything, and all said nice things about each other.

FAITH.

One prominent feature of the meetings was the great faith with which the members drank in all the wisdom that flowed from the lecturers and the lips of the guides on the excursions. Curious geological phenomena—explained in curious ways—were never questioned; extraordinary dates and weird descriptions given to specimens in the old buildings visited were apparently swallowed as though they had been camels. We missed the familiar and pardonable, though sometimes awkward 'How do you know?' and 'Why?' that we get in Yorkshire.

THE PRESIDENT'S ADDRESS.

The President, the Rev. T. R. R. Stebbing, the well-known authority on Crustacea, certainly gave a surprise and caused some concern by his address on 'Thoughts that breathe and words that burn.' He began with the anecdote of the man going to Bagdad who asked a skull by the wayside, 'How came you here, my friend?' to which the skull replied, 'By talking too much.' Should an antiquarian a thousand years hence light upon this narrative he must not infer that in our epoch skulls without brains retained a limited power of vocalisation. This warning applies to a scientific audience as much as any other, in proof of which opinions are continually changing, and therefore absolute freedom is necessary for scientific expression. To win sympathy for this claim to full liberty of conscience Mr. Stebbing quoted Sir Thomas Moore, whose life was forfeited because he quietly clung to the opinion in which he had been educated. How men change their minds on vital questions, with results which influence the world for ages, was illustrated by various examples, and he pointed out that it was no refutation of an argument to cast stones at the speaker, as at the devout Syrian who was tried for his religious faith. It was, moreover, unfair to forcibly interrupt an argument midway because one disliked the conclusion to which it was leading. On one side one had multitudes incessantly and fervidly proclaiming their opinions, and on the other, assemblages who, by holding their tongues, averted needless obloquy.

'WHAT IS TRUTH?'

It was assuredly in no jesting mood that Pilate asked, 'What is truth?' and had he waited for an answer until Bacon's essay on Truth was published he would still have found it undefined. Mr. Stebbing did not aspire to answer the question. His humbler task was to examine particular instances of what is not truth. When we looked at the problems involved in human affairs, laws or ethics, where did we find anything like agreement or finality? In spite of the fact that the struggle between orthodoxy and heresy has been repeatedly determined by the sword, it may still be maintained that all reasonable human controversy must be engaged in bywords. When a fallacy is embodied in a single word it may escape notice. There was no word more misleading in the English language than 'Bible,' which had become almost an object of idolatry. Sometimes the title 'The Book' was amplified into 'The Holy Bible.' Yet it was a selection of many books, whose conflicting contents were summed up in the description of the national theology of England as given by a famous poet in his invocation beginning 'Of man's first disobedience.'

SCIENTIFIC CRITICISM.

Almost every word of this summary of our national theology was now challenged by scientific or other criticism as untenable, misleading, and impossible to reconcile with any claim to Divine inspiration. Can it be a matter of indifference to our law-givers, bishops and clergy, masters of public schools, whether tenets which most of them are bound officially to accept, and to instil into others, are really of Divine origin, or, alternatively, unworthy of belief? How could missionaries confronted with every grade of culture meet men their equals in the discipline of argument if they showed themselves lamentably ignorant or wilfully scornful alike of science and the art of reasoning? Those they wished to convert were confronted by the geologist with the alternative of believing either that Omnipotence spent six days in creating the globe, or that Omniscience deliberately inspired Moses to falsify the record.

THE BOOK OF GENESIS.

The speaker proceeded to test the Book of Genesis from the astronomical, geological and anthropological standpoints, bringing the Articles of the Church of England into the comparison. How many women of intelligence even among the most devout will be willing to acknowledge the Biblical account of the actual origin of their sex. Yet in the New Testament the sanctity of marriage was based on a quotation from this account. Mr. Stebbing next dealt with the talking, argumentative serpent, and quoted Professor Owen's description of the capabilities of the serpent, which, he remarked, was a

fine defence for an animal which in these days could not speak for itself. In relieving the serpent of responsibility for a share in Adam's fall it was urged that man's first disobedience did not bring death into the world, because as palaeontologists are assured, death was there long before man made his appearance, and zoologists are well aware that the serpent is no more accursed than any other wild animal. But supposing no weight were allowed to the crushing scientific evidence that the early chapters of Genesis are not a Divine revelation, there still remains the tremendous point that the Church bases its faith on the record of Adam's fall.

THE DELUGE.

The President next passed under review the Biblical account of the Deluge and the Tower of Babel, and the predatory campaigns of the Israelites. In every direction the advance of science makes it clear that men of old had no more communication with the Most High than we have. In their writings of reputed inspiration, noble thoughts and lofty ideals are mixed up with atrocities unworthy of a barbarian. In these days we may be excused for asking how Christianity fulfilled its earliest promise of bringing glad tidings to the human race. What he had been saying was not to be regarded as a perverse and presumptuous challenge, but an appeal for vital changes in the laws of the Church and State which conflict with the traditional faith of millions.

SUPERSTITION.

To this last point he invited attention, not only for its intrinsic importance, but because of the misunderstanding which attended it. Those who were immovably sure of being among the chosen few must have the disquieting suspicion that their confidence may be misplaced, and generous minds would be haunted by the probability that the majority of their friends may not share their bliss. The dreadful arithmetic of the Athanasian Creed was appalling. Mr. Stebbing quoted the terrors fulminated by last century divines, including the description of the infernal regions by good Bishop Berridge, and remarked that poets and preachers seemed seldom to reflect that this riot of divine vengeance has left the world indifferent. It is surely time for men of science and theologians to join hands in revolt against superstition masquerading as piety. If a tree can be known by its fruits, the history of the world proclaims that there must be something wrong in the traditional teaching of Christianity which needs a thorough purging. Statements founded on fable and supported by false logic must be withdrawn. When the dross has been cleared away, the pure gold of true inspiration will have a chance of shining. The noblest thoughts which in different ages have found expression will win their way into the general

conscience, bidding men to do justice and love mercy, and to think of God not as an implacable avenger, but as the author of Peace and lover of concord, who asks our help in the well ordering of this small corner of His wondrous universe, and who would have us know that all our doings without loving kindness are worth nothing.

DISCUSSION.

As might be expected, an audience consisting largely of ladies, and a fair sprinkling of clergy, received the address in different ways. One member even went so far as to propose that the President be asked to write another address! A President's address, however, whether we agree with it or not (and few addresses can be found in which there is not *some* point of disagreement) is, by courtesy, not a subject for discussion, and should be printed as given, especially when it is made quite clear in the volume that the authors alone are responsible for the opinions expressed in their communications. Eventually this was agreed to by a large majority of the delegates.

OTHER PAPERS.

The other papers given before the Congress were:—'Some Remarkable Resemblances of Inorganic Formations to Organic,' in which Mr. G. Abbott dealt with limestone concretions, etc.; 'Extinct Animals,' by Mr. H. R. Knipe; 'Prehistoric Man,' by Dr. Keeble; 'Young Animals,' by Dr. Chalmers Mitchell; 'Coinages and Mints of South Eastern England,' by Mr. A. Archibald; 'Some Rare British Birds,' by Miss E. L. Turner; 'The Discovery of Oxygen in the Stars,' by Professor H. N. Turner; and 'The Educational Importance of the Kinema,' by Dr. W. Martin. All were well illustrated, the last lecture, given at a 'Picture Palace,' being especially striking. Papers dealing with definite problems in connection with the natural history, geology and archæology of the area covered by the Union were not quite as plentiful as they might have been. The popular lectures of course are valuable and desirable, but they do not carry out what should be, and no doubt is, the main object of the South Eastern Union, namely the scientific investigation of its area.

THE BRITISH MUSEUM.

One delegate suggested that a resolution should be sent to the Government in reference to the closing of the British Museum. Sir Henry Howorth, who was called upon, said that as a Trustee of the British Museum of many years' standing, he had made a desperate fight, together with his colleagues, to have the Museum left open. The fact was that the whole thing was perfectly illegal. There was a Charter in which it was specially provided by Act of Parliament that the Museum should never be closed at all, and many things had been given

on that condition. The Government, however, threatened to withdraw grants if the Museum were kept open during the war. The only Museum of any quality or importance in the whole of England, Scotland, Ireland or Wales to be closed on account of the war was the British Museum. He was afraid however, that it was hopeless to attempt to do anything in the matter. Professor Boulger asked if they could not apply to the High Court for a writ of mandamus against Sir Henry and the other Trustees to compel them to re-open the Museum? Sir Henry Howorth replied that if the speaker liked to go round with the hat and collect five or six thousand pounds to pay for the legal proceedings he might do so.

RADIOLEUM.

Of somewhat exceptional and certainly extraordinary character, was the exhibit by Mrs. W. Dickinson, of Brighton, which was in the temporary Museum at the Technical Institute. By an appalling series of photographs, mysterious crystals in tubes, microscope slides and so on, Mrs. Dickinson explained the wonderful properties of her discovery known as Radioleum. This, it is claimed, 'works entirely by nature, and is a radio-active agent of purely vegetal origin, which effects many wonderful changes, comparable with those produced by radium.' From a pamphlet which was distributed, it seems that among many other things, Radioleum makes 'pure radio-active water; it produces radiole fibres or threads, radiole stars, the brilliant specks, radiole crystals, sometimes snow-like; it produces X-ray photography; it is a substitute for yeast; it separates and purifies any mineral, gives greater heating power with slower combustion to coal, producing no waste; it produces an egenitic fertilizer for pure vegetation from soil; it cleans wool direct from the sheep in a few hours, ready for the weaver; it produces active iris rays in glass, also gaseous rays in brilliant colourings; it purifies and reduces waste paper into pulp in a few minutes ready for re-manufacture; produces a substitute for ice from flour, etc.'

THE BASIS.

Apparently the substitute is derived from an oil from the East, which was exhibited, and which we understood Mrs. Dickinson to say was something like 2,000 years old, possibly more. Any scepticism a visitor might have was dispelled by Mrs. Dickinson's persuasive personality, which was most convincing. In the short time available it was not possible to fathom the mysteries of the results of Mrs. Dickinson's six years' hard work. In one respect, however, the present writer must express a little disappointment. He was assured that Radioleum would considerably reduce his weight, but there was no great difference in his bulk when he left Tunbridge Wells. Possibly the fair scientist had not proper opportunity

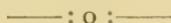
for experiment. In any case if Radioleum has anything like the properties claimed for it, we shall certainly be hearing much more of Mrs. Dickinson and her discoveries in years to come.

TUNBRIDGE WELLS HANDBOOK.

In one respect the South Eastern Union has carried out a magnificent piece of work, which will be a valuable scientific record of the district for all time. This is entitled 'Tunbridge Wells and Neighbourhood. A Chronicle of the Town from 1608 [? 1606] to 1915, and papers by various writers relating to the Geology, Plant and Animal Life, Archæology, and other matters of the District. Edited by Henry R. Knipe, LL.B., F.L.S., &c., President of the Tunbridge Wells Literary Society,' and contains 205 pages with illustrations, the whole being bound in an artistic cover. The publication is sold at 2s. 6d. The first section contains a chronological list of the events between 1606 and the present day. There are chapters on Archæology, Geology, and the various Natural History sections, by first-rate men. The editor, Mr. Knipe, is certainly to be congratulated upon a very valuable piece of work.

DR. W. EAGLE CLARK.

Readers of *The Naturalist* will be delighted to learn that the St. Andrew's University has conferred the degree of Doctor of Laws, 'honoris causa,' on a past-President of the Yorkshire Naturalists' Union, William Eagle Clark, F.R.S.E. Dr. Eagle Clarke was at one time Curator of the Museum at Leeds, and took a prominent part in the affairs of the Yorkshire Naturalists' Union, and was joint Editor of *The Naturalist*. Twenty-eight years ago he received an appointment at the Royal Scottish Museum, Edinburgh, where he is now the keeper of the Natural History Department. While he was one of the Hon. Secretaries of the Yorkshire Naturalists' Union, together with his colleague, Mr. W. Denison Roebuck, he wrote a 'Handbook of Yorkshire Vertebrata.' He is also the author of a magnificent volume 'Studies in Bird Migration,' and at the present time is preparing a new edition of Newton's Dictionary of Birds.



The following are a few scraps picked from the discussions during the scientific feast at the South Eastern Union's Congress at Tunbridge Wells:—

A collector is no good if he is not a thief.

The blush that fades at seventeen fixes itself at forty-five.

While each of us would resent anything said against our mother, all of us would be glad to have had a frisky grandmother.

Improper criticism should be put in the waste paper basket, where we all put our *soiled linen* (and Sir Henry Howorth wondered why the delegates laughed!).

Dr. Chalmers Mitchell showed a slide of *amæba*, one of which had a wide 'modern' waist, another had a slim one such as he used to put his arms round years ago, he said.

Dr. Woodward tells a story of the late Dr. Gray who was interested in crustacea. One day he was discovered carefully boiling something in a test-tube. 'Damn it,' he said, 'it *won't* go red!' It turned out to be a domestic flea.

The late Dr. Buckland was fond of experimenting in a variety of ways. He once secured a black patch of fleas from a heron and carefully placed them in his hat. They all died. A lady to whom he told the circumstances replied, 'Killed by the natives, I suppose?'

The secretary and editor, Dr. W. Martin, resigned his positions after six years' service, which was regretted. He stated, with some truth, that it was better to feel that there was regret at a resignation, than to hold office so long that a resignation came as a relief to the members.

A scientist called Knipe
Lectured to the members
On animals one night;
Quaint things that one remembers,
Such as *Iguanodon mantelli*,
Which had a long thumb nail
And a fearful big round—stomach,
And a monster of a tail.

A Canadian visitor to the Zoo asked an attendant what the Kangaroos were. On being told they were 'natives of Australia,' he said, 'Well, I'm blowed (or words to that effect), my daughter's marrying one of they.'

As illustrating the advantage of German scientific methods over English, Sir Henry Howorth pointed out that every German doctor tests his diagnosis by post-mortem. That is pure science.

The same gentleman at the 'bread and butter meeting' stated that doubtless the hosts and hostesses would be busy counting their silver. At any rate he did not give his hostess (the President's wife) an opportunity of counting her fountain pen. She told us herself that he took it to London with him. Inadvertently, of course. We are glad to take this revenge in view of Sir Henry's somewhat pointed remarks about thieves.

A lady, Mrs. Dickinson,
Invented Radioleum.
Its penetrating properties
Exceeded best petroleum.
It pulped the evening paper;
In glass made little stars;
It scorched the skin of Venus,
And made men laugh in Mars.
Radioleum originated
In the fair far East,
And many ruminated
At a scientific feast;
'It worked entirely by nature,'
And its action never ceased;
Its origin being vegetal,
It takes the place of yeast!

—: o :—

A Cuckoo Note.—We learn from the press that at Howden recently a labourer, Patrick Larkin, who is known locally as 'the human cuckoo,' has a wonderful gift of imitating the call of the cuckoo and has on occasions mystified many people in the district. A week ago, in Howden Street, he was exercising his peculiar powers, but he also attracted the attention of the police by drinking beer from a bottle, and creating a disturbance. He was fined £2.

WHITE-BILLED NORTHERN DIVER (COLYMBUS ADAMSI), AND OTHER SEA FOWL AT SCARBOROUGH.

W. J. CLARKE, F.Z.S.

The prolonged period of strong off-sea winds experienced on the Yorkshire Coast during the latter part of February and early part of March, 1916, brought great numbers of sea birds to the shelter of the coast, where they congregated in the harbours and quiet places until the gale subsided.

At Scarborough, the effect of the storm upon the birds was very marked. Great quantities of gulls congregated in the South Bay, where at times their numbers must have reached many thousands. These thronged the harbour, and sat in rows upon the piers and the roof of the fish market waiting for the usual offal to be thrown overboard to them. But as the trawlers could not get out to sea, there was no food thus supplied, and a considerable number of the birds perished in consequence. Every day, during the latter part of the gale, dead and dying gulls could be seen floating in the harbours. On March 6th, during a couple of miles' walk along the south beach, I picked up eleven dead gulls; on the 7th I found eight, and on March 9th seventeen fresh corpses were seen. These included Herring Gulls, Black-headed and Common Gulls, and a single Great Black-backed Gull. None bore trace of any injury, and a rough post-mortem showed in every specimen examined, that the body was extremely emaciated, and the stomach contained no trace of food. Together with the bodies of the gulls were the recently dead remains of many Razorbills, nearly all adult birds, no doubt just returning to their breeding stations at the Speeton and Gristhorpe Cliffs, a few Guillemots, including a single Ringed Guillemot, several Puffins, a few Little Auks and a single Fulmar Petrel. At one time the presence of so many corpses would have brought forth strictures upon 'the man with the gun,' but as not a shot has been fired upon our coast since the commencement of the war, other reasons must be sought, and I am satisfied that the cause of death in almost all cases was starvation.

A visit paid to the harbour during this period of wild weather was full of interest. In addition to the crowds of gulls, there were other avian visitors awaiting the return of quieter times. A little group of seven Shags—two adults and five immature birds—was a conspicuous feature, and as these usually shy birds were very tame, an excellent opportunity of watching their ways was afforded. They dived constantly

in search of food, searching the piles and sides of the pier very closely, and the course of the submerged bird could be clearly traced by the air bubbles rising to the surface of the water. The Shags brought up small Coalfish, and also fish offal, and did not display any discrimination in gulping down both living and dead food.

Several Little Auks also availed themselves of the shelter afforded by the piers and paddled contentedly about, keeping at a respectful distance from their larger neighbours. A fisherman on board one of the trawlers scooped one up in his net as the bird swam past the stern of the boat, and called to his mates to come and look at the 'little duck.' After being somewhat roughly, but not unkindly, handed round for inspection, it was decided to restore it to liberty and its captor placed it on the pier, from whence it was quite unable to take wing, probably from exhaustion, as I have seen specimens rise readily enough from the rocks on other occasions. The little bird crawled laboriously about, pushing itself along on its breast by means of its feet, its wings being also used as fore limbs to assist its progress. It was eventually thrown up into the air, and after a short flight alighted on the water. Immediately after, the company of Shags which had been foraging beneath the water, rose to the surface close to it. The Little Auk showed considerable awe of its larger neighbours and removed itself as quickly as possible by diving and swimming, but the Shags made no effort to molest it.

On February 29th, learning of the presence in the harbour on the previous day of a very large diver, I walked down and saw what at first I took to be a Great Northern Diver. On the approach of the bird, however, I formed another conclusion, but in consequence of the military prohibition of the use of field glasses, I had none with me and was obliged to come away in a state of uncertainty as to the visitor's real identity. On the following day, I was again there and found the bird diving in the rough surf close inshore, where it appeared impossible for it to avoid being washed ashore. After a while it approached the pier very closely and from a sheltered nook, I was able to get a good look at it with my glasses, and to confirm the opinion I had formed on the previous day, that it was an adult specimen of the White-billed Northern Diver (*Colymbus adamsi*). At a distance of less than twenty yards, I could see the bird as if I held it in my hand, and the yellowish white bill, upper and lower mandibles the same colour, the latter much upcurved and giving the bill a distinctly turned-up appearance, quite different from the bayonet-shaped bill of the commoner form, was very distinct. There was a very slight brownish tint at the extreme tip of the upper mandible which appeared to be due to abrasion of the cuticle at that part. The

spots on the back were arranged in a similar pattern to those on the Great Northern Diver, but were larger individually and considerably fewer in number, in colour a light ash grey. The feathers of the back and wings bore no light margins, hence I concluded the bird was adult. In size, I estimated it to be slightly larger than the biggest Great Northern I have handled, which was a specimen weighing 10 lbs.

Although so large a bird, it was very remarkable to note the graceful way in which it dived. During the couple of hours I had it under observation it was continually descending in search of food. This operation was performed by dipping the head quietly under water, and the body submerged without the slightest disturbance, as if drawn beneath by an invisible force. The contrast to the acrobatic feats of the Shags feeding close at hand, was very striking, and even the accomplished performance of a Red-throated Diver near by was clumsy by comparison.

I did not see it catch a fish, but it several times brought up large shapeless lumps of what appeared to be fish offal which had been buried in the mud, and these were swallowed. On one occasion, it brought to the surface what I took to be a crab, but I was not quite sure.

After three days' sojourn the bird disappeared, and I did not see it again. Nor could I hear of it from any of the pier men, all of whom had noticed it on account of its great size:

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BIRDS.

Nesting of the Grasshopper Warbler in the West Riding.—As a sequel to the notes of Mr. Sam Longbottom and myself under the above heading (*ante* pp. 167-170 and 199-203) on a pair of these birds that successfully reared two broods of six in each nest last season (1915), I am sorry to have to add that they have kept true to their erratic nature in this district, and not any of them, old or young, have returned this season. Until June 16th Mr. Longbottom, the park-ranger, and several other local observers have kept a strict look-out for their return; so that we can now look upon it as hopeless, and we can also designate them as ungrateful birds—after such a successful nesting season, and with a promise of another similar one; aided by protective friends. I can only add that it is another proof that wild nature has a way of its own; quite regardless of man's idea of what it should be.—H. B. BOOTH, Ben Rhydding.

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Man, for April, contains an excellent portrait and an obituary notice of the late Sir Clements Markham.

THE LINEAGE OF TRAGOPHYLLOCERAS LOSCOMBI (J. SOW.).

A. E. TRUEMAN, B.Sc.,
University College, Nottingham.

In a recent paper, F. L. Spath* has suggested that *Tragophylloceras loscombi* is descended from the continental form *T. numismale* (Quenst.) the more primitive condition of the

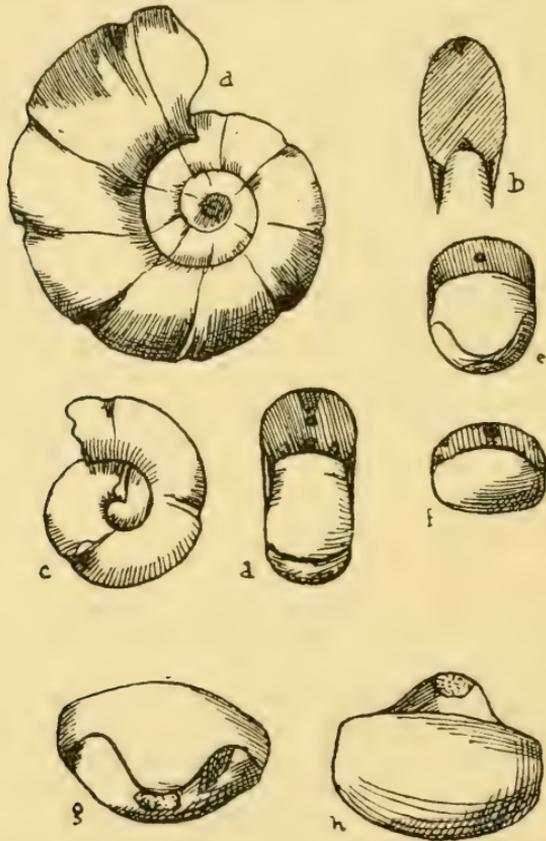


Fig. 7.—a. b. Shell at diam. 73 mms. c. d. The same at diam. 1.2 mms. e. The same at diam. 8 mms. f. At diam. 55 mms. g. h. Protoconch, $\times 42$.

latter being indicated by its wider umbilicus and the persistence of constrictions until the shell attains a diameter of 20 mms. On the tunnel heaps at Old Dalby in North Leicestershire, there occur small specimens of *T. loscombi* similar to those described by Spath from Lyme Regis; associated with these

* F. L. Spath, 'The Development of *Trag. loscombi*,' Quart. Journal Geol. Soc., 1914, p. 336.

at Dalby are constricted specimens ranging up to 13 mms. in diameter. It has been pointed out by B. Smith* that the heaps at Dalby probably contain representatives of all the zones from *oxynotus* to *jamesoni*, and it is therefore to be regretted that the exact stratigraphical relationships of *T. loscombi* and its constricted variety cannot be satisfactorily studied. Light is thrown on its phylogenetic position, however, by a consideration of the development of a series of specimens representing the intermediate stages between the most primitive form found (fig. 1a, b,) and the normal *T. loscombi*.

Details of such a series are given below. The more advanced members are characterised by a greater degree of involution and by a smaller number of constrictions, which are confined to earlier stages in shell growth.

	Diameter.	Umbilicus % (at diam. 7.5 mms.)	Number of Constrictions.	Last Constriction at
Type 4 (typical <i>T. loscombi</i>)	10 ...	20 ...	7 ...	3 mms.
„ 3	9 ...	26 ...	12 ...	8 mms.
„ 2	13 ...	30 ...	17 ...	Still faintly constricted.
„ 1 (Fig. 1)	7.5 ...	35 ...	19+	Marked constrictions.

It appears therefore that we are here dealing with successive stages of a lineage or genetic series, the characteristic features appearing at earlier stages in the more advanced members owing to acceleration in development.

This conclusion is further supported by a comparison of the shells and sutures of the two most widely separated forms. The sutural development of the specimens of *Tragophylloceras loscombi* (Type 4) examined does not differ materially from that figured by Spath; ‡ the development of the suture in the constricted form (Type 1) is given in fig. 2 a-f. It will be noticed that the first suture (fig. 2a) is of the usual angustisellate character; the "incipient ventral lobe" observed by Spath in some examples of *T. loscombi* is not present. Much greater differences are shown in the second suture. The shallow ventral lobe, without a median saddle, is suggestive more of *Phylloceras heterophyllum* § than of *T. loscombi*. The third suture (fig. 2 c) is similar to the second suture of the typical *loscombi* figured by Spath, so that here again the acceleration in development revealed by the constrictions, is quite evident. By the

* Mem. Geol. Survey, Sheet 142, 'Geol. of Melton Mowbray, &c.' 1909, p. 36.

‡ Loc. cit. Fig. 1, p. 341.

§ Branco, W. 'Beit. Entwickl. foss. Ceph.' Th. I., Pl. IX., fig. 1, 1879.

seventh suture in *T. loscombi* the first lateral saddle is greater than the external saddle, a characteristic feature in the sutures of *Tragophylloceras*, yet this is not attained in type 1 until much later. In this form, moreover, the first indications of denticulation appear at a diameter of 4 mms., while in *loscombi* they are developed at little more than half this diameter.* The stage reached by the latter form at 4 mms. is not attained by type 1 until the diameter is 7 mms.

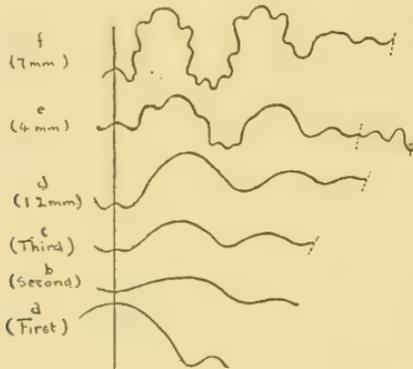


Fig. 2 Suture development of *Traganoceras* shown in Fig. 1



Fig. 3 Suture of Type 2



Fig. 4

The suture shown in fig. 3 is from a rather more advanced form belonging to type 2. That shown in fig. 4 was drawn from an isolated piece of a whorl and thus its exact position in the series cannot be given, but it is at approximately the diameter of 30 mms. and it is closely paralleled by Spath's figure of *loscombi* at two thirds that diameter. It is also practically identical with the suture figured by Quenstedt† as *Ammonites heterophyllus numismalis*.

The differences between the relative heights of whorl and

* Loc. cit. Fig. 1 d., p. 341

† Quenstedt, F. A., 'Amm. Swabisch. Jura.' Tab. 37, fig. 10, 1883-5.

the degree of involution may likewise be explained by tachygenesis. The following table gives details of whorl heights in type 1, in *loscombi** and in 'numismale.'†

Diameter.			loscombi.	Type 1.	'numismale.'
1 mm.	Wh. ht. per cent.....		35	37	40
"	Wh. th. "		44	46	50
4 mms.	Wh. ht. " about ...		48	46	45
"	Wh. th. " " ...		38	43	45
7 mms.	Wh. ht. "		54	47	44
"	Wh. th. "		30	33	36

It will be seen from the above that in '*T. numismale*' whorl height is equal to whorl thickness at a diameter of 4 mms.; in type 1 this condition is reached a little earlier, and in *T. loscombi*, at less than 3 mms. At every stage, the specimen shown in fig. 1 is intermediate between the typical *T. loscombi* and Pompeckj's *numismale*.

The protoconch of type 1 (fig. 1 g,h) likewise shows interesting differences from that of *Tragophylloceras loscombi*. The former is more tumid and less distinctly fusiform, although the lengths of the two forms are identical, viz. about 0.6 mms. Probably these characters also are indications of its more primitive nature.

It will be apparent that the constricted specimens we have described, approach very closely in many respects to *T. loscombi*; indeed, similarly constricted forms were described by d'Orbigny‡ under that name. They are still more like the fossils referred to *numismale* by Pompeckj. Buckman,§ however, has limited the name, and separated Pompeckj's forms and some of those figured by Quenstedt, as *T. typicum*, which is a 'crenulate, compressed development' of *numismale*. The lineage of *numismale-loscombi* in all probability also includes *Trag. ambiguus*, Simps. Pompeckj stated that one of the differences between '*numismale*' (i.e. *typicum*, Buck.) and *T. loscombi*, lay in the smaller number of auxiliaries in the latter. Spath urged that this difference is no reason for doubting his conclusion, a suggestion which is supported by the types described, in which the number of auxiliaries is very variable.

For our information concerning the constricted form, we have had to rely almost entirely on young material, therefore we cannot state its precise position in the lineage *numismale-ambiguus-loscombi*, until the developments of the named adult

* Spath, loc. cit. Table I., p. 342.

† Pompeckj, J. F., 'Beit. Revision. Amm. Swab. Jura,' 1893, p. 14. Buckman has renamed this *T. typicum*. See below.

‡ d'Orbigny, 'Paleont. franc. Terr. Jurass,' Tom. I, p. 265, 1842.

§ Buckman, S. S., 'Yorks. Type Amm.', I., p. viii., 1912.

forms are known. The observations, however, are interesting since they confirm Spath's conclusion regarding the connections between *T. numismale* and *T. loscombi*; for although the specimens whose development has been traced may not prove to be *T. numismale*, they unmistakably carry back the lineage of *T. loscombi* to a form but little removed from it.

I wish to thank Prof. Swinnerton of University College, Nottingham, for the help he has so readily given me at all stages of my work, and for allowing me to make use of the specimens in the college teaching collection. I must also acknowledge my indebtedness to Mr. W. Stafford for the abundant material he has given, without which this work could not have been carried out so completely.

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COLEOPTERA.

The Distribution of *Agabus arcticus* Pk.—In the *Naturalist* for June, p. 206, in recording *Agabus arcticus* as new to Yorkshire, Dr. Fordham states that the species has hitherto only been recorded from Scotland, Northumberland, and Ireland. This is hardly correct. It is a well-known Cumberland insect and has several times been recorded from the county in the *Ent. Mon. Mag.* and the *Ent. Record*, and also in the list of Cumberland beetles published in the Carlisle Nat. Hist. Society's *Transactions*. It is largely an Alpine insect, most abundant at an elevation of 2,000 ft. or more, and is invariably associated with *A. congener* and *Hydroporus morio*.—F. H. DAY.

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MOSESSES.

***Trichostomum nitidum* Schp. in West Yorks.**—This moss has not been recorded for V.C. 64 up to the present; it is known in North Yorks. and found in fair quantity on the limestones around Grange-over-Sands. I have kept a careful look out for it for some years and at last found it near Austwick; curiously enough, not on the pure limestone, but on the impure basement conglomerate at the head of Norber Sike. This rock has a very considerable amount of included siliceous débris, and near to the *Trichostomum* on similar rock is a fine growth of *Pterogonium gracile*, a species which is cited in Lee's Flora as altogether confined to the slate type of rock; this latter moss was first noted here by Mr. F. Haxby. It is very interesting to get two mosses—one so typical of limestone and the other of slate rock—growing together on a conglomerate comprised of the two materials. Mr. W. E. Nicholson has kindly verified the determination of the species.—C. A. CHEETHAM.

OBSERVATIONS ON BREFELDIA MAXIMA, Rost.

A. R. SANDERSON.

WHILE searching for Mycetozoa in the Clapham district (Trow Ghyll) in November, 1913, I had the good fortune to see a large plasmodium of *Brefeldia maxima*, which had just emerged from an old ash stump preparatory to fruiting. The large plasmodium—in many places two inches in thickness, was spreading over the vegetation (chiefly old stems of nettles) in the immediate vicinity of the stump, but by far the greater mass, covering in all about four square feet, had moved much further away and was spreading over the vertical faces of the limestone rocks, where fruiting was eventually completed in the form of large dark brown æthalia, many of these masses being several square inches in extent. In October, 1914, a similar large plasmodium of the same species was noticed issuing from another decayed ash stump, about two hundred yards higher up the valley—the same stump also yielded large colonies of *Lycogula epidendrum*, *Physarum nutans*, *Trichia scabra*, *Trichia varia*, *Hemitrichia clavata* and *Arcyria denudata*. I collected several large masses of the plasmodium of *Brefeldia maxima* and kept them under observation until spore formation was completed. One mass in particular about 8 ins. long, 3 ins. wide and 2 in. thick was carefully watched, and in a few hours' time, the upper surface, which was still creamy white, showed evidences of demarcation into definite small rounded areas, marking the limits of the individual sporangia.

At quite an early stage, these signs became much more pronounced at, and around definite centres in the plasmodium where the mass became rather more heaped up. The heaping up at and round these points became more marked as development proceeded, while the limits of the individual sporangia became more strongly marked than in the surrounding parts of the plasmodium further distant from the centres. As development continued, it became more and more evident that fruiting had commenced at certain points approximately equidistant from each other and from these points was spreading gradually outwards. At a still later stage, further evidence of this was shown by the coloration, for at the centres the creamy white appearance had given place to a very pale brown which now more rapidly darkened, and passing outward from the centres, the colour gradually changed in shades of brown becoming paler to the extremities of well marked zones. Finally the colour at the centre became very dark brown and this change gradually spread outward as spore formation was completed in the zone. Further, at all the centres, fruit

formation did not evidently commence at the same time, or if so, the time taken for completion was considerably longer by, in the last to finish, something like forty hours. At the first centre under observation, spore formation was completed in about twenty-six hours and throughout the mass, in about seventy-two hours. The development of this large mass of plasmodium suggested that it might possibly have divided into a number (about five) of smaller æthalia, and that in each case, fruiting development had commenced at or near the centre and gradually extended outwards in all directions to the extreme edges. Thus, while in the mass, development proceeds from the centre outwards, in the individual sporangia as in *Badhamia utricularis*, *Physarum nutans*, etc, development proceeds from the outer edge inwards, the last formed spores being at or near the centre of the sporangium.

An interesting point noticed, was that about twenty hours after fruiting commenced, a large quantity of water had collected round the base of the developing æthaliium. This, by slightly raising the dish at one end, I drained to the opposite end, and the volume was considerably increased during the next thirty hours. Unfortunately, I did not measure the water exuded, but should estimate it at not less than one tenth the volume of the æthaliium. It was evidently the excess of water being discharged from the plasmodium during the process of protoplasmic condensation preceeding spore formation. The same process is often noticed in such species as *Physarum nutans*, *Badhamia utricularis*, *Trichia decipiens*, where the sporangia (more or less spherical) arise separately. In these cases, the excess water is passed out through the sporangium wall and is rapidly evaporated. Each sporangium being small, a comparatively large surface is offered for evaporation, which is therefore rapid, though sometimes the water is seen as a small drop on the top of the sporangium. In the case of *Brefeldia*, the excess water was practically all passed away downwards and issued from the base of the æthaliium, and in the case of a large æthaliium, such a method seems an advantage, as the total amount of water to be discharged, compared with the surface of sporangia exposed is relatively large, much too large to be got rid of by evaporation from the surface as rapidly as it is passed out.* In order to make more careful observations as to time required for fruiting etc, I kept a separate mass under observation at the same time. From this, beginning after eighteen hours, I fixed portions every fifteen minutes until the change in colour was marked, (about thirty hours). From examination of sections of this

* I am much indebted to Mr. C. A. Cheetham for so kindly undertaking the photographic part.

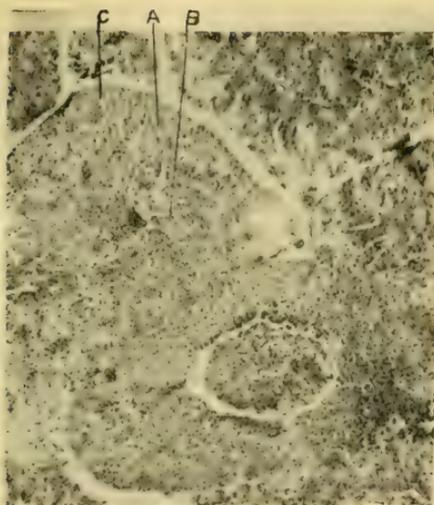


Fig. 1.—Showing the comparatively large channels in transverse section. These channels probably facilitate the passage downwards of the excess of water passed out during condensation of the protoplasm previous to the nuclear division which precedes spore formation.



Fig. 2.—Vertical section, showing channels which probably facilitate the passing out downwards of excess water.



Fig. 3.—A small portion occupying the zone indicated at B in fig. 1. The nuclei are large, but division has not actually begun, and there is scarcely a sign of the breaking up of the protoplasm into small masses of two-spore capacity.



Fig. 4.—Nuclei in process of division a short time previous to stage shown in Fig. 5.

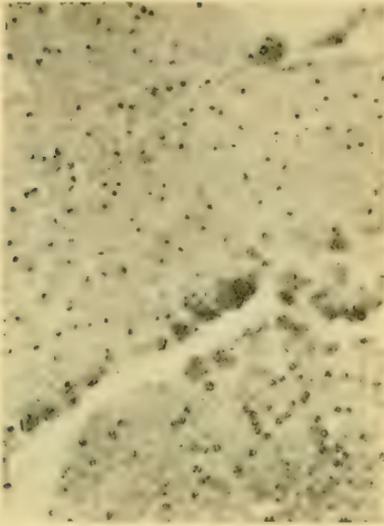


Fig. 5.—A portion from zone C (fig. 1), showing a more advanced stage. The division of the nuclei is complete, and the protoplasm has finally broken up into uninucleate masses which will eventually form the separate spores.

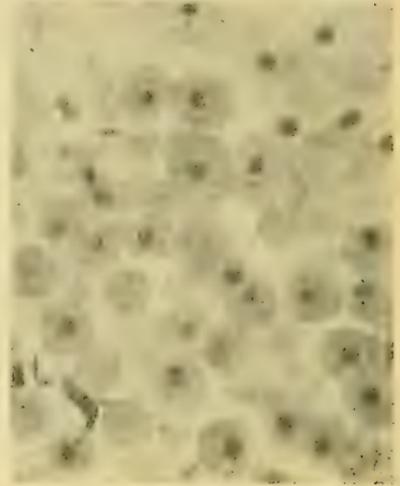


Fig. 6.—Spore formation complete. A little later appearance of a portion as shown in fig. 5.

fixed material, it is evident that division of nuclei for spore formation, takes place about twenty-five to twenty-seven hours after development begins. As in other species of mycetozoa which have been examined, the protoplasm, just before nuclear division, breaks up into more or less rounded masses, in this case of considerable size, [the capillitium has been formed a considerable time previously]; while a vertical section shows well marked vertical spaces between the masses. These, as also the spaces round the central columella, possibly facilitate the passing out of the excess water downward. (See figs. 1-6).

Large masses of plasmodium of the species appeared again in November, 1915, this time, from a third stump, also ash, about thirty yards higher up the valley again. It would almost seem that the species is making a regular progression from stump to stump.

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We have received the *Eighty-second Annual Report of the Natural History Literary and Polytechnic Society* issued by the *Bootham School, York*, which shows that the Society still keeps a keen interest among its scholars in Natural History matters. There are illustrations of wasps' nests and also of the title page of the manuscript *Naturalist* of 1834, which appeared in this Journal some little time ago.

PSEUDANODONTA ELONGATA (?) IN YORKS.

J. A. HARGREAVES AND J. DIGBY FIRTH, F.L.S.

ON January 29th, 1916, Mr. J. Digby Firth obtained from Wakefield a number of freshwater bivalves of various kinds, including *Unio pictorum*, *U. tumidus*, *Anodonta anatina*, etc., Among the Anodons were two living specimens, which Mr. Hargreaves considered to belong to the genus *Pseudanodonta* Bourg., of which two species have been added to the British



Pseudanodonta elongata (?).

list during the last few years. The specimens were submitted to Mr. J. W. Taylor, M.Sc., who confirmed the generic determination.

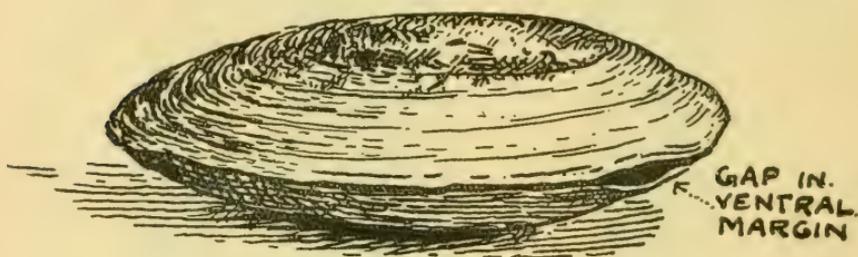
Of the two known British species, *Pseudanodonta elongata* Holandre, is recorded from the Thames, and *P. rothomagensis* Locard, from the River Teme in Worcestershire. Both are recorded in the *Journal of Conchology* for January 1911, and January 1912.

* The specimen shown on the left of the figure has been kindly given to the Municipal Museum at Hull by Mr. Digby Firth, and can be seen at any time by those interested.—ED.

The Wakefield specimens apparently belong to *elongata*, but as the differences between recognised species are small, it is desirable to get further and mature specimens before pronouncing as to their specific identity.

Since seeing the specimens from Wakefield, Mr. Hargreaves has seen a specimen from Derby, and as the genus closely resembles *Anodonta* superficially, it is probable that it has been overlooked and may occur in other localities.

The umbones give the readiest and most satisfactory way of determining the genus. In *Anodonta* the umbonal striae are concentric and more or less semi-circular, in *Pseudanodonta* the markings are distinctly nodulous and are not concentric. A further means of distinguishing the two genera, lies in the gap in the ventral margin of *Pseudanodonta*, which does not completely close the shell. This method is not absolutely certain, as occasionally *Anodonta* are found with the same



peculiarity, but in such cases, reference to the umbones will settle the matter.

On a later occasion, Mr. Firth took over sixty specimens of Unionidae from the same locality in which *Unio tumidus* and *Anodonta anatina* were nearly equal in numbers, a few specimens of *U. pictorum* occurred, whilst there were only three specimens of *Pseudanodonta*, which is therefore scarce.

The genus *Pseudanodonta*, of which many species are recorded, occurs also in Belgium, France, Germany, Austria, Russia, extending as far as Central Asia. In France alone, Locard records twenty-seven species, but it must be remembered that many of these would be considered by British writers as varieties only.

Along with the Unionidae already mentioned, were also found *Limnaea pereger*, *L. palustris*, *L. stagnalis*, *Planorbis corneus*, *P. umbilicatus*, *P. vortex*, *Physa fontinalis*, *Bithynia tentaculata*, *Vivipara vivipara*, *Valvata piscinalis*, *Neritina fluviatilis*, *Dreissensia polymorpha*, *Unio pictorum*, *U. tumidus*, *Anodonta cygnaea* (mostly var. *anatina*), *Sphaerium rivicola*, *S. corneum*, and *Pisidium amnicum*.

YORKSHIRE NATURALISTS AT MALTON.

THE field excursions of the Union for the present year were commenced at Malton, where a moderate number of members, including the President, Mr. W. N. Cheesman J.P., F.L.S., spent the Easter week-end, having headquarters at Wheelgate House.

Neither Malton, nor its immediate vicinity, have claimed the attention of the members of the Union very much in the past, and it was to some extent a little unfortunate that Spring was so tardy in its development, as the many places visited displayed ample scope for more interesting results than were obtained. However, the charm of the walks were many and varied and there was always something to call for attention and discussion, while the lectures in the evenings were an additional aid to the happiness of the meeting.

On Saturday morning, a brief time was spent in the local museum, examining the objects of interest, which are, however, not seen to advantage. It is intended after the war to house the collections in a more suitable building, already purchased for the Malton Naturalists' Society by Sir Walter Strickland. At noon, the party, which was greatly increased in numbers by members from York, Scarborough, Malton, Leeds and Bradford, trained to Rillington, walked across the fields to Scampston, in order to accept the very cordial invitation of Mr. W. H. St. Quintin J.P., D.L., a past-President of the Union, to visit his gardens and aviaries. Mr. St. Quintin welcomed the party, and he conducted one of the three groups into which it was divided. The weather being favourable, the visit proved a source of great pleasure and profit. The magnificent aviaries cover a large extent of ground and although the birds have absolute freedom of movement, the almost entire absence of timidity was very marked, and this gave ample opportunity of noting the many beauties of the birds at close quarters. Moreover, being in their best nuptial garb, the wonderful variety and blending, and in some cases, most gorgeous coloration of the birds, was seen to advantage. Ornithologists in general are much indebted to Mr. St. Quintin for the scientific manner in which his aviaries are conducted, much knowledge as to the habits of many species of birds having been gained. The botanical members enjoyed their visit immensely, for among the many plants in blossom were some of the rarer British Alpines, as *Asarum europæum* (Asarabacca), *Cardamine bulbifera* (Coralwort), and *Anemone apennina* (Mountain Anemone). The inspection of the Orchid houses also proved attractive.

On Sunday, the morning was spent in a visit to Welham Park, near which were examined some lake deposits. From

there, the walk led to Huttons Ambo in order to examine the gorge which formed the outlet of Lake Pickering. The return was made along the banks of the Derwent. In the afternoon, a visit was paid to a house in a yard abutting upon the remains of the Norman Castle. On the walls in the bedroom of this house is elaborate carving. The cellar of the same house contains evidence which points to its having been a Sanctuary Chapel. An inspection was made of the Gilbertine Priory Church of St. Mary's, ending with a visit to the gravel pit near the Electric Power Works.

The rainfall until nearly noon on Monday, made serious working out of the question, nevertheless the walk arranged was carried out. Detraining at Castle Howard station, the party proceeded alongside Crambe Beck through Pretty Wood, inspecting the Pyramid erected to the memory of Lord Howard, and then to the Castle, where they were courteously received by Mr. C. Luckhurst, who subsequently conducted the party through the gardens and the Mausoleum. The homeward walk was by way of Lowthorpe, and along a green lane, in the hedgerows bordering which was an abundance of *Daphne laureola* (Spurge Laurel), to the York Road.

At the close of the excursion, sectional reports were presented, and hearty thanks accorded to the Countess of Carlisle, for permission to visit her estates at Castle Howard; to Mr. W. H. St. Quintin for permission to visit his gardens and aviaries; to Mr. A. H. Taylor for the many comforts and facilities at headquarters, and for acting as guide on the excursions; to Mr. C. C. Laverack for his loan of books and maps, and also for acting as guide, and to Mr. A. E. Peck for making the local arrangements.

At the evening meetings, the President, Mr. Cheesman, discoursed upon some of the species of Australian and New Zealand fungi collected by him nearly two years ago, seven of which had proved new to science. One of these, *Peniophora Cheesmani*, was among the many species exhibited by him.

Mr. H. B. Booth gave an interesting resumé of the principal features of the Scampston Hall aviary, eulogising the services which Mr. St. Quintin was rendering to ornithologists.

Two lectureries were delivered by Dr. Woodhead. In the first, he gave an account of the excavations now in progress in the neighbourhood of Deighton, near Huddersfield, on the site of the works of British Dyes. The sections here exposed are in the so called river gravels, but these deposits were seen to consist of successive beds of gravel and sand; resting on the shales was a bed of dirty grey gravel, followed by coarse gravel, coarse sand, a thin bed of gravel, and finally a bed of fine sand becoming clayey in places. These deposits could best be explained on the theory of a glacial lake. The Airedale

filacier dammed up the waters of the Calder and Colne at Horbury, and formed the large lake Calderdale. The Huddersgeld deposits could be satisfactorily explained as lake deposits, and this theory would also account for the high level gravels in the neighbourhood. The paper was illustrated by photographs of the sections exposed, and by a map showing the extent of the lake.

His second lecture dealt with the vegetation of the Vale of Pickering. After paying a high tribute to Mr. J. G. Baker's 'Flora of North Yorkshire,' he described the geology of the neighbourhood, tracing the beds of the Upper, Middle and Lower Oolites and their influence on the topography. The surface deposits were illustrated by Prof. Kendall's Glacial Map of Cleveland, and on this basis he explained first the types of woodland occupying the calcareous dales on the north of the Vale, and distribution of the Pine in the higher parts. The woods of the Howardian Hills were described, and the distribution of the Beech was considered, and the influence of limestone on plant distribution, especially on the heather and grass moors in the district. The Vale itself was finally described, and the distribution of the vegetation shown in detail on a number of six inch maps, special reference being made to the marshy pastures and their economic influence, and the way in which its special topography has influenced man's operations from earliest times to the present day.—W. E. L. W.

GEOLOGY.—Miss M. A. Johnstone, B.Sc., writes:—

In solid geology, the only work done was at the exposures of Oolitic limestone. Several of the quarries mentioned by Mr. Burton in the circular notes were visited and typical fossils were collected from them.

The glacial problems of the district and the solutions provided for them by the reseaches of Professor Kendall and others raised much interest in all sections of the society. From the higher levels near Malton, the eye could range over the wide vale of Pickering with its encircling hills, within which at one stage in the glacial epoch was penned up the whole or nearly the whole drainage of Southern Cleveland and the northern slopes of the Howardian Hills. Nearly due north of Malton, the torrents from the Lakes of Eskdale poured out of Newton Dale. Forge Valley brought the waters of another chain of lakes and every other dale added its minor flood from the moors. The waters of this great lake, surging to higher levels at times of melting snow and ice, hemmed in from the sea on the East by moraine and ice, converged towards the angle in the hills near Malton and cut a way down through the watershed of the Howardian hills, to escape into the Vale of York. This gorge, one of Professor Kendall's 'direct overflows,' was visited, and its impressive and convincing outlines noted.

Half a mile from Norton, in some of the usual field excavation of the present day, were seen sections of stratified sands and gravels. They were horizontal, such as might be deposited by quietly moving water in a lake bed.

A second very interesting gravel section was seen in a sand pit near the Electric Power Station about a mile west of New Malton. It was near the 100 foot contour line and in the region of the old lake shore.



Photo by

[C. C. Laverack.]

Section near the Electric Power Station, New Malton.

The materials are evidently current-bedded and are sorted out into layers with regularity and nicety. The beds lie at an angle of 45° ; they are in series, ten of which are exposed. In each series, there are three bands; (a) about nine inches, of pebbles averaging four inches in diameter, (b) one foot of pebbles resembling small marbles, (c) fine sand, all very much waterworn. Most are oolitic, and fossils are plentiful. The large flattened pebbles lie with their long axes on the 45° slope. They seem to lie just as deposited, possibly by the wash up from the strong currents crowding together here from North West, North and North East, as they hurried into the

gorge. The angle of the sloping beds is a steep one and suggests that they were not laid down by a stream entering the lake here, especially as no high land is near at hand.

I am indebted to Mr. C. C. Laverack for the photograph of this section which is here reproduced.

VERTEBRATE SECTION.—Mr. H. B. Booth writes:—

The chief feature of the excursion for this section was the inspection of Mr. W. H. St. Quintin's renowned aviaries, which being chiefly used for avicultural experiments and knowledge, are usually kept as quiet as possible at this time of the year. Those members who attended had the opportunity of seeing the large area containing paddocks of choice Cranes, Ducks, Geese, Tregopans, Black and White Storks, Pheasants, etc. There were also the Great Bustards, which until well within one hundred years ago, inhabited the Yorkshire Wolds in a feral state; Secretary Birds from Africa—aberrant-birds of prey—who in their anatomy appear to be following on the line of the Cranes and Flamingoes; and the celebrated (in captivity) pair of nesting Ravens. The sight that appealed most was one of a pair of Bitterns, which, owing to the scarcity of reed cover, could be plainly seen with its body, neck and beak at the perpendicular, and in such a position that it was at once a picture and a pattern of protective environment. In this same covering, of dead reeds, was another Bittern, but no member of the party could discover it—a further proof of the complete resemblance of this bird to its environment. An item of great interest was the small flock of Soay (the name of a 'stack' off the island of St. Kilda,) sheep. This flock, through having been bred in captivity, has somewhat increased in size, and now rather resemble Shetland sheep. They should be objects of national interest, as I believe they represent the most primitive form of British sheep extant, and to-day they also represent the nearest source from whence the many celebrated breeds of British sheep have been evolved. I am speaking chiefly from a 'wool' point of view. It is all-important that this breed should be kept intact and pure. I am informed that Black-faced Scotch rams have been put upon the stack of Soay, to *improve* the breed. Certainly these rams will increase the size of the sheep, and also the quantity—but not the quality—of the wool. Some of our West-Riding towns should try to preserve these Soay sheep. In the first place, they would be of educational value to show the nearest origin of our celebrated woolled sheep, and secondly, they may yet at some future time, be of great value to 'cross-in' to improve the stamina of our 'in-bred' flocks.

In wild birds, the greatest rarity seen was a female Pintail Duck that had settled on the upper lake at Scampston, on April 20th. Unfortunately, Mr. St. Quintin had not any

captive Pintails this season to induce it to remain. Another feature of interest at Scampston, was that the heronry on the island in the lake, which four or five years ago had become reduced to a single nest, and looked like becoming extinct, had now revived. There were six, or possibly seven occupied nests this season.

Welham Park Lake was visited, on which were noted ten pairs of Tufted Ducks, many Coots and a single female Teal.

A pleasing feature of the visit to Castle Howard was the comparative abundance of Woodpeckers—both the Greater Spotted and the Green. Mr. Jefferson, of Castle Howard, who kindly acted as guide, pointed out an interesting episode, that the Woodpeckers had taken the galls from oak trees and inserted them in the deep grooves of the bark for the purpose of extracting the grub in the gall. The galls were inserted in the grooves in exactly the same way as a Nuthatch would insert nuts, and on some of the old Oak trees, there were strings of Oak galls in different grooves. Mr. Jefferson had never seen the Nuthatch there, nor has he ever actually observed the Woodpeckers performing this operation, although he was convinced by many reasons that it was the result of their work—one being that a pair of Woodpeckers had nested in a tree that had a great many galls fixed in its bark.

I asked Mr. Jefferson to try to confirm this as an actual observation. On the lake were five Great Crested Grebes, Coots, about twenty pairs of Tufted Ducks, and Mr. Jefferson informed me that there were a few Pochards, but these I failed to see, possibly owing to the very rough surface that prevailed, the date being rather early for many immigratory species of birds. Up to our arrival at the lake at Castle Howard we only noticed several Chiffchaffs, many Willow Warblers and a single Swallow. Over the lake at Castle Howard were scores of Swallows, several Sand Martins, a few House Martins, and, greatly to our surprise, ten to a dozen Swifts. This early arrival of the Swift in numbers bears out my remarks on previous occasions that the Swift has been arriving much earlier during the last few years, than formerly* (See 'The Naturalist' 1916, p. 34). Sparrow Hawks are certainly more common in this district than they are in most parts of Yorkshire. They were noted at Rillington, Malton and at Castle Howard. Jays were both numerous and noisy near to the lake at Castle Howard. The five species of mammals, one amphibian and three species of fishes observed were not notable, unless it be that a fine Tench was lying dead on the bank of the lake at Castle Howard.

(*To be continued*).

* On April 29th, I saw eight to ten Swifts circling high over Bolton Abbey. On the same date *The Field* states that Swifts are reported from all parts of the country much earlier than usual.

DECREASES IN YORKSHIRE BIRDS.

W. A. DÜRNFORDE, M.B.O.U.

IN his interesting Presidential Address, which has recently been reproduced in your columns, Mr. Riley Fortune deals at some length with a well-worn subject, the decrease in the number of various species of birds. In this respect Yorkshire appears to be singularly unfortunate as, judging from my experience in Hampshire, I am inclined to think that the bird population of the country as a whole, both in numbers and variety, is greater to-day, than it was when I was a boy, between forty and fifty years ago, and, although I am aware that the suggestion may raise some criticism, I attribute this happy condition of things largely to the much abused preservation of Game. No one will deny that by the destruction of the Sparrow Hawk and the Magpie and above all of the domestic cat, as well as by putting a stop to the depredations of the birdcatchers and casual gunners, and by providing a supply of food in hard weather for many of our resident species, the gamekeeper proves himself the best friend of the vast majority of our British birds. The protection afforded by legislation has undoubtedly had a most beneficial effect. In old days birdsnesting was a recognised occupation of boyhood, and in many villages it was a common thing to see long strings of blown eggs hanging from the ceilings of the cottages. Old Etonians will remember how we used to buy small bird's eggs by the hundred from the cads who frequented the entrance to the School Yard, but to-day the scene has changed, and last spring I met an Eton boy on a Hampshire common who was intent on securing photographs of the nest and eggs of a Redshank, a bird entirely unknown in that locality until within the last few years. Then again, the bird population will vary greatly with the weather, it being impossible to estimate the destruction caused by one really hard winter.

To revert to Yorkshire; my experience is that while I agree with Mr. Fortune that large numbers of interesting species of what are commonly called small birds, especially insect feeders, are rapidly disappearing, the bird population (leaving house-sparrows out of the reckoning) as a whole, is larger than ever. May I suggest that a partial solution of the problem may be found so far as a large portion of the West Riding is concerned, in the rapid increase in the number of Chemical Works of various kinds which must undoubtedly have a most fatal effect on insect life. In my own neighbourhood (South Yorkshire) such a thing as a grasshopper or a cricket is unknown, and it certainly would seem that, while the more robust species of birds such as Rooks, Peewits, Starlings, Blackbirds

and Thrushes can increase and multiply, the more tender varieties such as Redstarts, Wheatears, Whinchats, Pipits and the various Warblers can no longer find a sufficient supply of suitable food within our borders. But however much we may theorize on the subject it is quite certain that we cannot account for many changes in the distribution of birds with which we are all familiar. Why, for instance, should the Goldfinch become more numerous while the Yellow Hammer apparently the most robust species of the two, seems to be decreasing in numbers, or what reason can we give for the enormous increase in the number of Starlings during the last century? After all, Ornithology, the most attractive of all sciences, would lose half its interest if we could account for all the mysteries with which we meet in its pursuit.

—: o :—

In *The Entomologist* for June Mr. Claude Morley includes some northern records in his 'Notes on Braconidæ.'

Mr. T. A. Coward records the Long-tailed Skua in Lancashire on May 15th, in *The Lancashire Naturalist* for May.

An excellent account of the Wellcome Historical Medical Museum, London, by C. J. S. Thompson, appears in *The Museums Journal* for May.

In *British Birds* for June, J. H. Owen has an admirably illustrated article on 'The Effect of Rain on the Breeding Habits of the Sparrow-Hawk.'

The Irish Naturalist for May appears late owing to the fact that when about ready for the press the type was destroyed by the fires following the rebellion in Dublin during Easter week.

In *The Geological Magazine* for May Dr. W. Wingrave describes what he considers to be a new variety of Ammonite *Calocevas Davæi* (*Davæi* on the plate: both should be *davæi*) as variety *rectiradiatum*. It is from the Lower Lias, Dorset.

Wild Life for May contains the following papers:—'Carrion Crows,' by Edwin Wood; 'A Mallard Incident,' by Jasper Atkinson; 'The Dormouse,' by Lionel E. Adams; 'Wasps,' by David Arthur; and 'The Spring Habits of the Stone Curlew,' by Edmund Selous. They are well illustrated.

The New Phytologist, 'Double Number, Vol. XV., Nos. 3 and 4, March and April, 1916. Published May 28th,' (help!). contains, 'The Vegetative Anatomy of *Molinia cærulea*, the Purple Heath Grass,' by T. A. Jefferies, and 'The Vascular Anatomy of the Tubers of *Nephrolepis*,' by Birbal Sahni.

In *The Entomologist's Monthly Magazine* for June, Mr. J. W. H. Harrison writes on 'The Geographical Distribution of *Dimorpha* (*Endromis*) *versicolora*, L. and what it suggests.' In this he suggests that the species 'was driven far to the East during the Glacial Period, whence it advanced during favourable inter-glacial periods. . . . The bulk of the present habitats of European forms were reached during the last inter-glacial period.' The theory may be all right for the followers of James Geikie, who think there have been various and numerous inter-glacial periods, but it is a bit awkward for the new school of glacialists—Wright, Lamplugh, Kendall and others, who think, and we believe correctly, that there was but one Ice-age, and therefore no inter-glacial periods.

1916

A Plague of Caterpillars.—With reference to the press reports of the devastation caused by caterpillars to the oak trees at Ashted, three or four years since a similar occurrence took place in the oak trees in Richmond Park. The denudation of the trees was so severe that in the spring of 1913 H.M. Office of Works consulted Mr. Maxwell Lefroy of the Royal College of Science, with a view to stamping out the pest. Eventually it was decided to spray the trees with chromate of lead at such a time that the young caterpillars, on hatching out, should have only poisoned food. The spraying operations were carried out by portable high pressure pumping apparatus lent by myself, self-supporting telescopic ladders being provided to reach the tree tops some 40 feet from the ground. This was, I believe, the first occasion on which attempts were made to spray such large trees, and there is not much doubt that the oaks at Ashted could be treated in a similar manner. It is now too late in the season to take preventive measures, but if spraying were undertaken early next May I have not much doubt that the pest could be eradicated.—J. COMPTON MERRYWEATHER, 4, Whitehall Court, S.W.

Bird Notes from Whitby.—From the middle to the end of November a Velvet-Scoter came into the inner harbour at Whitby to feed, almost daily. Two immature Shags appeared toward the end of November, frequenting the harbour through the winter. One was picked up dead on the beach on Feb. 5th, and one remained until March 25th. On Dec. 15th, a Grey Phalarope was observed in the harbour. It consorted daily with the Black-headed Gulls for about a week, after which it disappeared. The lively manners of this interesting little bird attracted considerable attention. Towards the close of January, a Rough-legged Buzzard—in the usual immature plumage—was shot a few miles from Whitby. The Purple Sandpiper has been noticed here since the latter part of January. A small party has been frequently seen feeding on the rocks at the mouth of the harbour, and on the pier extension; last seen on April 8th. An immature Glaucous Gull, which has been seen about the harbour since the early part of October, was last noticed on April 18th. It usually kept apart from the other gulls. The Little Auk was observed in November, and two were picked up dead on the beach in January. The following are the earliest dates:—April 4th, Wheatear; 6th, Chiff-chaff; 17th, Sandpiper; 20th, Blackcap; 22nd, Swallow, Willow-wren; 25th, Cuckoo, Sand Martin, Redstart; 26th, Martin; 28th, Sedge-warbler, Landrail; 30th, Sand-Martin. May 1st, Whitethroat, Whinchat, Swift; 4th, Wood-wren; 5th, Pied Flycatcher; 8th, Grasshopper-warbler; 10th, Garden-warbler, Tree-pipit; 15th, Spotted Flycatcher.—F. SNOWDON, Whitby.

NORTHERN NEWS.

The Journal of the Board of Agriculture for May, contains a report on the Food of the Rook, Starling and Chaffinch.

We note the death of Charles Stonham, whose work on the Birds of the British Islands, 5 vols., was issued a few years ago.

The Board of Agriculture and Fisheries has issued a pamphlet on 'Weeds and their Suppression,' as leaflet number 112.

The 25th Annual Report of the Royal Society for the Protection of Birds contains an excellent record of the work done during the year by that useful Society.

The death is announced of Professor Silvanus Phillips Thompson, D.Sc., F.R.S., B.A. (Lond.) Hon. M.D., LL.D., who was born at York in 1851, of Quaker parentage.

The Report of the British Association for 1915 (Manchester Meeting), was received in the middle of June, and occupies more than 1,000 pages. It contains the usual valuable record of this great Scientific Conference.

It will be remembered that Sir William Turner, the well-known anatomist and Principal of the Edinburgh University, recently died. Oddly enough his successor, Sir James Alfred Ewing, was a 'director of naval education.'

The death is announced at Shirley, Rusholme, of Mr. J. Howard Reed, at the age of 57 years. He was well known in geographical circles in Manchester, and was for many years connected with the Manchester Geographical Society.

At a recent sale of the collection of F. H. and A. E. Waterhouse two examples of *Euanessa antiopa*, taken in Yorkshire, fetched 22s. each, whereas another specimen believed to have been taken in Suffolk, with other species, only realised 3s.

Illustrating some 'Notes on an Excavation in the Wilderness,' by C. J. Also in the *Report of the Marlborough College Natural History Society*, No. 64, is an illustration of an Anglo-Saxon cooking-pot. A list of others is given, to which should be added an example in the Driffeld Museum, now in the possession of the Hull Corporation.

In the recent Annual Lantern Slide Competition promoted by the Royal Photographic Society, to which selected work is contributed by affiliated societies, the Plaque (the highest honour) in the Scientific Section, was awarded to Mr. A. E. Peck, of Scarborough. The subject was a female Emperor moth and eggs which were met with on a Yorkshire Naturalists' Union Excursion.

We learn from *The Yorkshire Post* of June 16th that 'a tremendous fall of cliff has occurred at Bempton, between Flamborough and Filey, and as the spot is one of the principal sea-bird breeding grounds of the British Isles, the fall is sure to have a serious effect upon the harvest of eggs. At one point alone, for a distance of 67 yards, great masses of cliff, which in summer time are crowded with sea fowl, have dropped into the sea. At least 14,000 cubic yards must have disappeared at this spot; in fact, there is no record of a similar fall having occurred at Bempton or Speeton within living memory. As the fall began with the breeding season, it must have disastrous consequences to sea-bird life. Tens of thousands of the famous Bempton birds have been rudely dislodged from their habitations, and we hear from a well-known Yorkshire naturalist, who has visited the scene, the guillemots and puffins and kittiwakes have been sitting looking on at the wreckage ever since, unable to rouse themselves to seek suitable incubating nooks in other parts of the cliff.' We understand that the point of cliff where the great fall has taken place, is that just showing out of the mist in Mr. Woodhouse's picture, 'A Misty Morning on the Bempton Cliffs,' forming the frontispiece to Vol. I. of 'Birds of Yorkshire.'

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NOTES AND COMMENTS.

ROYAL SOCIETY OF EDINBURGH.

At a recent meeting of the Royal Society of Edinburgh, Dr. A. E. Cameron read a paper on 'The Insect Association of a local environmental complex in the district of Holmes Chapel, Cheshire.' The districts with which the study is concerned were two fields, Glover's Meadow and the alluvial pasture situated in the farm land of the Holmes Chapel Agricultural College. In these fields the soils were respectively a reddish clay loam and a dark coloured loam. The plant environment and its relation to the insects were fully considered; also the physical factors of the environment, such as water content, humidity, light, temperature, precipitation, wind, soil, exposure, slope and the like. The index of an insect's habitat is where it breeds, and it is important to recognise endemic forms which are proper to an association and polydemic forms which are invaders. Detailed accounts were given of the various orders on insects found, such as Diptera, Coleoptera, Neuroptera, Apterygota, Hymenoptera, etc., and the facts were brought together in a series of tables, showing the months of occurrence of the different species, their habits, and the plants with which they were associated. Another point of interest was the relation of the soil-inhabiting insects to the food habits of ground-feeding birds.

THE BRITISH ASSOCIATION MEETING AT NEWCASTLE.

The preliminary programme for the 86th Annual Meeting of the British Association at Newcastle in September has been issued. On the evening of Tuesday, September 5th, Sir Arthur Evans, F.R.S., will deliver his Presidential address in the Town Hall, where Dr. P. Chalmers Mitchell is also to speak on Friday evening on 'Evolution and the War.' Sectional meetings will be held on Wednesday, Thursday and Friday, and, if necessary, on the Saturday morning, the following being the chairmen of sections:—Mathematical and Physical Science, Dr. A. N. Whitehead, F.R.S.; Chemistry, Professor G. G. Henderson, D.Sc.; Geology, Professor W. S. Boulton, D.Sc.; Zoology, Professor E. W. McBride, D.Sc., F.R.S.; Geography, Mr. D. G. Hogarth, M.A.; Economic Science and Statistics, Professor A. W. Kirkaldy; Engineering, Mr. G. G. Stoney, F.R.S.; Anthropology, Dr. R. R. Marett; Physiology, Professor A. R. Cushny, M.D., F.R.S.; Botany, Dr. A. B. Rendle, F.R.S.; Educational Science, the Rev. W. Temple, M.A.; and Agriculture, Dr. E. J. Russell.

MUSEUMS ASSOCIATION.

The Museums Association held its annual meeting in Ipswich, July 10th-12th, under the presidency of Mr. E.

Rimbault Dibdin, of the Walker Art Gallery, Liverpool. The following papers, etc., were read:—Address by the President of the Association; Mr. F. Woolnough, 'The Future of Provincial Museums'; Mr. F. R. Rowley, Demonstration of the results of experiments on the use of arsenious jelly as a preservative; Dr. J. A. Clubb, 'Note on the educational value in Public Museums of Introductory Cases to animal groups'; Mr. Reginald A. Smith, 'The collections made by the late Lord Avebury'; Mr. E. E. Lowe, 'The British Science Guild'; Mr. Reginald A. Smith, Demonstration in the Geological Room at the Museum of Grime's Graves and Northfleet flints; Mr. J. Reid Moir, Demonstration *re* Sub-Crag Implements; Inspection of the Museum under the guidance of the Curator, who invited criticism of fittings, arrangement of specimens, etc.; Mr. A. H. Millar, LL.D., 'The Photographic Survey of Dundee'; Mr. F. Woolnough, (a) 'Description of case for exhibiting Postage Stamps, with lantern illustrations'; (b) 'Demonstration of methods of preserving Flowers in their Natural Colours': (1) The Fothergill Process, (2) Hot Sand Process; Private H. D. Skinner, 'Museums and the consolidation of the Empire'; Mr. W. K. Spencer, 'The use of Gelatine Moulds for Plaster Casts'; Mr. E. E. Lowe, 'Report on the supply of Museum Glassware.'

A WONDERFUL WHEEL ANIMALCULE.

A remarkable account of one of the wheel animalcules, or rotifers, is given by Mr. Charles Rousselet in *Knowledge*. The rotifer—a mere speck $\frac{1}{2000}$ part of an inch in size—first allows itself to be eaten and taken inside an armed and well-defended fortress (in the shape of another organism), and then assails it from the inside; and, when this does not succeed at once, weakening the master of the castle, and depriving him of his food-supply by the simple plan of consuming it himself, and refusing all the time to be digested! Lastly the rotifer lays one or more eggs, and forces its way out again.

' BRITISH BIRDS.' *

With commendable promptitude the third volume of this magnificent publication, which has been already noticed in these columns, has appeared. If possible the illustrations seem to be of even more general interest than in the two preceding volumes, especially as several are of peculiar interest to Yorkshire Naturalists. Plate 60 shows examples of the Great Bustard with their extraordinary displays. The Bitterns (plate 41), are very different from the usual 'stuffed' specimens one meets with in Museums. There are many excellent

* By A. Thorburn. London. Longmans, Green & Co. Volume III. Price £1 11s. 6d.

plates of Geese, Swans and Ducks. Plate 30 illustrates Pallas's Sand Grouse, a species of great interest to northern Naturalists, and there are also Ptarmigan, Pheasants, Partridges, Crakes, etc.

PURPLE HEATH GRASS,

In *The New Phytologist* there is a second illustrated article on the Purple Heath Grass by the Rev. T. A. Jefferies, F.L.S., entitled 'The Vegetative Anatomy of *Molinia caerulea*.' It follows up the author's former account of the plant's ecology, based on a study of the species carried out on the Slaithwaite Moors near Huddersfield at the suggestion of Dr. T. W. Woodhead, and describes many peculiar features in the morphology of this interesting grass. The roots have root-hairs distributed over the entire system and more abundant on the thick cord-roots than on the fibrous; the piliferous layer does not become cuticularized and mycorrhiza are common; the cord-roots have a well developed stele containing a strong sclerenchymatous pith and very large vessels, and surrounded by a prominent pitted endodermis. The rhizomes are usually much reduced, but elongate considerably when conditions call for an upraising of the leaves. The aerial stems have tuberous 'basal internodes' containing very thick walled storage tissue, having wide pits which clearly show continuity of protoplasm, and packed with starch and protein grains.

AND ITS ANATOMY.

These storage organs remain throughout the winter to feed the spring growth, and are 'evergreen' in the upper part. Two series of leaves spring from the top and the bottom of these 'basal internodes,' and it is noteworthy that in this monocotyledonous species we have absciss layers to protect the food reserve after leaf fall. The leaves, which, unlike some other common moorland grasses, are of the flat ribbon type, possess a highly developed motor mechanism, and have vascular bundles with very thick walled elements, double sheaths, and stereome girders. In addition to the 'basal internodes' food reserves are stored in the rhizomes and in the cortex of the cord-roots, and in the latter case the thick walled storage tissue functions also as an aerating tissue. Other striking features are the wealth of mechanical strengthening tissue in all parts, and the remarkable development of xylem elements. The galls of *Oligotrophus ventricolus*, which are regularly found on this grass, are also briefly described.

OXLIPS.

In a district where both primrose and cowslip are plentiful (says Mr. Highfield in an article in a recent number of *Knowledge*) it is quite a common thing to meet with intermediate

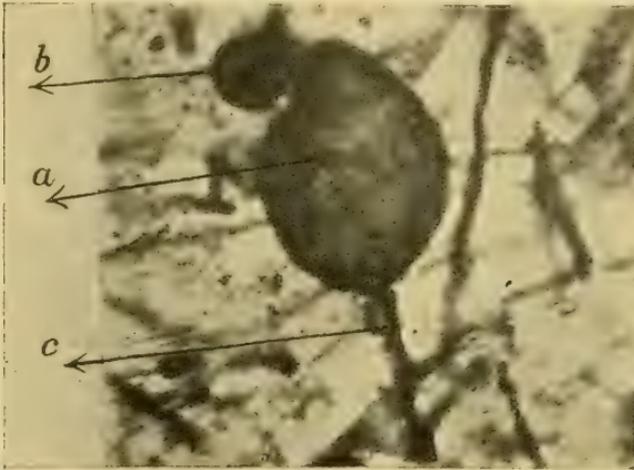
forms possessing, in varying degrees, the character of both. These plants are commonly called "oxlips," but they must not be confused with the true oxlip (*Primula elatior*), if such exists as a fixed species. There is no fixity about these variant forms. Every gradation of intermediate characters between the two species may be found, from a primrose-like flower borne on a single stalk, but showing cowslip parentage in a slightly deeper tinge of yellow, to umbel-bearing flowers, varying in colour and form through every possible gradation of the two characters. The hybrid origin of these flowers is probable from many considerations. There is little structural difference between the flowers of primrose and cowslip, and there is every likelihood that occasionally pollen should be conveyed from one to the other by insects. It is noticeable too that the intermediate forms are very commonly met with in a belt between a primrose and a cowslip habitat. In order, however, to put the matter to a definite test, Mr. Highfield made a number of crosses, and he gives the results with photographs of the flowers and leaves of the hybrids.

ROCK STRUCTURES AND PRIORITY.

A correspondent who signs himself 'R.H.R.' in *Knowledge* for June, in speaking of 'Structures in Sedimentary Rocks,' states, 'one of the pioneers in this kind of work was Professor Bonney, who was President of the Geological Section of the British Association at Birmingham in 1886. In his presidential address he gave a most interesting summary of the then state of our knowledge on the subject, chiefly based on a study of thin slices of the rocks. The late Dr. Sorby, of Sheffield, also did a good deal of work on the sedimentary rocks.' With all due respect to Professor Bonney we think that even that gentleman will consider that this correspondent has put the cart before the horse, to use an expression familiar to Professor Bonney. Surely the late Dr. Sorby was the pioneer in these matters. In the very address by Professor Bonney, referred to, this would appear to be borne out, judging by the following extract:—'Once for all, I ask you to bear in mind that this address is mainly a recital of other men's work, so that I shall not need to interrupt its continuity by remarks as to the original observers. The subject is, indeed, one to which I have paid some attention, but I can only call myself a humble follower of such good men as Godwin-Austin, "the physical geographer of bygone periods," and Sorby, *who was the first to apply the microscope to similar problems*, and to whom in this class of investigation, we need only apply the well known saying, *Nihil tetigit quod non ornavit.*'

FOSSIL FUNGI.

It might be imagined at first sight that such evanescent things as fungi would not be found fossil, but in *Knowledge* for April, Dr. David Ellis shows that this is very far from being the case. In some instances, even the delicate fungal threads can be distinguished, as they have been replaced, particle by particle, by some durable substance, such for instance as oxide of iron or calcite. In many cases, however, we get imprints of fungi on fossil leaves and stems; in others, again, the threads, or spawn, of parasitic forms are found in the substance



Phycomycites frodinghamii. $\times 800$.

- (a) Fully developed sporangia, with attached hypha (c).
 (b) Young sporangium.
 (c) Hypha which supports the sporangium (a).

of fossil trees; while some very beautiful examples are preserved, as insects are, in amber. Dr. Ellis illustrates his remarks by photographs of *Phycomycites frodinghamii*, from the Iron-stone of Frodingham; one of which we are kindly permitted to reproduce.

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We should like to congratulate the Hon. Treasurer of the Yorkshire Naturalists' Union, Mr. E. Hawkesworth, on being elected a member of the Leeds City Council.

In *The Journal of the Board of Agriculture* for June, Mr. A. Roebuck describes 'A Bad Attack by the Mustard Beetle on Watercress,' in Shropshire.

A letter from Essex ordering 100 tons of chalk, in an envelope with the type-written address, 'J. W. Shepherd, Gotham,' was recently safely delivered to the curator of a Yorkshire Museum. Apparently the 'Gotham' misled the postal authorities.

BOTANICAL PROBLEMS AT AUSTWICK.

C. A. CHEETHAM.

- (a) The occurrence of *Calluna* and like species on the limestones.
- (b) The 'survival' (?) of *Silene maritima* on the high level limestone escarpments.
- (c) The varying floras of the old turbary pools on Austwick Moss.

(a) The area to be investigated is Moughton Scar, a considerable part of which is covered with *Calluna*, *Erica*, *Empetrum*, *Vaccinium*, etc. The finest growth is in the hollows, and here there is a considerable depth of peat. Samples have been taken just above the subsoil some two feet below the surface, where it is of a dark brown colour. After air-drying 35 grammes were taken and dried 8 hours at 100°C. This reduced it to 30.1 grammes; it was then ignited and gave 4.34 grammes of a reddish coloured residue which was heated with nitric acid, leaving 3.5 grammes. The residue left on ignition represented 12.4 per cent. of the air-dried, or 14.4 per cent. of the oven-dried peat.*

Samples of the peat were boiled with caustic potash and examined microscopically in the hope that some light might be thrown on the plants which had formed the peat, but without success; no mosses were detected and the only plant remains were *Calluna* rootlets and mycelium, but as the peat is much cracked in dry weather the surface vegetation can easily root to this depth.

The sand below was examined and found to be free from lime, and of a sharp-angled, gritty nature, the grains small and fairly uniform giving a hard compact bed with a narrow iron-coloured band, possibly 'pan.' It seemed quite possible from the nature of this material that the finer matter has gradually been washed out and made the whole less water-tight. The subsoil rests directly on the limestone.

There are plenty of grit boulders about as evidence of former ice action, even if we do not look across Crummock Dale to the classic examples at Norber.

At the end of the Ice Age the surface would be covered with a clayey deposit and in the hollows water would collect, and it is still hoped that evidence of the vegetation history may yet be obtained from the peat which has resulted from it.

Leaving these hollows for the higher parts, *Calluna* is seen growing on a soil free from peat; the habit of the *Calluna* is

* This work was kindly undertaken by Mr. W. H. Burrell, F.L.S.

more stunted, but healthy. On examination the soil is found to be free from lime, although the plants are in direct contact with the limestone rock in many cases.

The hill contour is one of alternate level areas and small screes; it is on the former that the *Calluna* grows. Dr. Rayner has ably dealt with the problems of *Calluna* and Chalk in papers in *The New Phytologist*, Vol. XIII., p. 59, and also *The Annals of Botany*, Vol. XXIX., No. 113.

(b) *Silene maritima* has been known in this station for a long time, and it has been suggested quite seriously that it is a remnant of a time when the sea washed these cliffs and slopes. This is one of a group of plants, including the well-known examples of Sea Thrift and Sea Plantain, which are found on sea shores and high mountains, and the question of the escarpment being at any time a sea cliff with the present types of marine plants is scarcely worth consideration. Still, the problem of this small group of plants is a fascinating one.

(c) An investigation of the cause of the varying flora of the different pools seems to promise some interesting features. A casual walk round shows that some pools are practically pure Sphagnum, others Harpid Hypna or aquatic hepatic; and lastly, pools with plants as Pondweed or Floating Burweed. Sphagnum is well-known to be soon destroyed by alkaline conditions, and this suggests a line of enquiry. Preliminary trials show that the pools with the Sphagnum are the most acid, though the results are not very decisive as yet; the water in all is very soft.

Where a cut has been made between a Sphagnum and a Hypnum pool the latter seems at first to become covered with algal growth (*Edogonium*). The Sphagnum also gets a foothold and seems to oust the true moss or hepatic.

This rather disposes of a view at first taken that possibly the moss or hepatic pools were cut down through the peat to the old lake bed which may be of a marly nature, with shell remains, and which would neutralize the acidity required by the Sphagnum. An able *resume* of the question of the acidity of Sphagnum and its relation to Chalk, by M. Skene, will be found in *The Annals of Botany*, Vol. XXIX., No. 113.

With these problems the botanical section will find plenty of scope for discussion and work at Austwick, particulars of which will be found on the inside of the cover.

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The *Journal of the Quekett Microscopical Club*, No. 78, contains the following papers:—'On the Formation of Sporangia in the Genus *Stemonitis*,' by A. E. Hilton; 'On a Species of *Aleurodes*,' by James Burton; 'The Collection and Preservation of Desmids,' by G. T. Harris; 'Presidential Address—Some Factors of Evolution in Sponges,' by Arthur Dendy; and 'On the Bdelloid Rotifera of South Africa,' by W. Milne.

GLACIAL BEDS AT HUNMANBY, E. YORKS.

T. SHEPPARD, M.Sc., F.G.S.

HAVING occasion recently to wait a while for a train at Hunmanby, near Filey, I visited Mr. Parker's brick pit, which adjoins the station, and which, a few years ago yielded a Chariot Burial of the early Iron Age.* The section is about 300 feet above O.D. and is almost on the line of the moraine which is so well developed a little further south, at Speeton. The pit is largely overgrown, but is being worked at one or two places. An examination of these shows that the deposit is very variable, but roughly may be taken to show :—

Rounded Gravel, 8 feet ;

Purple Boulder Clay, 6 to 8 feet ;

Contorted Laminated Clay, 6 feet ;

and doubtless this rests on a further bed of Boulder Clay.

In some parts of the pit, at the top of the section, there was a loose red earthy clay resembling Hessle Clay, though it may have been re-distributed.

The gravel was typical glacial gravel such as occurs in other parts of the district. The purple boulder clay was also typical of that deposit, both with regard to texture and contents.

The stoneless laminated clay is interesting. Fallen blocks on being dried split into innumerable laminae resembling the deposit described by G. W. Lamplugh† in the cliff section south of Bridlington. Dried fragments show whitish partings on which are small ripple-marks. It has every appearance of having been deposited in a glacial lake. But it is not entirely in its original position, if at all. The beds are twisted and contorted in a remarkable manner. Besides being crumpled and folded, whole masses have been torn away and thrust along ; in some places they have evidently been heaped up and crushed together, now and then resembling current bedding, at other times taking the appearance of an enormous crush-breccia. The fine lines of demarcation between one mass and another suggest that the lumps were crushed together while in a frozen condition.

This particular bed of course, though limited in extent, makes excellent bricks—those made from the boulder clay in the remainder of the section being much inferior.

At various places in the floor of the pit are heaps of boulders, many, especially the limestones, being glacially striated. These are no doubt principally derived from the Purple Boulder Clay, though a few are obviously from the gravel, and some, such as

* 'On a Chariot Burial at Hunmanby,' by T. Sheppard, *Yorks. Arch. Journ.*, No. 76, 1907, pp. 482-8.

† *Proc. Yorks. Geol. Soc.*, Vol. 8, 1882, pp. 27-38.

the Cheviot porphyrites and the Greywacké sandstone (Silurian), are from the Upper Boulder Clay.

The following is a list of the boulders noticed, many, especially the limestones, being striated:—

- Augite syenite (Scandinavia).
- Rhomb-porphry ,,
- Quartz-porphry ,,
- Halleflinta ,,
- Hornblende gneiss (Scotland?).
- Gneiss with large red 'eyes' ,,
- White Granite ,,
- Red ,,
- Porphyrite (Cheviots).
- Amygdaloidal lava (Cheviots).
- Greywacké sandstone ,,
- Basalt (Teesdale).
- Dolerite ,,
- Andesite (Lake District).
- Lidianstone.
- Millstone Grit (large angular block).
- Carboniferous Limestone (Teesdale).
- Sandstone (Common).
- Micaceous ,,
- Quartz.
- Quartzite.
- Magnesian Limestone (Roker).
- Lias, with *Gryphoca incurva*, *Pecten*, and Saurian vertebra.
- Secondary Sandstones (Common).
- Estuarine ,, (Scarborough).
- Black Flints.

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Methods in Practical Petrology, by **H. B. Milner** and **G. M. Part**. Cambridge: W. Heffer & Sons, 68 pages, 2s. 6d. net. The sub-title is 'Hints on the Preparation and Examination of Rock Slices.' The authors wish the volume to act as a companion to existing petrological textbooks, and have consequently omitted detailed description of rocks, minerals and structures. They give prominence to methodical procedure in microscopical work, and an important feature of the book is the section devoted to the preparation of rock slices. There is no doubt that a practical student will find it of value.

The Gravels of East Anglia, by **Professor T. McKenny Hughes**. The University Press, Cambridge, 58 pages, 1s. net. There is no doubt that the question of the origin of the Gravels of East Anglia is an exceedingly difficult one, and it requires a thorough knowledge of the various and numerous exposures to enable one to speak authoritatively on the matter. That knowledge is possessed by Dr. T. McKenny Hughes, and the present hand-book is of distinct service as it describes and classifies the various gravels, and enumerates the mammaliferous and other contents. The author also gives a useful summary of the subject. His diagrams illustrating 'False Succession' should be carefully studied by certain East Anglian pre-historians.

CASUAL AND ALIEN PLANTS FROM WAKEFIELD.

JOHN CRYER.

The following list consists mainly of Casual and Alien Plants noted by the writer on the banks of the River Calder at Wakefield during the past twelve years. Over ninety per cent of the total seen were discovered on a piece of land about two hundred square yards in extent in a pasture close to the river. They are no doubt the outcome of sweepings thrown out by the barge men.

RANUNCULACEAE.—*Adonis annua* L. ; *Ranunculus arvensis* L. ; *R. sceleratus* L. ; *Delphinium Ajacis* L. ; *D. Consolida* L.

PAPAVERACEAE.—*Hypocoum grandiflorum* Benth. ; Teste, Dr. Thellung. This occurred for several years, and in 1912 I counted over fifty flowering specimens.

CRUCIFERAE.—*Radicula palustris* Moench. ; *Alyssum Alysoides* L. ; *A. incanum* L. ; *Sisymbrium Sophia* L. ; *S. pannonicum* Jacq. ; *S. columnae* Jacq. ; *S. Irio* L. ; *Erysimum cheiranthoides* L. ; *E. perfoliatum* Crantz. ; *Camelina sativa* Crantz. ; *C. silvestris* Wallr. ; *Coronopus didymus* Sm. ; *C. verrucarius* (Gars.) *Lepidium Draba* L. ; *L. perfoliatum* L. ; *L. ruderale* L. ; *L. incisum* Koth. ; *L. campestre* Br. ; *Raphanus Raphanistrum* L.

VIOLACEAE.—*Viola Riviniana*, Reichb., var. *diversa* Greg. ; *V. arvensis* Murray, var. *Lloydii* (Jord.).

CARYOPHYLLACEAE.—*Saponaria Vaccaria* L. ; *Silene juvenalis* Del. ; *S. noctiflora* L. ; *S. Armeria* L. ; *Stellaria aquatica* Scop.

MALVACEAE.—*Malva moschata* L.

LINACEAE.—*Linum usitatissimum* L.

LEGUMINOSAE.—*Trigonella Foenum-graecum* D. ; *T. corniculata* L. ; *T. caerulea* Ser. ; *Medicago sativa* L. ; *Melilotus officinalis* Lam. ; *M. alba* Desr. ; *M. arvensis* Waller ; *M. indica* Alb. ; *Coronilla scorpioides* Koch. ; *Vicia hirsuta* S. F. Gray.

UMBELLIFERAE.—*Conium maculatum* L. ; *Carum Carvi* L. ; *Scandix Pecten-veneris* L. ; *Anthriscus Scandix* Beck. ; *Æthusa Cynapium* L. ; *Coriandrum sativum* L. ; *Anidrum testiculata* (Roth.) ; *Caucalis leptophylla* L. ; *C. daucoides* L. ; *C. Anthriscus* Huds. ; *C. arvensis* Huds. ; *C. nodosa* Scop. ; *C. latifolia* L.

RUBIACEAE.—*Galium tricorne* Stokes ; *Asperula arvensis* L.

COMPOSITAE.—*Bidens cernua* L. ; *Anthemis nobilis* L. ; *A. Cotula* L. ; *Matricaria inodora* L. ; *M. Chamomilla* L. ; *M. suavecolens* Buch. ; *Senecio viscosus* L. ; *S. sylvaticus* L., var.

auriculatus Meyer; *Carduus pycnocephalus* L.; *Centaurea Cyanus* L.; *C. solstitialis* L.; *C. Calcitrapa* L.; *C. iberica* Trev.; *C. Verutum* L.

CAMPANULACEAE.—*Specularia Speculum* A. D.C.

PRIMULACEAE.—*Angallis femina* Mill; *Angallis arvensis* L.

BORAGINACEAE.—*Lappula echinata* Gilib.; *Lycopsis arvensis* L.; *Asperugo procumbens* L.; *Lithospermum arvense* L.

SOLANACEAE.—*Solanum nigrum* L.; *Datura Stramonium* L.; *Hyocyamus niger* L.

SCROPHULARIACEAE.—*Antirrhinum Orontium* L.; *Veronica agrestis* L.; *V. didyma* Ten.; *V. multifida*. This plant was first seen in July, 1910. It is not recorded in Dunn's Alien Flora or in Druce's British Plants.

LABIATAE.—*Salvia aethiopsis* L.; *Sideritis montana* L.; *Wiedemannia orientalis* Fisch. & Mey.; *Dracocephalum parviflorum* Nutt.

PLANTAGINACEAE.—*Plantago ramosa* Asch.; *P. Coronopus* L.; *P. maritima* L.; *P. Lagopus* L.

CHENOPODIACEAE.—*Chenopodium rubrum* L.; *C. botryodes* Sm.; *C. urbicum* L.; *C. murale* L.; *C. album* L., var. *viride* Syme.; *C. Vulvaria* L.; *Beta vulgaris* L.; *B. maritima* L.; *Spinacia oleracea* L.; *Atriplex tatarica* L.

GRAMINACEAE.—*Setaria viridis* Beauv.; *S. glauca* Beauv.; *Apera interrupta* Beauv.; *A. intermedia* Hack.; *Bromus tectorum* L.; *B. madritensis* L.; *B. arvensis* L.; *Hordeum murinum* L.; *H. marinum* Huds.

My thanks are due to Messrs. A. B. Jackson and W. B. Turrit of Kew, also to Dr. F. A. Lees of Leeds, for valuable help in identifying many of the above.

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Engineering Geology, by H. Ries and T. L. Watson, 2nd edition, London: Chapman & Hall, xxvii. + 722 pages, 17s. net. In this Journal for September, 1911, a review of this excellent book was given. The present notice is to draw attention to the fact that the book has been so far successful, that within a very short time a second addition has been called for. Much additional matter has been added, bringing the total number of pages to about 750, though the price has not been advanced. The volume is produced in the excellent style we expect from Messrs. John Wiley & Sons, New York, where it first appeared.

A Text Book of Geology, Part 2. Historical Geology, by Charles Schuchert. London: Chapman & Hall, pp. 405-1026, 12s. net. This volume is written 'For use in Universities, Colleges, Schools of Science, etc., and for the general reader.' The author is Professor of Physical Geology at the Yale University, and naturally draws largely upon the American examples to illustrate his theme. By the aid of innumerable pen and ink sketches, maps and photographs, as well as by representations of restorations of extinct animals, he has made a very instructive narrative which will by well worth careful study by English geologists. Additional interest is added to the volume by the numerous reproductions of photographs and paintings of geological pioneers. There is also an excellent coloured geological map of North America.

CUMBERLAND HEMIPTERA-HETEROPTERA.

F. H. DAY, F.E.S.

THERE are very few published records of these insects from Cumberland. In Saunders' 'Hemiptera-Heteroptera of the British Isles' only two or three species are mentioned for the county, the most noteworthy being *Peribalus vernalis*, Wolff. There are few records in the entomological magazines. Mr. James Murray has recorded some of his captures in the *Ent. Mon. Mag.* during the last few months. In the 'Victoria History of Cumberland' I gave a list of 77 species which had been hurriedly collected for the purposes of that work. That was 16 years ago, since when, as a result of some rather desultory collecting, the list has been increased to 173 species. It seems desirable, therefore, to publish present knowledge as it stands to serve as a foundation for a county list.

As in the compilation of other lists of Cumberland insects, I have had the assistance of my friends, Messrs. H. Britten, J. Murray and G. B. Routledge. I am also much indebted to Messrs. E. A. Butler and E. A. Newbery for help in determining and verifying many species.

Where no localities are given after a species it is one of common and general distribution.

Localities without the name of an authority are based on my own observations.

PENTATOMIDAE.

Scirius biguttatus, L. In moss in spring, Keswick.

Peribalus vernalis, Wolff. Borrowdale (Saunders' 'Hemiptera-Heteroptera of the Brit. Isles,' p. 27).

Dolycoris baccarum, L. On *Ononis*, Seascale.

Piezoderus lituratus, F. Fairly common on *Ulex*.

Pentatoma rufipes, L. On various trees and shrubs, not uncommon.

Picromerus bidens, L. Locally common near Carlisle on *Calluna*.

Rhacognathus punctatus, L. In moss, rare, Durdar.

Zicrona coerulea, L. Local and uncommon on *Collina*, Wan Fell.

Acanthosoma interstinctum, L. On birch usually, not scarce.

Elasmostethus griseus, L. Of similar distribution.

BERYTIDAE

Nicides tipularius, L. One specimen on the sandhills at Seascale.

Berytus minor, H.S. By sweeping etc., Gt. Salkeld (Britten), Newby Cross (Murray).

Berytus crassipes, H.S. By sweeping, Silloth, Burgh-by-Sands, (Britten).

Metacanthus elegans, Curt. Common on the coast sandhills.

LYGAEIDAE.

Nysius thymi, Wolff. Tarn Lodge (Routledge), Silloth, Seascale.

Cymus glandicolor, Hahn. In damp places, Newton Reigny Moss, Hayton Moss.

Ischnorhynchus geminatus, Fieb. On *Calluna*, Wan Fell, (Britten).

Pamera fracticollis, Schill. In *Sphagnum*, not common, Orton.

Stygnocoris rusticus, Fall. By sweeping, etc., Orton, Durdar.

Stygnocoris pedestris, Fall. In moss, etc., common.

Stygnocoris fuliginosus, Geoffr. Fairly common.

Peritrechus sylvestris, F. Widely distributed.

Trapezonotus arenarius, L. Uncommon, Gelt Woods (Murray), Gt. Salkeld.

Drymus sylvaticus, F. Common, Mr. Murray mentions the var. *ryei* from Stainton.

Drymus brunneus, Sahlb. Common.

Drymus piceus, Flor. In *Sphagnum*, etc., scarce, Newton Reigny Moss (Britten), Castle Carrock Fell (Murray), Orton.

Scolopostethus affinis, Schill. Scarce, Gelt Woods (Routledge), Grinsdale (Murray), Carleton.

Scolopostethus thomsoni, Reut. Cummersdale, Orton (Murray), Upperby, several on toadflax.

Scolopostethus decoratus, Hahn. Common.

Gastrodes ferrugineus, L. On conifers, Orton, Baron Wood, etc.

TINGIDIDAE.

Acalypta cervina, Germ. In moss, scarce, Carlisle, Newton Reigny Moss.

Acalypta parvula, Fall. In cut grass, etc., common.

Dictyonota tricornis, Schr. Scarce, Gt. Salkeld (Britten).

Dictyonota strichnocera, Fieb. A few taken, Prior Rigg (Murray), Wan Fell, Gt. Salkeld.

Derephysia foliacea, Fall. On broom, etc., not uncommon.

Monanthia cardui, L. Common on thistles.

HEBRIDAE.

Hebrus ruficeps, Thoms. Abundant in *Sphagnum*.

GERRIDIDAE.

Hydrometra stagnorum, L. Common in flood refuse.

Microvelia pygmaea, Duf. Edges of ponds, scarce, Orton.

Velia currens, F. Common, Mr. Britten has taken the developed form sparingly.

- Gerris lateralis*, Schum. var. *costae*, H.S. Common on boggy ponds.
Gerris thoracicus, Schum. Less common than *costae*, Carlisle, Silloth, Gt. Salkeld.
Gerris gibberfer, Schum. Hayton Moss (Routledge), Gt. Salkeld (Britten), Bowness Moss.
Gerris lacustris, L. Common.
Gerris odontogaster, Zett. Edenhall, Newton Reigny Moss (Britten), Orton.

REDUVIDAE.

- Ploiariola vagabunda*, L. Scarce, Gt. Salkeld (Britten).
Ploiariola culiciformis, De G. Scarce, Gt. Salkeld (Britten).
 Carlisle (Murray).
Coranus subapterus, De G. Local on heaths, Wan Fell.
Nabis major, Cost. Local but not scarce, Hayton Moss (Routledge), Seascale, Silloth.
Nabis flavomarginatus, Scholtz. }
Nabis limbatus, Dahlb. } All more or less abundant.
Nabis ferus, L. }
Nabis cricctorum, Scholtz. }
Nabis rugosus, L. }

SALDIDAE.

- Salda pilosa*, Fall. Salt marshes, not scarce on the Solway estuary.
Salda littoralis, L. Solway estuary, also inland.
Salda morio, Zett. Scarce, Orton, Cross Fell, Grisdale Pike, etc.
Salda scotica, Curt. Common on the banks of the rivers Eden, Caldew and Gelt.
Salda orthochila, Fieb. Rare, Melmerby Fell (Britten).
Salda saltatoria, L. Fairly common.
Salda c-album, Fieb. Common.
Salda pallipes, F. Solway marshes.
Salda lateralis, Fall. Local, Anthorn.
Salda cincta, H.S. Common.
Salda cocksi, Curt. Scarce, Wan Fell, (Britten).

CIMICIDAE.

- Cryptostemma alienum*, H.S. Sides of streams, Gt. Salkeld.
Cimex lectularius, L. Common.
Lyctocoris campestris, F. Among hay, common.
Piczostethus galactinus, Fieb. By sweeping, scarce, Gt. Salkeld.
Piczostethus cursitans, Fall. Rare, Gt. Salkeld.
Temnostethus pusillus, H.S. Tarn Lodge (Routledge).
Anthocoris confusus, Reut. Common.
Anthocoris nemoralis, F. Common.
Anthocoris nemorum, L. Common.

- Anthocoris gallarum-ulmi*, De G. Scarce, perhaps over-looked, Orton (Murray).
Anthocoris sarothamni, D. & S. Tarn Lodge (Routledge).
Tetraphleps vittata, Fieb. By beating, Orton, Carleton, Gt. Salkeld.
Acompcocoris pygmaeus, Fall. Not uncommon on Scots fir.
Triphleps minuta, L. Scarce, Gt. Salkeld.
Microphysa pselaphormis, Curt. A few taken, Carlisle, Penrith.

CAPSIDAE.

- Pithanus maerkeli*, H.S. Tarn Lodge, undeveloped forms only (Routledge).
Miris holsatus, F.
Miris calcaratus, Fall. } Abundant in grassy places.
Miris laevigatus, L. }
Megaloceraea ruficornis, Fourc. Fairly common.
Megaloceraea psammaecolor, Reut. Silloth (Murray).
Teratocoris saundersi, D. & S. Newton Reigny Moss.
Leptopterna ferrugata, Fall. Local, Kingmoor, Wan Fell
Leptopterna dolobrata, L. Generally common.
Monalocoris filicis, L. } Abundant on ferns.
Bryocoris pteridis, Fall. }
Pantilus tunicatus, F. Rare, Rose Bridge (Murray).
Phytocoris populi, L. Tarn Lodge (Routledge), Langwathby (Britten).
Phytocoris tiliac, F. Tarn Lodge (Routledge), Gt. Salkeld, on plum trees (Britten).
Phytocoris longipennis, Flor. Locally common, Orton, Durdar.
Phytocoris pini, Kb. Wan Fell (Britten).
Phytocoris ulmi, L. Common.
Calocoris ochromelas, Gmel. Fairly common on oak, etc.
Calocoris sexguttatus, F. Very common on nettles.
Calocoris roseo-maculatus, De G. Locally common, Tarn Lodge (Routledge).
Calocoris alpestris, Mey. Local and scarce, Gelt Woods (Murray).
Calocoris bipunctatus, F. Common.
Calocoris lineolatus, Goeze. On *Ononis*, Silloth, Seascale.
Calocoris striatus, L. Occurs sparingly in most large woods.
Dichroscytus rufipennis, Fall. Locally common on Scots fir, Tarn Lodge (Routledge), Wan Fell.
Plesiocoris rugicollis, Fall. On willows, Orton, Gelt Woods, etc.
Lygus pabulinus, L. Common.
Lygus contaminatus, Fall. Local, Orton, Gt. Salkeld.
Lygus viridis Fall. Fairly common.
Lygus leucorum, Mey. Wreay.
Lygus pratensis, L. Very common and variable.
Lygus cervinus, H.S. Tarn Lodge (Routledge).

- Lygus kalmii*, L. By sweeping, not uncommon.
Camptozigum pinastri, Fall. On Scots fir, Orton.
Pocilloscytus gyllenhali, Fall. Orton, Seascale, Gt. Salkeld.
Liocoris tripustulatus, F. Common on low plants.
Capsus scutellaris, F. Local and scarce, Wan Fell.
Bothynotus pilosus, Boh. Orton, one specimen (Murray).
Rhopalotomus ater, L. Common.
Orthocephalus saltator, Hahn. Tarn Lodge, one specimen, undeveloped (Routledge).
Strongylocoris leucocephalus, L. Orton, Baron Wood, etc.
Dicyphus epilobii, Reut. Common on willow herb.
Dicyphus stachydis, Reut. Common on dumb nettle.
Dicyphus pallidicornis, Fieb. Common on foxglove.
Dicyphus globulifer, Fall. Seascale, Gt. Salkeld.
Cyllocoris histrionicus, L. In most large woods.
Cyllocoris flavonotatus, Boh. Moderately common.
Aetorhinus angulatus, F. Common.
Mecomma ambulans, Fall. Common in marshy places.
Cyrtorrhinus caricis, Fall. Newton Reigny Moss, Gt. Salkeld.
Orthotylus marginalis, Reut. Tarn Lodge, Gt. Salkeld, Wan Fell.
Orthotylus flavosparsus, Sahlb. Gt. Salkeld.
Orthotylus chloropterus, Kb. Local, Orton.
Orthotylus ericetorum, Fall. Common.
Orthotylus viridinervis, Kb. Gt. Salkeld.
Heterocordylus tibialis, Hahn. Common on broom.
Conostethus salinus, Sahlb. Kirkbride, two specimens.
Macrotylus paykulli, Mey. Common on the coast.
Harpocera thoracica, Fall. On oak, common in woods.
Phylus melanocephalus, L. Gelt Woods (Routledge.)
Phylus coryli, L. Gelt Woods (Murray).
Psallus ambiguus, Fall. }
Psallus betuleti, Fall. } Widely distributed and fairly
Psallus variabilis, Fall. } common.
Psallus varians, H.S. }
Psallus roseus, F. }
Psallus quercus, Kb. Orton, scarce.
Psallus falleni, Reut. Orton, one specimen.
Plagiognathus albipennis, Fall. Gt. Salkeld.
Plagiognathus chrysanthemi, Wolff. } Both common.
Plagiognathus arbustorum, F. }
Asciodema obsoletum, D. & S. Orton (Murray), Gt. Salkeld (Britten).

NEPIDAE.

Nepa cinerea, L. Common.

NOTONECTIDAE.

Notonecta glauca, L. Common.

CORIXIDAE.

- Corixa geoffroyi*, Leach. Locally common.
Corixa lugubris, Fieb. Burgh Marsh.
Corixa hieroglyphica, Duf. Cummersdale.
Corixa sahlbergi, Fieb. Very common.
Corixa linnaei, Fieb. Scarce, Orton, Cummersdale.
Corixa limitata, Fieb. Not uncommon, Kingmoor, Cummersdale.
Corixa semistriata, Fieb. Cummersdale.
Corixa venusta, D. & S. Scarce, Carlisle.
Corixa striata, L. Fairly common, Gt. Salkeld, Cummersdale.
Corixa distincta, Fieb. Thurstonfield, Monkhill, Edenhall.
Corixa falleni, Fieb. Cummersdale, Monkhill.
Corixa moesta, Fieb. Local, Wan Fell.
Corixa fossarum, Leach. Fairly common near Carlisle.
Corixa scotti, Fieb. Rare, Orton.
Corixa nigrolineata, Fieb. Very common and variable.
Corixa praeusta, Fieb. Kingmoor, Cummersdale, Saddleback.
Corixa caledonica, Kirk. One specimen, Thurstonfield.
Corixa bonsdorffi, Sahlb. Thurstonfield, Monkhill, Edenhall.
Micronecta minutissima, L. River Caldew (Murray), River Irthing

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Third Appendix to the Sixth Edition of Dana's System of Mineralogy. by **W. E. Ford.** London: Chapman & Hall, pages xiii+87, 6s. 6d. net. This volume has been prepared by the assistant Professor of Mineralogy of Yale University in order to bring Dana's well-known text book complete to 1915. The first part deals with recent improvements in mineralogical methods, especially by the use of X-rays photography, then follows a bibliography of recent papers and an extensive classified list of new names, the remainder being occupied by information respecting various minerals, arranged in alphabetical order.

How to Lay out Suburban Home Grounds, by **H. J. Kellaway.** London: Chapman & Hall, 134 pages, 8s. 6d. net. This book is written by an American Landscape Architect, and its object is to show how greatly American homesteads may be improved in appearance by the efforts of a 'Landscape Architect.' There is no doubt that our cousins across the Pond frequently require the efforts of some such person to beautify their dwellings, and the illustrations which Mr. Kellaway gives clearly indicate the success of his methods, though of course from the nature of the vegetation, etc., many of his recommendations would not apply in this country.

The Investigation of Mind in Animals, by **E. M. Smith.** Cambridge University Press, 194 pages, 3s. net. The present little volume is written with the object of instructing those interested in animal intelligence, in the proper methods employed in animal physiology, its aims, trend, and the general nature of the results hitherto obtained. The chapters are headed:—Protozoan Behaviour, Retentiveness, Habit Formation, Associative Memory and Sensory Discrimination, Instinct, Homing, Imitation, The Evidence for Intelligence and for Ideas, and in addition there is a valuable bibliography, which will enable those interested to pursue their investigations.

COLEOPTERA IN YORKSHIRE IN 1915.

W. J. FORDHAM, M.R.C.S., L.R.C.P., F.E.S.

(Continued from page 207).

- † *Phlæopora angustiformis* Bandi. (*transita* Brit. Cat.). Edlington. October, 1911. W. E. S. (*P. reptans* Gr. has been taken by Dr. Corbett at Cusworth. These species are closely allied and sometimes occur together).
- † *Homalota nigella* Er. Shirley Pool, Askern. October, 1911. W. E. S. This species has not previously occurred north of the Midlands.
- † *Homalota linearis* Gr. Shirley Pool, Askern. October, 1911. W. E. S.
Homalota cuspidata Er. Castleton, May, under loose bark. M. L. T.
- † *Homalota succicola* Th. (*euryptera* Steph.) Shirley Pool, Askern. October, 1911. W. E. S.
Homalota paradoxa Rey. Bubwith. Moles' nests, April. W. J. F. *61.
- † *Homalota indubia* Shp. Shirley Pool, Askern. October, 1911. W. E. S.
- † *Homalota mortuorum* Th. Castleton, May. Two specimens under loose bark. M. L. T. This is now generally considered the same species as *atricolor* Shp., which has been recorded from Redcar, Wheatley and Brimham Rocks. If not the same species they are very closely allied.
- † *Gyrophæna bihamata* Th. Skipwith, August, in fungi. W. J. F. Only recently added to the British list but probably widely distributed. (*Fowler Brit. Col.*, Vol. VI., p. 336).
Gyrophæna affinis Man. and *G. minima* Er. Skipwith, August, in Fungi. W. J. F. Both *61.
- Bolitochara lucida* Gr. Brough. Common in rotten stump. T. S. *61.
- Hygronoma dimidiata* Gr. Bubwith, June. Sweeping. W. J. F. *61.
- Gymnusa variegata* Kies. Keld., July, in sphagnum. M. L. T. *61.
- Tachyporus solutus* Er. and *T. brunneus* F. Shirley Pool, Askern. October, 1911. W. E. S. Both *61.
- Megacronus cingulatus* Mann. Hawkesworth. T. Stringer. Nine Standards Rigg, July. One under stone on summit. M. L. T. *65.
- Mycetoporus splendidus* Marsh. Malham. J. W. C. *64.
- Heterothops nigra* Kr. Bridlington. Mole's nests, 23-5-09. W. E. S. *61.

- Quedius longicornis* Kr. Bubwith. Two in mole's nest, 15-2-13. W. J. F. *61.
- †*Quedius nigrocaeruleus* Rey. Bubwith. Mole's nest, one, March. W. J. F.
- Quedius brevicornis* Th. Bridlington. Bred from mole's nest. May, 1909. W. E. S. Usually occurs in birds' and wasps' nests. Never before bred from a mole's nest.
- Quedius obliterated* Er. Brighton, near Bubwith in moss. W. J. F. *61.
- Quedius scintillans* Gr. Shirley Pool, Askern, October, 1911. W. E. S. *63.
- †*Quedionuchus lævigatus* Gyll. Sunningdale, near Keighley. J. Beanland. An alpine species occurring in Scotland and Northumberland. It has, however, been taken at Bury St. Edmunds by Mr. Tuck.
- Ocybus brunnipes* F. forma With black legs. Bubwith. W. J. F.
- Philonthus intermedius* Bois. Filey, Escrick, Brighton. W. J. F. *61.
- Philonthus proximus* Kr. Bubwith in dung and carrion. W. J. F. *61.
- †*Philonthus nigriventris* Th. Brighton Common, two in dead hedgehog, May, 1912. W. J. F. A rare species in Britain.
- Philonthus ventralis* Gr. Bubwith, 1910 W. J. F. *61. Wheatley. H. H. C. *63.
- Philonthus micans* Gr. Bubwith. Under stones and flood refuse, 1910-11-12. W. J. F. (Only previous record. Hornsea. W. K. Bissill).
- †*Gabrius pennatus* Shp. Bubwith, flood refuse. W. J. F.
- Cafius xantholoma* Gr. var. †*variegatus* Er. Bridlington, 23-5-09. W. E. S.
- †*Lathrobium ripicola* Czwal. Bubwith. April, 1912. W. J. F.
- †*Lathrobium filiforme* Gr. Askern, February. H. H. C.
- Lathrobium terminatum* Gr. var. †*atripalpe* Scrib. Wilby, near Doncaster, 25-6-06. H. H. C.
- Evacstethus scaber* Gr. Hornsea Mere. T. S. *61.
- E. ruficapillus* Lac. Skipwith Common. G. B. W. *61.
- †*E. lævisculus* Mann. Skipwith Common. G. B. W. One.
- Stenus subæneus* Er. Shipley Glen. F. Rhodes. *63.
- Stenus ossium* Steph. Bubwith, 1912. W. J. F. *61.
- †*Stenus foveicollis* Kr. Keld. September, one in sphagnum on high moor. M. L. T.
- Stenus paganus* Er. Middleton-in-Teesdale. July, 1911. W. E. S. *65.
- Oxytelus complanatus* Er. Bubwith, May, 1913. W. J. F. *61.
- Trogophloeus corticinus* Gr. Bubwith, flood refuse. W. J. F. *61. Shirley Pool, Askern. Oct., 1911. W. E. S. *63.

- Geodromicus plagiatus* Heer. var. *nigrita* Mull. Near Keighley. F. Rhodes. *63.
- †*Lesteva luctuosa* Fauv. Malham. Three specimens in 1913. Common but very local in 1915. J. W. C. (See *The Naturalist*, 1915, March, p. 104 and *E.M.M.*, 1915, March, p. 125 and November, p. 311).
- Olophrum fuscum* Gr. Keld, July in Sphagnum. M. L. T. *65.
- Homalium striatum* Gr. Stamford Bridge on *Radicula*, September, 1914. W. J. F. *61.
Edlington, October, 1911. W. E. S. *63.
- Proteinus ovalis* Steph. Bubwith. W. J. F. *61. Edlington, October, 1911. W. E. S.
- †*Proteinus macropterus* Gyll. Edlington, Oct., 1911. W. E. S.
- Megarthus denticollis* Beck. Bubwith. G. B. W. *61.
- Megarthus depressus* Pk. Bubwith, flood refuse. W. J. F. *61.
- Prognatha quadricornis* Kirb. Newbald, a male under ash bark, 31-10-15. T. S. *61. Askern, October, 1911. W. E. S.
- Silpha opaca* L. Rossington, 12th September, swept off rushes. H. V. C. *63.
- Choleva kirbyi* Spence. Skipwith in fungus, June, 1914. W. J. F. *61.
- Catops sericatus* Chaud. Bridlington, 23-5-09. W. E. S. Only so far recorded for V.C. 61, but should occur generally.
- Colon brunneum* Lat. Bubwith. W. J. F. *61.
- †*Euconnus hirticollis* Ill. Shirley Pool, Askern. October, 1911. W. E. S.
- Scydmaenus tarsatus* Mill. Weedley. T. S. Bubwith, 1914. W. J. F. *61.
- †*Claviger testaceus* Preysl. Robin Hood's Bay, September, 1911 in nest of *Lasius flavus* T.S. (See *The Naturalist*, 1915, December, p. 385 and 403).
- Pselaphus heisei* Hbst. Houghton Woods. Common. T. S. *61.
- Bythinus securiger* Rch. Bubwith, one. G. B. W. *61.
- †*Bryaxis helferi* Schm. Welwick. T. S. and E. Bilton. (See *The Naturalist*, 1915, December, p. 403).
- Bryaxis* sp? A specimen taken by W. J. F. from reed refuse on Skipwith Common in April is considered by Mr. E. A. Newbery to be possibly *nigriventris* Schm. (a species new to Britain); but till more specimens are taken this cannot be definitely decided. The Skipwith insect resembles *juncorum* Leach., but is narrower, smaller, and darker in colour.
- Trichonyx märkeli* Aub. Weedley. with *Lasius flavus*. T. S. *61.

- †*Corylophus cassidioides* Marsh. Hornsea Mere. T. S. (See *The Naturalist*, 1915, December, p. 403).
- Subcoccinella* 24 *punctata* L. Bentley Ings. Very common by sweeping in September. H. V. C. (A very local species).
- Halyzia* 14 *guttata* L. A black form with red thorax. Wheatley Wood, September. H. V. C.
- Hyperaspis reppensis* Hbst. Houghton Woods and Hotham Carrs Common. T. S. North Cave. G. B. W. *61.
- Scymnus suturalis* Th. Saltend Common. T. S. *61.
- S. suturalis* Th. var. *limbatus* Steph. Bubwith, flood refuse. W. J. F. *61.
- Cerylon histeroides* F. Bubwith, G. B. W. Skipwith, W. J. F. *61.
- †*Cerylon ferrugineum* Steph. Helmsley. G. B. W.
- †*Pria dulcamaræ* Scop. Edlington Wood. one male, 6th September. H. V. C.
- Meligethes fulvipes* Bris. Bubwith. Abundant in August. W. J. F. Redcar marshes. G. B. W. *62.
- Meligethes brunnicornis* Stm. Bishop Wood. W. J. F. *64.
- Meligethes obscurus* Er. Thorganby, September, on ragwort. W. J. F. *61.
- Rhizophagus depressus* F. Askern, October, 1911. W. E. S.
- Rhizophagus parallelocollis* Gyll. Keighley, R. Butterfield. *63.
- Rhizophagus bipustulatus* F. Bubwith, under bark. An entirely black example. W. J. F.
- †*Cartodere filum* Aub. Hull Museum. T. S. (See *The Naturalist*, 1915, December, p. 404).
- Corticaria elongata* Gyll. Keighley. J. W. C. *63.
- †*Cryptomorpha desjardinsi* Guer. Bradford, in house. F. Rhodes. An imported species which is probably introduced with bananas and recorded from several localities in the kingdom.
- Byturus sambuci* Scop. Pickering, July, 1911. W. E. S. *62.
- †*Diphyllus lunatus* F. Cusworth, April. H. H. C. This is now the most northerly record for this species.
- Cryptophagus saginatus* Stm. Selby, 1914, diseased potatoes. J. F. Musham. *64.
- Cryptophagus punctipennis* Bris. Bubwith, by sifting dead leaves. W. J. F. *61. (This species is only recorded from Studley).
- Cryptophagus pallidus* Stm. With the last. *61.
- Cryptophagus pubescens* Stm. Bubwith, dead thrush. W. J. F. *61.
- Atomaria mesomelas* Hbst. Askern, October, 1911. W. E. S. *63.
- Elmis volkmari* Pz. Malham. J. W. C. *64.

- † *Heterocerus flexuosus* Steph. Welwick. E. Bilton.
Heterocerus marginatus F. Market Weighton, 1909. T. S.
 Bubwith. W. J. F. *61.
Heterocerus laevigatus Pz. Saltend, Hull, 29-7-08. T. S.
 (This confirms Spence's record for the Humber shore).
Heterocerus britannicus Kuw. Saltend, 15-7-08. T. S. *61.
Corymbites metallicus Pk. Bubwith, fairly abundant on
 umbellifers and thistles by the River Derwent. W. J. F.
Lampyrus noctiluca L. South Cave, common. T. S. *61.
Podabrus alpinus Pk. Unusually abundant (both type and
 black var.) in June. Cleveland. M. L. T. Arncliffe,
 1908-9 (type and black var.). J. W. C. Keighley.
 R. Butterfield. Lonsdale. G.B.W. Helmsley. G.B.W.
Malthodes mysticus Kies. Saltaire. J. W. C. and F. Rhodes.
 *61.
Malachius bipustulatus L. Abundant, Bubwith and Skipwith.
 W. J. F. (Not previously noted in this locality). Mr.
 W. E. Sharp has noted in the *E.M.M.*, March 1897, p.
 61, that this species varies in abundance in different
 seasons in the Liverpool district.
Necrobia rufipes De G. Doncaster in hides. H. H. C. *63.
Niptus hololeucus Fall. Northallerton, infesting an old house
 in considerable numbers. Keating's Powder had no
 effect on its numbers, H. Slater. (This species is noted
 for its delight in piquant substances, and has been found
 in cantharides, capsicum, cayenne and ginger, so pre-
 sumably would delight in the Keatings! See *E.M.M.*,
 1893, pp. 238 and 261.).
 † *Trigonogenius globulus* Sol. Bradford, in different ware-
 houses, 1909 (two) and 1913 (one), Mr. Stringer, 1915,
 J. Beanland. A native of Chile, which may gain a
 footing in suitable localities as it is evidently a follower
 of commerce.
Stenostola ferrea Schr. An unset specimen from Mr. Cash
 labelled 'Wadworth, off Elm, 1908.' J. W. C.
Donacia semicuprea Pz. Apperley Common. J. W. C.
 Keighley. R. Butterfield, abundant but local. Bub-
 with. W. J. F.
Donacia sericea L. Saltaire. J.W.C. Keighley. Butterfield.
 *63. Bubwith, abundant and variable (including abs.
festucae F., *nymphæ* F., *armata* Pk. and *micans* Pz.),
 W. J. F.
Donacia discolor Pz. Norton, by R. Went, 13th September.
 H. V. C. *63.
 † *Phædon concinnus* Steph. Humber shore at Saltend (Hull).
 T. S. Bubwith, flood refuse, January. W. J. F. This
 is usually considered a salt marsh insect.
Luperus flavipes L. Skipwith. W. J. F. *61.

- Longitarsus atricillus* L. Richmond. G. B. W. *65.
Longitarsus pratensis Pz. var. †*collaris* Bed. Stamford Bridge,
 on clover, 5-9-14 (with the type). W. J. F. *61.
Longitarsus laevis Duft. Saltaire. F. Rhodes.
Haltica ytenensis Shp. (*oleracea* Brit. Cat.). North Cave.
 G. B. W. *61.
Mantura rustica L. var. *suturalis* Weise. Bridlington, 23-5-09.
 W. E. S. *61.
Mantura rustica L. ab. Entirely shiny black with slightly
 pitchy brown apex to elytra, legs wholly black. Bishop
 Wood. W. J. F.
 †*Aphthona nigriceps* Redt. Grassington. J. W. C. Adding-
 ham on *Geranium pratense*, T. Stringer.
Aphthona sp? A very interesting insect, which Mr. E. A.
 Newbery thinks may possibly be *Aphthona violacea*
 Kuts., not previously recorded from Britain, which
 occurs on *Euphorbia*. One specimen taken in flight.
 April. W. J. F.
Psylliodes napi Koch. Richmond. G. B. W. *65.
Psylliodes picina Marsh. Saltaire. F. Rhodes.
Cassida viridis F. Unusually common (generally scarce) in
 autumn near Doncaster. H. V. C.
Alphitobius diaperinus Pz. This species which was abundant
 at Doncaster in damaged hides. H. H. C. (*The Nat-
 uralist*, 1915, June, p. 209), is not new to V.C. 63 (as
 stated l.c.) having been recorded from Barnsley. E.G.B.
 (*Piceus* Ol. has not previously been recorded for V.C.
 63).
Clinocara tetratoma Th. Wheatley Wood, January. H. H. C.
 *63.
Melandrya caraboides L. Helmsley. G. B. W.
Attelabus curculionoides L. Houghton Woods, one. T. S.
 *61.
 †*Rhynchites harwoodi* Joy. Skipwith. June. W. J. F. Allied
 to *nanus* and *uncinatus* and probably not uncommon.
 (Fowler, *Brit. Col.* VI., p. 346).
Apion miniatum Germ. Bubwith, on dock. W. J. F. This
 confirms a previous doubtful record for the county.
Apion pallipes Kirb. Saltaire. F. Rhodes. *63.
Apion nigritarse Kirb. Saltaire (*63) and Boston Spa. F.
 Rhodes.
Apion simile Kirb. Skipwith Common on birch. W. J. F.
 *61. (The only previous record is Knaresborough, 1838,
 J. Walton).
Apion affine Kirb. Baildon Moor, very abundant on Rumex.
 J. W. C. and T. Stringer.
Exomias araneiformis Schr. Several in moles' nests at North
 Duffield, April. W. J. F.

- Tanymericus palliatus* F. Bubwith. W. J. F. *61. Barlow. J. F. Musham.
- Barynotus elevatus* Marsh. Bubwith. G. B. W. *61.
- † *Hypera alternans* Steph. Bridlington, 23-5-09. W. E. S.
- Liosoma ovatum* Clair var. † *collaris* Rye. Bubwith, flood refuse. W. J. F.
- † *Orchestes alni* L. Foggathorpe, near Bubwith. W. J. F. (The most northerly record previously is Cleethorpes).
- Dorytomus pectoralis* Gyll, near Keighley. F. Rhodes.
- † *Gymnetron beccabungæ* L. Kildale, on *Veronica*, June 18th. M. L. T. Bishop Wood, June 19th, W. J. F. These specimens are both of the var. *nigrum* Hardy. The type appears to be rare in Britain.
- Cryptorhynchus lapathi* L. Leyburn. G. B. W. *65.
- Rhinoncus gramineus* F. Bubwith. W. J. F. *61.
- Rhinoncus perpendicularis* Reich. Stamford Bridge on *Radi-
cula*, September, 1914. W. J. F. *61.
- Phytobius comari* Hbst. Bubwith, July, 1912. W. J. F. *61
- Limnobaris T. album* L. Shipley Glen. F. Rhodes. *63.
- † *Limnobaris pilistriata* Steph. Bubwith. W. J. F. June, by sweeping. (See Fowler, *Brit. Col. VI.*, p. 198).
- Balaninus betulæ* Steph. Wheatley Wood. Several on alder, September, H. V. C.
- Cryphalus abietis* Ratz. Bubwith, in flight, April. W. J. F. *61. (The only Yorkshire record previously is Studley, E. A. Waterhouse).
- † *Xyleborus saxeseni* Ratz. This is the insect recorded as *X. dryographus* Ratz. from Cusworth, H. H. C., in last year's report. (*The Naturalist*, 1915, June, p. 200). *X. dryographus* therefore still remains to be discovered in Yorkshire.

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The Proceedings of the Liverpool Naturalists' Field Club for 1915 (26 pages), besides a list of officers and members, etc., contains a report on the field meetings for 1915, by J. W. Ellis, which is mostly botanical.

In the *Journal of the Torquay Natural History Society for 1916*, Dr. A. Smith Woodward describes a specimen of 'A Fossil Arthrodiran Fish,' (*Homosteus milleri*), which was in a Caithness flagstone in the Victoria Parade, Torquay, and it has been gradually exposed during the past 30 years, by people walking over it. In the same *Journal* Mr. H. J. Lowe describes some stone implements from Kent's Cavern.

The Journal of the East Africa and Uganda Natural History Society for June (Longmans, Green and Co. 4s.) is well illustrated and contains a coloured plate of Entomological interest. Among the papers are:—'The Game Fish of Mombasa and Malindi,' by E. K. Boileau; 'Game and War,' by Capt. C. W. Woodhouse; 'Report on the Collection of Ophidia in the Society's Museum,' by A. Loveridge; 'Life Histories of certain Butterflies,' by Capt. P. L. Coleridge; 'Sundogs and Halos seen at Njoro,' by W. A. Tunstall, and 'Dessication of East Africa,' by Capt. Henry Darley. In addition there are several shorter notes.

YORKSHIRE NATURALISTS AT MALTON.

(Continued from page 236).

COLEOPTERA.—Dr. Fordham writes:—Little was done by the coleopterists present (Mr. M. L. Thompson and Dr. Fordham) but 32 species were obtained near the lower end of Crambe Beck. The majority of these were common species but the following deserve mention:—*Anacæna globulus* Pk., *Tachyusa flavitarsis* Sahl., *Stenus impressus* Germ. and *nitidiusculus* Steph., *Quedius scintillans* Gr. (a rare species in Yorkshire), *Lathrimæum atrocephalum* Gyll., *Tychus niger* Pk., *Trichopteryx* sp. (?), *Barynotus mærens* F., and an interesting variety of *Liosoma deflexum* Pz., (= *ovatulum* Clair) approaching the var. *collaris* Rye., but of a uniformly reddish colour and structurally slightly different from the type. The majority of the beetles taken were obtained under stones by the Beck or in the luxuriant growth of moss on the ground in the wooded parts.

CONCHOLOGY.—Mr. Thomas Castle writes:—

The recent flooded state of the River Derwent, together with the check upon the vegetation upon its margins, had the effect of restricting the numbers of fresh-water species. The rainfall during the visit to the woods at Castle Howard, made observations difficult and the list is far from complete in consequence, but ideal places abound for a fully representative number of woodland species. The services of Mr. C. C. Laverack have been secured towards making out a complete record of the mollusca of the district.

Our genial host, Mr. A. H. Taylor, informed me that a conchologist once residing in Malton had commissioned his children to collect about 10,000 shells of *Helix nemoralis* in the district, with the view of securing specimens of six banded varieties, but of this variety only two were obtained, one now being in the local museum and the other in the British museum. This fact indicates that the geological formation of the district is conducive to molluscan life.

Several fossil representatives of this order, but of marine origin, were met with in a gravel pit near the Electric Power Station. They are worthy of note as possibly indicating the beds from which the material was brought down by the glacial rivers, and the suggestion is offered that the specimens should be correlated by an expert.

FRESH WATER SHELLS.

Anodonta cygnea } reported by Mr. Wattam from Scampston
 „ *tumidus* } Lake.
Limnea stagnalis shown by Mr. Laverack from River Derwent.
 „ *peregra* River Derwent and three small ponds.
 „ *truncatula* „ „ „

<i>Sphaerium corneum</i>	small ponds.
„ <i>lacustris</i>	„
<i>Pisidium amnicum</i>	River Derwent and small ponds.
„ <i>fontinale</i>	small ponds.
<i>Planorbis spirobis</i>	„
„ <i>albus</i>	„
<i>Physa hypnorum</i>	„
„ <i>fontinalis</i>	River Derwent.
<i>Ancylus fluviatilis</i>	„
„ <i>lacustris</i>	reported from River Derwent by Mr. Taylor.

LAND SHELLS.

<i>Helix aspersa</i>	old lanes around Malton.
„ <i>nemorialis</i>	„ „
„ <i>hortensis</i>	dead specimen from old land leading to pasture lane crossing approaches to gravel pit.
„ <i>arbutorum</i>	„ „ „
„ <i>cantiana</i>	„ „ „
„ <i>virgata</i>	banded form. Many places.
„ <i>rufescens</i>	type, old lane and hedgerows.
„ „	var. <i>nigrescens</i> „
„ <i>hispida</i>	old lanes and Castle Howard Woods.
„ <i>rotundata</i>	„ „ „
<i>Cochlicopa lubrica</i>	„ „ „
<i>Carychium minimum</i>	„ „ „
<i>Vitrina pellucida</i>	„ „ „
<i>Hyalina cellarius</i>	old lanes and „ „ „
„ <i>alliarius</i>	„ „ „
„ <i>nitidulus</i>	„ „ „
<i>Hyalina nitidus</i>	„ „ „
„ <i>purva</i>	„ „ „
<i>Hyalina cyrstallinus</i>	„ „ „
„ <i>fulvus</i>	„ „ „
<i>Pupa umbilicata</i>	„ „ „
<i>Clausilia laminata</i>	reported by Mr. Taylor.

MYCOLOGY.—Mr. A. E. Peck writes:—

The Committee were represented by Mr. W. N. Cheesman, Miss C. A. Cooper and myself. Mycologists do not expect to meet with finds of outstanding interest at this time of year. At Castle Howard, *Polyporus cuticularis* on Beech, according to the writer's experience, was unusual on this host. Hitherto he had only met with it on trunks of Alder.

Fomes fomentarius occurs in the fine avenue of Beech trees and the writer is confident that certain specimens at the foot of one Beech tree are the same as were observed at the time of the visit of the Mycological Committee in 1909.

YORKSHIRE NATURALISTS AT BOLTON WOODS

An ideal day favoured the very large gathering of naturalists who participated in the Union's excursion to Bolton Woods on Saturday, May 20th. All enjoyed the variety of charm of springtime in this lovely and romantic portion of the Valley of the Wharfe. A pleasing feature was the excellent official Sectional representation, and the support given to the President, Mr. W. N. Cheesman, J.P., F.L.S., by the presence of four past Presidents of the Union, Mr. Riley Fortune, F.Z.S., Mr. W. Denison Roebuck, M.Sc., F.L.S., Mr. John W. Taylor, M.Sc., and Dr. Harold Wager, F.R.S., F.L.S.

The area of investigation was from the Abbey to Barden Bridge; the geological party, however, visited the Hambleton Quarries at the back of the Railway Station.

An excellent resumé of the day's work was given by the Sectional recorders at the meeting held at the close of the excursion. Thanks were accorded to His Grace the Duke of Devonshire, for the privileges given to visit his estate; to Mr. Riley Fortune for making the local arrangements, and to Mr. T. Roose and members of the Bradford Naturalists Societies for acting as guides.

Mr. Roose exhibited a fine collection of flint implements found by him on the Rombalds, Hazelwood and Barden moors.

VERTEBRATE ZOOLOGY.—Mr. H. B. Booth reports:—In all 54 species of birds were seen, of which 19 species were what are usually classed as summer migrants. Pied Flycatchers were moderately common, and Wood Warblers relatively abundant—in fact I never remember having heard quite so many of the latter in Bolton Woods before. The three British nesting species of Wagtail were noted*—one young brood of Grey Wagtails having already just left the nest. The five ordinarily known species of Titmice were seen, including a pair of Long-tailed Tits, which latter appears to be returning to this district as a nesting species.† Bullfinches also appear to have slightly increased in numbers. On the other hand the Tree-Creeper appeared to have decreased from its comparative abundance there of a few years ago, and neither the Hawfinch (of which species several pairs have been known to nest for many years), nor any of the Woodpeckers

* Exactly three weeks before this excursion, (viz., on April 26th), I noticed a male White-Wagtail just below the stepping-stones. After watching it for half an hour, I went for Mr. Roose, and asked him to try and keep his eye on it as a *rara avis* for the Y.N.U. excursion—more particularly if it should remain to nest. Although it was still there when I returned that evening, neither Mr. Roose nor I have seen it since.

† Mr. Roose informed me that there is another pair of Long-tailed Tits in another part of the woods. We went to look for them after the meeting, but without success.

were seen or heard. Of the other species the Blackcap and the Garden Warbler were not heard in their usual numbers for this district. Possibly this may have been partly accounted for by the heat of the day. More Tree Pipits were seen than is usual in a ramble through these woods, yet much fewer were heard in song.

Many nests of different species were noted, including a particularly small nest of the Chaffinch which more resembled the nest of a Humming-bird, on a branch of an ash-tree. The sitting Chaffinch's body exceeded the size of this abnormal nest by quite one inch at the forequarters, and three inches at the tail-end. The bird sat most obligingly for a fairly close inspection by all present. This species is unusually numerous and tame in Bolton Woods. A nest of the Dipper, with six quite fresh eggs was examined—evidently a second brood.

Five species of Mammals were noticed, which included the decreasing squirrel—for some reason unknown, as they are not killed off—and eight Red Deer that are supposed to be descendants of the original feral stock that were hunted by the monks of Bolton Abbey; with the addition of an occasional strange buck in order to prevent the herd from dying out by in-breeding.

ARACHNIDA.—Mr. W. Falconer writes:—After entering the park through the Hole in the Wall, the route followed by Dr. Fordham, Mr. Winter and myself led up Posforth Gill, across to and around the waterfalls in the Valley of Desolation, returning through the pine wood above and finishing with a short stretch on the left bank of the Wharfe from Lud's Island to the wooden bridge. Although the season was not an unsuitable one for spiders, they were not found either in number or variety, the ground covering being of little depth. Beating the trees produced only the species commonly met with in such a situation, *Theridion pallens*, Bl., *Linyphia peltata* Wid., *Epeira diademata* Clerck, and less frequently *E. cucurbitina* Clerck, the last two as yet immature. Ground collecting was a little more productive, a fair number of different kinds being taken, amongst them *Enidia cornuta* Bl., and ten species which have not previously been noted for the woods, but all of general occurrence except *Diplocephalus latifrons* Camb., and *Troxochrus hiemalis* Bl. The little cave on the river bank was entered, but only *Meta merianæ* Scop. with its var. *celata* Bl. was seen. A marked feature of the specimens collected was their more distinct markings, or darker coloration. Harvestmen were mostly young, only three common species being recognisable. A few examples only of the common false-scorpion were noticed. The mites were a little more numerous, eleven species being obtained, viz., *Oribates globulus* Nic., *Oppia bipilis* Herm., *Damaeus clavipes* Herm., *D. genuic-*

latus C. L. Koch, *Trombidium holosericeum* Linn, *Ritteria nemorum* Koch, *Gamasus crassipes* Linn, *G. runciger* Berl, *Hypoaspis aculeifer* G. Can., *Linopodes notatorius* Linn, *Anystis baccharum* Linn.

FLOWERING PLANTS.—Mr. W. H. Burrell writes:—Billowy masses of expanding foliage seen from the numerous beauty spots, interspersed with a profusion of Cherry and Apple blossom, Bluebell, Ramsons, Wood Anemone and Wood Stitchwort made an impressive sight that will linger in the memory. The following plants were reported as having been seen:—Globe Flower, three bitter cresses (*Cardamine amara*, *pratensis* and *hirsuta*), Scurvy Grass, three violets (*Viola odorata*, *sylvestris* Kit., and *Riviniiana* Reichb.), Wood Geranium, Shining Geranium, Water Avens and *Geum intermedium*, Salad Burnet, Rue-leaved Saxifrage, Alternate-leaved Saxifrage, Sweet Cicely, Crosswort, Northern Galium, Melancholy Thistle, Cowberry, Mimulus, Toothwort, Early Purple Orchis, Lily of the Valley, Yellow Gagea, Herb Paris, Blue Moor and Mountain Melic Grasses, *Equisetum maximum* and *Equisetum hyemale*, the latter on the river bank above the Strid, bearing mature spikes.

MOSSES AND HEPATICS.—Mr. C. A. Cheetham reports:—A start was made on the wet shales opposite the Abbey, and here *Webera carnea* was seen fruiting. With it were *Bryum pallens* (also in fruit), *Barbula spadicea*, *Dicranella varia*, *Barbula cylindrica*, and the hepatic *Lunularia cruciata* which seems too much at home in all parts of Yorkshire to be deemed an escape from hothouses. The rocks in the river bed are well covered with *Cinclidotus fontinaloides*, *Grimmia apocarpa* var. *rivularis*, *Amblystegium fluviatile* and the rare *Fissidens rufulus*, long known from this station. Going upstream on a sandy path *Pleuridium subulatum* was seen and on shaley sandstones *Webera prolifera*. At a swampy corner, the grit boulders were covered with *Dicranum scoparium*, *Mnium hornum* and *Racomitrium fasciculare*, the shady sides of these rocks having delicate growths of *Heterocladium heteropterum* in plenty; in the more swampy spots *Mnium affine* var. *elatum* was very fine. Next the woods were entered, with their carpet of *Dicranum majus*, *D. fuscescens* var. *falcifolium*, *Mnium hornum*, *Polytrichum formosum*, *Eurhynchium striatum* and many others. In Posforth Gill the clayey banks had *Pterogophyllum lucens* fruiting, and two woodland mosses had made themselves very much at home on the stream sides and boulders, viz., *M. hornum* and *Catharinea undulata*, in this station the latter has wider and shorter leaves than usual and somewhat approaches the more usual *Catharinea crispa* of the stream side.

On the river side above the Strid the low cliffs had *Swartzia*

montana in nice fruiting condition and fine masses of *Zygodon mougeotii* together with *Bartramia pomiformis* and *B.ithyphylla*. Above these rocks in rather dryer places was seen the rarer *Orthodontium gracile* easily overlooked as *Dicranella heteromalla*.

A complete list of the mosses of Bolton Woods could serve no useful purpose here, but to any one interested in Bryology it would be difficult to find better ground, but let it be in winter, when the flowers, trees and enticing views are not calling the bryologist from his purpose.

MYCOLOGY.—Mr. A. R. Sanderson writes:—The visit did not yield any outstanding species of mycetozoa, the best time for these being the Autumn. Perhaps the most interesting point was the complete absence of *Perichæna corticalis* Rost., one of our most common and generally distributed species. The list includes those found by Mr. Cheesman, Mr. Burrell and myself. Most of the specimens were old and in poor condition. Besides the mature and weathered sporangia, two or three small plasmodia were seen, and one in the sclerotium condition.

The list apart from these is as follows:—*Badhamia panicea* Rost., (on Elm); *Physarum nutans* Pers., common; *Didymium squamulosum* Fries., common; *Leocarpus fragilis* Rost.; *Reticularia lycoperdon* Bull.,; *Lycogala epidendrum* Fries. (on oak and ash); *Comatricha nigra* Schroeter. (on Sycamore); *Trichia affinis* de Bary; including a plasmodiocarp form; *T. varia* Pers.; *T. decipiens* Macbr.; *T. Botrytis* Pers., common; *Hemitrichia clavata* Rost.

(To be continued).

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Rambles of a Canadian Naturalist, by **S. T. Wood**. J. W. Dent & Sons, 274 pages, 6s. net. With the aid of a number of beautifully coloured illustrations by Robert Holmes, the author of this work gives an introduction to the more important aspects of nature as illustrated in Canada. Birds, Flowers, Moths and Mammals are referred to in a number of short and pleasantly written articles. The book will be useful to those desiring information as to the Natural History capabilities in this important colony.

A Veteran Naturalist, being the Life and Work of W. B. Tegetmeier, by **E. W. Richardson**, with an Introduction by the late Sir Walter Gilbey. London: Witherby & Co., 232 pages, 10s. net. It is always pleasant to read an account of the life work of a prominent scientific worthy, and the present volume contains a very interesting account of the great Naturalist, 'The Collaborator of Darwin, The Bee Master, The Father of Pigeon Fanciers, The Father of the Savage Club,' the man who had so many sided a character. His achievements are well described, and doubtless those of our readers who are familiar with Tegetmeier's various volumes on birds, etc., will be glad to peruse the present interesting volume. That he was not a "narrow" Naturalist may be gathered from the illustrations to the book, one of which is Tegetmeier 'training the Ballet at Liverpool.' There are two Appendices, the first being a list of his works, and the second, a poem headed 'To Sixty-six from Twenty-six.'

FIELD NOTES.

BIRDS.

Bird Notes from Hebden Bridge.—It was hoped that a pair of Stonechats, which were first observed at Jumble Hole in October, and then removed to Withens Reservoir, two or three miles away, would stay to nest, but they have not been seen here since February 20th. During the last two years the Corn Bunting has become very scarce, and I have not detected a single bird this year. A fine male Shelduck was killed at Withens Reservoir on March 24th (see *The Naturalist*, May 1916, p. 173). Spring and summer migrants were observed as follows; Ring Ousel, March 26th; Wheatear, April 2nd; Cuckoo, April 21st; Willow Wren, Swallow, April 22nd; Sandpiper, April 24th; Tree Pipit, Yellow Wagtail, Whinchat, April 29th; House Martin, Sand Martin, Redstart, April 30th; Swift, May 8th; Landrail, May 12th; Spotted Flycatcher, May 13th; Wood Wren, May 14th; Garden Warbler, May 30th; Blackcap, May 28th; Nightjar, late May. Landrails have been far less numerous than usual, and the Common Whitethroat, which has been decreasing the last two or three years, has not been noted at all. It is the first time for many years that it has altogether failed. Contrary to the general custom, the Blackcap, judging from singing males, has outnumbered the Garden Warbler. The Golden-Crested Wren has nested and is probably doing so annually now. Although the nest of the Redshank has not yet been found there is little reason to doubt the breeding of the birds at more than one place. Tawny and Long-eared Owls are now thoroughly established. A very few years ago they were rarities here. The Dunlin still maintains its breeding numbers, but Black-headed Gulls have either begun to nest in undiscovered quarters or bred more sparingly than for many years. Less than a score of adults were counted at the largest settlement, where there were only a few nests, and the report from the other ground suggests that they have missed altogether, though there were a large number of adult birds there in early spring. The old breeding ground is under water, which is higher than usual at this time of year. During the last day or two in June a Lesser Black-back Gull frequented the reservoir.—WALTER GREAVES.

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The Selborne Magazine for June contains a well-illustrated article on the 'Fungi of Bare Pine Woods,' by Somerville Hastings.

In *The Scottish Naturalist* for June, Mr. W. E. Collinge writes:—'On the Specific Identity of the Wood-louse, *Oniscus fossor* Koch.'

Wild Life for June contains the following notes:—'Nature in the Arctic'; 'The Chough,' by Oswald J. Wilkinson; 'The British Shrews,' by Lionel E. Adams; 'Whitethroats—A Busy Pair,' by A. M. C. Nicholl and J. H. Franklin; 'Sexual Selection in Birds,' by Edmund Selous.

NORTHERN NEWS, Etc.

We learn that Frederic Enoch died at Hastings on May 31st. He was 71 years of age.

A little while ago the timber in a wood on the south-west side of Lowthorpe Station, near Bridlington, was felled and cleared away. Its site is now entirely covered by a magnificent thick growth of meadow-sweet.

The Proceedings of the Cheltenham Natural Science Society contain papers on "The Long Barrow Race beyond the Cotteswolds," by E. T. Wilson, 'Extinct Apes,' by A. G. Thacker, and 'Church Glass,' by A. J. de H. Bushnell.

Entomologists interested in Nomenclature will find some puzzles in the report of the British National Committee on Entomological Nomenclature, printed in the *Transactions of the London Entomological Society*, part 5, issued on June 2nd.

The report of the *Norwich Museum* for 1915 (21 pp.) contains records of many noteworthy additions made during the year. As a frontispiece is an illustration of 'Adult Male, "chick" (1905) and egg (1838) of Emperor Penguin, in the Museum Collection.'

The 29th Report of the *Bootle Museum Committee* is to hand, and shows that there have been over 41,000 visitors to the Museum during the year. Dr. Clubb of the Liverpool Museum, has given 24 nicely mounted specimens of British Birds, in exchange for some skins of foreign birds; and 75 duplicate specimens of common birds have been sent to the schools in Bootle.

Sir William Ramsay, the eminent chemist whose researches into the rarer gases, and the properties of radium, won him world-wide repute, died recently at Beechcroft, Hazlemere, Bucks, after an illness of some months' duration. He was born at Glasgow in 1852, and was the only son of the late Mr. William Ramsay, C.E., whose younger brother, the late Sir Andrew Ramsay, was a famous geologist.

A pamphlet with the title 'The Meaning of Life,' deals with 'The Ascent of Man.' The author states, 'I want to give you, if I can, a clear understanding of my theory regarding the ascent of man from the very beginning. . . . I cannot understand anyone, who looks at it from the right point of view, hesitating to accept the whole of it. The only difficulty is to get the right point of view.' This 'right' point of view of course is the author's. He calls it the 'only' difficulty. Most people find it 'some' difficulty.

Dr. Aubrey Strahan, Director of the Geological Survey, has favoured us with a copy of his address on 'The Search for New Coal-fields in England,' delivered at the Royal Institution, London, recently. The paper contains a useful summary of the history of coal-mining in this country, as well as the prospects for further supplies of coal in areas at present unworked. It is illustrated by maps and diagrams, and, as might be expected from the author's reputation and experience, is a valuable statement as to the present position of the question.

Following on the report of the Yorkshire Naturalists' Union meeting at Malton, there has been a correspondence in *The Yorkshire Post* in reference to 'Willow Warblers and Chiffchaffs.' That this has proved of public interest is shown by an illustrated 'joke,' by 'Kester,' in the *Yorkshire Evening Post*. Two birds (? a robin and a sea-gull) are perched on adjoining trees, one is reading a paper on which appears, 'Yorkshire Post Willow Warbler and Chiffchaff,' with the legend: 'Willow Warbler: Fancy not knowing the difference between a Warbler and a mere Chiffchaff. People must be blind and deaf. Why you can't sing for nuts with your silly "chiff chaff."' Moral for songsters: Don't eat too many nuts and don't let Kester sketch yer.

Books for Sale.

(Mostly from the Library of a Yorkshire Naturalist, recently deceased. The books are as new, and the prices asked are, in most cases, less than half the published price).

- OUR COMMON SEA BIRDS. Lowe. 4to 8/6
ANIMAL ROMANCES. Renshaw. 4/-
BRITISH BUTTERFLIES, etc. (coloured plates). Thomas. 4/-
NATURAL HISTORY OF ANIMALS, 8 vols. 4/6 per vol.
DETERMINATION OF SEX. Doncaster. 4/6
BOOK OF NATURE STUDY. Farmer. 6 vols. 4/6 per vol.
RICHARD JEFFERIES. Thomas. 6/6
ANIMAL LIFE. Gamble. 4/-
FUR AND FEATHER SERIES. PHEASANT, PARTRIDGE, GROUSE. 1/9 each.
SCIENCE FROM AN EASY CHAIR. Lankester. 4/-
Do. (Second Series). 4/-
NATURE THROUGH THE MICROSCOPE. Spiers. (99 plates). 4/-
WHITE'S NATURAL HISTORY OF SELBORNE. Coloured Illustrations by Collins. 6/-
LIFE OF MACGILLIVRAY. 6/-
THE MAKING OF SPECIES. Dewar and Finn. 4/-
THE GREATEST LIFE. Leighton. 3/-
FAUNA OF CHESHIRE. 2 vols. 15/-
HISTORY OF BIRDS. Pycraft. 6/-
BOOK OF BIRDS. Pycraft. 2/6
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THE NATURALIST.

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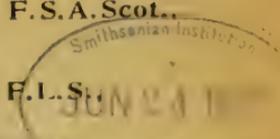
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THE GEOGRAPHICAL DISTRIBUTION OF THE MOTHS OF THE SUBFAMILY BISTONINAE.

J. W. HESLOP HARRISON, B.Sc.

(Continued from page 198).

III.—THE GENUS AMORPHOGYNIA (WARREN).

Amorphogynia necessaria (Z.) Distribution.—Asia Minor from Smyrna to Armenia.

Amorphogynia inversaria (Rebel.) Distribution.—Eastern Rumelia.

This genus is a direct derivative of *Lycia* and there is but little to separate the two genera except the semiapterous females of the present group. This being so, it must have originated in Asia Minor subsequent to the advent of *Lycia hirtaria*. Even in Asia Minor it has been able to occupy only a small area although it had reached Europe before the geological changes resulting in the union of the Black Sea and the Mediterranean had occurred. The formation of the Bosphorus, Sea of Marmora and the Dardanelles, therefore, divided the then species into two branches which have diverged so much owing to geographical isolation that, whilst it is dubious whether the divergence is of specific value, it is still certainly of varietal importance. The exact status of the two forms cannot be determined until the male of *A. inversaria* is discovered.

IV.—THE GENUS POECILOPSIS (HARRISON)

Poecilopsis pomonaria (Hb.) Distribution:—North and Central Europe as far west as Paris, Piedmont, Uralsk. Absent from Holland, Belgium, the British Islands, almost the whole of France, Spain, Italy and the Balkan Peninsula.

Poecilopsis isabellae (Harrison). Mountains of Silesia, Alps of Austria, Bavaria and Eastern Switzerland.

Poecilopsis liquidaria (Ev.) Kirghiz Steppes.

Poecilopsis lapponaria (B.) Scotland (Perthshire) Lapland southward to Livonia.

Poecilopsis rachelae (Hulst.) In North America from Montana northward along the foot hills of the Rocky Mountains to Alaska, eastward to Manitoba.

Here again we have another genus developed from *Lycia*; it differs from that genus at all points but its species show this separation in varying degrees. The first three, *P. pomonaria*, *P. isabellae* and *P. liquidaria*, are fairly near to *Lycia* and form a very compact little group whilst the other two species, *P. lapponaria* and *P. rachelae*, approach the genus *Nyssia* and connect *Lycia* and *Poecilopsis* with that

genus ; they, too, form a natural little group of two, differing slightly in certain points of structure from the first three. Four of the species possess almost apterous females ; of the fifth, *P. liquidaria*, the female is unknown.

The most primitive, or phylogenetically oldest form, is *P. pomonaria* which, in consequence, is a fairly widespread insect. The insect being attached to oak, and not refusing such foods as hawthorn, it seems curious that its range is not greater. Careful study of the map will reveal the facts that the limits are those set by the winter isotherm of 35°F or, more plainly, it only inhabits regions in which there is a minimum of two and a half months of frost. With most species such factors are not of serious importance, but in the case of forms such as those comprised in the Non-Boarmioid Bistoninae, which pass the winter as a fully formed imago inside the pupa case, a very open winter spells disaster* as direct experiment has shown. I took about eighty pupæ of *P. pomonaria* as soon as they had hardened and exposed them to the weather throughout the late Summer and Autumn. The imagines commenced to emerge in December and were over by the end of January. Ova laid under these conditions would hatch far in advance of the leafing of oak and the larvae would therefore perish. Any hold then that the species has on regions other than those with a fairly rigorous continental climate must be very precarious. If this state of affairs holds now, it is reasonable to assume that the same physiological peculiarities have been potent in the past. Therefore, when *Poecilopsis* was developed in the Boreal home of the group, we must suppose that it took its origin at some point to the North-east far from the insular climates produced by the Atlantic Ocean and possible Gulf Stream of early or middle Pliocene times. Now it was postulated in tracing the wanderings of *Lycia* that it arose nearer Europe than America ; *Poecilopsis*, therefore, came into being similarly nearer to Europe but to the east of the centre of dispersal of *Lycia*. In consequence, with the deterioration of the climate in late Pliocene and in Glacial times, it would retreat *via* Scandinavia and North Russia until the sunnier and warmer Pannonian Hills of Hungary and Southwest Russia were reached, whence it issued finally at the close of the Glacial Period. Many attempts to advance would be made as so-called Interglacial conditions intervened ; such attempts, owing to the more temperate character of its dominating food plant, oak, would be foiled for all suitable points, even in Central Europe, were overwhelmed later by the coalescence of the local glaciers

* Unless they have developed the habit, as in the case of all the genus *Nyssia*, *Lycia hirtaria*, and *Poecilopsis lapponaria* of not responding readily to the stimulus of a rise in temperature.

with those of the Alps and of the Baltic Ice. After the ice had finally vanished and the Post-glacial 'Dryas' period had yielded successively to those of birch and pine, and these, in turn, had given place to the oak period the species came forth with many another Pontic refugee spreading westward and northward along the valleys of the Vistula, Oder and Elbe as the oaks advanced. Bound by no iron climatic barrier such as determined (and determines) the continued existence of *P. pomonaria*, the oaks went far ahead of the insect, for this reached its maximum westerly extension just east of Paris. Here the proximity of the Gulf stream, with its warmth, stopped it short, and its course was now southward down the colder parts of the Rhone Valley whence it passed into the valleys of Switzerland and the Piedmont until a milder climate once more forbade its occupation of new territory.

Similarly, it passed northward into Scandinavia, Finland and Lapland, only bound in its northward career by the failure of oak and its powers of adapting itself to new foods. Southward, but little progress could be made as milder winters stepped in; eastward it was more fortunate, a gradual advance being made, slow it is true, on account of the lack of food, but nevertheless sure, for the insect penetrated Asia across the Uralsk far into the steppes of the Kirghiz where, however, altered food and steppe conditions have transformed it into the elusive species called *P. liquidaria*—evidently but little more than a specialised or local race of *P. pomonaria*.

Next we take up *P. isabellae*, the youngest species of the genus. The study of the geographical distribution of this species presents us with a very pretty problem as to the period of its origin—a problem that the specialised nature of its food very neatly solves. Unlike its congeners, it is rigidly attached to a special food and that special food is the common larch (*Larix decidua*); it absolutely rejects all other foods. The connection between the insect and the tree is much closer than this would suggest. Its larvae in their early stages mimic larch needles and in their later ones they imitate the curious markings of a larch twig. In addition, the female has acquired the curious instinct of climbing the larches and laying its ova under the scales of the cones of the previous year. Obviously, therefore, if we can elucidate the history of the larch in Europe that of the insect is known.

The genus *Larix* comprises within its limits nine to thirteen species depending upon the value one attaches to certain forms. Adopting the minimum view, we have the following species:—

Larix decidua (*europaea*) N. Asia, Central Europe, but absent from Scandinavia, France, Spain, Apennines, British Islands etc.

Larix ledebourii.—Siberia.

Larix sibirica.—N. E. Russia, Ural Mountains, Siberia to Kamschatka.

Larix dahurica.—Siberia extending far past the Arctic circle.

Larix griffithi.—Nepaul, Bhotan, Sikkim.

Larix leptolepis.—Japan.

Larix lyalli.—Rocky Mountains.

Larix americana with its forms *pendula* and *microcarpa*.—Canada and United States.

Larix occidentalis.—N. W. America.

From the above details it will be seen that, if we accept the usual test of taking the area in which a genus reaches its greatest development as its centre of origin, then the genus *Larix* has spread from some point in South-central or South-eastern Siberia. This is confirmed by the fact that the European larch is only a form of a widespread polymorphic species having local races in the form of *L. sibirica*, *L. occidentalis* and *L. decidua* from which we see that it extends from East-central Europe to N. W. America. But, let it be noted, it is of such recent occurrence in Europe that it has not had time to spread, as a wild plant, further than the Central European Mountains, failing to reach Scandinavia, which, for an Alpine plant of Eastern origin, is a very remarkable thing. Further, its only occurrence fossil is in certain Inter-glacial deposits at Lauenburg in Prussian Saxony and, if that were the maximum western range then, it would be very seriously limited before the close of the Ice Age. Hence, we must conclude that in all probability the larch permanently occupied the areas it now holds in Post-glacial times. Add to this the fact that *P. isabellae* is not found accompanying the larch either in Russia or in Asia and we must draw the conclusion that *P. isabellae* has arisen from *P. pomonaria* since the larch reached Silesia, Austro-Hungary and Switzerland and, consequently, is of Post-glacial origin. This is strongly confirmed by the fact that in spite of the great differences in specific characters between *P. pomonaria* and *P. isabellae* the physiological divergence is so slight that they hybridise freely and, what is still more emphatic, the hybrids themselves are fertile.

From all of these facts, it is clear that *P. isabellae* must have had its origin in a spot where, very early, its food plant larch came into contact with *P. pomonaria*; this spot, too, must be one whence *P. isabellae* could advance easily to its present habitats. Such a locality is the Sudeten Gebirge in Silesia or, rather, the angle between them and the Carpathians. From this abode, the species has evidently spread, using the Mountains of Moravia and the Little Carpathians as its path. to the present stations in the Noric and Rhaetian Alps and subsequently to the Eastern Alps of Switzerland and Bavaria.

The two remaining species, *P. rachelae* and *P. lapponaria*, now claim our attention. They are a closely related, but perfectly distinct pair of species, and seem, in spite of their inhabiting such different geographical areas, not to be 'representative' species. *P. rachelae* is the most primitive form and shows most relation to the other group of three. Both are northern forms and extend far beyond the Arctic Circle and both, in nature, feed on such Arctic or Boreal forms as *Betula nana*, *Myrica gale* and the low growing *Salices* peculiar to Northern and Alpine regions. From biological and other considerations, I judge that *P. rachelae* originated as a break from the *pomonaria* stem and, arguing from the food plants, possibly as a Northern form of that species and this is confirmed by the fact that convergence has caused the much younger Alpine form (*P. isabellae*) of *pomonaria* to assume many of the outward characters of *P. rachelae*. Being the oldest break, and also more Arctic in its nature than *P. pomonaria*, *P. rachelae*, had time to press far to the north west in the Arctic Archipelago, giving off as a new break, soon after it commenced to spread, the species which has yielded what is now known as *P. lapponaria*.

With the approach of the Ice Age, *P. rachelae* retreated but, as the insect was of Arctic origin, its retreat was postponed far longer than that of *Lycia* and *P. pomonaria*; these passed southward and reached refuges, one both in Europe and America and the other, on account of its limited range and attachment to oak, only in Europe. *P. rachelae*, on the contrary, gave ground before the oncoming glacial conditions so slowly that, when it had to flee far to the south, its way was barred in the Eastern areas of Arctic America by the newly formed Baffin Bay, the formation of which was no doubt almost contemporaneous with the separation of Spitzbergen from Greenland. Only one course of escape was now open and that was south westward over the northern portions of the Arctic Archipelago to the North Canadian coast near the Mackenzie river mouth, up the valley of which it slowly withdrew as climatic conditions deteriorated. Along the foothills of the Rockies, it worked its way into what is now the States of Montana and Wyoming, attaining a haven of rest there. From this haven, it once more issued as the ice-sheets waned and favourable conditions returned, retracing its steps as far as possible, but at the same time giving off offshoots which passed along the Valleys of the Saskatchewan, Qu'appelle and Assiniboine Rivers eastward. Finally, it reached its northern limits and rounded the foothills of the Mountains of Alaska to reach its most westerly stations.

With *lapponaria*, the case was different. This, also, is of great age for, from it, the whole genus *Nyssia* has been evolved

and that at a time when the larval characters were not greatly removed from those of *P. rachelae* but when, nevertheless, the biology of the imago was as specialised as it is now. From which facts, as *P. lapponaria* is even more Arctic in character than *P. rachelae* as the abnormal period its pupæ can lie over and its attachment to *Betula nana* in Lapland tell us, it follows that *lapponaria* must have arisen long before *P. rachelae* had reached its western areas. It must have spread at once to the north of the *rachelae* stations of those days. In all probability, then, the 'metropolis' of *P. lapponaria* was in some long submerged lands in the neighbourhood of, but to the north of, Spitzbergen and Franz Josef Land. It, too, would feel the pinch of the approach of the glacial period, but in a far less degree than any of the others. Hence, its retirement was still slower than that of *P. rachelae*; so slow was it that, ere the insect fell back, the ice smothered the whole of the Scandinavian mountains, and when they were reached it found the conditions so inclement that it bifurcated* as it struck them, one horde passing down to the British Islands, utilising ice-free plains of the continuous Scandinavian and British coasts as a causeway and the other wending its way down the eastern margin of the then much more extensive Baltic Inland Sea through Lapland, Finland and Livonia to Central Russia. Somewhere on islands fringing the coast, and not impossibly on ice clear spots inland, the western branch of the species survived the Glacial Period, reaching its present position (which the Arctic nature of the insect demands) when the ice disappeared. The other division, similarly, passed through the Ice Age on non-glaciated areas of Russia, extending its range slightly as the climate periodically improved, but finally emerging as the last phase of the Glacial Epoch, the Great Baltic Glacier, melted away. Steadily pursuing a northward course, but limited by the Baltic Sea, which was slightly more extensive then, it reached its present posts.

This completes the history of the wanderings of the species we call *P. lapponaria*, but it is well to note that the Scottish insect which I have provisionally described as a subspecies under the name *P. scotica*, owing to its long geographical separation from the other colony is clearly diverging from it specifically and, if allowed to exist, will finally attain specific rank. The Continental insect is a dull, heavy, shaggy insect, whereas our own form is more brightly coloured and neater reminding one vividly of *P. rachelae*.

* Evidences of such bifurcation we see in the present stations of the plants *Potentilla fruticosa*, *Saxifraga nivalis*, etc., and this is emphasised by their absence from the Alps. Many other such examples are masked by the fact that many Alpine forms have gained access to their present stations in Scandinavia, N. Russia and the Alps by direct migration from the east in late geological times.

FAUNULA LITTORINIDAE ISLANDIAE
BOREALIS.

HANS SCHLESCH,
Hellerup, Denmark.

***Littorina palliata* Say. (Syn. : *L. arctica* Möll.).**

Testa minus solida, colore saepius obscure fusco-viridi, interdum fasciata vel fusco-reticulata, forma ovato-globosa, spira modice elata $\frac{1}{3}$ circiter testae longitudinis occupante, anfr. 5 leviter convexis, ultimo magno et dilatato, sutura parum profunda, apertura ampla, labro externo valde expanso, acuto intus incrassato, columella planulata. Superficies lineis numerosis spiralibus tenuissimis undulatis sculpta. Long. 12 mm. (Sars.).

Habit. : sparsim vulgaris.

Var. *elatior* Sars.

Testa magis solida ovato-turrita, spira sat producta plus $\frac{1}{3}$ testae longitudinis occupante, anfr. aequaliter convexis, sutura distincte impressa, apertura minus expansa. Long. 11 mm. (Sars.).

Habit. : sat vulgaris.

Var. *turritella* Schlesch, nov. var.

Testa subtenuis, conico-oblonga, duplo fere longior quam latior, colore saepius obscuro-nigricante, spira sat elevata, anfr. 5, subscalariformibus, apert. minus expansa. Long. 13-15 mm.

Habit. : portus Isaffjördur, 1913, passim (spec. typ. coll. Schlesch, Mus. Hull. Anglia).

Var. *carinata* Schlesch, nov. var.

Testa solidula, colore valde variabili, spira obtusa, forma ovato-globosa, anfractibus 5, celeriter accrescentibus, ultimo maximo, acute carinato, sutura parum profunda, apertura ampla, labro externo leviter incrassato, interno callum magnum et solidum formante, columella planulata. Superficies lineis numerosis spiralibus tenuissimis undulatis sculpta. Long. 10-11; lat. 13-15 mm.

Habit. : Isaffjördur, Islandia boreal. (spec. typ. collect., Schlesch, Mus. Hull. Anglia).

Var. *auricularia* Schlesch, nov. var.

Testa solida, subglobosa, spira saepissime brevissima, anfr. 5, convexis, apert. amplissima, subcircularis. Long. 10, lat. 15, ap. long. 8 mm.

Habit.: portus Isafjörður 1913, passim. (spec. typ. coll. Schlesch, Mus. Hull, Anglia).

Monst. coarctata Sars.

Testa obtuse conica, spira valde producta dimidiam fere testae longitudinem occupante, apice obtusa, anfr. elongatis et medio coarctatis, apertura obpyriformi, labro externo supine appresso. Long. 16 mm. (Sars).

Habit. tota, sed ubique rarior.

Littorina obtusata Linné.

Testa solida, colore valde variabili, nunc uniformiter lutea vel fuscata, nunc modo fasciata vel maculata, forma oblique ovata, spira brevissima et obtusa, vix elevata, anfr. 5-6 convexis, ultimo maximo, oblique expanso, sutura parum impressa, apertura plus minusve patula oblique, labro externo leviter incrassato, interno callum magnum et solidum formante. Superficies sublaevis, striis spiralibus parum conspicuis. Long. 13 mm. (Sars.).

Habit.: raro.

Littorina rudis Maton.

Testa solidula, colore saepius uniformiter obscure fuscato, rarius rubra vel albida, interdum fasciata vel maculata, forma ovato-turrita, spira producta, anfr. 5, angulato-convexis, medio saepius leviter planulatis, sutura profunde impressa, apert. oblique rotundata, labro externo tenui, columella brevi, planulata. Superficies costellis spiralibus plus minusve elevatis rudis. Long. 10 mm. (Sars.).

Habit.: passim.

Var. groenlandica Menke.

Testa duplo major, spira magis producta, anfr. 6, aequaliter convexis, apert. sat expansa, columella lata. Long. 20 mm. (Sars.).

Habit.: passim.

Var. conoidea Schlesch, nov. var.

Testa subsolida, forma elongato-pyramidali, spira valde producta, attenuata, apice acuto, subcostulata, anfr. 5, apertura subglobosa, labro externo sat arcuato, tenui, Long. 16. lat. 12, ap. long. 6 mm.

Habit.: portus Isafjörður, 1913, raro, (spec. typ. coll. Schlesch, Mus. Hull, Anglia).

(The specimens referred to in this paper are in the Schlesch Collection in the Hull Museum).

THE ICELANDIC PISIDIUM-FAUNA.

HANS SCHLESCH,
Hellerup, Denmark.

THIS list includes the collections formed by F. H. Sikes (London) Bjarni Sæmundsson (Reykjadik) and myself, together with the finds made by the late Prof. Steenstrup during his visit in 1839-40. Prof. Steenstrup cites the locality 'Arnardrangur,' but I am unable to identify the situation of this. Probably it is a small place in West Iceland. I am much indebted to Mr. Sæmundsson for generously handing over his collections to me, and to Mr. John W. Taylor for kindly assisting me in the determination of species. Mr. Sæmundsson's specimens and my own finds are included in the collection in the Municipal Museum, Hull.

1. Subgenus *Fluminina* Clessin.

1.—*Pisidium amnicum* Müller.

Habit: Botnvatn, Sudur Thingeyarsýssel. N. Iceland, Aug. 1st, 1913, (Sæmundsson). This species is probably identical with the *concha bivalvis, testa ovata oblonga, planiuscula* of Eggert Olafsson and *Tellina lacustris* of Mohr.

2. Subgenus *Fossarina* Clessin.

2.—*Pisidium pulchellum* Jenyns.

Habit: Arnardrangur (Steenstrup). Engidal near Isafjördur, 1914, (Schlesch). N.W. Iceland.

3.—*Pisidium nitidum* Jenyns.

Habit: Arnardrangur (Steenstrup). Engidal near Isafjördur, 1914, (Schlesch). N.W. Iceland.

var. *fedderseni* Westerlund.

Habit: Islandia (Feddersen) in Westerlund: Fauna in der palæarct. Reg. leb. Binnenconchylien, 1890, VII., p. 24.

4.—*Pisidium subtruncatum* Malm.

Habit: Botnvatn, Sudur Thingeyarsýssel, N. Iceland, Aug. 1st, 1913, (Sæmundsson).

5.—*Pisidium lilljeborgi* Clessin.

Habit: Thingvellir and Raudavatn, S.W. Iceland, 1912, (F. H. Sikes); Bolungarvik, N. W. Iceland, 1913, (Schlesch).

6.—*Pisidium scholtzii* Clessin.

Habit: Hnifsdal, Isafjördur, N.W. Iceland, 1913 (Schlesch).

7.—*Pisidium pusillum* (Gmelin).

Habit: near Arnardrangur (Steenstrup), Laugaland, Drangajökul, 1913, (Schlesch). N.W. Iceland.

- 8.—*Pisidium cinereum* Alder (= *P. casertanum* Bourg.)
Habit: Isafjördur, 1912, (Sikes). N.W. Iceland.
- 9.—*Pisidium personatum* Malm.
Habit: Faxaflbi, W. Iceland, (Steenstrup).
- 10.—*Pisidium milium* Held.
Habit: Gemlufallsheidi, Ömundarfjördur, N.W. Iceland, 1913, (Schlesch).
- 11.—*Pisidium fossarinum* Clessin.
Habit: Isafjördur, N.W. Iceland, 1913, (Schlesch),
Granavatn, Mijvatn, N. Iceland, July 24th, 1913,
(Sæmundsson).
var. *flavescens* Clessin.
Habit: Isafjördur, 1914, (Schlesch). N.W. Iceland.
- 12.—*Pisidium obtusale* C. Pfeiffer.
Habit: Thingvellir, S.W. Iceland, 1912 (Sikes), Laugaland
in Skjaldfaunardalur near Drangajökul, 1913 (Schlesch).
- 13.—*Pisidium steenbuchii* Möller.
Habit: Thingvellir, S.W. Iceland, 1912, (Sikes), Botnvatn,
Sudur Thingeyaryssel, N. Iceland, Aug. 1st, 1913
(Sæmundsson).

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THE DISTRIBUTION OF SPIDERS IN THE EAST RIDING.

G. STAINFORTH, B.A., B.Sc.,
Hull.

IN view of the small number of workers and the large area to be covered, generalisations on the distribution of the main groups of Arachnida in the East Riding may seem somewhat premature. Temporary absence from the district, however, has led me to draw up the following notes, which include the results of my own collecting and that of others.

It is obvious that generalisations on the distribution of a group of animals in a specified area are unsatisfactory until it has been exhaustively examined. The best or richest localities are very often those most thoroughly searched, and this is so in south-east Yorkshire (V.C. 61), some portions of which, particularly near Hull and in the south-west of the division have been well worked, whereas other portions, as along the northern and north-west boundary, have been neglected or visited only casually, owing to difficulty of access from the collectors' bases. However, adopting the principle of 'ab

uno disce omnis,' we may cover over some of the unworked gaps in the map.

Changes in the distribution of animal and plant life are necessarily always taking place, even in the natural course of events, but these changes are intensified (too often on the side of extermination), by drainage, deforestation, military works, building and other manifestations of the activities of civilised communities. Moreover, long established species may be overlooked for many years and the occurrence of some form discovered by mere luck—usually by an outsider—is liable to upset one's pet theories. Further, additions are constantly being made through natural or accidental means of dispersal. Thus in matters of distribution there is no finality owing to changes on both the plus and minus sides.

Quite large numbers of spiders are of common occurrence over the whole area, provided they are searched for in their respective habitats, and this number will probably be still further increased as more attention is devoted to collecting. For example, under the bark of trees or in crevices of fences can always be found *Segestria senoculata*, *Amaurobius fenestralis*, *Epeira umbratica* and *Salticus cingulatus*; while every field and open space is coursed over by myriads of the Wolf Spiders, *Lycosa amentata* and *L. pullata*. Affecting human habitations and outhouses are such forms as *Amaurobius similis*, *Tegenaria derhamii* (par excellence our domestic species), and *Zilla x-notata*; while every ditch, drain and pond side is frequented by *Pirata piraticus*, *Clubiona holosericea* and *Enidia bituberculata*.

On the other hand are species which occur only in a limited area, and there perhaps commonly. These are forms specialised for life under particular conditions related to either the native food supply or soil, relative salinity, or to some indefinable cause, and unable in some cases to adapt themselves to even slight changes of habitat.

In investigating the subject of localness of species, puzzling facts come to light. How is it, for instance, that *Hycia nivoyi* and *Clubiona subtilis*, both abundant species on the sandhills at Spurn and the Humber shore at Easington, are not found elsewhere in the vicinity of the dunes, nor indeed in any other Yorkshire locality, although in other parts of the country, as at Wicken Fen, they inhabit a totally different habitat?

For our present purpose the East Riding may be conveniently divided into the following eight areas:—

(1) HULL.—It is of interest to know the spiders to be found in a large city. In addition to those characteristic of human habitations, cellars, warehouses, etc., are species which may be introduced by the agency of trade and commerce;

and in the course of the ordinary operations of dispersal numerous spiders find their way into the streets and gardens. As is the case for the whole of Europe and many other parts of the world, our common cobweb spider is *Tegenaria derhamii*, which prefers semi-dark or dark conditions. *Dysdera crocata* frequently occurs in cupboards, cellars and outhouses, as well as in the open (usually in chalk-pits), and we often have this striking spider brought to the Hull Museum. *Amaurobius similis* is also common in houses, especially near windows, while *Zilla x-notata* is equally abundant, but prefers the outsidcs of houses and other buildings. In the summer time *Salticus scenicus* is very frequently seen, even in the very heart of the city, running and jumping about, stalking flies on the sun-lit walls of buildings, and, less frequently, *Attus pubescens*, another of the interesting jumping spiders, may be seen in similar situations. The tiny *Panamomops bicuspis* has been found in Hull and possibly is an urban species, while private gardens and public parks provide among others such species as *Drassus lapidosus*, *Amaurobius fenestralis*, *Theridion varians*, *Steatoda bipunctata*, *Stemonyphantes lineata*, *Leptyphantes nebulosus*, *L. leprosus*, *Bathyphantes concolor*, *B. gracilis*, *Micryphantes rurestris*, *Œdothorax retusus*, *Erigone promiscua*, *E. dentipalpis*, *E. atra*, *Diplocephalus cristatus*, *D. beckii*, *Pachygnatha degeerii*, *P. clerckii*, *Meta segmentata*, *Zilla atrica*, *Epeira diademata*, *Xysticus cristatus*, *Lycosa amentata* and *L. pullata*. In greenhouses, the introduced species *Theridion tepidariorum* is common, and in the park hothouses another alien, *Hasarius adansonii* is to be found. Little is known yet regarding the spiders which reach Hull through the importation of fruit, etc., from foreign countries, beyond the fact that living examples of the enormous hairy spiders of the genus *Mygale* are brought to the Hull Museum every season. They appear to occur usually among bananas. The difficulties of hunting for spiders in our fruit markets are very great and require a considerable amount of nerve, especially at the present time when a spider hunter on the docks would be looked upon with very grave suspicion.

(2) **HOLDERNESS.**—Roughly speaking this division includes the boulder clay area between the sea and Humber shore and the foot of the Wolds. For our present purpose it is convenient to exclude the dune area of Spurn and the estuarine area of the Humber shore, owing to the peculiar conditions which they exhibit. Most of the Holderness area as thus curtailed as somewhat uninteresting owing to the high state of cultivation of most of the area. The barrenness of the sea coast is easily accounted for by the instability of the clay cliffs and beach, the only species which appears able to maintain

itself on the sand on every part of the coast from Sewerby to Kilnsea being the pretty *Trochosa picta*. *Scotophæus blackwallii*, *Leptyphantes cristatus*, *Metopobactrus prominulus*, *Troxochrus scabriculus*, *Baryphyma pratensis*, *Xysticus kochii*, *Tarentula andrenivora* and *Lycosa herbigrada*, are recorded for the Holderness area only as far as the East Riding is concerned, but all, or most of these species will almost certainly be found in other areas when more collecting is carried on.

(3) HUMBER SHORE AND TIDAL AFFLUENTS.—This division includes the shores of the Humber where the conditions are estuarine, that is excluding the dune area of Spurn, Easington and Welwick, which has its own peculiarities. The banks of the tidal affluents such as the River Hull, R. Ouse, R. Derwent, and various creeks partake of the same features. The spiders characterising this area are *Cicurina cinerea*, *Halorates reprobus*, *Erigone longipalpis*, *Erigone spinosa* (at Saltend Common only), *Cnephalocotes curtus*, *Cornicularia kochii* (recently found also on the shores of Hornsea Mere), *Lycosa purbeckensis*, var. *minor* together with the Harvestmen, *Liobunum blackwallii* and *Oligolophus hansenii*.

(4) SPURN, EASINGTON, WELWICK.—The sand-dune area of the extreme south-east of the East Riding is one of the most interesting we have, and many of the spiders found there are not recorded elsewhere in the whole county of Yorkshire. The following are the more remarkable species found in this area:—*Prothesima latreillii*, *P. electa*, *Clubiona subtilis*, *Protadia subnigra*, *Erigone atra*, var. *lantosquensis*, *E. arctica* var. *maritima*, *Entelecara trifrons*, *Heliophanus flavipes*, *Hycia nivoyi*, *Euophrys equipes*, and the Pseudoscorpion, *Chelifer latreillii*. If dame Rumour speaks correctly, Spurn as the naturalist knows it, is likely no longer to exist.

(5) HORNSEA MERE.—As the only survival of the meres of Holderness, Hornsea Mere is worthy of special attention and investigation. With the exception of *Linyphia impigra*, and *Tmeticus affinis*, the type of which was found there, there are no species peculiar to the Mere. Naturally many of the forms found there also occur in other marshy places in Holderness, e.g., *Bathypantes approximatus*, *Phaulothrix huthwaitii*, *Ædothorax gibbosus*, *Æ. tuberosus* and *Enidia bituberculata*. *Cornicularia kochii*, a species which was thought to occur only on the Humber shore, was found at Hornsea Mere on several occasions last year.

(6) THE WOLDS.—The Wold area forms the backbone of V.C. 61. It stretches from Flamborough Head past Driffild and Beverley to Hessle and Brough. As will be seen at a glance down column 6 in the following list, the spider fauna is a fairly rich one although few species can be put down as

peculiar to this area alone. The following are species found up to the present only on the Wolds, but several of these are certain to be found in one or the other of the remaining districts:—*Clubiona terrestris*, *Chiracanthium carnifex*, *Anyphæna accentuata*, *Coelotes atropos*, *Antistea elegans*, *Hahnia helvcola*, *Mengea scopigera*, *Dicymbium tibiale*, *Nerience rubella*, *Styloctetor penicillatus*, *Prosopotheca incisa*, *Pachygnatha listeri* and *Heliophanus cupreus*.

(7) DERWENTLAND.—This is perhaps the richest district in insect and spider life that still remains to us in East Yorkshire. There are many large areas which have not been cultivated and hence still retain their primeval fauna. Such localities are Riccall, Skipwith and Allerthorpe Commons, Hotham Carrs, Houghton Moor and Woods, all of them scenes of past excursions of the Yorkshire Naturalists' Union. The spider fauna is very rich, the following being the species recorded for this area alone:—*Prothesima petiverii*, *Clubiona trivialis*, *Zora maculata*, *Scotina gracilipes*, *Dictyna latens*, *Hahnia nava*, *H. montana*, *Theridion impressum*, *T. bimaculatum*, *Crustulina guttata*, *Enoplognatha thoracica*, *Floronia frenata*, *Hillhousia misera*, *L. mengii*, *Oreonetides firmus*, *Eutelecara thorellii*, *Cnephalocotes elegans*, *Tapinocyba pallens*, *Cercidia prominens*, *Pisaura mirabilis*, *Lycosa nigriceps*, *Evarcha falcata*, and the Harvestman, *Megabunus insignis*.

This characteristic species for this district are *Zora maculata*, *Crustulina guttata* and *Evarcha falcata*.

(8) DERWENT CARRS.—The eighth of the areas into which the East Riding has been divided is the least satisfactory, as it has received but scant attention on the part of arachnidists. It includes the low lands to the north and north-west of the Wolds, and drained by the Hertford and Derwent rivers. Mr. W. Falconer has fortunately done some collecting at Scampston and Killington and last year I paid a visit to the Derwent near Binnington. The only spider recorded for this area and not elsewhere in the Riding is *Leptyphantès alacris (terricola)*.

The following is a complete list of the known spiders of the East Riding, the distribution of each being indicated by a cross in one or more of the eight areas into which the Riding has been divided.

For assistance in identification I am greatly indebted to Mr. W. Falconer, without whose courteous aid this list would have been almost impossible.

All the species referred to are to be seen in the collection of Yorkshire Arachnida in the Hull Museum.

(To be continued).

HEMIPTERA COLLECTED AT BASLOW, DERBYSHIRE.

J. W. CARR, M.A., F.L.S., F.E.S.

THE only published list of Derbyshire Hemiptera, so far as I am aware, is the exceedingly poor one given in the Victoria History of the County (1905). This list comprises some 29 species only, and as the majority of these were collected at Burton-on-Trent, which is in Staffordshire, the number of species undoubtedly taken in Derbyshire is reduced to about ten. The following list, the result of casual collecting during a short visit to the county, will serve as a first attempt towards a better knowledge of the Hemipterous fauna of Derbyshire.

Last year (1915) I spent the first ten days in August at Baslow, and—when the weather permitted—did a little collecting in the grounds of the 'Grand Hotel,' and on the moor (Eaglestone Flat) immediately above it, as well as on the banks of the stream running alongside the Sheffield road in immediate proximity to the village. With the exception of the Calver records all the specimens were obtained within a radius of about a mile from the Hotel. Calver is about two miles away.

The number of species collected was 83—31 Heteroptera and 52 Homoptera, but with better weather and more systematic work the total would no doubt have been largely increased. All the Heteroptera were submitted to Mr. E. A. Butler, and all but the commonest of the Homoptera were determined by Mr. J. Edwards. The most noteworthy species taken were *Acocephalus tricinctus* and *A. trifasciatus*: both sexes of each of these were obtained by searching under heather on the edge of the Eaglestone Flat.

HETEROPTERA.

- Macrodema micropterum* Curt.
Trapezonotus arenarius L. Eaglestone Flat.
Nabis flavomarginatus Scholtz.
 „ *ericetorum* Scholtz.
Anthocoris confusus Reut. Baslow and Calver.
 „ *nemoralis* L.
 „ *nemorum* L.
Megaloceraea ruficornis Fourc.
Monalocoris filicis L.
Calocoris sexguttatus Fab.
Plesiocoris rugicollis Fall.
Lygus pabulinus L.
 „ *contaminatus* Fall.
 „ *cervinus* H.-S.
Dicyphus pallidicornis Fieb. On Foxgloves.

- Campyloneura virgula* H.-S.
Actorhinus angulatus Fab. Baslow and Calver.
Globiceps cruciatus Reut.
Mecomma ambulans Fall.
Orthotylus marginalis Reut.
 „ *viridinervis* Kb.
 „ *ericetorum* Fall.
Psallus ambiguus Fall.
 „ *variabilis* Fall.
 „ *varians* H.-S.
 „ *roseus* Fab.
 „ *rotermundi* Scholtz. On white poplar, hotel grounds.
Atractotomus magnicornis Fall.
Plagiognathus chrysanthemi Wolff.
 „ *arborum* Fab.
Asciodema obsoletum D. and S.

HOMOPTERA.

- Philænus spumarius* L. In addition to the type the forms
leucocephalus Germ., *populi* Fab., and *vittatus*
 Fab. were more or less common.
 „ *exclamationis* Thumb.
 „ *lineatus* L.
Ulopa reticulata Fab. Eaglestone Flat, common under
 heather.
Euacanthus interruptus L.
Batracomorphus lanio L.
Oncopsis alni Schr.
 „ *rufusculus* Fieb.
 „ *flavicollis* L.
Macropsis rubi Boh.
Idiocerus vitreus Fab.
 „ *fulgidus* Fab.
 „ *confusus* Flor.
Acocephalus nervosus Schr.
 „ *trifasciatus* Fourc. Several of both sexes obtained
 by searching under heather on Eaglestone Flat.
 „ *tricinctus* Curt. Both sexes taken with the pre-
 ceding species. Careful dissections of both
 species have been made by Mr. J. Edwards,
 who vouches for the accuracy of the deter-
 minations.
Stictocoris flaveola Boh.
Athysanus brevipennis Kbm.
 „ *sordidus* Zett.
 „ *plebejus* Fall.
 „ *obsoletus* Kbm.
Deltocephalus ocellaris Fall.

- Deltocephalus flori* Fieb.
 „ *distinguendus* Flor.
 „ *thenii* Edw. Eaglestone Flat.
 „ *punctum* Flor.
 „ *abdominalis* Fab.
 „ *pascuellus* Fall.
 „ *cephalotes* H.-S.
 „ *pulicaris* Fall.
Thamnotettix striatulus Fall. Eaglestone Flat.
Limotettix quadrinotata Fab.
 „ *sulphurella* Zett.
Cicadula sexnotata Fall.
Alebra albostriella Fall.
Empoasca smaragdula Fall.
Eupteryx urticæ Fab.
 „ *melissæ* Curt. Common on sage in hotel garden.
 „ *auratus* L.
Typhlocyba ulmi L.
 „ *douglasi* Edw.
 „ *tersa* Edw. On willows by the Derwent at Calver.
 Previously recorded only from Birkdale, Lancs.
Cixius cunicularius L.
 „ *nervosus* L.
Conomelus limbatus Fall.
Delphax fairmairei Perr.
Psyllopsis fraxinicola Först.
Psylla peregrina Först.
 „ *mali* Schmd. On Mountain Ash.
 „ *alni* L. Baslow and Calver, common on Alder.
 „ *försteri* Flor. With the last in both places.
 „ *buxi* L. On Box bushes in hotel grounds.
 „ *spartii* Guer. On Broom in hotel grounds.
Trioza urticæ L.

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The *Entomologist* for July contains some Durham records.

The *New Phytologist*, published on July 24th, contains the following items:—On a New Penetrating Alga, by Elizabeth Acton; *Dicranochaete reniformis*, A Fresh Water Alga new to Britain, by W. J. Hodgetts; Carbon Assimilation, by Ingvar Jörgensen and Walter Stiles; The Pollen of *Echeveria retusa* as Laboratory Material, by M. C. Rayner.

The *Vasculum* for June contains the following notes:—‘Marine Zoology at Redcar,’ by H. Preston; ‘Jottings from the East Nook of Cumberland,’ by G. Bolam; ‘Talks about Plant Galls,’ by R. S. Bagnall; and J. W. H. Harrison; ‘The Study of Moors,’ by F. Elgee; ‘The History and Geography of the Shrubby Cinquefoil,’ by J. W. H. Harrison; ‘On the Rearing of Caddis Flies,’ by G. B. Walsh; ‘Zoological Miscellanea,’ by G. Bolam, besides smaller records, etc. A wrong heading appears to have cropped in on page 45. We must congratulate the Editors on the present number.

MR. J. HAWKINS' COLLECTION OF GRANTHAM SHELLS.

C. S. CARTER,
Louth.

IN his presidential address to the Lincolnshire Naturalists' Union, 1909, Mr. W. Denison Roebuck said that Mr. J. Hawkins of Grantham was 'the first man who paid attention to our (Lincs.) shells since Lister's time' (17th cent.) and that 'the only regret we can have is that he has never published any account of the Grantham shells, and that there is therefore no record in print of the admirable work he accomplished during a long and well spent life.' This latter I particularly endorse with the possible exception that in the year 1903 Mr. Hawkins did contribute to *The Grantham Journal* a series of four interesting articles containing notes on some Grantham shells, under the title 'A Tour in search of Land Shells,' copies of which he very kindly sent me at the time.

It was a great joy to me when on July 7th last, I received from the venerable Mr. J. Hawkins (now in his 97th year), his kindly greetings and his collection of shells obtained in Grantham and neighbourhood.

The collection, though not large, is of such interest as to be worthy of record, especially as one species (*Azeca tridens*) represented has not, I believe, been previously recorded for South Lincs.

Mr. Roebuck in his address remarked 'it was about 1854 that he (Mr. Hawkins) collected *Helix lapicida*, the identical specimens being now in his collection—as also are those of *Clausilia laminata*, which he found in Ropsley Rise Wood.' Fortunately in this collection there is a tube containing *H. lapicida* and bearing a label on which is written 'Harrowby Lane, Aug., 1855.' Of this species Mr. R. Worsdale, in an interesting paper read before the Grantham Scientific Society, remarks 'it is rare hereabouts and can be found in very few places round Grantham.'

Referring to *Cæcilioides acicula* Mr. Worsdale said, 'Mr. Hawkins assures me that he found it in the Harrowby Lane some forty years ago.' Probably these are the specimens in a small tube without locality or date but bearing the label '*V. minutissima*.' There is also a tube labelled 'Ropsley Rise Quarry, Sept., 1907,' containing a number of *C. acicula*, evidently of Holocene age. Mr. Worsdale also remarked that '*Clausilia rolphii* is a rare variety for Grantham. Up to the present it has only been found in Ropsley Rise, and that by Mr. Hawkins, who secured it more than forty years ago, and was the first to re-discover it.' As evidence of Mr. Hawkins' keenness there is a tube labelled '*Clausilia rolphii*, 1904,

Bridge End Road, 1905,' containing over 70 specimens of this species, and another tube labelled 'Gathered Nov. 3rd, 1903, C.I., C.Ri., C.R., Bridge End Road Spinney,' the initials signifying respectively *Clausilia laminata*, *Cl. rolphii* and *Cl. rugosa*; and in yet another tube labelled 'May 30th, 1904, Ropsley Rise, *lubricus* from wood top of hill' are 3 *H. lapicida*, 2 *Cl. laminata*, 1 *E. obscura (lubricus)*, 2 *P. rotundata* and 3 *Cl. rolphii*.

It is to be regretted that one tube containing specimens of *Cl. bidentata* var. *everetti*, *Jaminia cylindracea*, *H. caperata* and one specimen of *Azeca tridens* is without a label, thus preventing a full record of what is probably the first *Azeca tridens* collected in South Lincs.

The following is a full list of species in the collection with locality and date as per label:—

Vitrea cellaria.

V. rogersi.

Pyramidula rupestris.

P. rotundata. 'Ropsley Rise.'

Helicella virgata. 'Storton, Oct. 4th, 1907.'

var. *lutescens*. 'Spittlegate Heath, 1902.'

H. itala. 'Spittlegate, Oct. 29th, 1903.'

„ 'Belton Park Wall.'

„ var. *hyalozonata*. 'Belton Park Wall.'

H. caperata.

Hygromia hispida.

H. rufescens. 'Spittlegate Heath, 1902.'

var. *albocincta*. 'Belton Lane, Oct. 5th, 1903.'

var. *alba*.

Vallonia costata.

Helicigona lapicida 'Harrowby Lane, Aug., 1855.'

„ „ 'Ropsley Rise, May 30th, 1904.'

Helicigona arbustorum.

Helix nemoralis var. *libellula* { 00000
12345
:: 345

„ „ var. *rubella* { 00000
1: 345

H. hortensis.

„ var. *lutea* { 12345
10345
(12)3(45)

Ena obscura 'Bridge End Road Spinney, Nov. 3rd, 1903.'

„ „ 'Ropsley Rise, May 30th, 1904.'

Cochlicopa lubrica.

Azeca tridens.

Cæcilioides acicula. 'Ropsley Rise Quarry, Sept., 1907.'

Jaminia cylindracea.

- Balea perversa*. 'Carely, Aug. 2nd, 1904.'
Clausilia laminata. 'Ropsley Rise.'
Cl. bidentata. 'Bridge End Road Spinney, Nov. 3rd., 1903.'
 „ var. *everetti* 'L. Ponton.'
Cl. rolphii. 'Ropsley Rise.'
 „ 'Bridge End Road.'
Ancylus fluviatilis. 'Waterworks, Oct., 1906.'
Limmæa stagnalis.
Planorbis corneus.
Pl. carinatus.
Bithynia tentaculata. 'Belton Park, July, 1904.'
Pomatias elegans. 'J. White, June 2nd, 1904.'
 „ „ 'Mr. Stow, June 2nd, 1904.'

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In *The Geological Magazine* for July is an excellent portrait of Prof. J. E. Marr, with a Memoir.

The Scottish Naturalist for July-August contains pages 147 to 218, and is entirely devoted to the report on Scottish Ornithology for 1915.

The Irish Naturalist for August is almost entirely occupied by an account of 'Two Irish Chilopods,' by Hilda K. Brade and the Rev. S. G. Birks.

The Yorkshire Archæological Journal, part 93, contains an illustration of a fine Bronze-Age spear-head, nearly 10 inches in length, found at Northallerton.

In *The Lancashire and Cheshire Naturalist* for June a new variety of *Chordeumella scutellare* var. *brölemanni*, by Miss H. K. Brade and Rev. S. G. Birks, is described.

The Museums Journal for August contains the presidential address of Mr. E. Rimbault Dibdin, of the Walker Art Gallery, Liverpool, as well as an account of the recent conference of Museums' curators at Ipswich.

In the *British Dental Journal* for May, Mr. W. C. Lyne has an elaborate paper on the Significance of the Radiographs of the Piltdown Teeth. In this Mr. Lyne evidently considers that the isolated canine tooth has no connection whatever with the remainder of the Piltdown relics.

Wild Life for July contains the following articles:—'The Little Owl in Essex,' by J. H. Owen; 'The Wheatear,' by Wm. Farren; 'The Beaver,' by W. B. Johnstone; 'The Curlew,' by the Rev. D. A. Scott; 'Notes on the Wryneck,' by E. Eykyn; 'Sexual Selection in Birds,' by Edmund Selous.

We notice in *Man* for July that Mr. J. R. Moir describes some human bones of neolithic and later date, found in the Ipswich district, while excavating in the Shelly Red Crag. We are inclined to doubt the neolithic age of the specimens so described, as judging from the associated objects they certainly seem to be of the Bronze Age. The British Museum authorities state 'late neolithic or early Bronze Age,' but notwithstanding this Mr. Moir definitely says neolithic.

A writer in *The Entomologist's Monthly Magazine* for August suggests that certain species of insects which were described in some little paper should be treated as though they had never been described. This suggestion cannot of course be adopted as when a species has once been described, no matter where nor how badly, the description must be recognised. Of course it is admitted that it would be a great advantage to Naturalists if authors described their species properly, in recognised Journals.

YORKSHIRE NATURALISTS AT BOLTON WOODS

(Continued from page 270).

CONCHOLOGY.—Mr. W. Denison Roebuck, M.Sc., writes :—The Conchological Section was represented by its President, Mr. Greevz Fysher, Mr. J. W. Taylor and myself. About 27 species had been observed, two water shells, eight slugs, and the rest land shells. The principal addition to the known fauna of the area was *Zonitoides excavatus*, found in numbers on an old stump in the Laund Pasture Plantation, above the Valley of Desolation, in company with *Hyalinia fulva*. *Limnæa peregra* was also added to the known list. Among the rarer species taken were *Hygromia jusca*, *Zonitoides nitidus*, *Hyalinia helvetica*, etc.

COLEOPTERA.—Dr. Fordham writes :—The present writer spent the day in Posforth Gill and the Valley of Desolation and on the left bank of the Wharfe in Bolton Woods in company with Messrs. Falconer and Winter, (to whom he is indebted for several of the species recorded).

Beetles were not as numerous as expected, although a few species, e.g., *Abax ater* Vill., *Otiorhynchus picipes* F. and *Strophosomus coryli* F. were rather abundant in the woods. Fifty-three species were obtained altogether, including two specimens of *Malthodes brevicollis* Pk. (*nigellus* Kies) by sweeping near the Wharfe, which has not previously been found in Yorkshire.

Mr. Falconer obtained *Paramccosoma melanocephalum* Hbst. by sweeping near the river and Mr. Winter captured a Tiger Beetle (*Cicindela campestris* L.) in the Valley of Desolation.

Three species of *Bembidium*, *ustulatum* L. (= *littorale* Brit. Cat.) *decorum* Pz., and *tibiale* Duft, were abundant in shingle by the River Wharfe and by the stream in Posforth Gill, and in the latter place occurred in company with *Bembidium atrocæruleum* Steph., *Stenus guttula* Müll. and *nitidiusculus* Steph. and *Helodes marginata* F. In the pine wood *Rhagium bifasciatum* F. and its larvæ occurred in a fir stump and a specimen of *R. mordax* De G. (*inquisitor* Brit. Cat.) was swept up in the same locality. Other beetles obtained by sweeping in the woods were *Anthobium primulæ* Steph. (from Primroses), *Phyllobius oblongus* L. (commonly), *P. viridicollis* F., *Barynotus mærens* F. (from *Mercurialis perennis*), *Sciaphilus asperatus* Bonsd. and *Orchestes fagi* L. Other beetles worthy of passing mention are *Tetraplatypus similis* Dj., *Bembidium mannerheimi* Sahl., *Anacæna globulus* Pk., *Tachinus humeralis* Gr., and *collaris* Gr., and an entirely black specimen of *Elmis æneus* Müll., (the latter taken in wet moss by the waterfall in the Valley of Desolation).

In addition to these species the following beetles were taken

during the meeting and handed over later to Mr. J. W. Carter:—A nice series of *Triplax ænea* Schal. from fungi taken by Mr. Malone; *Haltica oleracea* L., taken by Mr. H. Lumby and *Calvia 14 guttata* L., taken by Mr. W. H. Parkin.

GEOLGY.—Mr. A. Gilligan, B.Sc., F.G.S., reports:—The members of the Geological Section first visited the Hambleton Quarries, and it was remarked that many changes in the appearance of the folded strata had taken place within the memory of those present as the workings have extended further into the hillside. It would be of service if someone could undertake the work of making a series of photographs from which a model could be constructed to illustrate the complicated structure here exhibited in such perfection. The usual finds were recorded, one member being exceptionally fortunate in being able to spot anything which was mentioned as being likely to occur, such as various forms of calcite, slickensiding and even the somewhat rare blebs of bitumen in the calcite veins. Crystals of kaolinite resulting from the decomposition of a felspathic grit occurring in the neighbourhood of this quarry are on view in the museum of Practical Geology, Jermyn Street. One very large, badly preserved goniatite was found on a vertical face of shale in the approach to the quarry from the station. This was not 'gathered' and was seen by the writer a week later. Proceeding towards the abbey and along the left bank of the river to the bungalow an excellent opportunity was afforded of studying river action. Among the pebbles of the strands several masses of coral *Lithostrotion*, and *Syringopora* were found. A search among the pebbles which occur in the grit of the Strid yielded some good things, granites and cherts, one of the latter very large, at least in comparison with the usual size, being at least one and a half inches in diameter. The moraines came in for a great deal of attention; the one on which Barden Tower stands was explored and either it or the good things provided by the present occupier of this ancient edifice proved so attractive that no time was left for the further walk to Burnsall Fell to examine the storm channels which, however, the writer can vouch are still there, as he visited them the following week.

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We regret to record the death of Abraham Shackleton, retired printer, publisher, bookbinder, and a botanist of some repute, at the age of 86 years, which occurred at Braithwaite, Keighley, recently. He made a special study of mosses, and collected largely in lichens, in which he did much work in association with Mr. Thomas Hebden. With Mr. Hebden, he has tramped hundreds of miles in search of specimens. The pair published three or four papers in *The Naturalist* some twenty years ago, giving three very good lists of district lichens. Mr. Shackleton was the founder and supporter of the old Keighley Scientific and Literary Society, and the existing organisation, the Keighley Naturalists' Society, founded in 1904, elected him its first honorary member.

YORKSHIRE NATURALISTS IN COVERDALE.

THE calls of the time are such that even naturalists must expect to have their enjoyment curtailed, and the official request for the postponement of the Whitsuntide holidays had its effect upon the attendance at the meeting of the Union held at Middleham for the Whit week-end, June 10th to 12th. The number of members present with the President, Mr. W. N. Cheesman, J.P., F.L.S., was not large, and this was the more to be regretted considering the excellent local arrangements which had been made by the divisional secretary, Mr. J. Hartshorn, Leyburn, and also the interest taken in the Union's visit by local gentlemen.

With the exception of Jervaulx, Coverdale has not, until the present occasion, been officially visited by the Union. The area chosen for investigation was the lower portion of the dale, which included West Scafton, Carleton, East Witton, and Jervaulx. Considering the ample scope there is for the student in each section, it would most certainly be worth while to traverse the same area again when normal times return.

Middleham itself is an old-world town, sheltered by the ruins of its mediæval castle, a memory of the power and glory of the ancient family of Nevilles, and within the immediate vicinity of the town is much of historic and archæological interest.

On Saturday the members first proceeded to Coverham Abbey, the ruins of which were explained to them by the Rev. H. G. Topham, Rector of Middleham. The foundation of this Abbey of the White Friars dates back to 1214. The Abbey House was also inspected, and it was noticed that many carved stones and inscriptions had been incorporated in the adjacent buildings. What now remains of the site of St. Simon's Chapel and Well were also visited. After leaving the Abbey the greater part of the rest of the day was spent in the vicinity of West Scafton, where the beauties of numerous ghylls proved very fascinating, closing with a visit to Gilbert Scar Quarry, where the members examined the underground workings from which sandstone was obtained. The geologists had the able guidance of Mr. W. Horne, F.G.S., who, despite his advanced years, remained with the party all day, and added much to the pleasure of the excursion by his local knowledge.

Sunday morning was spent in examining the meadows and woods alongside the river Cover (which joins the Yore at East Witton), proceeding as far as the village of Harmby. On reaching Leyburn in the afternoon the party was taken in charge by Mr. Hartshorn and Mr. F. Croft, and spent a delightful time on the celebrated "Shawl," where memory was sweetened with the magnificent scenic panorama, and the

wealth of vegetation disclosed. It was as Maude, the local poet, wrote :—

‘ We view a lower world where beauties spring
Tempting and fair, as classic poets sing,
Woods, streams and flocks the vale’s sweet bosom grace,
And happy culture smooths her cheerful face.’

On Monday the party passed over the Common to the valley of the Cover, calling at Braithwaite Hall, where the tenant very kindly permitted an inspection of the rooms, some of which had oak-panelled walls with carving, from which it was apparent the building dated back to about the sixteenth century. Braithwaite ghyll was explored on the way to the moors, on reaching which Mr. J. Maughan conducted the party for the rest of the day. From the moors they first passed through the very fine coniferous woods, chiefly of spruce, and also visited the splendid plantations of Corsican Pine, Douglas Fir, Japanese and Silesian Larch, all in a thriving condition. Next a series of deciduous woods was traversed, including Sawden ghyll, a most entrancing spot, the beauties of which were greatly admired, and where a waterfall of about 120 feet in height was in good force. The excursion was brought to a close in the grounds of Jervaulx Abbey, where Canon Garrod, Rector of East Witton, very ably and lucidly explained the well-kept ruins of this Cistercian monastery. He was heartily thanked for his services.

After the sectional reports had been presented at the meeting held subsequently at headquarters (the White Swan Hotel), an omnibus resolution of thanks was recorded : to Mr. J. Hartshorn for his excellent work as divisional secretary ; to the guides ; to Mr. H. Maughan for granting permission to visit his magnificent rock garden, and to the following landowners for permission to visit their estates, viz., Lord Masham, Mr. W. L. Christie, Major Harrison Topham, Mr. A. W. Chayton, Sir F. Brown, Capt. W. Burrill Thomson, Mr. H. J. Bowring and Mrs. Wright.

Hearty congratulations were accorded to Mr. W. Eagle Clarke, F.L.S., F.R.S.E., a past President of the Union, on whom the University of St. Andrew’s had conferred the honorary degree of Doctor of Laws, as a mark of esteem for his scientific work.

An additional interest to the meeting were the three lectures which were delivered. Mr. J. Hartshorn spoke upon the chief botanical features of the Middleham district. He remarked that the general impression was that geologically Wensleydale was a limestone dale. As a matter of fact, the relation of limestone to the sandstones and shales of the dale was only two per cent. After a brief description of the scenic beauties of Coverdale, which were only revealed to those who left the beaten track, he remarked upon the number of plants

which occurred in the district, as remarkable for their occurrence in the British Isles and West-Central Europe. The features of the flora in general were also commented upon.

Dr. T. W. Woodhead, M.Sc., discoursed upon the life history of the Purple Heath Grass (*Molinia caerulea*) in the Huddersfield district. He explained that the details of its distribution, and of the anatomy of the plant had been worked out by one of his students, the Rev. T. A. Jeffries, and recently published. The morphological features of the plant, and the factors affecting its distribution on the moorland areas, and in the woods of the Huddersfield district, were described, as well as the chief competitors of the grass under certain conditions of growth.

Mr. B. Hobson, B.Sc., gave an interesting account of his investigations of the underground watercourses of the limestone areas, especially dealing with those in the district of Ingleborough, the geological features of which he lucidly explained. He particularly mentioned the repeated disappearance of Dale Beck, and also of disappearing streams in Dentedale, and in the early sources of the rivers Wharfe, Aire and Skirfare. His remarks were illustrated by geological maps.—W.E.L.W.

CONCHOLOGY.—Mr. Greevz Fysher reports :—

All the shells I collected have been seen by Mr. J. W. Taylor, and the slugs by Mr. W. Denison Roebuck. At Slade Gill, Coverham, were found *Arion circumscriptus*, *Pyramidula rotundata* and a fine trochoidal example of *Helicigona arbustorum*. At Coverham Abbey were found *Agriolimax agrestis* v. *reticulata*, one *Zua lubrica*, a few *Hygromia hispida* and numerous *H. rufescens*. At Scafton was abundance both of *Clausilia bidentata* and *Cl. cravenensis*, one *H. rufescens*, two *Pyramidula rupestris*, and a typical example of *Limax arborum*. At Middleham *Helix aspersa* was in abundance, *Agriolimax agrestis* and *H. rufescens* were numerous, together with a few each of *Balea perversa*, *Cl. bidentata* and *Hygromia hispida*, and one *Hyalinia cellaria*. On West Witton Fell were found fine adult examples of *Limax cinereo-niger* var. *luctuosa* and *L. maximus* var. *fasciata*, the type of *Arion ater*, an adult *A. circumscriptus*, a half-grown *H. arbustorum*, an immature *H. hispida* var. *rubens*, one *Azeca tridens*, one *Cl. bidentata*, and a few *Clausilia laminata*. This makes a total of five slugs and thirteen land shells for the Lower Coverdale area planned for special investigation. Other captures were *Helicella cantiana* and its reddish form in great abundance at Melmerby, near Ripon, *H. itala* in plenty together with *H. rufescens* and its var. *rubens* and *P. rotundata* at Leyburn; and *Hyalinia cellaria* (two adults), *Cl. bidentata*, and a fine example of *H. aspersa* at Wensley.

FLOWERING PLANTS.—Mr. J. Hartshorn writes :—

During the last week in May the most striking floral feature of Coverdale was the Bird Cherry. By Whitsuntide this had passed and Hawthorn and some Horse-Chestnut bloom had succeeded. A number of Hawthorn blooms were examined and all proved monogynous. Of the Crane's-bills, *Geranium sylvaticum* and *G. pratense*, the latter is the common one in this district, with the former most abundant in the upper part of the valley. Similar records obtain for Wensleydale, while in Swaledale common by the roadside down to Richmond we find *G. sylvaticum*; also in plenty on the walls and rock ledges were *G. lucidum* and *G. robertianum*, also *Arabis hirsuta*, *Saxifraga tridactylites*, *Sedum acre*, *Asplenium trichomanes*, *A. Ruta-muraria* and *Cystopteris fragilis*. Other ferns of different habitat are Lady Fern, and the lowly yet interesting Moonwort and Adder's-tongue. On the moor traversed there was much *Empetrum nigrum* in fruit.

As all the members present wished to see the Shawl and the plants indicated for Leyburn, an investigation was arranged. The following species were noted:—*Staphylea pinnata*, *Ribes alpinum*, *Acer Platanoides*, *Sedum rupestre*, *S. album*, *Hypericum calycinum* and *Sambucus ebulus*. Most of these are quite at home and flourish exceedingly, but they were probably introduced years ago when a good deal of planting was done. *Geranium phœum*, sparingly found in Coverdale and Wensleydale has also been introduced.

On Monday the members had the advantage of Mr. J. Maughan's services as guide. Knowing the ground intimately, and a keen student of Forestry, he was able to make the woods pleasant and instructive. Sawden Beck was charming, especially in Deep Gill, and Jervaulx Abbey would have provided work for the whole day. Species not already mentioned and worthy of record are:—*Colchicum autumnale* (foliage and fruit), *Orchis ustulata* and *O. morio* (both abundant), *Habenaria viridis*, *Trollius europæus*, *Parietaria ramiflora*, *Primula farinosa*, *Echium vulgare* and *Lactuca virosa*. Sweet woodruff appeared to be in unusual profusion between Coverham and W. Scafton and the fruiting condition of Butter-bur was remarkable.

Near Wensley an abundance of *Arenaria verna* was noted.

BRYOLOGY.—Mr. C. A. Cheetham reports :—

The bryologists took a wider survey of Coverdale than that included in the circular, three members making the old entrenchment at Coverhead their headquarters on Friday night, and starting at sun-rise on Saturday to work the ghylls forming the head waters of the Cover. Here on the limestone rocks some interesting mosses were gathered, typical things for these places, such as *Plagiobryum Zierii*, *Webera cruda*,

Orthothecium intricatum, *Seligeria pusilla*, *Hypnum stellatum* var. *protensum* and *Bartramia Œderi*; in the streams with an abundance of *Hypnum palustre* were found *Fontinalis squamosa* and *Hypnum ochraceum*. In one swampy spring head what appeared like an uncommon Bryum, turned out to be *Mnium stellare*, a moss one associates with dry woodland walls and rocks; this same moss was also seen on the rocks by the Cover side further down the valley. Close to Carlton it was interesting to see the variation of the mosses on the walls accordingly as they were limestone or grits. On the grit walls *Hypnum cupressiforme* was dominant, with plenty of *Leucodon sciuroides*, and a little *Grimmia trichophylla*, whereas on the limestone the dominant species is *Pleuropus sericeus* with *Bryum capillare*, *Encalypta streptocarpa*, etc., and in one place, near Gilbert Scar Bridge, some fine *Bartramia ithyphylla*. On limestone by some of the lower tributary streams we gathered *Eurhynchium tenellum*. In the woodland by Coverbridge mosses were luxuriant; on the walls of the roadway we made the most interesting find of the day, a moss, *Neckera complanata*, which is extremely frequent in these places but barren, was found in very good fruit, the *Mnium stellare*, before mentioned, was also on the walls in its typical state. Some damp limestones with tufa had *Weisia verticillata* in good fruit as were *Barbula tophacea* and *Hypnum commutatum*. A small *Eurhynchium* gave some trouble and had to be submitted to Mr. W. Ingham who determines it as *E. pumilum*. This moss is a new record for the drainage area and was in the fruiting state. *Mnium cuspidatum* was well grown and fruiting, and so was *Homalia trichomanes*. An adjournment was made to the stream side and the rocks examined; *Hypnum molluscum* var. *fastigiatum*, *Dichodontum pellucidum* of varying forms covered many of the rocks, with *Barbula spadicea*, *B. cylindrica*, *Eurhynchium crassinervium*, *Mnium stellare*, *M. cuspidatum* and *Bryum pallens*. In the afternoon we cycled to Jervaulx and from here we took the road through Masham, calling in Hackfall Woods, where another variety, *condensatum* of *H. molluscum* was seen with the uncommon *Hypnum Patientiæ*.

MYCOLOGY.—Mr. W. N. Cheesman reports:—

Eastertime is somewhat early for many of the fungi, and this year the cold dry weather had the effect of retarding growth, but by diligent search, Mr. R. Fowler Jones and the writer succeeded in getting together fifty-five species of fungi and sixteen species of Mycetozoa, most of which were of common occurrence, exceptions being *Urocystis colchici*, the fungal parasite of *Colchicum autumnale*, which has only been once previously recorded for Yorkshire (1880), and *Tremellodon gelatinosum* growing on the underside of a pine log. This

plant is not recorded in the ' Fungus Flora ' of Yorkshire, but was found, perhaps for the first time, at Forge Valley last year.

The three most noteworthy species of Mycetoza were *Hemitrichia rubiformis*, *Enerthenema papillata* and *Perichæma vermicularis*, all three growing on decaying wood.

In spite of the care devoted to the well kept woods several species of fungi attacking forest trees were noted, especially *Fomes annosus* on Spruce and Pine, *Dasyscypha calicina* on Larch, *Polyporus betulinus* on Birch, *Dædalea quercina* on Oak, and *Armillaria mellea* on various deciduous trees.

The following is a list of the species collected :—

<i>Cyathus vernicosus</i>	<i>Radulum quercinum</i>
<i>Sphærobolus stellatus</i>	<i>Grandinia granulolum</i>
<i>Lycoperdon gemmatum</i>	<i>Odontia fimbriata</i>
<i>Amanita rubescens</i>	<i>Solenia anomala</i>
<i>Lepiota procera</i>	<i>Stereum hirsutum</i>
<i>Armillaria mellea</i>	" <i>purpureum</i>
<i>Tricholoma gambosum</i>	<i>Corticium calceum</i>
<i>Clitocybe infundibuliformis</i>	<i>Hymenochæte rubiginosa</i>
<i>Laccaria laccata</i>	<i>Peniophora quercina</i>
<i>Collybia velutipes</i>	<i>Thelephora laciniata</i>
<i>Mycena galericulata</i>	<i>Typhula erythropus</i>
" <i>alcalina</i>	
<i>Pluteus cervinus</i>	<i>Hirneola auricula-judæ</i>
<i>Nolanea pascua</i>	<i>Tremella mesenterica</i>
<i>Pholiota præcox</i>	<i>Dacryomyces stillatus</i>
<i>Galera tenera</i>	<i>Calocera viscosa</i>
<i>Crepidotus mollis</i>	
<i>Stropharia æruginosa</i>	<i>Puccinia menthæ</i>
<i>Hypholoma fasciculare</i>	" <i>primulæ</i>
<i>Anellaria separata</i>	" <i>suaveolens</i>
<i>Coprinus comatus</i>	<i>Urocystis colchici</i>
" <i>niveus</i>	<i>Graphium flexuosum</i>
" <i>micaceus</i>	
<i>Marasmius oreades</i>	<i>Physarum nutans</i>
" <i>rotula</i>	<i>Craterium minutum</i>
	<i>Didymium difforme</i>
<i>Boletus luteus</i>	" <i>squamulosum</i>
<i>Polyporus brumalis</i>	<i>Stemonitis fusca</i>
" <i>squamosus</i>	<i>Comatricha nigra</i>
" <i>sulphureus</i>	<i>Enerthenema papillata</i>
" <i>betulinus</i>	<i>Cribraria argillacea</i>
" <i>adustus</i>	<i>Dictydæthaliæ plumbeum</i>
<i>Polystictus versicolor</i>	<i>Reticularia Lycoperdon</i>
" <i>abietinus</i>	<i>Lycogala epidendrum</i>
<i>Fomes fomentarius</i>	<i>Trichia persimilis</i>
" <i>annosus</i>	" <i>varia</i>
<i>Poria vaporaria</i>	" <i>Botrytis</i>
<i>Dædalea quercina</i>	<i>Hemitrichia rubiformis</i>
	<i>Perichæna vermicularis</i>

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Mr. T. Sheppard, M.Sc., has been invited to accept the position of Vice-President of the Conference of Delegates at the Meeting of the British Association at Newcastle.

YORKSHIRE NATURALISTS AT DRIFFIELD.

By a coincidence, the visit of the Union to Driffield on Saturday, July 8th, was on exactly the same date as their visit to the "capital" of the Wolds seventeen years ago.

The weather was glorious, quite a change from the depressing type of weather experienced just before the excursion, and those who were present enjoyed the outing immensely, one of the features being the excellence of the working ground provided within a very short distance of the town.

The geological party was under the guidance of Mr. J. W. Stather, F.G.S., and after detraining at Lowthorpe the members visited quarries at Ruston Parva and Nafferton on their way back to Driffield.

The general body of naturalists first visited the Mortimer Museum where, under the able guidance of Mr. Thomas Sheppard, M.Sc., they had lucidly explained to them the important contents of this finest example of 'local' museum in the country. It is pleasing to know that through the generosity of Col. G. H. Clarke the valuable collections made by the late Mr. J. R. Mortimer have been presented to the Hull Corporation who intend, after the war, to remove the contents to a suitable building in Hull.

Afterwards, under the guidance of Mr. J. F. Robinson and Mr. W. H. Blakeston, they spent a most enjoyable time on the marshlands, and in the woods in the vicinity of King's Mill, Kelleythorpe, and Sunderlandwick, where the flora in particular was most delightful and particularly attractive.

The sectional reports given at the close of the excursion showed the time of those present had been well spent. A vote of thanks to the landowners, Mr. Bryan Boyes, Mr. Harold Hopper, Mr. F. Reynard, J.P., D.L., Mr. A. J. Wise and Mr. W. H. St. Quintin, J.P., D.L., as well as to the Divisional Secretary, Mr. J. W. Stather, for making the local arrangements, to the guides, and to the Hull Museums Committee for permission to visit the Mortimer Museum, concluded a pleasant meeting.—W. E. L. W.

FLOWERING PLANTS.—Mr. J. F. Robinson reports:—

A very fair number of members and friends were present. Active operations in the field were commenced at King's Mill—'Mill' now only in name, for the picturesque, tree-embowered residence of Mr. Bryan Boyes occupies the place once held by the well known mill, which was burnt down some years ago. The millponds, and the swiftly flowing 'race,' are still there, however, and to these, with the gardens and grounds around, free access was kindly given by the genial gentleman himself.

The marshy grounds near by afforded many specimens of aquatic vegetation including some new things, notably *Epipactis*

palustris and *Carex paradoxa* which, however, were known in stations in similar ground below Driffield, towards Wansford. There was a large growth of the sedges—chiefly *Carex paniculata* and the grasses *Phalaris arundinacea* and *Poa aquatica*. In connection with the last, Dr. Woodhead initiated an interesting discussion on the 'tussock' formation that is such a marked feature of the damp ground near King's Mill. The origin of the 'tussocks' was to some extent elucidated later in the day by investigations made in a wet, shallow gravel-pit of not more than ten year's excavation, near to Kelleythorpe, whither we proceeded after visiting the King's Mill Marsh. Here there was a wonderful growth of *Carex flava*, in specimens and tufts of the maximum size, occasionally intermingled with the sedges *C. Goodenovii*, *C. glauca* and *C. paradoxa* (another new station). As one trod upon the wet, gravelly floor of the pit, and ever and anon, upon one of the already fairly large 'tussocks' of *Carex flava*, it seemed evident that the sedges do pioneer work in 'tussock'-building, the grasses and others coming in later as accessories. On dry ground at the edge of the pit the adder's tongue fern grows in abundance, many plants being found bearing aloft the characteristic sporiferous frond.

The swamp, and the wood on the part of the same, near Kelleythorpe, are very wet notwithstanding the two or three ditch-like streams of very clear water by which they are intersected. This proved a rich and interesting bit of ground, for upon it grew a wealth of species in great luxuriance. In flower were *Thalictrum flavum*, *Ranunculus Lingua*, *Myosotis palustris*, *Pedicularis palustris*, *Iris pseudacorus*, etc.

In the wet wood there was profusion of *Carex paniculata*, again forming huge 'tussocks,' whilst *Juncus acutiflorus* was sparingly present and *Schœnus nigricans* considerably less so. But the remarkable sight was the luxuriant, almost rampant, growth of the Marsh Buckler fern—*Lastrea Thelypteris*. Leaving the Kelleythorpe habitat of plants beloved by the botanist we crossed the railway and made *via* fields to Sunderlandwick, ten minutes from Driffield.

It had not been a very long round—three or four miles in all—but the remark made in the circular programme of the meeting that near Driffield one finds some of the best botanical ground in the vice-County (East Riding) had ample confirmation.

BRYOLOGY.—Mr. C. A. Cheetham writes:—

The mosses were few and of a common type, the first noted was a fine growth of *Eurhynchium rusciforme* by the sluice gates, with *Physcomitrium pyriforme* and *Webera carnea* on the river banks. Amongst the grass in the damp meadows at King's Mill *Hypnum cuspidatum* with *Climacium dendroides* are to be seen in plenty and where water usually stands *Hypnum*

aduncum. In the marshy ground next visited other factors seemed to enter in; the chief moss was *Hypnum revolvens* with some *Hypnum cuspidatum*, *H. clodes* and *H. giganteum*; also *Mnium affine* var. *clatum*, and on the streamside *Philonotis calcarea*, all of which points to the water supply being of a calcareous type, and the absence of any sphagnum is confirmatory evidence of this.

MYCOLOGY.—Mr. W. N. Cheesman writes:—

Mr. R. Fowler Jones and the writer made diligent search during the available collecting time with the result of recording thirty-five species of fungi and ten species of mycetozoa. The most noteworthy fungi were three species of peziza, all blood in colour and similar in size (6-8 mm.) and outward appearances. Microscopic examination proved these to be *Sphaerospora trechispora* from marshy ground near King's Mill, *Lachnea scutellata* on decayed wood and *L. umbrata* on the bare soil at Kellythorpe. *Puccinia moliniae* was abundant on *Orchis maculata* and its uredospores on *Molinia caerulea* near by. The elder-bushes in the woods were covered with the Jew's ear fungus *Hirneola auricula-judae*, and in a single instance it was found on *Alnus glutinosa*.

Boggy places yielded a few sporophores of the beautiful ascomycete *Mittrula paludosa*.

The rare *Polyporus elegans* was found on the collar of a willow-bush in a wet place which was found covered with *Lastrea Thelypteris*. *P. radiatus* was on the same bush but two or three feet above the ground.

Several patches of *Rhizina undulata* were seen under fir trees in the Kelleythorpe wood.

Some leaves of *Holcus mollis* bearing minute brown objects proved a mycological conundrum to several experts on leaf fungi to whom they were submitted, the Kew authorities eventually deciding that they were the sporangia of *Pilobolus Kleinii* which had adhered to the grass when shot off from the fungus.

The most notable mycetozoa gathered were *Physarum psittacinum*, *Diachæa elegans*, *Stemonitis flavogenua* and *Enerthenema papillata*; also plasmodium, still undeveloped.

GEOLOGY.—The Geologists, under the leadership of Mr. J. W. Stather, visited the chalk quarries of Ruston Parva and Nafferton and obtained some characteristic fossils from the beds of Middle Chalk there exposed. Later they examined the fine collection in the Driffield Museum.

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Mr. R. A. Phillips figures two species of *Pisidium* new to Ireland (namely *P. supinum* and *P. parvulum*) in the *Irish Naturalist* for July. In the same Journal for June, Prof. C. J. Patten describes 'Fragmentary Remains of a Tree-Pipit found on Tuscar Rock.'

NORTHERN NEWS, Etc.

We regret to notice the death, at Lewes, of Charles Dawson, the discoverer of the famous Piltdown skull.

Publication 55 of the *Belfast Municipal Art Gallery and Museum* deals with Soils and their Builders; How Plants Grow; and Garden Pests.

The 'Library Circular No. 60' issued by the Sunderland Public Libraries, Museum and Art Gallery, contains particulars of recent additions to the Museum, among which we notice several cases of birds.

The Report of the National Trust for Places of Historic Interest or Natural Beauty has been received. During the past year Thurstaston Heath, Cheshire, has been presented to the Trust, and a further portion of Wicken Fen has been obtained.

The 93rd Report of the Whitby Literary and Philosophical Society is not very encouraging, and probably for the first time in the Society's history not a single donation has been made to the Museum during the year. There are some meteorological tables in the Report.

Mr. John Walker, Bootmaker and Antiquarian, of Hull, has recently died at the age of 78. He was a well-known Hull character, and for 43 years has followed the hounds in Holderness on foot. In his shop he had a miscellaneous collection of curios. He occasionally joined the excursions of the local scientific societies.

We much regret to record the death of J. A. Harvie-Brown, of Dunipace House, N.B. Mr. Harvie-Brown was intimately associated with *The Scottish Naturalist*, and was the joint author of a number of valuable memoirs bearing upon the Natural History of the various parts of Scotland. He was born in 1844, was a fellow of the Royal Society of Edinburgh, and of the Zoological Society, and a member of the British Ornithologists' Union. According to *Who's Who*, he is the author of over 250 books, papers and notices. He was an occasional contributor to *The Naturalist*.

Parts 1 and 2 of Volume 60, of the *Memoirs and Proceedings of the Manchester Literary and Philosophical Society*, contain the following interesting papers:—'Animal Symmetry and the Differentiation of Species,' by Prof. S. J. Hickson; 'Relationship between the Geographical Distribution of Megalithic Monuments and Ancient Mines,' by J. W. Perry and Prof. G. E. Smith; 'Notes on some Palaeozoic Fishes,' by D. M. S. Watson and H. Day; 'A Change in the Habits of the Black-Headed Gull,' by T. A. Coward; 'The Money Cowry as a Sacred Object among North American Indians,' 'The Aztec Moon-cult and its Relation to the Chank-cult of India,' 'The Geographical Distribution of the Shell-Purple Industry,' 'Shell-Trumpets and their Distribution in the Old and New World,' by J. Wilfred Jackson; 'The Geographical Distribution of Terraced Cultivation and Irrigation,' by W. J. Perry.

The death took place in Edinburgh Infirmary on August 27th of Dr. C. T. Clough of the Geological Survey of Scotland. He was collecting specimens at the railway near Manuel, West Lothian, on Wednesday, and was run over by a passing train. Both his legs had to be amputated. Dr. Clough was for many years engaged in the geological survey of North-West Yorkshire, especially in the Sedbergh, Wensleydale and Upper Teesdale districts. The earliest Yorkshire publication which bears his name was issued as long ago as 1877. In 1883 he completed the map of the Angram district. He has written much upon the windyke of Upper Teesdale. In the service of the Geological Survey he had attained to the rank of district geologist in charge of the work of revision of the map. The circumstances of his death will remind geologists of that of another famous Yorkshire geologist, Hugh Strickland, Professor of Geology at Oxford, who was killed many years ago by being knocked down by a train while he was collecting fossils on the railway banks near Doncaster. —(*Yorkshire Observer*).

Books for Sale.

(Mostly from the Library of a Yorkshire Naturalist, recently deceased. The books are as new, and the prices asked are, in most cases, less than half the published price).

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No. 717

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THE NATURALIST.

A MONTHLY ILLUSTRATED JOURNAL OF
NATURAL HISTORY FOR THE NORTH OF ENGLAND.

EDITED BY

T. SHEPPARD, M.Sc., F.G.S., F.R.G.S., F.S.A.Scot.,
THE MUSEUMS, HULL;

AND

T. W. WOODHEAD, Ph.D., M.Sc., F.L.S.,
TECHNICAL COLLEGE, HUDDERSFIELD.

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NOTES AND COMMENTS.

BRITISH ASSOCIATION.

The Eighty-sixth Annual Meeting of the British Association was held between September 5th and 9th. Difficulties of railway travelling, combined with the fact that so many men are now employed on work of national importance, resulted in the attendance being smaller than usual—there being 826, as compared with 1439 at Manchester last year. The attractions for the ‘hangers-on’ of the British Association, were absent. Visits to works were dispensed with; there were no garden parties, and no river trips. As the Mayor told us, and as we found out, Newcastle was a ‘prohibited area,’ and the various works were all closed to visitors, with notices outside ‘No admittance except on business,’ and not always even then!

SCIENCE AND WAR.

Still it did not necessitate visits to works to show to what a great extent a certain district is doing its share of work in the present national crisis. It was patent everywhere. And it was some satisfaction to the visitors to feel that behind all this vast multitude of manufactures of war materials, there was the trained scientist:—the nature of the explosives, the construction of the shells, the manufacture of the guns, the building of ships—aerial and marine; were all the result of organized science. The only regret one has is that it is necessary in this twentieth century that the best brains of the country should be put to such a use.

However, the fact of the members attending, and the nature of their discussions, demonstrated that the decision to continue these annual conferences was a wise one. There is no question that in future, the necessity of giving science its proper position will be recognised. Its great neglect, by this country, in the past, has almost proved a national calamity. The British Association may certainly be looked upon as the hub of British science, and anything in the way of retarding scientific progress, at this juncture, would be deplorable.

In almost every section, it was shown that science could play its part in the country's welfare. The papers read at the sections devoted to Mathematics, Chemistry, Geology, Geography, Engineering, Physiology, Botany, Agriculture, etc., clearly indicated the variety of ways in which science could be, and is being, placed at the service of the state.

THE PRESIDENT'S ADDRESS.

The President, Sir Arthur Evans, delivered an address on ‘New Archæological lights on the Origins of Civilisation in Europe,’ a title of peculiar significance at the present time.

The last time archæology was the theme of the President's address was in 1897, when Sir John Evans, the father of Sir Arthur, presided at the Toronto meeting. There is no doubt that Sir Arthur Evans's address was quite equal to the high standard attained by his predecessors, but what with the nature of the hall (which the Mayor described as of 'Neolithic' architecture), and the effect caused by the half-filled seats; the quiet voice of the President could not be heard, and we doubt very much if anybody in that vast audience heard a tenth of the address. The present writer, who was on the platform quite near to the President, adopted with his neighbours, the expression of an interested listener, albeit he heard but little. It seems a pity that the old 'Red Lion Club,' in connection with the British Association, has been discontinued. At its meetings, the members were able to practice 'roaring like a lion,' and whether there is anything in the roar or not, it is much better appreciated by an audience than is the bleating of a lamb, however intellectual.

NORTHERN ANTIQUARIES.

Sir Arthur Evans paid a tribute to the work of the local antiquaries in connection with the Roman remains of the north of England; and then summarised recent researches among the early European civilization, in which he has himself played an important part. After dealing with this point, the President concludes with a few words as to the future. He says:—'But can we yet despair of the educational future of a people that has risen to the full height of the great emergency with which they were confronted? Can we doubt that, out of the crucible of fiery trial, a New England is already in the moulding? We must all bow before the hard necessity of the moment. Of much we cannot judge. Great patience is demanded. But let us, who still have the opportunity of doing so, at least prepare for the even more serious struggle that must ensue against the enemy in our midst, that gnaws our vitals. We have to deal with ignorance, apathy, the non-scientific mental attitude, the absorption of popular interest in sports and amusements.'

THE GOVERNMENT AND MUSEUMS.

And what, meanwhile, is the attitude of those in power—of our Government, still more of our permanent officials? A cheap epigram is worn threadbare in order to justify the ingrained distrust of expert, in other words of scientific, advice on the part of our public offices. We hear, indeed, of 'Commissions' and 'Enquiries,' but the inveterate attitude of our rulers towards the higher interests that we are here to promote is too clearly shown by a single episode. It is those higher interests that are the first to be thrown to the wolves. All are agreed that special treasures should be stored in positions

of safety, but at a time when it might have been thought desirable to keep open every avenue of popular instruction and of intelligent diversion, the galleries of our National Museum at Bloomsbury were entirely closed for the sake of the paltriest saving—three minutes, it was calculated, of the cost of the War to the British Treasury ! That some, indeed, were left open elsewhere was not so much due to the enlightened sympathy of our politicians, as to their alarmed interests in view of the volume of intelligent protest. Our friends and neighbours across the Channel, under incomparably greater stress, have acted in a very different spirit.

SCIENCE AND EDUCATION.

It will be a hard struggle for the friends of Science and Education, and the air is thick with mephitic vapours. Perhaps the worst economy to which we are to-day reduced by our former lack of preparedness is the economy of Truth. Heaven knows !—it may be a necessary penalty. But its results are evil. Vital facts that concern our national well-being, others that even effect the cause of a lasting Peace, are constantly suppressed by official action. The negative character of the process at work which conceals its operation from the masses makes it the more insidious. We live in a murky atmosphere amidst the suggestion of the false, and there seems to be a real danger that the recognition of Truth as itself a Tower of Strength may suffer an eclipse. It is at such a time and under these adverse conditions that we, whose object it is to promote the Advancement of Science, are called upon to act. It is for us to see to it that the lighted torch handed down to us from the Ages shall be passed on with a still brighter flame. Let us champion the cause of Education, in the best sense of the word, as having regard to its spiritual as well as its scientific side. Let us go forward with our own tasks, unflinchingly seeking for the Truth, confident that, in the eternal dispensation, each successive generation of seekers may approach nearer to the goal.'

ORGANISATION OF THOUGHT.

Prof. A. N. Whitehead, in his address to the Mathematical and Physical Science Section, deals with the Organisation of Thought. He tells us 'It is an organisation of a certain type which one will endeavour to determine. Science is a river with two sources, the practical source and the theoretical source. The practical source is the desire to direct our actions to achieve predetermined ends. For example, the British nation, fighting for justice, turns to science, which teaches it the importance of compounds of nitrogen. The theoretical source is the desire to understand. Now I am going to emphasise the importance of theory in science. But to avoid

misconception I most emphatically state that I do not consider one source as in any sense nobler than the other, or intrinsically more interesting. I cannot see why it is nobler to strive to understand than to busy oneself with the right ordering of one's actions. Both have their bad sides; there are evil ends directing actions, and there are ignoble curiosities of the understanding. The importance, even in practice, of the theoretical side of science arises from the fact that action must be immediate, and takes place under the circumstances which are excessively complicated. If we wait for the necessities of action before we commence to arrange our ideas, in peace we shall have lost our trade, and in war we shall have lost the battle.'

CHEMICAL SCIENCE.

Prof. G. G. Henderson reviewed the recent advance made in Chemical Science. 'The period which has elapsed since the last meeting of the Section in Newcastle has witnessed truly remarkable progress in every branch of pure and applied chemistry. For fully fifty years previous to that meeting the attention of the great majority of chemists had been devoted to organic chemistry, but since 1885 or thereabouts, whilst the study of the compounds of carbon has been pursued with unflagging energy and success, it has no longer so largely monopolised the activities of investigators. Interest in the other elements, which has been to some extent neglected on account of the fascinations of carbon, has been revived with the happiest results, for not only has our knowledge of these elements been greatly extended, but their number also has been notably increased by the discovery of two groups of simple substances possessed of new and remarkable properties — the inert gases of the argon family and the radio-active elements.

MATHEMATICS AND PHYSICS.

In addition, the bonds between mathematics and physics on the one hand and chemistry on the other have been drawn closer, with the effect that the department of our science known as physical chemistry has now assumed a position of first-rate importance. With the additional light provided by the development and application of physico-chemical theory and methods, we are beginning to gain some insight into such intricate problems as the relation between physical properties and chemical constitution, the structure of molecules and even of atoms, and the mechanics of chemical change; our outlook is being widened, and our conceptions rendered more precise. Striking advances have also been made in other directions. The extremely difficult problems which confront the bio-chemist are being gradually overcome, thanks to the

indefatigable labours of a band of highly skilled observers, and the department of biological chemistry has been established on a firm footing through the encouraging results obtained within the period under review. Further, within the last few years many of our ideas have been subjected to a revolutionary change through the study of the radio-active elements, these elusive substances which occur in such tantalisingly minute quantities, and of which some appear so reluctant to exist in a free and independent state that they merge their identity in that of another and less retiring relative within an interval of time measured by seconds. In truth, if Rip Van Winkle among chemists were to awake now after a slumber of thirty years, his amazement in coming into contact with the chemistry of to-day would be beyond words.'

GEOLOGY AND THE WAR.

In Prof. W. S. Boulton's presidential address to the Geological Section, as well as in several papers discussed in the Section, it was shown that geologists, as well as chemists, engineers and metallurgists, have become keenly exercised as regards the operation of their respective sciences, not only to the making of munitions of war, but to the advancement of industry after the war.

THE GEOLOGICAL SURVEY.

In reference to the poor financial help given to the Geological Survey, Prof. Boulton makes some very pointed remarks. He says that 'In any discussion of the present outlook of economic geology in Britain we naturally turn first to the work of the Geological Survey. When in 1835 the National Survey was founded with De la Beche as its first Director, it was clearly realised by the promoters that its great function was to develop the mineral resources of the Kingdom, which involved the systematic mapping of the rocks, and the collection, classification, and study of the minerals, rocks, and fossils illustrative of British Geology. For upwards of eighty years this work, launched by the enthusiasm and far-sighted genius of De la Beche, has been nobly sustained. We geologists outside the Survey are ever willing to testify to the excellence, within the Treasury-prescribed limits, of the published maps and memoirs. Indeed, it would be difficult to name a Government service in which the officers as a body are more efficient or more enthusiastic in their work.'

FALSE ECONOMY.

We have ceased to hear rumours of Treasury misgivings as to whether the Geological Survey can justify, on financial grounds, its continued existence. When we call to mind the untold wealth of information and fact in the published maps,

sections, and memoirs, the enormous value of such knowledge to mining, civil engineering, agriculture, and education, and indirectly to the development of the mineral resources of the whole Empire, and then reflect that the total annual cost of the Geological Survey of England, Wales, Scotland, and Ireland is somewhere near 20,000*l.*—less, that is to say, than the salary and fees we have been accustomed to pay every year to a single Law Officer of the Crown—we should find it difficult to bear patiently with any narrow or short-sighted official view. But the time is opportune, I think, when we may ask whether the Survey is fulfilling all the functions that should be expected of it; whether it is adequately supported and financed by the Government; whether it should not be encouraged to develop along lines which, hitherto, from sheer poverty of official support, have been found impracticable.’

Prof. Boulton covers a wide field in his address, other subjects reviewed being the Development of Concealed Coalfields, Geological Features of the Visible Coalfields which bear upon the Distribution and Structure of Concealed Coalfields; the Need for a Systematic Survey by Deep Borings; Chemical and Microscopical Investigation of Coal Seams; Geology of Petroleum; Underground Water, and Organisation of Expert Knowledge.

ZOOLOGICAL SECTION.

An idea of the nature of Prof. E. W. MacBride’s presidential address to the Zoological Section may be gathered from his first paragraph. ‘All of us are agreed that our country has entered into this conflict with clean hands, and is striving to attain high and noble aims; but many of us think that the attainment of those aims has been to a considerable extent hindered by a neglect on the part of our rulers and organisers to take advantage of the results obtained by scientific research, and also by their neglect to provide adequate means for the continuance of that research. Hence the Organising Committee of the Section has very wisely sought to encourage the production at this meeting of papers setting forth those results of zoological research which have either a direct economic value as bearing on the rearing of useful animals, or an indirect economic one as teaching us how to combat harmful parasites both of animals and man. But we must never forget that whilst the justification of a science in the long run—at any rate in the eyes of the many—may reside in the value of its applications,

LAWS OF INHERITANCE—

yet the first condition of its assured progress is the resolute adherence to the investigation of its underlying laws; and surely of all these laws the most fundamental in the case of biology are the laws of inheritance. These laws, as we are

all aware, have been the subject of the most intensive research, especially during the last sixteen years. In these researches, however, the method which has been almost exclusively employed has been that of selective mating between different strains, and attention has been too exclusively focussed on the adult characters of the offspring. Another set of researches which may eventually throw a good deal of light on the laws of inheritance have been going on simultaneously with the experiments on cross-breeding. These researches have had as their object the determination of the laws governing the development of the germ into the adult organism, and researches of this kind are generally denoted by the term *EXPERIMENTAL EMBRYOLOGY*. Even in this time of storm and stress, it seemed to me to be not inappropriate if I were to endeavour in a necessarily brief sketch to take stock of the positive results which have been gained as the harvest of thirty years' work in this branch of zoology.' He does so.

ANTHROPOLOGICAL SECTION.

Dr. R. R. Marett, in his address to the Anthropological Section, dealt with Anthropology and University Education. He showed that in his section, also, knowledge could be put to good service in the interests of the nation. 'We have had some experience at Oxford in the anthropological training of officers for the public services. The Sudan Probationers, by arrangement with the Governor-General of the Sudan, have received systematic instruction in Anthropology for a number of years. Again, members of the University and others serving or about to serve in Africa have more recently attended our classes in considerable numbers, and with the express sanction of the Colonial Office. If the Indian Probationers have so far had less to do with Anthropology, it is simply because the programme of studies which they are expected to carry out within the space of a year is already so vast. The following are some of the impressions I have formed as to the most suitable way of training students of this type. In the first place, each set of the officers destined for a particular province should be provided with a course in the ethnography of their special region. In the second place, all alike should be encouraged to attend some of the general courses provided by the School, if only in order that they may associate with the regular students, and so gain insight into the scientific possibilities of the subject. Thirdly, such official students ought not to be subjected to any test-examinations in Anthropology at the end of their course, unless they elect on their own account to enter for the ordinary examinations of the School.'

PHYSIOLOGICAL SECTION.

Even in his address to the Physiological Section, Prof. A.

R. Cushny, in dealing with 'The Analysis of living matter through its reactions to poisons,' refers to the past neglect of his special branch of science. He states he wishes to discuss an aspect of pharmacological investigation which has not been adequately recognised even by the pharmacologists themselves and which it is difficult to express in few words. 'In recent years, great advances have been made in the chemical examination of the complex substances which make up the living organism, and still greater harvests are promised from these analytic methods in the future. But our progress so far shows that while general principles may be reached in this way, the chemistry of the living organ, like the rainbow's end, ever seems as distant as before. And, indeed, it is apparent that the chemistry of each cell, while possessing general resemblances, must differ in detail as long as the cell is alive. No chemistry dealing in grammes, nor even microchemistry dealing in milligrammes, will help us here. We must devise a technique dealing with millionths to advance towards the living organism. Here I like to think that our work in pharmacology may perhaps contribute its mite; perhaps the actions of our drugs and poisons may be regarded as a sort of qualitative chemistry of living matter. For chemical investigation has very often started from the observation of some qualitative reactions, and not infrequently a good many properties of a new substance have been determined long before it has been possible to isolate it completely and to complete its analysis.'

BOTANICAL SECTION.

In his address to the Botanical Section, Dr. A. B. Rendle pointed out that, in connection with the war, botanists have been able to render helpful service on lines more or less directly connected with their own science. Even in Botany, a greater need for proper scientific training is apparent. 'During the past year, there has been considerable activity in the collecting of wild specimens of various species of medicinal value, frequently, one fears, involving loss of time and waste of plants owing to want of botanical or technical knowledge and lack of organisation. In this connection, a useful piece of botanical work has been recently carried out by Mr. W. W. Smith, of Edinburgh, on the collection of sphagnum for the preparation of surgical dressings. The areas within the Edinburgh district have been mapped and classified so as to indicate their respective values in terms of yield of sphagnum. By the indication of the most suitable areas, the suitability depending on extent of area, density of growth, freedom of admixture of grass or heather, as well as facility of transport and provision of labour, the report is of great economic value. The continuity of supply is an important question, and one which should be borne in mind

by collectors of medicinal plants generally. And while it is not the most favourable time to voice the claims of protection of wild plants, one may express the hope that the collector's zeal will be accompanied by discretion.'

EDUCATIONAL SCIENCE SECTION.

The Rev. W. Temple, in his address to the Educational Science Section, touches an interesting topic. He says, 'The present interest of Englishmen in education is partly due to the fact that they are impressed by German thoroughness. Now let there be no mistake. The war has shown the effectiveness of German education in certain departments of life, but it has shown not only its ineffectiveness but its grotesque absurdity in regard to other departments of life, and those the departments which are, even in a political sense, the most important. In the organisation of material resources, Germany has won well-merited admiration, but in regard to moral conduct, and with regard to all that art of dealing with other men and other nations which is closely allied to moral conduct, she has won for herself the horror of the civilized world. If you take the whole result, and ask whether we prefer German or English education, I, at any rate, should not hesitate in my reply. With all its faults, English education is a thing generically superior to the German. It is to perfect our own, and not to imitate theirs, that we must now exert ourselves.'

AGRICULTURAL SECTION.

Dr E. J. Russell, in his address to the Agricultural Section, demonstrates the necessity for a scientific training in agricultural matters. 'We are met this year under peculiar conditions such as may never recur in our history. We have had a demonstration, more striking than ever before, of the vital part that agriculture plays in the life of the community; we have seen how in time of war, the supply of food might easily become the factor determining the issue, and it is already clear that in time of peace a vigorous rural civilisation is indispensable to the stability of the social structure of the nation. I am going to deal with the possibilities and the prospects of increased crop production, which, both in its narrow aspect as a source of national wealth, and its wider significance as the material basis of rural civilisation, must always remain one of the most important of human activities. We may take it as an axiom that the developments of the future will in the main grow out of those of the past. There are no breaks in the continuity of progress in agriculture; the farmer's unit of time—the four-or-five-year rotation—is too big to allow of sudden jumps and short cuts from one stage to another; and so, if we want to find the most promising lines of progress for the future, we must first discover the lines along which progress has been made in the past.'

GEOGRAPHICAL SECTION.

Still on the same theme, Mr. E. A. Reeves, in his presidential address, on 'The Mapping of the Earth, Past, Present and Future,' states: 'This is a great testing time—a crisis in our history when theories are put to practical trial, and I fear many of them will be weighed in the balances and found wanting. Scientific training is specially being tested, and almost every branch of human knowledge has, either directly or indirectly, been called upon to do its utmost in connection with the great War. This is no less true of surveying and geography generally. There has always been of necessity a close connection between military operations and map-making, and it is not too much to say that one of the essential conditions of successful warfare is a good and accurate knowledge of the geographical features of the theatre upon which the operations have to be carried out. Many a battle has been lost in the past, as we ourselves know to our cost, through imperfect topographical or geographical knowledge. The South African Campaign, without referring to any others, produces more than enough evidence of the serious results ensuing from imperfect maps; and at the present time the general staffs of all combatants seem more than ever alive to the importance of this subject.

WAR AND MAPS.

There are various ways in which this War will affect the map-maker; not only will new boundaries have to be surveyed and laid down; but outside of Europe districts will have to be mapped of which little information has hitherto existed, so that, after all is over, our present maps and atlases will be out-of-date, and the publisher will find himself called upon to produce new ones.

It therefore appears to me that this is a suitable occasion for taking stock of our position, and I will endeavour to give you:

- (1) A brief general summary of what has been done in the past towards the mapping of the earth's surface;
- (2) a sketch of how things stand at the present time; and
- (3) finally add a few remarks upon future work, specially as regards instruments and methods.' He does.

ECONOMIC SCIENCE.

In this Section, the President, Prof. A. W. Kirkaldy, devotes his address to 'Some Thoughts on Reconstruction after the War,' and he also deals with the following questions in his address:—'Attempted Forecast of our Industrial Future,' 'The Need for National Organisation,' 'Industrial Organisation.' He points out that when the British Association held its

meeting in Australia, in August 1914, 'the war cloud had only just burst, and thus the distinguished economist who occupied the Presidential Chair of this Section could deal freely with the normal economic problems of old and young communities, disregarding the new and disastrous problems resulting from a great world war. 'Last year, however, my predecessor was compelled to take account of the critical events of the preceding twelve months. The war which so many presumably well-informed people expected to be over in less than a year is still with us, and the economic difficulties have increased in number and intensity. It is true that one of our statesmen has declared that the war may end sooner than some of us think—a not very hopeful utterance, but still I feel warranted from various signs in dealing in this address rather with the period of reconstruction after the war than with the existing situation, for, owing to kaleidoscopic changes, what is written as to present conditions in August will probably be quite out of date by September, whilst the work of reconstruction may last for the best part of a century, and continue to affect the well-being of the community throughout succeeding history.'

ENGINEERING SECTION.

The same tone is to be found in Mr. Gerald Stoney's address to the Engineering Section. He points out that 'At such times as these, the mind naturally turns to problems to be considered both at the present time and after the war, and in considering such problems a review of some of the errors committed in the past is most necessary. The general complaint is that University and College men are too theoretical and not practical. It is the usual thing for a bad workman to blame his tools, and is it not because employers do not know how to make use of such labour that they utilise it to such a small and imperfect extent? Things are very different in some other countries with which we have competed in the past, and with which there will be in all probability still fiercer competition in the future. There we find the fullest use made of highly educated scientific labour.'

SCIENCE AND SALARIES.

How many engineering firms in this district have a skilled chemist on their staff, and what percentage of these pay him a decent salary? And how many heads of firms have sufficient chemical knowledge to appreciate the work of and utilise the services of such a man because, unless there is appreciation of the work done by such a man his services are useless and he becomes discouraged, generally finding himself up against the blank stone wall of there being no appreciation of his services, and yet chemical problems are continually cropping up in engineering work. There is the question of the supply of materials; as a rule, the manufacturer trusts to the name of

the contractor and assumes that he gets materials of the composition and purity he ordered. Every now and then, something goes wrong, and the question arises, why? Without a chemist to analyse the material, it is often most difficult to say. Apart from this question of the analysis of raw or partly manufactured materials received, there is the chronic question as to the mixtures of the metals in both the metal and brass foundry, and large economies can be effected by systematic analyses.'

POPULAR SCIENCE LECTURES.

The Conference of Delegates, at the request of the Council of the British Association, discussed the Report of the Committee on Popular Science Lectures. A valuable report, summarising about 1,500 replies from various societies, has been drawn up by Prof. R. A. Gregory, who was thanked for a useful piece of work. It was pointed out that 'At the meeting of the Council in June 1916, representations were made by the Organising Committee of Section L (Educational Science) that much less attention is given to popular lecturing now than was formerly the case; and it was suggested that efforts should be made to promote increased public interest in science by means of such lectures. The Council, therefore, appointed a Committee representative of all the Sections of the Association to institute inquiries into this subject and prepare a Report upon it. Many local Scientific Societies, Universities, University Colleges, and similar institutions have organised popular science lectures; and the Committee has endeavoured to secure the results of the experience obtained, with the object of discovering the elements of success or failure.' There is no doubt that the discussion which took place at the Conference of Delegates, where were many men with practical experience, will help the Committee in its work.

INTEREST IN POPULAR LECTURES.

In reply to the question, *Has public interest in popular science lectures increased or decreased in your district during the past ten or twenty years?* the report says; 'The analysis of replies to this question is inconclusive. About one-third of the correspondents report that interest has increased, another third that it has decreased, and the remaining third that it has remained stationary or no decided change has been noticed. Museums mostly report an increase of interest, and technical institutions a decrease. No general conclusion can be derived from the replies from scientific societies, in which so much depends upon the energy of the secretary and the constitution of the committee. For example, the Birmingham and Midland Institute Scientific Society reports an increase, while the Birmingham Natural History and Philosophical Society records a decrease.'

LECTURES IN THE FUTURE.

The public science lectures of the present times need not be of the same kind, or on the same subjects, as those of a past generation, but should be adapted to more modern needs and interests. Above all they should be intended for the people as a whole, and not for students or others who propose to devote systematic attention to the subjects of the lectures or devote their careers to them. This distinction is not recognised in the subjoined remarks by Mr. C. F. Procter (Hon. Sec., Hull Scientific and Field Naturalists' Club), which represent the views of many scientific societies as to the present position, yet it is most important.

A WAIL FROM HULL.

Mr. Procter says: 'Scientific lectures can only be made popular in the sense that you attract the crowd of unscientific people, with a profusion of experiments, or, failing that, lantern illustrations. People will flock to the Egyptian Hall and are vastly entertained and educated a little by an exhibition of what is often clever scientific acrobatics. Human nature loves to see what it cannot understand, and twenty years ago represents a period when the commonplaces of science were a wonderland to the average mind. The trend of education has altered that, and has sharply divided the same people into a minority of scientific enthusiasts who "ask for more," and a majority of indifferents who remain cold at a display of the old elementary stuff. Education (and that includes very largely the popular science lectures of the past) has created in this, as in all arts, a small aristocracy of intellect, or rather, comparatively small. These are not satisfied with anything that can possibly be popular. They are long past that, but will feverishly attend anything which proposes further to explore the deep water. The crowd—the man in the street and his women-kind—has had its wonder-bump excised in the school laboratory. Modern sensationalism in amusement and the plethora of scrappy yet crisp literature (which religiously exploits every new thing, scientific or otherwise, that may entertain) has calloused this excision. The application of the film pictures to microscopy, etc., is about the only way to popularise science lectures, but—why bother? We cannot all be men of science, and the present system provides that any who get the call may answer it, whilst popular lectures only attempt to entertain individuals of an age who are already past the slightest hope of ever being useful scientists. The proper thing is already being done by our schools, universities, and University Extension lecturers with our budding professors.'

A SUMMARY.

The following is a summary of the Committee's report :—

(1) Many local societies arrange for the delivery of occasional popular or semi-popular science lectures, but the audiences are mostly made up of members and their friends.

(2) In most places there is a small circle of people interested in scientific work and development, and sufficient means exist to enable them to extend their acquaintance with diverse branches of natural knowledge, but the great bulk of the community is outside this circle and is untouched by its influence.

(3) Popular lectures on scientific subjects do not usually attract such large audiences as formerly in most parts of the Kingdom. To make a wide appeal to the general public the same principles of organisation, advertisement, and selection of lecturer and subject must be followed, as are adopted by agents of other public performances.

(4) Increase in the number of educational institutions has provided for the needs of most persons who wish to study science, either to gain knowledge or prepare for a career. Other people seek entertainment rather than mental effort in their leisure hours, and they require subjects of topical interest, or of social and political importance, to attract them to lectures.

(5) Few popular lectures pay their expenses, and scarcely a single local society has a special fund upon which it can draw in order to meet the cost involved in the provision of a first-rate lecturer and adequate advertisement.

(6) Expenses of public lectures are usually paid from (a) general funds of local societies; (b) college or museum funds; (c) rates; (d) education grants; or (e) Gilchrist and other trusts.

(7) After the war there will be a new public for lectures and courses on a wide range of subjects; but one of the main purposes of the lectures should be to show as many people as possible that they are personally concerned as citizens with the position of science in the State, in industry, and in education.

PROF. G. A. LEBOUR'S ADDRESS.

In his presidential address to the Conference of Delegates, Prof. G. A. Lebour dealt with 'Co-operation.' He pointed out that all Field Clubs, at one period or another, probably 'have been the means of encouraging and fixing the scientific bent of minds which without their help would have been lost to science. I refer specially to those many remarkable men who, without special training, often without any but the slightest elementary education, have done so much towards the advancement of Biology and Geology. Every district has produced

excellent naturalists of this type, and in most cases their success has been greatly due to the opportunities given by local Field Clubs. . . Clubs like these gave the requisite assistance to young men of sagacity and intuition, and started them on a career of fruitful observation and discovery. I am anxious to claim the utmost credit in the past for Field Clubs in the performance of functions such as these. The question now arises : are these functions performed with equally good results at the present time ? I think that anyone who has had long and practical acquaintance with the working of such associations will, on consideration, answer this question in the negative.'

FIELD CLUBS.

While there is, at the present time, a slight falling off in the attendances at the meetings and excursions of some of our Field Clubs, we hardly agree with Prof. Lebour in considering that they are not doing such good work at the present time. A variety of circumstances exist to cause an apparent lack of interest just now, but these will be removed. The encouragement and help given to young men is quite as great now, if not greater, than before ; only the young men are not there in such great numbers, for obvious reasons. But they will be, probably in greater numbers than ever later on. Young minds moulded at Field Club Meetings frequently result in the formation of eminent naturalists. No doubt, the greater proportion of the audience — among which were many prominent naturalists—listening to Prof. Lebour's address, received their first introduction to natural history at these meetings.

COLLEGES AND FIELD CLUBS.

Prof. Lebour goes on to say, 'A turning-point in the history of local societies, and more especially of those of the Field Club character, came some forty or fifty years ago. It coincided, I firmly believe, with the great increase in the number of subjects taught to the masses of the people and with the establishment of college after college and university after university in every part of the country. We are here concerned with the scientific results of the new order of things. One of these results was a marked—though some will think by no means sufficiently marked—increase in the number of young men trained in the principles of science and practised in some branch of it. This was all to the good. A class of potential workers in science had come into being. At the same time, however, a still larger class had been turned into the world with what may not unjustly be termed a smatter of science.

SMATTERERS.

It need not be insisted on that the smatterers were not by any means always the less noisy, the less self-assertive, or the less pretentious of these two sets of men. It could scarcely be

otherwise. What was the effect of this change on the provincial Field Clubs? The newly created class of workers were soon busy at their professional labours—too busy for the most part to become active members of the clubs. The smatterers on the other hand either joined the clubs in a condescending manner or thought themselves too good for them. The influence of this on the clubs was a curious one. The old genuine Field Club naturalist was no smatterer. What he knew, he knew well, from personal observation and from hard private reading, carried on often at great sacrifice, for the love of nature and knowledge. The new smatterers were not to his taste; their long words and arrogance drove him to silence and spoilt for him the old feeling of club brotherhood and equality as leaners and seekers of the less academic days of the past. His modesty produced diffidence. Only the more sturdy and independent members resisted and went on as before. The others gradually dropped off. The character of the club had sensibly changed.'

To some extent, we must agree here. There is no question that the existence of a University College in a town, members of which, quite properly, join the Field Club, alters the nature of the meetings. The amateur does not care to ask what may be looked upon by the professional scientist as simple or silly questions. In a way, this may be a disadvantage, but such disadvantage should surely be more than counterbalanced by the superior methods advocated by the trained scientist. The members specialise more—which is an advantage—the 'all-round' naturalist, as a result of the growth of knowledge in all branches, becomes more and more a rarity. Year by year, such a man more resembles a miracle. Still, those who do not wish to take advantage of this special knowledge, can do what actually has been done in one Yorkshire town, viz., form another society and keep it among themselves!

ORIGINAL OBSERVATIONS.

Prof. Lebour goes on to say, 'Again, in the course of years all the flowers, beetles, butterflies, birds and beasts of a limited tract of country have practically been gathered. The lists of all the larger objects are complete or nearly so. Only on the luckiest occasion, can even a new variety be found. Hence the purposes which actuated the eager searchers of the past are much diminished in force. Only microscopic organisms are left to be sought for. These hitherto unpopular creatures represent almost the only remaining quarry.' On this point we can hardly agree with the President! There are hundreds of forms of life, by no means microscopic, which want investigation. It is not so long ago that a volume dealing with the Diptera of Northumberland and Durham, was issued by the

late W. J. Wingate. It must have contained hundreds of additions to the fauna of the area. Other 'neglected orders' would prove similarly beneficial; in fact, during the Newcastle meeting, a well-known worker showed us a note-book containing quite a large list of additions to the fauna of the Newcastle district, and the species were not microscopic. Encouragement should be given to young people to study the usually neglected forms of animals and plants. As will be seen from *The Naturalist* in recent years, good will result.

COMPLIMENTARY TO YORKSHIRE.

Prof. Lebour proceeds:—'I have now enumerated and briefly commented on some of the chief factors which, in the past half-century or so have, as it seems to me, been active in the evolution of the Field Club type of scientific society. The Field Clubs are no longer quite what they were. In some respects they have improved, in others, they have deteriorated. On the whole, they are perhaps more scientific than they used to be. I think they produce rather less original work properly so called. They perhaps contain more well-known scientific names in their lists of members, but a smaller number of their members remind one of the enthusiastic, self-taught, coadjutant crowds of the past. They are less popular in the best sense of that word. Evolution, here as elsewhere, has been of two kinds—both progressive and retrogressive. If it be admitted that I am in any way right in the views I have endeavoured to lay before you, we may now proceed to consider whether some means can be found by which to make the most of the progress and to check or remedy the decadence which has set in. It is pleasing to note that already methods have been adopted by several of our societies admirably calculated to do good in the right directions. I wish to avoid invidious distinctions, but, as an instance, the system of fruitful and promising co-operation amongst local societies in Yorkshire, so capably conducted by our indefatigable Vice-President, Mr. Sheppard, may be referred to without fear of criticism. In some form of Co-operation I believe the remedy to be sought for lies.' Prof. Lebour concluded by showing ways in which Field Clubs can accomplish valuable scientific work, these being on the lines of the Committees of the Yorkshire Naturalists' Union.

THE FISH SUPPLY.

Professor W. A. Herdman, in a paper on the exploitation of British inshore fisheries, urged the cultivation of these sources of food supply, particularly at the present moment, when so many areas for deep sea fishing were closed owing to the exigencies of the War. Very profitable industries might be established around the coast, giving employment to the fishermen, and adding to the food supply of the country. As an example of

the good results obtained, he quoted the local sprat fishery established by local public spirit, ingenuity, and enterprise at Morecambe. During the height of the fishery fully seventy tons per day were landed in the winter. A ton of sprats averaged 130,000, so that close on nine million sprats were captured per diem, and this went on day by day without any diminution of the fish. In his view, it would probably be just as important for some time after the war to prevent many from leaving this country, and for other reasons, such as the employment of men and the production of food, it was obviously desirable that home production should be organised and stimulated. The Chairman said that Professor Herdman's illustrations of what had been accomplished at Morecambe and the Isle of Man were samples of what he had urged upon the Government to do generally, and what could be done on a much larger scale if the Treasury could only be persuaded to disgorge at a more generous rate for the home production of food supply.

DEPOPULATION OF THE FISHING VILLAGES.

An interesting survey of the coastal fisheries of Northumberland, embodying the results of his investigations during the last twenty years, was given by Professor A. Meek. He said it was a matter of considerable gratification that the regulations had given not merely satisfaction to the authorities who had to enforce them, but to the fishermen themselves. The only reasonable objection that the inshore fishermen had to their more successful deep-sea rivals was with regard to the white fishing. But the longshore fishermen all told grave stories about the destruction of fish by the trawlers, the killing of young fish, and destroying the fishing grounds. When they came to inquire carefully into the question, they found the main cause of complaint was that the deep sea fisherman was really a successful competitor in the market. The war conditions had, however, given the inshore fisherman a chance with white fish. He felt, however, that in normal times it would pay the inshore fishermen to take a large share in the white fishing. The solution of the problems of the inshore fishermen lay deeper than this. They must not only preserve and extend their inshore fisheries, but must do something to encourage the longshoremen to remain in the villages. There was a marked tendency to the depletion of their seaside villages. It was deplorable, and unless we took steps to arrest it there would be wide areas along the coast destitute of these interesting and important villages in the near future.'

THE CHARACTERISTICS OF COAL.

A joint session of the Chemistry and Geology Sections was held to consider the investigation of the chemical and geological characters of different varieties of coal, with a view to their

most effective utilisation as fuel, and to the extraction of by-products. In the course of the discussion, Professor Kendall, of the University of Leeds, said that as a geologist he drew a distinction between coal and coal seams. He deprecated the method of the chemist in taking samples for analysis. The chemist simply contented himself by taking a portion and assuming it was a fair sample of the bulk. That, in his view, was not sufficient, because coal, even in the same seam, varied from top to bottom. Broadly speaking they found coal in two varieties—in bright lustrous layers and in dull charcoal layers. These layers were probably of different botanical constituents but it was not so much a difference in plants perhaps as the fact that the plants were probably submitted to different processes in the course of their accumulation. Chemical analysis of these two types of coal had produced very different results.

BRIGHT AND DULL COAL.

It was assumed that the bright layers consisted of the bark of trees, and that the dull layers were composed of twigs, smaller branches, leaves, and so on. When examined chemically it was very material. Ash was an important factor in connection with the investigation of coal values. He particularly emphasised this, as insufficient discrimination had been paid to the method of sampling. He quoted a number of analytical results which had been obtained by his friends, from which he found that the brighter layers of coal gave a very low percentage of ash, and the dull a much higher percentage. The question then arose as to the composition of the ash. Professor Kendall referred to the experiments conducted by Dr. Garrett and Mr. Burton in connection with the origin of this extraneous matter, as to whether it was introduced by percolation. He urged the need of correlation between chemist and geologist in arriving at the true nature of coal. These investigations should be carried through a particular seam.

THE HANDBOOK.

‘The Official Handbook to Newcastle and District’ was well written and well illustrated, being prepared under the editorship of Messrs. G. B. Richardson and W. W. Tomlinson. It contains 190 pages. We regret, however, that the authorities did not consider it worthy of a more permanent cover than one of flimsy paper. *The Naturalist*, also, was very disappointed to find not a single paper on the geology, botany or zoology of the area. This seems all the more remarkable when it is remembered that the District is well represented in workers in various branches of natural science. The omission seems all the more unaccountable, for we read in the Preface, ‘in the articles describing industries the latest developments have necessarily been suppressed.’

ORNITHOLOGICAL OBSERVATIONS AND REFLECTIONS IN SHETLAND.*

EDMUND SELOUS.

THE Common Cormorant, though greatly outnumbered by the Shag, here, is still a Shetland bird. I saw some six or seven of them together a few days ago, and to-day I located another small colony in a bay on the north-eastern coast-line. They were assembled on some low rocks, which some of them would leave, from time to time, to disport themselves in the bay. Here they came into shallow water near the beach, diving all the while at more or less frequent intervals. Presumably they were fishing, yet they never had anything in their bills on coming up. One of them swam about amongst the long brown seaweed exposed by the tide as it sank, and it certainly seemed to me to be seizing hold of it, as the Eider Duck had done, but as the distance was greater in this case, I could not make so sure of it through the glasses. But the other day at a projecting point, which, according to the state of the tide, is either a peninsula or an island, I surprised one of these birds amongst a quantity of such seaweed and right in shore. Unfortunately it saw me and at once made out into the clear sea, but it would hardly have been where it was except for some purpose connected with the seaweed and so thick was this, and so shallow the water, which was quite filled up with it, that fish could hardly have swum there. It seems probable, therefore, that the Common Cormorant (which would probably mean the Shag also), as well as the Eider Duck, feeds to a certain extent either on this common brown seaweed itself or on something that it finds there which is not a true fish.

Both the Shag and the Common Cormorant are affectionate birds, but of the two I am inclined to think the latter the more so, since, though here it is much the less common of the two and it being now not the love season, yet it has, notwithstanding, contrived to bring more evidence of this under my notice. In the Shag, for instance, the conjugal tie seems now more or less in abeyance, but these Cormorants still swim in pairs and by sometimes coming very close indeed to one another, as also by diving and often emerging about the same time and not widely separated, and in other less definable yet unmistakable ways, show that they are mutually happy in each others society. There is certainly spousal attachment, and this may be exhibited in a way that seems almost playful, as near at any rate to that complex form of mentality as I have seen a bird get or look as if it had got, for I once saw one

* Made in 1911.

of a pair fly from the rocks to its mate in the water and come down almost, if not quite, upon it. It would have been quite if the other had not dived, and this, too, was done with a certain exuberance suggestive of a frolicsome spirit, the two birds seeming to be thoroughly pleased with one another. It is out of order, so far as I have seen, for a bird to join its mate in this fashion, and it struck me that there was a sufficient mutual consciousness of this to give something of a racy flavour to the performance. I admit, however, that in such a matter one may be widely mistaken, also I think that birds are often credited with a playful spirit when this cannot properly be said to obtain; indeed, there is more crediting, I think, with birds than with any other class of animal. Still, I maintain that there was a certain something and will leave it at that.

As befits its size, the Cormorant is less active and quick both in air and water than the Shag, its dive lacks the energy, its flight the lightness—at least the comparative lightness, of the latter, but *en revanche* and equally in accordance with these physical differences, there seems to be something larger and more majestic in the bird's spiritual nature. A Shag may be more pushing and elbowing; it may advertise itself more, show more aplomb, and, possibly for these reasons, get on better than its larger relative, which here, in the Shetlands, at any rate, it seems in a fair way of supplanting; but it cannot assume (much less feel) a look of such quiet importance. In the higher meaning of the word it may be said—always speaking comparatively—to lack deportment, and when it comes to calmness it surrenders without a struggle. Also, though superior in agility, it can hardly be said to show more grace in swimming, that which distinguishes it from the Cormorant, here, being more like mere glibness of tongue as against 'that large utterance' of the latter. As an aerial artist, however, the Shag, I think, stands higher, and the general opinion would probably be that he is the handsomer bird of the two, though as has been said, or implied, less imposing. With this let the matter rest. Between two such birds it would be rash to give anything like a final judgment. Better (and safer) to admit the merits of both and let admiration halt between the two. *In medio tutissimum ibis.*

The caves along the coast, here, which Rock Doves may be seen entering or issuing from at any hour of the day, are not to be looked upon merely as resting places for these birds, but rather as homes, both to gather and take shelter in. They are, indeed, the natural dove-cote of which the manufactured one is the lineal descendant, as much as its tenants are those of the wild stock. Unfortunately, none of these caverns—none that I have seen, that is to say—are penetrable to their

ends, even at low water, and most of them cannot be entered at all, except by boat. I got as far as what seemed about three quarters of the length of one, but I heard no sound of the birds, nor could I see any place where they might be supposed to congregate. Yet it was that very one called *par excellence* the 'doo's hellir' or cave—that, it would appear, being the old Norse word which, thus, at least, as a particular designation, has been handed down all these years. That the doo's habits in these secret habitations cannot be studied and compared which those of the dove-cot Pigeon, their semi-domestic representative, is a very great pity.

On looking, yesterday, at the sands at quite low tide, where the two Great Black-backed Gulls, young and old, had been feeding, I found it studded all over with the holes of Sand Worms. Afterwards, walking on the grass at a low altitude above the shores of the voe, where similar sands, bored in the same way, were covered by the tide to the depth of perhaps a foot, I found these shallow ringed holes even more strikingly visible than when the sands were bare. Here then is the explanation of the actions of these two birds.

OCTOBER 12TH.—Great assemblage of Kittiwakes, at further end of the loch, beyond the beach of the voe, for bathing purposes. Over forty when I counted them, but it has been fuller, I think. They bathe in the shallow water along a low bank of turf, and as they finish, come out and stand on this, so that there are two parties, those bathing and those standing quietly preening themselves, the latter growing gradually more and more till they include all except a few who stand and preen in the water. They bathe very prettily, with much flapping of wings and ruffling of feathers. A Whimbrel, however, who joins the party, out-bathes them all. He gives the water still noisier blows with his wings, and sends a continuous shower of drops all over himself, which has a very pretty effect, and must have still more should it happen to be sunny.

(*To be continued*).

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The *Annotationes Zoologicae Japonenses*, Volume 9, part 2, contains the following items, among many others:—'Notes on Oegopsid Cephalopods found in Japan' by Madoka Sasaki; 'Some new Scale Insects of Japan,' by S. I. Kuwana; 'Preliminary Descriptions of some Japanese Triclad's' by I. Ijima and Tokio Kaburaki.

Hull Museum Publications, Nos. 108 and 109, have been issued. The former is the 54th Quarterly Record of additions, and has illustrated articles on a Sedan chair, The Lister Overmantel, A fifth century bronze buckle from Lincolnshire, Early Mining Implements, and an East Riding Muster Roll, 1625. The latter is an account of 'Medals, Tokens, etc., Issued in connection with William Wilberforce and the Abolition of Slavery.' Each is sold at one penny and is by Mr. T. Sheppard, M.Sc.

YORKSHIRE NATURALISTS AT WENTBRIDGE.

THE abolition of the August Bank holiday resulted in the Union's meeting fixed for Wentbridge being curtailed to Saturday, August 5th, only. It was in some respects unfortunate that this was necessary, inasmuch as the district planned for investigation was the most picturesque portion of the Vale through which flows the Went, one of the little known rivers of Yorkshire. The inaccessibility of the chosen area was not, however, detrimental to the attendance, which was excellent, more than half the affiliated Societies being represented, as well as most of the Sections. The President of the Union, Mr. W. N. Cheesman, J.P., was in attendance.

Shortly before noon, all assembled at headquarters, and under the guidance of Mr. C. A. Cheetham, the time at disposal was spent along the right bank of the river to Kirk Smeaton, where the celebrated 'Craggs' were duly admired, returning along the left bank, to the old quarries, finishing in Broc-o'-dale Woods, a route which had many charming attractions.

The sectional reports presented at the close of the excursion were interesting, and at their conclusion, an expression of thanks was given to Mr. H. J. H. Barton and Lady Rosse for permission to visit their estates, and also to Mr. Cheetham for making the local arrangements.—W.E.L.W.

VERTEBRATE ZOOLOGY.—Dr. H. H. Corbett writes:—A better inland district for the Vertebrate Section could hardly be found than Wentbridge. Woods, crags, copses, upland pastures, low lying water meads with dense growth of rank herbage, and reed-fringed stream side, supplied abundant breeding sites for birds and mammals. But August is perhaps the worst time of the year for observing the former, and the thick cover rendered the latter practically invisible. It was pleasing to find Magpies and Jays fairly abundant. Whinchats also were very numerous. The Willow Warbler had just begun their second singing season which always occurs before the autumnal migration, and a few Whitethroats were to be heard 'churring.' All three hirundines were in numbers, but Swifts were notable absentees. The most interesting finds of the day were among the reptiles, an example of the Common Lizard being captured, and one of the Slow Worm being seen. It was not 'slow' enough, however, to be caught!

CONCHOLOGY.—Mr. Greevz Fysher reports:—The weather being hot and dry, there were few terrestrial mollusca astir. Mr. J. Digby Firth reported seeing *Helix aspersa*, *H. nemoralis*, *H. rufescens*, *Arion ater* and *Agriolimax agrestis*. The following species from specimens secured under plants on the limestone rocks, have been identified by Mr. John W. Taylor, viz:—*Clausilia laminata*, *Cl. bidentata*, *Buliminus obscurus*, *Helix hispida* and its var: *hispidosa*, and *Pyramidula rotundata*.

Dredging in the River Went yielded *Paludestrina jenkinsi* in abundance, *Sphærum corneum*, and *Valvata piscinalis*. Dr. Corbett reported having found *Planorbis spirorbis* and *Physa hypnorum* at Kirk Smeaton.

LEPIDOPTERA.—Mr. B. Morley reports that ten species of butterflies, and a number of moths, were observed, but the only species worthy of note were *Pararge ægeria* and *Cucullia verbasci*.

FLOWERING PLANTS.—Mr. W. H. Burrell writes:—The necessity of approaching Wentbridge by road, across the junction of the Coal Measures and Magnesian Limestone, contributed to the interest of the meeting by bringing into prominence, early in the day, certain elements in the flora common to one soil but more or less rare or absent from the other. Meadow Cranesbill made a great show at Thorpe Audlin, but during a twenty mile cycle ride from Leeds, *via* Wakefield and Ackworth Moor Top, it was not noticed until the Doncaster-Pontefract road had been crossed.

Brachypodium pinnatum and *Bromus erectus*, two grasses rarely seen off the Permian tract, were in abundance, and together with Rock-rose, Lady's fingers, Dropwort (*Spiræa filipendula*), *Potentilla verna*, Squinancywort (*Asperula cynanchica*), Small Scabious (*Scabiosa Columbaria*), Blue Flea-bane (*Erigeron acre*), Ploughman's Spikenard (*Inula squarrosa*), Greater Centaurea (*C. Scabiosa*), a white flowered form was seen; Clustered Bellflower (*Campanula glomerata*), Hound's Tongue (*Cynoglossum officinale*) and Gromwell (*Lithospermum officinale*), were recognised as indicators of limestone soil. Other plants seen during the day, more or less common on dry soils and not confined to limestone were:—Field Mouse-ear (*Cerastium arvense*), Mountain St. John's Wort (*Hypericum montanum*), Bird's-foot (*Ornithopus perpusillus*), Rose-bay (*Epilobium angustifolium*), Teasel (*Dipsacus sylvestris*), Yellowwort (*Blackstonia perfoliata*), Centaury (*Centaureum umbellatum*), Great Mullein (*Verbascum Thapsus*), Black Horehound (*Ballota nigra*), Wild Basil (*Clinopodium vulgare*) and Hemlock (*Conium maculatum*). In or near the river were Great Watercress (*Radicula amphibia*), Water Starwort (*Stellaria aquatica*), Yellow Waterlily (*Nymphæa lutea*) Arrowhead (*Sagittaria sagittifolia*) and Reed Poa (*Glyceria aquatica*).

A useful reminder that living organisms have a measure of adaptability, and will not always restrict themselves to the type of habitat in which they are usually found, was afforded by a tall plant of Figwort (*Scrophularia aquatica*) growing on a dry scree in a quarry. A parallel case of a plant of Brooklime (*Veronica Beccabunga*), of gigantic proportions, having been found on a dry roadside heap was cited, but no satisfactory

explanation of such a departure from normal conditions was available.

Dr. Corbett recorded having noticed *Dipsacus pilosus* and *Festuca rigida*.

BRYOLOGY.—Mr. C. A. Cheetham reports:—The rocks on the south side of the stream were found to be excellent for mosses; possibly further work on them would be repaid by the discovery of other species. The chief additions to Mr. W. Ingham's comprehensive lists on the circular relating to the excursion, are *Weisia tenuis* in quantity and well grown, *Plagiothecium depressum* and *Eurhynchium tenellum*.

MYCOLOGY.—Mr. W. N. Cheesman writes:—Miss C. A. Cooper, Mr. A. R. Sanderson and the writer represented the Mycological Section. 'Too dry,' said or thought all as they walked the hot dusty road from Pontefract to Wentbridge, but here compensation came in the sight of a charming well wooded gorge cut through the Magnesium Limestone ridge by the small River Went and locally called Broc-o'-dale—Badgers' Dale or Broken Dale.

Eighteen species of Mycetoza were found, the most notable ones being *Trichia contorta* and *Cribraria aurantiaca*. The latter was in the sap-green plasmodium stage and matured out before reaching home. This species is the only known one with green plasmodium. It is curious that some of these organisms will remain for weeks or months in the plasmodium condition and then suddenly complete their life cycle in a few hours. The following Mycetoza were gathered:—

<i>Physarum nutans.</i>	<i>Reticularia lycoperdon.</i>
<i>viride.</i>	<i>Trichia contorta.</i>
<i>Fuligo septica.</i>	" <i>Botrytis.</i>
<i>Craterium minutum.</i>	<i>Hemitrichia clavata.</i>
<i>Didymium difforme.</i>	<i>Arctia cinerea.</i>
<i>Stemonitis fusca.</i>	" <i>denuadata.</i>
<i>Conotricta nigra.</i>	" <i>nutans.</i>
<i>Cribraria aurantiaca.</i>	<i>Perichæna corticalis.</i>
<i>Tubifera ferruginosa.</i>	<i>Lycogala epidendrum.</i>

Fungi were not much in evidence, but the woods gave great promise for a later visit. The fungi observed were:—

<i>Amanita rubescens.</i>	<i>Boletus laricinus.</i>
<i>Armillaria mellea.</i> (Old mycelium	<i>Polyporus squamosus.</i>
<i>Collybia dryophila.</i> only).	<i>Polystictus abietinus.</i>
<i>Pluteus cervinus.</i>	<i>Fomes annosus.</i>
<i>Galera tenera.</i>	<i>Poria caporaria.</i>
<i>Stropharia æruginosa.</i>	<i>Dædalea quercina.</i>
<i>Hypholoma fasciculare.</i>	_____
<i>Coprinus plicatilis.</i>	<i>Corticium sanguineum.</i>
<i>Marasmius oreades.</i>	<i>Peniophora pubera.</i> (See <i>Naturalist</i>
" <i>rotula.</i>	1911, p. 169).
<i>Lentinus cochleatus.</i>	_____
_____	<i>Rhytisma acerinum.</i>
<i>Boletus flavus.</i>	<i>Xylaria hypoxylon.</i>

FIELD NOTES.

REPTILIA.

The Natterjack in Cumberland.—On August 16th, I found a fine specimen of this interesting species (*Bufo calamita*) at Allonby in this county. I am not sure whether it has hitherto been recorded for Cumberland; it is rarely found on our western seaboard.—REV. W. W. MASON, Melmerby.

ARACHNIDA.

Foreign Spider at Huddersfield.—A few days ago, a large spider was given me by Mr. Edgar France, Fruiterer, Primrose Hill, who had found it crawling about his shop. I submitted it to Mr. W. Falconer, who reports:—‘The spider is an exotic, probably brought over in a consignment of bananas or oranges, etc. It is a native of the Mediterranean region and has also been found in the Canaries, etc. Its name is *Zoropsis rufipes* Lucas.—CHARLES MOSLEY, Lockwood.

FLOWERING PLANTS.

Plants of Comondale, N. E. Yorkshire.—During a recent visit to Comondale one of our party found *Hypericum elodes* high up in the sphagnum bogs on the bank of the little valley which yields the clay for the Comondale Pottery. It was associated with *Anagallis tenella*, *Pinguicula vulgaris* and *Drosera rotundifolia*. This *Hypericum* has only been found once before in the Esk district in bogs high up in Sleddale where it was discovered by the late Mr. William Mudd, Curator of the Botanic Garden at Cambridge. In the lane between the railway station and ‘Oak Grove’ I gathered a Bramble which the Rev. W. M. Rogers regards as a hybrid between *Rubus rusticanus* and *R. leucostachys*. The other brambles are *Rubus rhamniifolius* and *R. dasyphyllus* Rogers.—J. G. BAKER.

COLEOPTERA.

***Telephorus darwinianus* Sharp, in Cumberland.**—I have met with this species in some numbers on the salt marshes both north and south of the mouth of the river Eden. It occurs on the long grass near the tide-way, or along the edges of the creeks, from mid-May to July. In Mr. W. E. Sharp’s ‘Coleoptera of Lancashire and Cheshire,’ p. 54, he reports it from Southport and Birkdale, adding, ‘This, up to the present, appears to be the only English record.’ This was in 1908. It was recorded from Cumberland so long ago as 1899 (*Ent. Rec.*, 1899, p. 105). It is also included in the list of Cumberland Coleoptera in the ‘Victoria’ History of the County, published in 1900. In the *Ent. Mon. Mag.*, 1909, pp. 214-15, Mr. E. A. Waterhouse has a note of seven specimens taken on the R. Medway in 1857, about nine years before its publication as a distinct species; also taken at Sheppey by Mr. J. J. Walker. My friend, Mr. F. H. Day, tells me he has also taken it in Cumberland, on the Skinburness, Newton, Cardrunknock and Calvo Marshes.—JAS MURRAY, Carlisle, July 25th, 1916.

REVIEWS AND BOOK NOTICES.

With commendable promptitude, Part 2 of **A Bibliography of British Ornithology**, by **W. H. Mullens** and **H. K. Swann** has appeared (Macmillan & Co., 6s. net). It occupies pages 113 to 240 and includes such well-known names as Cordeaux, Coward, Darwin, Doubleday, Dresser, Fortune (who, by the way, is a native of Hull), Fothergill, Frohawk, Gould.

Rambles in the Vaudese Alps, by **F. S. Salisbury**. London: J. M. Dent & Sons, 154 pages, 2s. 6d. net. This volume is a record of a holiday spent at Gryon, Vaud, in 1908, and is written to interest those who admire Alpine flowers and scenery. The value of the book is increased by illustrations from photographs of Alpine plants, by Somerville Hastings.

The Text Book of Geology, by **L. V. Pirsson**, London, Chapman and Hall, 444 pp., 10s. 6d. net. In this volume the Professor of Physical Geology, Yale University, gives an extraordinarily clear and well illustrated account of the various effects upon the earth of Rain, Hail, Snow, Heat, etc. Aided by a miscellaneous series of examples abounding on the American Continent the Author has been able to show the effects of various denuding agents, probably far better than he could had he been limited to other areas, though at the same time we observe that occasional European features are illustrated. Whether showing the formation of canyons, deltas, islands, hot springs, earthquakes, fractures, or other innumerable geological phenomena, remarkable instances are given and described. An excellent coloured geological map of North America accompanies the volume.

The Place-Names of Durham, by **Rev. C. E. Jackson**. London: George Allen & Unwin, Ltd., 115 pages, 5s. net. There is much of scientific interest in the origin of Place-Names, and in this connection considerable advance has recently been made in their proper study. Durham and other eastern counties have Place-Names which have a distinct bearing upon the Natural History or Physical Features of the district. The perusal of Mr. Jackson's ideas of the origin of many of the Durham Place-Names is of value, and now and again many old ideas have apparently to go to the wall. For instance, our ornithological friends will be sorry to be definitely informed that Egglesthorpe is neither Eagle's Cliff nor Eggs' Cliff, nor has Eggleston any ornithological significance. On the other hand, Roker and Rook Hope are said to have some connection with the Rook.

Bibliography of British Ornithology, by **W. H. Mullens** and **H. K. Swann**. Macmillan & Co., London, part 1, 112 pp., 6s. net. This useful work contains particulars of publications from the earliest times to the end of 1912, including biographical accounts of the principal writers on birds and bibliographies of their published works. The work is to be completed in six bi-monthly parts, and there is no doubt that in its complete form it will be of incalculable assistance to Zoologists. The present section begins with Adams (not 'Adam' though surely he ought to be classed as an early ornithologist and a namer of new species), to Buxton. Useful information is given relating to the different writers, though under George Bolam (p. 78) we find no reference to that writer's excellent report on the Birds of Hornsea Mere, yet less important items are quoted. Many Yorkshire Naturalists, present and past, are referred to in the pages.

The Geology of the Lake District, and the Scenery as influenced by Geological Structure, by **Professor J. E. Marr**. Cambridge University Press, 220 pp., 12s. net. Few people are able to speak with the authority that an acquaintance with a district warrants as does Professor Marr, who knows every nook and corner of 'One of nature's laboratories,' the Lake District. Professor Marr considers Jonathan Otley, the Keswick Guide, as the 'father of the Lakeland Geology,' and his portrait appears as frontispiece to the volume. By the aid of numerous sections, maps, diagrams, and reproductions of photographs, Dr. Marr describes the

Palaeozoic series, the intrusive igneous rocks; the Carboniferous Series, Post Carboniferous Changes, the Glacial Period, and the Post-Glacial Changes. There is no doubt that this book will be *the* guide to the geology of the district for some time to come. In a pocket at the end is a large coloured geological map by H. H. Thomas. There is an excellent index. The price seems rather high, but we suppose it's due to this sanguinary war.

Wild Flowers of the North American Mountains, by **Julia W. Henshaw**. Pp. xvii. and 383, 10s. 6d. net. McBride, Nast & Co., 1916. Mrs. Henshaw has written this book in the true spirit of the flower lover, and the region from which she selects her treasures is well adapted to arouse one's enthusiasm. The book is written for the traveller and general reader, but for the benefit of the botanist there is a general key to the families. For the convenience of the non-botanical reader the species described in the body of the work are classified according to colour. In each genus dealt with, one species is usually selected as a type and its character described, and the features of the remaining species referred to in popular language. English names are added, some of our familiar names being applied to very different American species. Occasionally, as in her description of the flower of *Parnassia*, she goes astray, but on the whole the book is very readable, well printed and illustrated with 17 coloured and 64 uncoloured plates, most of which are beautifully reproduced.

Plants in Health and Disease, being an Abstract of a Course of Lectures delivered in the University of Manchester during the Session, 1915-16. University Press, and Longmans, Green & Co., 1916, viii.+143 pp. 8vo. Price 1s. 6d. In order to assist the gardeners and cultivators in the Manchester district to increase the productiveness of their holdings during the present crisis, a series of lectures was arranged and undertaken by the botanical and entomological staff of the Manchester University. Such was the success of this very laudable attempt to bring the acquired store of expert knowledge possessed by a great university down to the level of scientifically untrained minds, that it was decided to issue to each member of the various audiences a more permanent record in the form of short eight-page summaries. The present volume consists of a complete set of these. Lectures 1 to 7 deal with plants in health, *i.e.*, the general physiology of plant life, nutrition, vegetative and sexual reproduction, hybridity, etc. This series was undertaken by F. E. Weiss, D.Sc., Harrison Professor of Botany. The remaining lectures treat mainly upon plants in disease. In lectures 8 to 12, Wilfrid Robinson, M.Sc., Lecturer in Economic Botany, describes the chief fungal diseases of plants, their life histories and methods of prevention, and includes the results of recent research work on some of the chief pests. The remaining of the seventeen lectures are concerned with injurious and beneficial animals, and were prepared by A. D. Imms, M.A., D.Sc., Reader in Agricultural Entomology. The work has certainly interest and value for a wider area than that for which it was specially produced, especially as it is well printed, arranged and indexed. It is, however, rather a pity that at least some of the diagrams, whereby the lectures were originally illustrated, could not have been reproduced.

Lincolnshire. By **J. C. Cox, LL.D.** (Methuen's Little Guides Series, pp. 351, 1916, 2/6). One is sorry to have to animadvert somewhat severely upon a work looked forward to with great hopes; but this attempt will not do, in no-way supplant Murray's Handbook of 1896; and is in many ways worse than up-to-date. With the Natural history section (pp. 12-18) only *The Naturalist* is, of course, concerned; but if we are to judge of the rest by it, confusion is indeed confounded. Acknowledgements are made (p. vii. viii.) to Mr. Jeans (author of the Murray), and Dr. Sympson, and others, but help in other departments has apparently not been sought in the right quarters. Inaccurate and antiquated indeed, is the account

of the 'Flora and Fauna,' albeit abundant recent material was available. Lees's and Peacock's work are just referred to, followed by this jumble (p. 15.) 'following Dr. Sympton, in *Lincolnshire Geography*.' 'The woods in all parts glow with the tender blue of the wild hyacinths'—blues do not glow at all, by the bye—the lily of the valley luxuriates in woods near Lincoln, and in Scotter parish.' 'The two nightshades are fairly common, and the odious henbane is occasionally found.' The beautiful grass of Parnassus, the marsh gentian, the bog pimpernel, bitterwort' (? butter wort mispelt, or felwort?) and two kinds of smilax occur in shady situations.' This is nigh nonsense,—No Smilax that I know of occurs in Britain at all, and neither bryony (black or white), of quite different orders, is ever dubbed wild sarzaparilla. The Rev. W. Fowler's discovery of the caraway-leaved milk-parsley is spelled wrongly in a new way: Murray had *Selinum Carvifloria*, Cox has *Salinum carvifolium*, shewing crasser ignorance still. Then, 'Samphire appears in abundance on certain parts of the coast, largely gathered for pickling,' which really refers to the so-called Glasswort, which, when burnt, yielding soda, is employed in making bottle glass and soap. 'Cranberries used to be abundant,' a quite true statement, but founded upon Arthur Young's report in his classic *Agricultural Survey* of 1799. All this is Inadequacy run wild. The arms of Lincoln figure its unique Iris, yet it finds no mention. Blyborough Church receives the barest mention (p. 349) in an Appendix, its famous and perhaps unique 'tick' none at all; and Linwood's (Lynwode) Brass lacks the interesting detail of the seven-childed wool-stapler, 'food for worms, sic transit gloria mundi.' Surely an area wherein meet and mingle alpine with lowland plants; where (at Tydd goit) the rare Sea-heath, *Frankenia*, once grew; where the yellow star *Cicendia* still occurs, where *Thesium* and *Maianthemum* flourish yet, and the tart bilberry is not! deserved fairer treatment than it has been accorded in a Twentieth-Century book. One fears to hope, almost, that a second Revised Edition may be soon called for.—F. ARNOLD LEES.

[The archaeological section of this work, which is its main part, appears to be carefully prepared and reliable: as we should expect it to be.—Ed.].

The Invertebrate Fauna of Nottinghamshire, by J. W. Carr, M.A., etc. Nottingham: J. and H. Bell, Ltd., 1916. 8vo., cloth, viii+618 pages. The County of Nottingham is to be congratulated on its possession of a society which has so steadily and continuously worked for a long series as has done the Nottingham Naturalists' Society, which attained its jubilee in 1902. Still more is the Society to be congratulated on the manner in which it resolved to celebrate the jubilee, the result of which is the volume now before us. The County, and the Society, are fortunate in the number of sound naturalists and diligent workers who have accumulated observations and records for the 5,330 species of invertebrates which find record in this volume. But that much remains to be done becomes evident, when we consider percentages of the Nottingham lists and the British lists. In only three groups does the percentage reach half of the British list, the Mollusca (79 per cent.), the Thysanura (80 per cent.), and the Neuroptera (64 per cent.). That the percentage of Lepidoptera reaches only 46 per cent. demonstrates clearly that what an old Yorkshire entomologist used to call the 'tinies' demand their close investigation; but it is not surprising that groups so numerous in species as the Coleoptera and the Diptera should have percentages of but 42 per cent. and 33 per cent. respectively. The spiders reach 38 per cent., the Sawflies 35 per cent., the Ichneumon-flies 28 per cent. and other groups average from 27 per cent. to 44 per cent., or thereabouts. The impression as to the diligence and activity with which the county has been worked is deepened and confirmed by the perusal of the work itself with the necessarily multitudinous details of localities, dates, and authorities which constitute it. The full and free citation of localities and details is an absolute necessity. The author is to be congratulated on the exceedingly

able manner in which he has executed his task—first as regards the working up of the more neglected groups of the invertebrata, and of the more neglected areas of the county, in which he has been much aided by the Rev. Alfred Thornley and other workers; secondly, by his invocation of the aid of specialists in certain groups, particularly of such as the Rev. Hilderic Friend, to whom is due the working out of the Oligochaets or earthworms; and thirdly, in respect of the clean and statesmanlike manner in which the book has been written. The county is fortunate in having so rich an area of aboriginal ancient woodland as is included in the famous Forest of Sherwood, a veritable paradise for insects, especially when we consider that these suffer so much from the diligence of agricultural man, to say nothing of the golfer and the automobile. Problems of distribution suggest themselves and call for explanation or investigation. Reference is made to single occurrences of *Papilio machaon* at Welbeck and Newark with a presumption of having been accidentally imported. Doubtless many are bred in captivity and escape, but the records quoted are so ancient that it is quite possible for the species to have existed. Evidences of decreases and extinctions among other Lepidoptera bristle throughout the work. The occurrences of the Hornet are singularly like Yorkshire experience, where examples have been taken wild which are undoubtedly correctly determined, and yet the species is not native. One of the most curious problems of range is that of *Hygromia striolata* (*rufescens*), of which there is no reliable evidence whatever of its occurrence in Notts, and yet it occurs more or less commonly in all the surrounding counties, in Leicestershire so near as Melton Mowbray, in Derbyshire at Matlock, and in South Yorkshire at Barnsley, while in Lincolnshire it occurs in 23 out of the 34 districts into which the county is divided for natural history work, and it occurs in three of the five divisions bordering Notts. The problem of *Hygromia revelata* is of another kind; the specimens were correctly named, but the locality stated was impossible for an inland county. The rediscovery of *Acocephalus trifasciatus* after more than 80 years since it was last indicated as British is interesting; as also the note of five Notts species of *Typhlocybe* which have not so far occurred elsewhere in Britain. The book is well and artistically printed in clear, bold, readable type. The use of bold-faced letter for scientific names, and the avoidance of the use of 'small caps' is altogether to the good. The volume is well and tastefully bound too. There are, however, things that one misses. One is a bibliography of the principal local works and papers under each group treated of. Another is a short readable summary of the physical features of the county, with such a sketch map of the soils of the county as might have usefully occupied a single page.—R.

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The 45th Annual Report and Proceedings of the Chester Society of Natural Science, Literature and Art is to hand (48 pages), and contains a summary of the Society's work during the year.

Lincolnshire Notes and Queries for July contains an article on the River Humber, and also an illustrated note on the Spout of a Roman Terra Cotta Jug, in the form of a woman's head, found in Lincolnshire, the latter being by Mr. T. Sheppard, M.Sc.

Hull Museum Publication 104, has just been issued (32 pages, 1d.) and is illustrated by numerous half-tone blocks, etc. It is almost entirely devoted to the old time Fishing Industry. The articles deal with Sailors' Remembrances; Four Early Hull Built Steamers; The Whaler, 'Royal Bounty,' of Leith; Legacy of Pictures to Hull Museums; The Wilson Liner 'Rollo'; Hull and the Revenue Cutter Days; The 'Pacific'; A Relic of Old Shipping Days; The Hull Steamship 'Leopard'; The Frozen up Whaler 'Jane' of Hull; Hull's Whaling Days, and Recollections of a British Columbian.

BRITISH ASSOCIATION NEWS.

Professor P. F. Kendall, of the Leeds University, has this year been elected as vice-president of the geological section of the British Association.

Mr. Gerald Stoney, in his address to the Engineering Section, tells us that 'It is important to remember that the boy of to-day is the man of to-morrow.' He ought to have been a zoologist.

In a discussion at the Conference, the Rev. T. R. R. Stebbing referred to the work of the South Eastern Union of Scientific Societies, known as the S.E.U.S.S., 'because we like to see ourselves as others SEUSS'!

Prof. E. W. MacBride began his address by stating 'The British Association meets for the *second* time in the midst of a great European war.' Prof. Henderson began his by stating 'For the *third* time in succession, the Section meets under the shadow of the war cloud.'

Having heard discussions on Omar Khayyam, a Bibliography of Violins, etc., between prominent members of the British Association, it is perhaps not surprising to find quotations from 'The Pilgrim's Progress' in Prof. Henderson's address to the Chemical Section. The geologists, also, 'Christian'-like, deposited their bundles in the Friends' Meeting House, in Pilgrim Street.

Prof. A. N. Whitehead says 'We may conceive humanity as engaged in an internecine conflict between youth and age. Youth is not defined by years, but by the creative impulse to make something.' The aged are those who, before all things, desire not to make a mistake. Logic is the olive branch from the old to the young, the wand which is in the hands of youth has the magic property of creating science.'

At a meeting of the General Committee, the Hon. Sir C. A. Parsons who had been previously nominated by the Council, was appointed President of the Association for the year 1917-18 (Bournemouth Meeting). A deputation was received from Cardiff, which conveyed an invitation to the Association to hold its meeting in 1918 in that city. The deputation was introduced by the Lord Mayor of Newcastle. After the Lord Mayor of Cardiff, the Deputy Lord Mayor, Lord Pontypridd and other speakers had addressed the meeting, the invitation was unanimously and gratefully accepted.

We learn from the *Evening Mail* that there were seven signatures appended to the request of Sir Benjamin Browne to the members attending the meeting of the British Association, in Newcastle, to sign their names and note, to the best of their knowledge, at what age they learned to read. Mr. Edward C. Barton, of Melbourne, Australia, who was born in 1858, stated that he learned to read when between the age of $5\frac{1}{2}$ and 6 years, by spelling the letters on the edge of a soup-plate. He learned alphabetical order at the age of 12 years. Mr. T. Sheppard wrote: 'Born in 1876. Learned at 4. Told a lie the same year.'

Speaking on the question of the fuel supply, Sir Hugh Bell recalled that Sir William Armstrong spoke upon a similar question fifty-three years ago. 'Looking round this hall, I don't think many of you heard that address. I had the misfortune, one that is inevitable if you go on living. Sir William Armstrong in that year pointed out that the total tonnage of coal raised in the United Kingdom was 86,000,000, and he thought that the limit was being reached. Time has proved his prophecy wrong. Let me give you a few figures:—

1883	163,000,000 tons.
1908	261,000,000 "
1913	287,000,000 "

'It therefore will not do to prophecy further.'

† In 'A Sketch of the Structure of the Northern Pennines.' Dr. A. Wilmore stated 'This paper attempts a brief summary of the structure of the Northern Pennines for geologists and geographers, especially for those who are interested in the relation of geographical form to geological

structure. It is, for the most part, a re-statement, and advances little that is new.'

Besides the President's address on 'Co-operation,' the Conference of Delegates of the Corresponding Societies discussed the following:—

(1) 'The Encouragement of Public Interest in Science by means of Popular Lectures.' Introduced by Mr. Percival J. Ashton, Extension Lecture Secretary of the Selborne Society.

(2) 'The Desirability of forming Federations of Societies with Cognate Aims.' Introduced by Mr. Arthur Bennett, Delegate of the Warrington Society.

(3) 'The Importance of Kent's Cavern as a National Site.' In the absence of Mrs. Hester Forbes Julian (née Pengelly), Delegate of the Torquay Natural History Society, the paper was read by Mr. W. Whitaker.

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'The Wood Pigeon,' is the title of the Board of Agriculture and Fisheries Leaflet, No. 307.

We should like to congratulate our contributor, Mr. J. J. Burton, F.G.S., on his election as a Justice of the Peace.

We regret to record the death of Lieut. Col. J. W. Ellis, a prominent member of the Liverpool Naturalists' Field Club.

From *The Times*, we learn that a beanstalk has been pulled in the Bourne district of Lincolnshire measuring 8ft. 3in. high and carrying 47 pods.

The 45th Report of the County Borough of Rochdale Public Libraries, Art Gallery and Museum Committee, states that pressure of work on the Library side has prevented much being done in the Museum.

We notice from *The Handbook and Descriptive Catalogue of the Meteorite Collections in the United States National Museum*, by G. P. Merrill, reference is made to a fragment of the Wold Cottage Meteorite which fell in Yorkshire in 1795.

Mr. G. M. Davies (mis-spelt *Davis* on the heading on page 94) has a valuable paper on the 'Rocks and Minerals of Croydon Regional Survey Area,' in the *Proceedings and Transactions of the Croydon Natural History and Scientific Society*, Volume 8, part 2.

The *Annual Report of the Yorkshire Philosophical Society* for 1915, just to hand, contains a lengthy and well illustrated paper on 'Yorkshire Potteries, Pots and Potters,' by Mr. Oxley Grabham. Mr. George Benson also gives notes on a Cobble Road, uncovered under the Vaulted Archway of St. Leonard's Hospital, York.

Prof. E. J. Garwood has a lengthy paper on 'The Faunal Succession in the Lower Carboniferous Rocks of Westmorland and North Lancashire' in the *Proceedings of the Geologists' Association*, Vol. XXVII, pt. 1. It is illustrated by numerous sections, maps, photographs and plates of fossils, and there are extensive tables of species.

We notice a correspondent, writing from a Vicarage, to *The Westminster Gazette*, states—'During the last few days, a young but fully-fledged and apparently fully-grown hawk has repeatedly flown on to my lawn, and, squatting, has made its hunger or its greed known by constant cries. Quite a number of swallows and wag-tails have gone to its assistance, bringing it insects and, I think, other food. . . . To me, it is a forcible and curious comment, in the world of nature, on the well-known Pauline passage: 'If thine enemy hunger, feed him,' and I am wondering whether, Androcles-like, these succourers of a potential foe in distress will escape its future hostile proclivities.' As the bird he described was no doubt a young cuckoo, the correct quotation should be, 'I was a stranger and I took you in.'

Books for Sale.

(Mostly from the Library of a Yorkshire Naturalist, recently deceased. The books are as new, and the prices asked are, in most cases, less than half the published price).

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Further particulars can be had from

J. HOLMES, 9 Campbell St., Crosshills, Keighley;

or C. A. CHEETHAM, Old Farnley, Leeds.

THE COUNTY OF THE WHITE ROSE

AN INTRODUCTION TO THE HISTORY
AND ANTIQUITIES OF YORKSHIRE

BY

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Author of "Leeds and its Neighbourhood," etc.*

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There is an excellent folding map of the three Ridings, and the value of the book is still further enhanced by the provision of a very exhaustive index of names and places.

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THE NATURALIST.

A MONTHLY ILLUSTRATED JOURNAL OF
NATURAL HISTORY FOR THE NORTH OF ENGLAND.

EDITED BY

T. SHEPPARD, M.Sc., F.G.S., F.R.G.S., F.S.A.Scot.,
THE MUSEUMS, HULL;

AND

T. W. WOODHEAD, Ph.D., M.Sc., F.L.S.,
TECHNICAL COLLEGE, HUDDERSFIELD.

WITH THE ASSISTANCE AS REFEREES IN SPECIAL DEPARTMENTS OF

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NOW READY.

YORKSHIRE'S Contribution to Science

*(Based upon the Presidential Address to the Yorkshire
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BY THOMAS SHEPPARD
M.Sc., F.G.S., F.R.G.S., F.S.A.(SCOT.)

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The publication of much additional matter has caused some delay in the appearance of the book. It is illustrated, and contains a complete history of the scientific publications issued in the various Yorkshire towns. It contains the following:—

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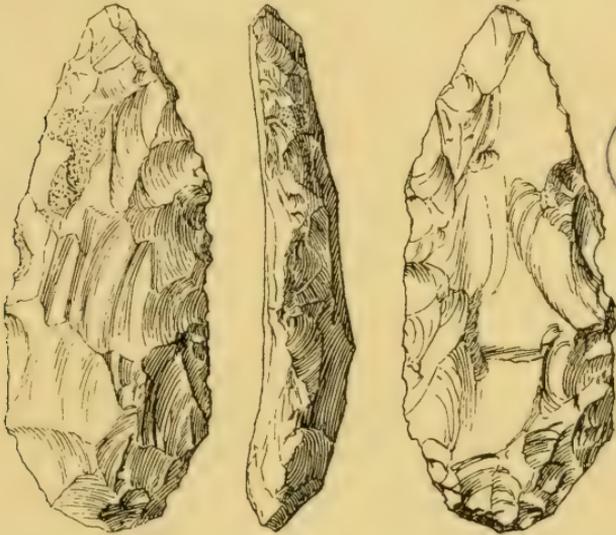
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NOTES AND COMMENTS.

EAST ANGLIAN PRE-HISTORIANS.

Vol. II., part 2, of the *Proceedings of the Prehistoric Society of East Anglia** is a remarkably well illustrated record of the work accomplished by this young society, the membership list of which contains quite a number of names of prominent workers in the fields of archæology. The contents are varied, but we especially draw attention to Mr. W. J. Lewis Abbott's paper on 'The Pliocene Deposits of the South-east of England,' and to Mr. A. S. Kennard's notes on 'The Pleistocene Succession in England.' Mr. Kennard begins well:—'It has always appeared to me that if any real advance in our know-



Implement worked on both faces. Grime's Graves. ☺.

ledge of early man is to be made, it is essential that the sequence of events during the Pleistocene period must be known, but judging from recent literature the prevalent ideas as to this succession are decidedly nebulous.' Mr. A. E. Peak's presidential address on 'Recent Excavation at Grime's Graves' has a number of illustrations, one of which we are kindly permitted to reproduce. We notice the map of Norfolk is up-to-date, as the sea area is described as 'North Sea, late German Ocean.'

'EARLIEST MAN.'

With the above title Mr. F. W. H. Migeod has issued a book† which he wrote on the Gold Coast, in which district

* pp. 161-325, 3s. 6d. net, from W. G. Clarke, 12 St. Philip's Road, Norwich.

† London: Kegan Paul, 1916, 133 pp., 3s. 6d.

his surroundings evidently gave him example and inspiration ; ' it is on the lives of wild animals and primitive men that the author has based his theories as to what sort of an existence earliest man lived.' While, in that far-off country, the author naturally had not a very extensive reference library, it is perhaps a little unexpected to find that the two books he recommends are ' Guide to the Antiquities of the Stone Age ' (British Museum), and ' Man and his Fore-runners,' by H. von Buttel-Reepen.

EVOLUTION OF MAN.

Mr. Migeod endeavours to give a sketch of the evolution of man from his simian ancestry down to the time that he attained the rank of *Homo primigenius*. His chapters deal with ' The Dawn,' ' Primary Instincts,' ' Proto-man,' ' Progress in the Arts,' ' From Eoliths to Palæoliths,' ' Origin of Speech ' and ' Social Organisation.' He also gives appendices (1) on ' Cranial Capacity in Cubic Centimetres ' of apes, ancient man, modern types of man, and Bismarck !; (2) ' Chronological Table ' of remains of man in Tertiary and Quaternary time, which is elaborate and mystifying with its estimates of years and various glacial periods ; and (3) ' Hypothetical Descent of Man ' from ' Pre-pithecanthropus ' to ' American Aboriginal.' There is a useful Glossary and an index. The book is written in simple language.

STONEHENGE.*

The Curator of the Salisbury Museum has produced a handy guide to Stonehenge, which, even in its present mutilated form, is one of the finest monuments of a prehistoric age in our islands. He deals with the origin of the stones, their erection, and when was Stonehenge built, and why? He also gives an account of the adjoining barrows and their contents. The handbook is well illustrated by H. Sumner, F.S.A.

EARLY PALÆOLITHS.

In *The Journal of the Anthropological Institute*† Mr. J. Reid Moir has an illustrated paper ' On the Evolution of the Earliest Palæoliths from the Rostro-Carinate Implements.' He describes ten flint ' implements ' from beds below the Red and Norwich Craggs, the Middle Glacial Gravel of Suffolk, and River Gravels of the Thames Valley and Suffolk. He shows how the ' Eagle-beak ' implements were made, and illustrates a number of specimens which he has seen in different collections, some of which, however, seem to have a more accidental than actual resemblance to the original ' rostro-

* ' Stonehenge, To-day and Yesterday,' by F. Stevens. London : Sampson Low, Marston & Co., 1915. 96 pp., 1s. net.

† Vol. XLVI., 1916, pp. 197-220.

carinates.' We are not quite sure of the object of the contribution, but the following is the concluding paragraph:—

POINTED PALÆOLITHS.

'The author has conducted various experiments in flaking flints, and finds that the easiest way to make an implement of the pointed type is to proceed as if it were desired to make one of the rostro-carinate form. He has found that the remains of the dorsal plane appear as a lateral platform on the specimens he has made, and that the outline of the rostro-carinate is sometimes preserved. Lateral platforms appear on ovate implements, but as these were in all probability evolved from specimens of the pointed type, by the simple method of substituting a rounded cutting edge for the pointed end, the occurrence of such lateral platforms upon these specimens is easily explained.'

TREPHING.

Dr. T. Wilson Parry favours us with a reprint of his paper in the *Journal of the British Archæological Association* on 'The Art of Trephining among Prehistoric and Primitive Peoples; their motives for its practice and methods of procedure.*' He reviews the various instances of prehistoric skulls having been operated upon during the lives of their owners, five examples of which are known from Great Britain. He shows how the holes were probably made in the skulls, and though the operations were severe, and necessarily of a primitive character, the bone in many cases is shown to have healed.

SKULLS AND CHARMS.

The researches of Professor P. Broca, among the prehistoric skulls of France, show that 'during the Neolithic Period a surgical operation was practised which consisted of making a hole in the skull, for treatment of certain internal disorders. This operation was performed almost, if not quite, exclusively on children. The skulls of those individuals who survived this operation of trephining were considered to be possessed with special endowments of a mystical order, and when the individuals died, rounds or fragments were often cut out of their skulls to serve as amulets, that part bordering on the healed edge of the opening being taken in preference.' It is perhaps rather remarkable that among the exceptionally large collection of prehistoric skulls from East Yorkshire barrows, preserved in the Mortimer Museum, no trace of trephining has been observed.

* See also *The Lancet*, June 13th, 1914, and *The Medical Press and Circular*, July 8th and 15th, 1914.

‘ MEN OF THE OLD STONE AGE,

their Environment, Life and Art ’ is the title of a volume recently issued by Prof. H. F. Osborn.* It is based upon the Hitchcock Lectures of the University of California, 1914, but it contains details of later discoveries, notably of the Pilt-down remains. These discoveries in Sussex have caused considerable discussion, and indirectly have led to the appearance of many books on prehistoric man, the present being among them. Professor Osborn is well known for his work in America, and he has spent three weeks among the French caves, a map showing the route taken being given at the end of the volume.

DIVISIONS OF TIME.

He deals in detail with the human remains of various deposits and periods, though we fear his time divisions are so numerous and varied that they will not readily be adopted by English archæologists. For instance, he refers to the ‘ Transition to the Pleistocene, The First Glaciation, The First Interglacial Stage, The Trinil Race, The Second Glaciation, The Second Interglacial Stage, The Heidelberg Race, The Third Glaciation, The Pilt-down Race, The Second Period of Arid ‘Climate, Close of the Third Interglacial, The Fourth Glacial Stage,’ and so on. Among them we find such headings as ‘Date of Pre-Chellean Industry,’ ‘Chellean Industry,’ ‘Acheulean Industry,’ ‘Arctic Tundra Life,’ etc.

RESTORATION.

A feature of the book, which will appeal more particularly to the ‘general’ reader, is a series of restorations of the features of prehistoric men of different periods. Thus there is *Pithecanthropus*, the Java ape-man, the Heidelberg man, the Pilt-down man, the Neanderthal man, the Cro-Magnon man, etc. But there is almost a family resemblance between some of these, though they are separated by thousands of miles, and, in time, by periods estimated in hundreds of thousands of years. For the most part they have quite refined features, and some at any rate have features quite American. This is due no doubt to the individuality of the artist being reflected in his work, but it detracts from the likelihood of the restorations being accurate.

PROF. OSBORN’S RESEARCHES.

Professor Osborn covers considerable ground in his book. Not only does he refer to the remains of the osteological remains of the races he describes, but the associated implements, the rock carvings, paintings, sculpturings, and even the associated fauna are described in a detail which is almost

* London : G. Bell & Sons, 1916, pp. 545, price 25s. net.

bewildering. We must say, however, that the volume is very thorough; his researches have been extensive. The Bibliography of twenty pages indicates that he has made a good acquaintance with the extensive literature on the subject. He also has decided opinions of his own, and expresses them. There are nearly three hundred illustrations; but the book is a 'heavy' one, in two senses.

FLINTS IN BOULDER CLAY.

In *Man* for October 1916, Mr. J. Reid Moir criticises Mr. H. Warren's paper, 'The Experimental Investigation of Flint Fracture and its Application to Problems of Human Implements,' (*Journ. Royal Anthropol. Inst.*, Vol. XLIV., 1914). Without entering into the question as to whether Mr. Moir or Mr. Warren is correct, there is one remark in Mr. Reid Moir's paper to which we must take exception. He says 'Flint, of even the best quality and greatest hardness, will stand only a limited amount of pressure before fracturing, and the pressures that "obtain beneath an ice-sheet" would undoubtedly reduce it to powder.' As anyone acquainted with our northern boulder clays knows quite well, these deposits contain tons of flints of all sorts and sizes, which are not crushed to powder, though many bear ice-scratches. They are there; and the boulder-clay was unquestionably formed under an ice-sheet. This merely confirms an opinion we have previously expressed, that before anyone can pose as an authority on pre-historic implements, especially when he is trying to prove that they are of extraordinarily great age, he must have at least an elementary knowledge of geology.

NEW NAMES FOR BRITISH BIRDS.

'H.B.B.' writes:—Under the above heading the current number of *The Ibis* (p. 667), gives the following extract:—'The July number of *The Auk*, (p. 346), has a note that, in a recent number of "Falco," the organ of the eccentric Otto Kleinschmidt, there are descriptions of the *British* races of *Passer domesticus* and *Strix alba* under the new names of *Passer hostilis* and *Strix hostilis*. The author, O. Kleinschmidt, states that his sub-species will probably have a hostile reception in their native country, and explains that he does not name them in the interests of British ornithology, but in accordance with the thoroughness of German science!' This attempt to re-name two such well-known British birds as the Common Sparrow and the Barn Owl may be taken as an honest endeavour of O.K. (Orl Korrekt) to assist his country in their strife for world domination; rather than a desire to make his name famous for having further confused scientific nomenclature.

RATS.

Part XIX. of 'A History of British Mammals' has been published,* and deals with the Black or Ship Rat, the Brown or Common Rat, and the House Mouse. Each species is dealt with in the careful and thorough manner which has characterised this work throughout. We learn that 'extraordinary calculations have been made as to the damage done by rats and the rate of their increase. F. von Fischer calculated that a single pair might leave, after ten years, a progeny of 48,319,698,843,030,344,720 rats. Mr. Lantz calculates that in nine generations, a single pair of rats would, if breeding uninterruptedly, produce more than twenty million individuals, but such a calculation is entirely theoretical. However, as he states that the average quantity of grain consumed by an adult or half-grown rat is fully two ounces daily, or 45 to 50 lbs. a year, the average cost of feeding one rat for a year becomes about seven shillings and sixpence.'

MORE RATS.

From the October number of *The Scottish Naturalist* we learn that in a communication by Oldfield Thomas, on the generic names *Rattus* and *Phyllomys*, the author confesses his disappointment at the discovery that the name *Rattus* was used earlier than he anticipated for the ordinary Rats, and, therefore, has priority over *Epimys*, which he hoped would be accepted. As a consequence, his 'attempted use of *Rattus* for Azara's Spiny-rat fails, and this animal will have to bear in future the burden of *Euryzygomatomys* as its generic name.' Poor creature!

MODERN 'ENTOMOLOGY.'

The Entomologist's Monthly Magazine for October is a mixed bag. Mr. D. Sharp says, 'I adopted Mulsant's name of *consimile* for this species, being under the impression that it and Mulsant's *mollis* would be found to be mixed in some collections, and that Mulsant was authorised to apply the name of *mollis* to either of the two forms. I have, however, found no example of his *mollis* in any collection I have examined.' Another 'correction' is given in the next paper by Mr. G. C. Champion, who overlooked a description of *Batobius* when dealing with this genus. But our entomological friends should not overlook things, and then have to make corrections after giving wrong names; this sort of thing is becoming 'chronic,' and is a distinct hindrance to scientific work. Of a more satisfactory nature is Mr. R. S. Bagnall's establishment of *Trioza proxima* as a British insect (in Sunderland), and Mr. H. S. Wallace's record of a new British gall-midge, *Mayetiola*

* Gurney & Jackson, pp. 601-648 (plates), 2s. 6d. net.

radicifica in Northumberland and Cumberland. *Trichopteryx fratercula* is also recorded as a new Yorkshire coleopteron.

A WONDERFUL SPIDER.

In *The Entomologist* for August, appears the following information from the pen of Mr. W. Saunders:—‘The other morning . . . I felt a tickling sensation on my face, and, putting up my right hand to brush away the cause of irritation, I caught on my forefinger, a shimmering gauzy filament at the end of which swung a tiny spider. . . . I held it up on a level with my head and the insect made one or two ineffectual attempts to reach my finger. Apparently realising then that this means of escape was hopeless, he swung inert for a few seconds, and then he *suddenly shot out in a horizontal direction, spinning furiously as he went.* This continued until he was six or nine inches from my finger, when another gauzy filament was rapidly dropped downwards at almost right angles to the first, attaching itself to a copy of the ‘Scotsman,’ . . . Who could then have had the heart to harm such a brilliant little logician.’ It seems to have been more than a logician, it was a magician.

DISCOVERY.*

Professor Gregory will understand that we wish to be complimentary when we say we have read his book from cover to cover, and have enjoyed it. It has the same inspiring effect as the famous *Somme* film, which most people have seen recently. Would that it were possible to place a copy of the book in the hands of every school boy and school girl. The result would certainly be greater than even Professor Gregory’s proudest hopes. The volume shows that in all times the greatest scientific discoveries have been made with most unselfish motives; not for personal gain, but for the love of science; for the good of mankind. Yet the greatest discoveries, whereby the lives of untold thousands have been saved, have not brought their authors anything like the renown that becomes the victorious soldier or sailor.

A POPULAR FALLACY.

It is also demonstrated that the scientific man is a man of principles, a man essentially human, whose watchword is ‘Truth.’ ‘To the popular mind, a man of science is a callous necromancer who has cast himself off from communion with his fellows, and has thereby lost the throbbing and compassionate heart of a full life: he is Faust, who has not yet made a bargain with Mephistopheles, and is therefore without

* ‘Discovery: or the Spirit and Service of Science,’ by R. A. Gregory. Macmillan & Co., 1916, 340 pp., 5s. net.

human interest. Scientific and humanistic studies are, indeed, supposed to be anti-pathetic, and to represent opposing qualities ; so that it has become common to associate science with all that is cold and mechanistic in our being, and to believe that the development of the more spiritual parts of man's nature belong essentially to other departments of intellectual activity.'

A NEGLECTED STUDY.

'The Study of Nature is elevating, and its material value is of the highest ; yet it is deplorably neglected, with the result that only very rarely is the simplest scientific subject referred to accurately in the works of literary men. Our guides and councillors, not only in the periodical press, but also in less ephemeral publications, are, in the great majority of cases, unaware of the most obvious facts and phenomena of Nature, and have no acquaintance with the most elementary vocabulary of science.* In everything that relates to the natural universe around them they are blind leaders of the blind ; and they call their darkness light. They are indifferent to the wonderful growth and extent of scientific knowledge, and live in a paradise in which rounded phrases and curious fancies are of more importance than actual facts. In such a world a one-eyed man can be king. A more enlightened man will only be obtained when it is realised that an educated man must know something of science as well as of literature.'

SCIENCE AND THE STATE.

Professor Gregory is inclined at times to be a trifle pessimistic. 'It would be a revelation to people endowed with a large share of worldly riches to be present at a meeting of the British Association for the Advancement of Science concerned with the allocation of grants for scientific purposes. Thirty or forty of the leading men of science in the British Isles debate for several hours how to divide the sum of about £1,000, which represents the amount available from the sale of tickets at each annual meeting. There are many applications for grants from committees of each of the twelve sections of the Association, and the amount required has usually to be whittled down to £5 or £10, which often does not cover the expense of stationery and postage of a research committee. Not one penny goes into the pockets of the men who are conducting the researches, yet claim after claim has to be passed, or reduced to its lowest limits, because the fund is miserably inadequate to meet the demands made upon it. . . . While the

* We notice that a well known and much advertised editor of one of our weekly papers, writing in a Sunday paper recently, says the human body consists of, 'a mere chemical compound of gas [!] and carbon and lime, synthesised.'—ED.

State grant made by Great Britain toward the expenses of the publications of learned societies is limited to the sum of £1,000 annually to the Royal Society, several times this amount is expended each year upon stationery alone used by members of the House of Commons.' In this connection may we suggest to Professor Gregory that 'Nature' never did betray the heart that loved her, and we trust he has found this to be so! There is no doubt that after the present crisis the claims of the scientific man will be much more appreciated. In many ways he has already demonstrated his worth. And Professor Gregory's book will, we hope, do much towards voicing those claims.

INVESTIGATION OF RIVERS.

In view of the suggested work in connection with Yorkshire Rivers being undertaken by the members of the Yorkshire Geological Society, we should like to draw attention to a valuable Final Report on the Investigation of Rivers, by Aubrey Strahan, N. F. MacKenzie, H. R. Mill and J. S. Owens, published by the Royal Geographical Society, 94 pages, price 3s. 6d. The report deals with the Severn basin and its vicinity, and is divided under the following headings:—Introduction, Report on Severn Discharge and Rainfall in the Basin; The Measurements of Discharges; Curves showing Rainfall and Discharge; Report of the Average Annual Rainfall of the Exe Valley; Report on the Daily Rainfall of the Exe Valley during the years 1907-1912; On the Area of each Basin and the Elevation of different parts of it; Report on Suspended and Dissolved Matter in the Exe, Creedy, Severn and Medway; Appendix—Table of Discharge Coefficients. There are many valuable charts and tables accompanying the report, which should serve as a model for other areas.

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Mr. Harold Peake has a note on 'The Origin of the Dolmen' in *Man* for August.

The Entomologist's Monthly Magazine for September, contains short notes relating to Yorkshire, Cheshire and the Lake District.

The Entomologist for August contains a paper on 'Coccidae and Aleyrodidae in Northumberland, Durham, and North-East Yorkshire, by J. W. H. Harrison, M.Sc.

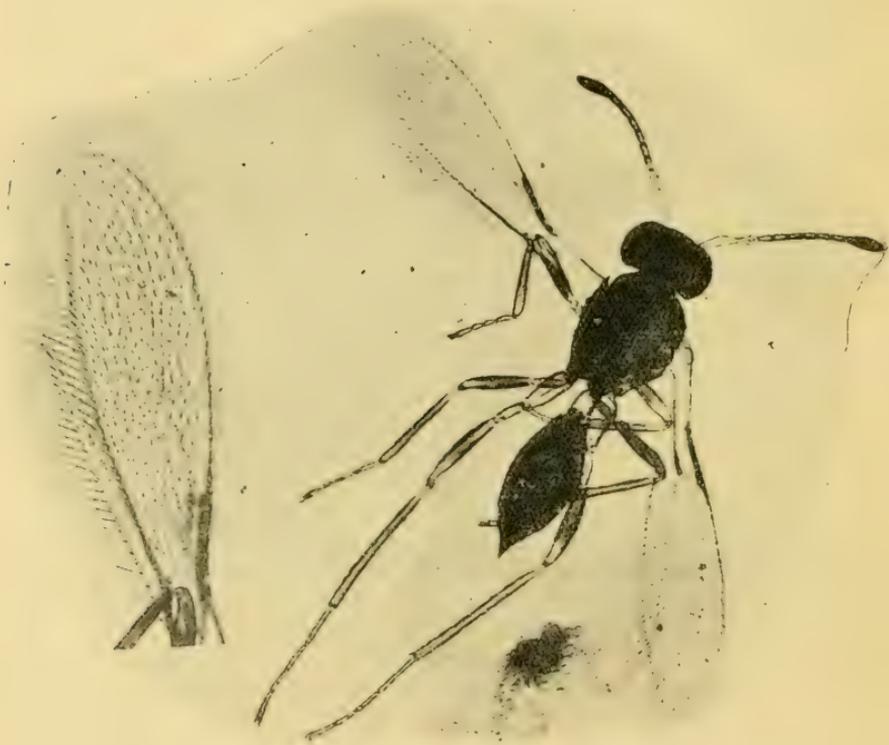
The Zoologist for August contains the following interesting articles:—'Habit Formation in a Wasp,' by J. M. Dewar; 'On the Educability of Three Rocklings and a Sea-Bullhead,' by H. N. Milligan; 'Notes on Inability of Natural Selection to explain certain steps in the Evolution of Protozoa.'

In *The Entomologist's Record*, in 1907, Mr. H. Donisthorpe described *Cis dentatus* Mellie, as a new British insect. In the same Journal for July and August, just received, he states that the species is not *dentatus* but an aberration of *C. alni*. In the same Journal Mr. R. S. Bagnall describes some new British Plant Galls from the Northumberland and Durham area.

POLYNEMA NATANS IN YORKSHIRE.

A. R. SANDERSON.

FROM a bog pool on Austwick Moss I have to place on record the finding of *Polynema natans* Lubbock (*Caraphractus cinctus* Hal.), a very small hymenopterous insect belonging to the Mymarides, which by Enoch are called 'Fairy Flies.' *Polynema natans*, one of the few hymenoptera with aquatic habits, has a strange life history, being in the larval stage parasitic



Polynema natans, and wing, magnified.

in the eggs of a Dragon Fly. The specimens I obtained were present among some *Hypnum fluitans*, which had been brought from the bog pool to feed aquatic larvæ. A few days after introducing this material to the tank I saw two of the insects swimming about in the water, using their wings as organs of locomotion. This struck me as being decidedly curious, so I watched developments, and noticing the immersion was not harmful (at first I took them for small flies in process of drowning) kept them under observation. On examination

I discovered them to be hymenoptera, and found the description in Professor Miall's 'Acquatic Insects,' which fitted. The identity has since been confirmed by Mr. Waterhouse. The insects left the water at intervals (they can remain immersed for at least twelve hours) and invariably come to rest about half an inch to an inch from the surface, head downwards. In no case did I find them far above the surface when resting. When immersed they were usually active, and I never saw them take any food, though seeing they are only one twentieth part of an inch long, it is quite possible to miss that interesting operation. It was most interesting to see one re-enter the water, and make desperate efforts by means of the legs to free itself from the air film, especially on the wings, which are clothed with fine hairs. Frantic efforts were often necessary to free the wings from air bubbles, so as to allow the creature to sink well below the surface. They moved about in the water with a jerky motion, using the wings only for propulsion. A second lot of material containing, besides *Hypnum fluitans*, an aquatic hepatic, was sent to me from the same district, and on careful examination I found five Dragon Fly eggs on this hepatic, which later provided me with two larvæ of Dragon Flies and three Polynema, one of which lived for twenty days in the tank, (not of course immersed all the time).

Altogether about a dozen of the insects appeared over a period of about nine weeks, and seeing that the creature can fly quite well for short distances, the distribution among neighbouring pools should not occasion much difficulty.*

—: o :—

AMPHIBIANS.

The Natterjack in Cumberland.—I am pleased to confirm Mr. W. W. Mason's note of this species in the north-west. A small colony of them may be found at Beck Heads, Woodland Fell, on the Lancashire side of the Duddon Valley. My first experience was six under loose stones, June 14th, 1913.—J. F. MUSHAM, Selby.

The Natterjack in Cumberland.—With reference to the Rev. W. W. Mason's note in the October number, it may be of interest to record that in July 1913, I saw an immense number of young Natterjacks, barely one inch long, in damp spots among the sandhills near Drigg. In June 1915, adult specimens were noticed in marshes at the mouth of the Calder, north of Seascale, and this year, in June, in the same locality, in a brackish pool close to the railway, I found this species breeding.—ANTHONY WALLIS, Penrith.

* The specimen figured herewith has been presented by Mr. C. A. Cheetham to the Hull Museum, where it can be referred to.

FIGHT BETWEEN EARWIG AND ANTS.

H. VINCENT CORBETT, B.A.

ON September 2nd, 1916, at 5-20 p.m., while watching a nest of *Myrmica ruginodis* Nylander, in a garden at Doncaster, I saw a worker dragging a large male specimen of the Common Earwig by his right front femur. The ant was holding her antennæ well back, and dodging the earwig's other legs. At first the earwig did not fight, merely making an obstinate tug-of-war. But, when he got within two inches of the ants' burrow, he evidently realised his danger, for he made a fierce resistance. Meanwhile many other ants passed, but few took any interest, and these only approached the earwig gingerly, and jumped back quickly when he kicked. The earwig's efforts were made partly with his legs, never with his mandibles, and chiefly with his forceps. He frequently arched his tail right over his head, and attempted to seize the ant. Several times he succeeded in turning the ant on her back.

Four times the ant pulled her prey to within an inch of the burrow; but each time the earwig made a stiff fight and dragged her back. At 5-50 the earwig was actually dragged into the mouth of the burrow. Not till then did other ants take an active part in the struggle, but now about twelve seized the earwig. This time the forceps were brought into tremendous play. Time after time ants were dislodged from their positions by them, and twice the earwig hurled an ant over his back and half an inch behind him. The ants, however, did not seem afraid of the forceps, which they often cleverly dodged. On the other hand they seemed very much afraid of his hind legs. At 6-10 the ants and earwig disappeared down the burrow, and I thought the fight was over. I did not observe it again until 6-40, when I found that the earwig had again got 12 inches away from the nest. The original (?) ant was still holding on to the right front femur, and two ants (*A* and *B*, which I had marked for other purposes) were holding the left front and left hind femora respectively. This time the ants were dragging their enemy *away* from the burrow. At 6-56 *A* returned to the nest; at 6-57 *B* changed her hold from the left hind femur to the left forcep. This provoked the earwig to another great effort and at 6-58 *B* left the fight and started fussing around. At 7-1 the earwig seemed much feebler, and allowed the ant to drag him on his back to the burrow. He then revived, and with his forceps dislodged the ant, which at 7-15 returned to the nest, leaving her foe nearly dead. At 7-19 she returned, and gripped the earwig by the left front femur. The earwig again dislodged her with his forceps, and the ant wandered about for a while. At 7-29 the ant returned once more, and took hold of the earwig's left hind tarsi. At

7-47 they reached the burrow again, and two new ants came out and seized the earwig's right hind leg and left foreleg. The earwig made a last effort to use his forceps, but was too weak to get them beyond his elytra. At 7-53 he was again dragged down the burrow; and, as he had not reappeared by 8-20, I suppose he was at last overpowered.

The extent to which he used his forceps I thought was interesting. They were, however, clumsy weapons, and useless, except when the actual points closed on the ants.

I am indebted to Mr. H. St. J. K. Donisthorpe for the identification of the ant.

—:o:—

Late Nesting of Woodcock.—On July 24th, I came across the nest of a Woodcock in a wood in this parish, near the foot of a fir. The bird flew off at my approach, and the nest contained four eggs. As the Woodcock is an early breeder, usually nesting in March or April, the above occurrence appears to me most extraordinary. It raises the question as to whether or this species may be double-brooded.*—W. WRIGHT MASON, Melmerby Rectory, Cumberland.

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Cumberland Hemiptera.—To the list of Cumberland Hemiptera (pp. 252-7 anteà) I can add the following:—*Malacocoris chlorizans* Fall., very local on Hazel in a lane near Wreay, on August 26th last. At the same time and place, I beat a few specimens of *Campyloneura virgula* H.S., from Oak. I have since found this latter species at Durdar. A specimen of *Phylus palliceps* Fieb. occurred at Orton from Oak, *P. melanocephalus* Linn. being common at the same time.—JAS. MURRAY, Balfour Road, Carlisle.

—:o:—

Cumberland Hepatics.—Many years ago the late Rev. R. Wood recorded many species of Mosses from the Caldbeck Fells district of Cumberland, but no Hepatics, so that the following species, which I gathered there in 1913, may be worth noting:—*Alicularia scalaris* (Schrad.) Corda, among mosses on High Pike. *Lophozia ventricosa* (Dicks.) Dum., High Pike, on the ground at 2,000 ft. *Plagiochila asplenioides* (Linn.) Dum., on rocks in shade in the 'Howk.' *Scapania dentata* Dum., High Pike, on wet rocks at 1,500 ft. *S. undulata* (Linn.) Dum., also on High Pike in wet places. *Madotheca platyphylla* (Linn.) Dum., abundant on shady bank in the 'Howk,' at Caldbeck.—JAS. MURRAY, Balfour Road, Carlisle.

* The occurrence is not extraordinary, as many of the species are double brooded. In the North of England, March and April, and June and July are the months in which the nests can be looked for.—R.F.

FOREIGN SPIDERS IN YORKSHIRE.

WM. FALCONER,
Slaithwaite, Huddersfield.

ADVERTING to Mr. Mosley's note in last month's issue, p. 330, it is not the first time that *Zoropsis rufipes* Luc. has been sent to me from a Yorkshire locality. In 1912, Mr. Musham forwarded a female, which had been taken alive in the coal-scuttle of a Selby tradesman. Early in the same year a female of *Z. maculosa* Camb.* (the second known occurrence of this

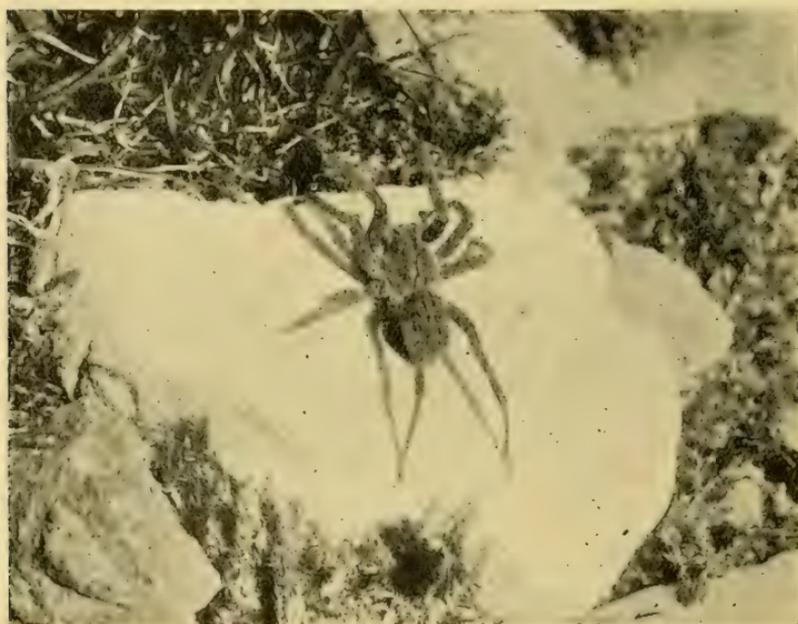


Photo by]

Zoropsis maculosa Camb.

W. J. Clarke, F.Z.S.

spider), was obtained on the premises of a Scarborough shop-keeper, from a consignment of Jaffa oranges, and kept alive for some time by Mr. W. J. Clarke, who managed to secure an excellent snapshot of it (herewith produced) in a characteristic posture, and showing the spots on its body and legs, from which it derives its specific name. Both species are natives of the Mediterranean region, Canary Islands, etc.

Though somewhat resembling in appearance some of our

* Described and figured in the *Proc. Zool. Soc., London*, 1907 (published May, 1908) pp. 820-823.

larger spiders, they belong to an entirely different group, with a different eye arrangement (Cribellatæ) characterised by the possession of an extra spinner differing in shape and position from the others, which is, always in the ♀ and sometimes in the ♂, associated with a comb of hooked bristles on the fourth pair of legs, though in *Zoropsis* neither structure is so highly developed as in the allied genera. The spinner produces a special kind of silk, which is carded by the comb, and spread over a framework of ordinary silk, forming a most tenacious snare. Similar webs made by their British relatives may be seen in old walls and cellars, and may be recognised when fresh by their blue appearance.

Mr. Musham has also sent me from Selby a female *Heteropoda venatoria* (of almost world-wide distribution) with an extraordinary number of young, newly hatched from a single egg-sac; found in a bunch of bananas; and I have seen displayed in various museums, examples of *Mygale* caught locally, amongst foreign products.

Doubtless, many other exotics reach this country, but on arrival finding no suitable habitat available, are speedily detected and destroyed, and all record of them lost.*

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The Birds of Shakespeare, by Sir Archibald Geikie, O.M., K.C.B., etc. Glasgow: J. Mackhose & Sons, 1916. x. + 121 pp., 3s. 6d. net. In this book Sir Archibald Geikie has extended his presidential address to the Haslemere Natural History Society, which was delivered in March last; and states that 'In all humility I desire to lay this little Tercentenary offering at the shrine of the "Sweet Swan of Avon."' Over fifty species of birds are enumerated by Shakespeare in his plays, and the apt references to them prove that in many instances he was familiar with their habits. This is shown by many quotations selected, pearls strung together with Sir Archibald's facile needle and inimitable thread. His notes are illustrated from blocks taken from Saunder's well-known 'Manual of British Birds,' though for some unexplainable reason these seem to us to be out of place. There is an excellent head-piece as a tail-piece. It shows the author with 'a friendly chough.'

An Introduction to the Study of Fossils (Plants and Animals), by H. W. Shimer. New York: The Macmillan Company. Pp. xiv. + 450. 10s. 6d. net. This volume is by the 'Associate Professor of Palæontology in the Massachusetts Institute of Technology,' and it is essentially an American publication. We know of no book quite like it published in Britain. Strictly speaking, it is an introduction to the science of Palæontology, and deals with almost every phase of the various forms of life represented in the rocks by their dead remains. All the examples mentioned are from America, but the remarks on the state of their preservation, the various ways in which remains of animals and plants are preserved, are so well described, that the volume will be welcome to British workers. There are nearly two hundred illustrations to the volume, which alone make it of value to the geologist. The price is very reasonable.

* See also *The Naturalist*, 1913, Feb., p. 114.

EDESTUS NEWTONI AT BROCKHOLES.

J. R. SIMPSON.

ABOUT the beginning of May, 1916, well boring operations were commenced at Rock Mills belonging to Messrs. Joseph Sykes and Co. Ltd., Brockholes, near Huddersfield, and by the middle of June the work was completed. A plentiful supply of water was obtained at a depth of 160 feet, and the bore-hole, which was 13¼ inches in diameter, was finished at 165 feet from the surface.

When the boring passed through the alluvium of the valley, it entered the group of shales underlying the Rough Rock which forms the highest member of the Millstone Grits in the district, and the following notes of the various strata encountered were drawn up during the work.

Section of bore-hole at Rock Mills.		Thickness.	Depth.
		ft. ins.	ft. ins.
Alluvium	{ Sandy Clay	8 0	8 0
	{ Gravel	8 0	16 0
Millstone Grit Shales below Rough Rock	{ Dark Shales, somewhat sandy in places, with bands of sandstone and ironstone	113 9	129 9
	{ Coal	0 3	130 0
	{ Sandy shale	12 3	142 3
	{ Dark sandstone with shaly micaceous bands, and beds of hard siliceous sandstone and con- glomerate	17 9	160 0
	{ Coal	0 6	160 6
	{ Shaly micaceous sand- stone	4 6	165 0

In the shales at a depth of 120 feet, a remarkably fine fossil was found by the engineer in charge, Mr. H. H. Freer. A small portion of the fossil, accompanied by a rough drawing which I made, was forwarded to Mr. John Pringle of the Geological Survey, who recognised it as belonging to *Edestus*, a rare and interesting genus of Coal Measure fish. A request was made for the other portion to be sent, and accordingly it was taken to London by Mr. Elon Crowther, senior director of Joseph Sykes and Co., who, at the request of Dr. A. Strahan, kindly presented it to the Geological Museum at Jermyn Street. Referring to the fossil in the course of a letter to Mr. Crowther, Dr. Strahan said,—‘It proves to be an unusually perfect example of a fossil fish spine of a type which is of the greatest rarity in Europe. We have one poor and imperfect specimen

in this Museum, the only one hitherto found in Great Britain. Your specimen is far more complete and will be of the utmost interest to geologists and zoologists from all parts of the world.'

The 'other specimen' referred to by Dr. Strahan was found in 1903 by Mr. John Pringle.

The fossil was then submitted to Dr. A. Smith Woodward, who read a paper thereon at the June meeting of the Geological Society, of which the following is an abstract:—

'The new fossil confirms the interpretation of *Edestus* as a row of symphyssial teeth of an Elasmobranch fish. The row of eight bilaterally symmetrical teeth, fused together, occurs at the tapering end of a pair of calcified cartilages, which evidently represent a jaw. An imperfect detached tooth probably belongs to an opposing row. All the teeth are unusually large compared with their base, and the serrated edges of most of them have clearly been worn during life. As in the case of the American Carboniferous *Edestus mirus*, small Orodont teeth of the form named *Campodus* are scattered in the shale near the jaw. Markings on the *Edestus* teeth themselves suggest that they have been derived from the *Campodus* type of tooth. The specimen, which represents a new species, was obtained by Mr. H. H. Freer from shale below the Rough Rock in the upper part of the Millstone Grit at Brockholes, near Huddersfield, and was presented to the Museum of Practical Geology, London, by Mr. E. Crowther.'

Dr. Woodward proposes the name of *Edestus newtoni* for the new species, and a full account will appear later in the Journal of the Society. A cast of the fossil is being prepared and it will be presented to the Huddersfield Natural History Museum.

The fish was associated with a number of marine shells, etc., among which the following have been recognised:—

<i>Posidoniella laevis</i> Brown.	<i>Glyphioceras</i> sp.
<i>Pterinopecten papyraceus</i>	<i>Orthoceras</i> cf. <i>asciculare</i> Brown
J. Sow.	
<i>Gasteroceras</i> sp.	<i>Edestus newtoni</i> A. S. Woodward
<i>Glyphioceras reticulatum</i> Phill.	<i>Modiola transversa</i> Hind.

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We have frequently drawn attention to the difficulty of quoting from *The New Phytologist* on account of its multiplicity of references. The part we have just received, however, seems to be 'the limit.' It is headed 'Vol. XV. No. 7. July 1916. New Phytologist Reprints. [Published September 6th]. No. 1 [out of print]. Lectures on the Physiology of Movement in Plants (1907), by F. Darwin. New Phytologist. Lectures on the Evolution of the Filicineae. A British Botanical Journal, by A. G. Tansley. Edited by A. G. Tansley, M.A., F.R.S.' The imprint reads 'William Wesley & Sons, 28 Essex Street, Strand. Price of Double London, four shillings.' It contains 24 pages, without plates, which is at the rate of twopence a page. We suppose we must put it down to the war, or beer!

REPORTED NESTING OF THE WHITE WAGTAIL IN YORKSHIRE.

H. B. BOOTH, M.B.O.U., F.Z.S.

FOR several years I have been looking forward to being able to report the nesting of this species in the West Riding, and more particularly from this dale in which I live (Wharfedale). I have also drawn the attention of my friends who are ornithologically inclined to keep a sharp look-out for the same possibility. Anyone who has the leisure to regularly patrol a few miles of our river banks during the months of April and May is almost certain to come across one or more White Wagtails. I have even seen single males on March 30th and 31st respectively in different years. But most of these birds are merely passing immigrants; although on several occasions, I have watched White Wagtails that I believed had the intention of—or were actually—nesting here. To quote just a few instances that occur, at random. About half a dozen years ago, a party of three males and two females regularly frequented a portion of the Wharfe close to Ben Rhydding to my knowledge for eighteen days, until the end of April—after which I could not find any trace of them. On another occasion, I watched a male White Wagtail for over an hour just above Grassington in the same dale, in May, which I felt sure had a sitting female; but I was unable to locate the nest, and I had to hurry away to catch the last train. Pressure of business prevented my re-visiting the spot that year, and several of my friends to whom I mentioned the occurrence, were unable to go to continue the investigation. Yet I feel sure that had any fairly good ornithologist been able to have spent a few hours there during the period of the feeding of the young, he would have been able to add a new nesting species of bird to the Yorkshire list. This year, I watched a single male for a considerable time on April 26th at Bolton Abbey, (ante. p. 267). It disappeared, but my friend, Mr. E. P. Butterfield, wrote me later that he had watched with field glasses, a male White Wagtail in Bolton Woods, about two miles further up the river on May 22nd. This may, or may not, have been the same bird; but, unfortunately, he had not the time at his disposal to prove whether it was nesting there. There are several other instances that I could relate in which it might almost be presumed that it was nesting here; but actually, the fact has still to be recorded. The current number of *The Zoologist*, (Sept. pp. 358-9), reports the nesting of the White Wagtail on the northern side of Scarborough this year, but I am afraid that this record will have to be received with a very large mark of interrogation.

The identification rests chiefly with the photograph of two nestlings obtained by a friend. Any bird photographer knows that the slight difference in black and white between the Young Pied Wagtail and the young White Wagtail, could not be recorded by the camera. A slight exposure, or a light, or a dark-print, would make much above the difference. I have even seen photographs of Lesser Black-backed Gulls, taken at close quarters, that I could not differentiate from Herring Gulls. Therefore we can only dispose of this record as eminently unscientific. And, although I believe that the White Wagtail does nest sparingly in Yorkshire, yet we can only accept this Scarborough record as *non-proven*.

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Elements of Mineralogy, by **Frank Rutley**. London: Murby & Co., 1916. Pp. xxii. + 394, 3s. 6d. net. This handbook is too well known to need description. The fact that it has now reached its nineteenth edition is a sufficient guarantee of its worth. The present edition has been revised by Mr. H. H. Reed, and there is a lengthy introduction by Mr. G. T. Holloway. Northern students will find many references to minerals to be found in Yorkshire, Derbyshire, Durham, Cheshire, Nottinghamshire, Northumberland, Cumberland, the Cheviots and Isle of Man.

The Birds of Britain: their Distribution and Habits, by **A. H. Evans, M.A., F.Z.S. etc.** Cambridge University Press, 1916. Pp. xii. + 275, 4s. net. The author hopes that the book, 'though primarily intended for school,' may be found useful by those who require a short handbook which includes the results of the most recent observations, and is adapted to modern nomenclature. That it is such a 'short handbook' we admit, but we doubt whether, with all its latin names and classifications, etc., it will be in great demand in schools. The notes are certainly written in a pleasant style—the number of species dealt with is enormous, and there are plenty of illustrations. There is also a list of 'occasional visitors' and a good index. Though the illustrations are taken 'for the most part from nature,' some at any rate, certainly seem to be photographs of museum specimens.

Agricultural Geology, by **R. H. Rastall**. Cambridge, 1916: pp. x. + 331, 10s. 6d. Mr. Rastall deals with Minerals and Rocks, Weathering, Transport and Corrosion, Sediments, Superficial Deposits, Soils, Water Supply and Drainage, and Geological Maps. The second half of his book is devoted to Stratigraphical Geology, in which rocks from Pre-Cambrian to Recent are reviewed. He concludes with a chapter on the Geological History of Domestic Animals, and there is a poor index, with which he has been helped. There are some remarkably clear diagrams, apparently the work of Prof. J. E. Marr. The frequent use of chemical equations gives the pages a forbidding aspect. For instance, 'Serpentinization is generally attributed to the action of Carbon dioxide dissolved in water,' which is explained by " $2[2 \text{Mg.O. Si.O.}_2] + \text{C.O.}_2 + 2 \text{H}_2\text{O} = 3 \text{Mg.O. 2 Si.O}_2 + 2 \text{H}_2\text{O.} + \text{Mg.C.O.}_3$ ". This will not appeal to many readers unless they are familiar with chemistry. We find no reference whatever to Marr's recent book on a similar subject, and as the author covers so many subjects, we should have liked some reference to the old soil maps issued in the county agricultural surveys published by the Board of Agriculture over a century ago. These were largely the basis upon which Smith's Geological map of 1815, and subsequent geological maps, were prepared. The price of the book seems sufficient.

CONCHOLOGICAL NOTES FROM MALTON.

W. GYNGELL.

THE Malton district has probably been defined by the local naturalists, as their Scarborough brother workers have mapped out the country, which for such purposes *they* call *their own*—roughly bounded on the South-West by a line drawn from Weaverthorpe to Pickering.

Scarborough conchologists are most justly proud of the very large number of inland species of mollusca found within a six-mile radius of their borough. Mr. J. A. Hargreaves' list published in the *Conchological Society's Journal* for July 1909, contains the names of 102 species. Since that date a few additions have been made, and at the present moment quite 100 species are to be found *living* in the district. There is no reason to doubt that Malton, *having land all round it* (which Scarborough has not), when thoroughly investigated, will be able to show as many or more species than may be found near Scarborough.

The writer much regrets that he, personally, has been able to spend very little time in or near Malton; but a few notes of his own finds there, meagre as they are, may not be without some interest.

* *Helicigona arbustorum* L.—A colony of this species on the Scarborough Road, just beyond Norton, produces in fair numbers the smallest specimens known to the writer. This 'variety minor' is also common near North Grimston.

*† *Helix nemoralis* L.—One or two varieties of this most beautiful and abundant species, varieties absent from the Scarborough district, occur at Malton. Variety *castanea* on the road to Old Malton, variety *albina* also near the town; whilst the band variety 00300, very rare at Scarborough, becomes fairly common as one approaches Malton. On the road to North Grimston the variety *albolabiata* was taken in 1913, and here both large and heavy specimens of fine colour are not uncommon.

The six-banded variety, referred to by Mr. Taylor, of Malton, as having been found some years ago, was doubtless merely a split banded form of the type, not a very rare occurrence.

† *Helix hortensis* Müller.—The variety *coalita*—with bands coalesced, and thus almost unicolourous black—not usually common, is to be found near Castle Howard, on the road from Malton, and here also occur specimens with bright yellow apex.

* *Vertigo pygmæa* Draparnaud was found near North Grimston in 1913.

† *Succinea putris* L.—By the river side at Old Malton very large specimens were to be found a few years ago.

* = East Riding. † = North Riding.

† *Limnæa auricularia* L.—Most remarkably wide-mouthed, and almost square-shouldered specimens, were taken in the lake at Castle Howard about ten years ago. The writer has seen nothing approaching them from elsewhere, but recent visits have failed to produce further specimens or, indeed, the species in any form.

*† *Limnæa stagnalis* L.—It is quite unusual to find this species in a river properly so-called, but Mr. Laverack showed some at the recent Yorkshire Naturalists' Union Meeting, which had been taken in the River Derwent, and the present writer has also taken it there; only on one other occasion has he noted a river habitat, and that was at Stafford.

*† *Planorbis vortex* L., lives in the lake at Castle Howard, and in the Derwent at Kirkham Abbey.

† *Aplecta hypnorum*, in a ditch at Marrishes, together with

† *Limnæa palustris* Müller, and

† *Valvata piscinalis* Müller, may be taken any day.

*† *Bithynia tentaculata* L., is in the river at Kirkham Abbey. Here also occurs

*† *Unio tumidus*; and the finest set of *Pisidium amnicum* that have had the misfortune to fall into the writer's dredges came from this spot.

*† One has to go half way to Malton to get *Neritina fluviatilis* from the River Derwent; doubtless it is to be found further down the stream.

* The writer would like to know more about "*Anodonta tumidus*"—reported by Mr. Walton from Scampston Lake. Here may be found *Unio pictorum* L., cleaner and more delicately formed and coloured specimens than are to be met with in other localities.

Other common species noticed in the official report of the Yorkshire Naturalists' Union Meeting,† and found by the writer, need not be repeated here.

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British Birds for September contains obituary notices of A. G. Leigh; Lieut. Col. B. R. Horsburgh; Capt. J. M. Charlton, and Lieut. H. V. Charlton.

The Scottish Naturalist for September contains a memoir and portrait of the late J. A. Harvie-Brown. Mr. W. Denison Roebuck writes on 'Main Argyll and its Inland Molluscan Fauna.'

Mr. J. W. H. Harrison has an illustrated note on Psocoptera collected by Mr. R. S. Bagnall at Grange-over-Sands, in the *Lancashire and Cheshire Naturalist* for August; Mr. G. A. Dunlop gives a list of Hemiptera (of Lancashire and Cheshire) collected in 1915; Mr. T. A. Coward continues his notes on the Vertebrate Fauna of the area; and Mr. R. Standen records *Chelifer (Chernes) powelli* Kew, and *C. (Withius) subruber* Simon, in Lancashire and Cheshire.

† See *The Naturalist*, 1916, pp. 265-266.

THE GEOGRAPHICAL DISTRIBUTION OF THE MOTHS OF THE SUBFAMILY BISTONINAE.

J. W. HESLOP HARRISON, M.Sc.

(Continued from page 278).

V.—THE GENUS NYSSIODES (OBERTHÜR)

Nyssiodes lefuarius (Erschoff). Distribution:—Japan, Western China, the regions about the Amur river as far north as Okhotsk and as far south as Corea.

With the study of the present genus, we face for the first time the consideration of one of the oldest genera of the group. From this, one must not conclude that it has persisted as such unchanged during the whole of its existence. Undoubtedly, its enormous plumose antennæ, the huge jawbone-like gnathos, the more slender and less hairy abdomen indicate its primitive character. Nevertheless, the valves of the male genitalia are of the true *Nyssia* type to the oldest species of which, *Nyssia zonaria*, it approximates in the very unusual combination of a velvety black abdomen with bright yellowish segmental incisions.

Without entering into the phylogenetical connection of the genera *Megabiston*, *Lycia*, *Palaconyssia*, *Nyssiodes*, *Poecilopsis* and *Nyssia*, which is reserved for special treatment, it is sufficient to say that in *Nyssiodes*, we are dealing with the remains of the line which linked up the forms with apterous females to the main Non-Boarmioid Bistonine line.

From the physiological remoteness of the genera *Lycia* and *Nyssia*, compared with the comparative nearness of *Lycia* and *Poecilopsis*, as betrayed by their partially fertile hybrids, and from the manifest relationship between *Nyssia zonaria* and *N. lefuarius*, there is but one conclusion to be drawn, and that is that the two latter forms, or what then represented them, must have at one time been in contact. At present, if we look at the map, we find that the nearest stations of the two insects are two thousand miles apart; if we replace *zonaria* by its two nearest allies in the *Poecilopsis* group, i.e. *P. rachelae* and *P. lapponaria*, the distance is increased in both cases to four thousand miles, in the former case to the east, and in the latter, to the west. It is, however, certain that the contact must have been at the point of origin of the newer genera and, consequently, in the old Miocene and early Pliocene continent to the north of Europe and Asia.

But this implies either that *Nyssiodes* has retreated from that point to its present stations, or that it has originated in the territory it now holds, and has spread northward, receding

once more when the climate became unfavourable or the ground submerged. The former supposition is the least likely, for then we should naturally expect to find European colonies of the insect, and this we fail to do. Let us observe, however, that this view means that, in the case of other insects which transgressed the point at which Miocene and Pliocene European and Asiatic continents were severed, we do find colonies so isolated. Such, indeed, is the case in very many insects as well as in other groups. Typical instances in the Lepidoptera are *Ennomos autumnaria*, limited to Europe and Eastern Asia, *Deileptenia abietaria* to Central Europe and Japan, *Hybernia leucophæaria* to Central Europe, the Amur district and Japan.

From these considerations, we conclude either that *Nyssiodes* originated in its present habitats or more probably, when due attention is given to the Boreal nature of the group, at points north of them, in Miocene times. This view is confirmed by the fact that the lines of advance of all the primitive members of the *Bistoninae*, and of the whole Boarmiad family, as well as those of the early groups, e.g., the Attacid genus *Actias*, radiate from the centres. And many of these insects are demonstrably of Miocene origin, for their present habitats coincide with those of many Miocene relicts, like the Sensitive Fern (*Onoclea sensibilis*), the former existence of which in high Arctic latitudes, is proved by abundant fossil remains in mid-Tertiary strata. Adopting, then, the conclusion that *Nyssiodes* came into being in the ancient Asiatic continent to the north of Wrangel Island, we see that it must have spread westward but, most certainly, not *via* Western Asia, for over that area rolled a mighty inland sea. Most likely, the advance was due west or even north-west. Reaching the northern European area, it yielded us the genera *Pocilopsis* and *Nyssia* very early. Almost immediately, local subsidences of the land cut it off from its derivatives and drove it gradually south eastward over the huge peninsula which then, and even into Pleistocene* times, stretched north westward from what is now Cape Chelyuskin and the New Siberian Islands. Gaining the valley of the River Lena, and utilising it and the foothills of the then relatively lower Yablonoi Mountains as a causeway, it continued its slow and methodical retreat, finally obtaining access to the headwaters of the River Amur at some place not far from the pass used by the Trans-Siberian railway. Here, safety was attained, and now it was not a question of retreat, but of organising new ground. At this period, the whole of its present northern stations, as well as the shores of the Yellow Sea were invaded, and from Corea, across the low isthmus which connected that country to Japan, the latter district was

* As the fossiliferous deposits of the islands show.

reached. Simultaneously, another branch advanced up what was then the basin of the Hoang-ho and took possession of the present outposts in Western China.

But now, climatic conditions were more constant, and little further change took place in the area occupied except that the constant pressure of the Pacific waves and currents severed Japan from the mainland. This, except for local changes such as that which destroyed the species in its localities near the old mouth of the Hoang-ho, in 1888, brings the vicissitudes undergone by *Nyssiodes lefuarius* to a close.

VI—THE GENUS PALÆONYSSIA (HARRISON).

Palæonyssia trisecta (Warren). Distribution:—Transvaal, Natal, Pondoland and Transkei.

This is the only outlying apterous form of the Bistoninae and, geographically, is so isolated that one feels tempted to state that it represents an independent development of some winged Bistonine genus of the *Haggardia* type. This, however, demands an arm of coincidence so long that one cannot grant it; it means that we have to assume that on three, if not four, separate occasions, the Bistonine sub-family has yielded wingless forms. Nor is there any need of it; structurally, in many respects, the insect is more primitive than *Haggardia* and its allies and it is precisely in these structures that *Palæonyssia* approaches the older Bistonine forms. Its heavy antennæ alone suffice to indicate an early origin and, when this is coupled with a furca that brings it near to *Megabiston*, a genus which has certainly produced the *Lycia* line and its satellites, the only position possible is that it represents a very early offshoot from the line of which the genera *Nyssiodes*, *Nyssia* and *Pocilopsis* are links or appendages. Its almost unique, stout, finger-like furca in the male genitalia too, points to an origin prior to *Nyssiodes* and, similarly, the heavy antennæ, not to mention other minor but primitive structural characters, show that it antedates *Nyssia* and *Pocilopsis*. Thus, in it, we are concerned with the oldest apterous species in the chain. This simply means that, let the original home of the sub-family be where it may, this species has advanced from it. As pointed out before, of a certainty, this home was in North-eastern Asia, if not of the present, then that of the Miocene and Pliocene epochs. From this, it is clear that the line of descent which *Palæonyssia trisecta* represents, has made a journey of ten-thousand miles from its birth place. It equally implies that, if such a journey was possible, other forms should have traced out the same path and this supposition is justified for such species we see in members of the genera *Actias*, *Argynnis* and *Colias* amongst others. *Actias mimosae* occurs in Natal, in the very areas occupied by *P. trisecta*. Of all

genera which are of Miocene dispersal, and are thus Miocene relicts, *Actias* keeps closest to the recognised abodes of such relict forms in the eastern portions of Asia and America. And, what is more significant, it has its headquarters now exactly where we have fixed the " fons et origo " of the sub-family we are studying.

Obviously, a mere study of the map suggests that such Miocene elements of the South African fauna would most easily reach their present abodes across the continent (whether we call it Lemuria or anything else) which once stretched across the Indian Ocean. But the presence of *Actias selene* in India and Ceylon, of a modified *Actias*—*Graellsia isabellae*—in Spain, and the absence of *Actias* from Madagascar, backed up by the fact that the nearest relative of *Palæonyssia* in the latter island is *Boarmia acaciaria* and therefore a representative of a genus flung worldwide in times far anterior to the existence of *Palæonyssia*, precludes this view. We glean from these facts that even then, Madagascar and consequently the African continent, were isolated from Asia *via* the Indian Ocean. Hence the path used must have been southward through Africa and this is confirmed by the occurrence of the other genus *Argynnis*, invoked to help us, on Mount Kilimanjaro. Whilst it is true that *Argynnis hanningtoni* gets no further south than this district, it is well known that the fauna and flora of the whole of the plateau of British and (' former ' when this appears, I hope) German East Africa show affinities with that of South Africa on the one hand, and with that of Abyssinia on the other, rather than with Tropical Ethiopian forms. From this, we perceive that a passage for temperate forms existed—nay exists—straight down the East African plateau from Abyssinia to Natal, Cape Colony and the Transvaal. Now add to this that the facies of the higher Abyssinian Flora and Fauna is Palæarctic and we get the desired connection with the latter geographical region.

To Abyssinia from Western Asia, we have apparently the choice of two routes. The course, it seems, may have been either from the Arabian plateau to that of Abyssinia across what is now the Straits of Bab-el-Mandeb, or across the Isthmus of Suez, and up the Nile Valley or its eastern uplands. Either course postulates what is now an impossibility, and that is the passage of genera like ours over a desert. We have, however, assumed that when the advance was made, two passages existed, and this is certainly not justified. The present geological and climatic conditions, both of the hills bordering the Nile Basin or the East, and of the deserts of Arabia and Palestine, came into being with the disastrous upheavals of early Pliocene times. Throughout the Miocene period, these areas were fertile and well watered. Where now lie the waters

of the Red Sea, there only flowed a noble river, receiving both the Nile drainage and that of Central Syria. Consequently, the two lines of advance were but one and the course followed was in all probability a broad one crossing the whole area from Palestine to the uplands of Southern Arabia—exactly the path indicated by the distribution of the European Mollusc genus *Clausilia* in Asia Minor and Africa and by that of the Coney (*Procapra syriacus*), and of the fishes peculiar to the Jordan and Upper Nile. Tracing back the line of advance of *Palaeonyssia* is now an easy matter; except that almost the whole of the great Siberian Plain was one vast inland sea, and that the great Central Asian system of folded plateaux was distinctly lower then than now, the southern course of Miocene animals advancing from North Eastern Asia into new areas, was not greatly different from that available to-day. It is just such as was followed by the first great colonising sweep of Oriental forms which hurled itself along the fertile slopes of the Yablonoi, Sajon, Altai, Thian Shan and Hindu Kush Mountains through the uplands of Persia and across Southern Syria; here it passed in two waves, one reaching Europe *via* Asia Minor, and the other advancing into what then existed of our continent *via* North Africa and the two (perhaps three) causeways across the Mediterranean Sea. The latter was the course adopted by *Actias* in reaching Spain, but only after it had parted company with *Palaeonyssia* and a branch of its own genus which struck south across Persia and Arabia to Abyssinia and onward as we have shown.

With this link, the wanderings of *Palaeonyssia* are completed, and its long and eventful journey from its headquarters in North Eastern Asia to its present home in South Africa traced.

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Mr. W. Mark Webb has an illustrated article on 'Grangerising' in *The Selborne Magazine* for September. In the same number, Dr. H. H. Corbett writes a caustic note on 'Sources of Error.'

Wild Life for August contains the following items:—'Some Field Notes on the Nightjar,' by G. C. S. Ingram; 'Rats and Mice,' by L. E. Adams; 'Notes on Reed Bunting,' by E. E. Pettitt; 'Tortoise-shell Larvæ,' by O. Warner; 'An August Diary in an Inland District,' by E. Eykyn, as well as a continuation of Mr. Selous's 'Notes on Sexual Selection in Birds.' The publication contains the usual wealth of illustration.

The use to which the curious instruments known as coliths were put has been the subject of much controversy. In *Knowledge* for August, Major Marriott considers that the opinion is now generally prevalent that they are of human workmanship, and that they were body stones being well adapted for rubbing down the body and limbs, scraping the skin and rasping the toes. He illustrates his point by showing similar stone implements still used by modern savages, and also by terra cotta foot rasps used by modern Egyptians.

ORNITHOLOGICAL OBSERVATIONS AND REFLECTIONS IN SHETLAND.*

EDMUND SELOUS.

(Continued from page 326).

ALL these Kittiwakes must be young ones, for their bills are not coloured, but blackish, as when they first leave the nests—at that time also they keep together and apart from the older birds. They have flown up in relays from another place of assemblage, a green knoll higher up on the bank where they had been standing, but not bathing in its vicinity, and here I noticed a grown Herring Gull and its full-sized young one, standing amongst them. Before long, as the Kittiwakes kept flying to their bathing place, these two birds went off with one of the parties and stood (I cannot quite recall if they bathed) with the rest there. The old bird, I think, took the lead in thus leaving. Now why should these two Herring Gulls—the grown one in particular, for its chick but follows it—be here amongst this flock of young Kittiwakes? When the Herring Gull and Great Black-backed Gull, as I have noticed, congregate at the same place, the two species stand in separate groups, even though, together, they may be said to form one group, but these birds were just two units in the midst of a large alien flock. The Herring Gull, as I have myself seen, preys to a certain, but only, I believe, a slight extent, upon the young Kittiwakes, and he is also very similar in coloration to the latter species, when mature, though there is considerable difference in size. Does this resemblance help him at all at the expense of his 'food-plant' so to speak? The young Herring Gull, it is true, has it not, but it is probably only the grown one that thus sometimes attacks the young Kittiwakes. Thus when one of the latter is killed, it is by an agent not so very like itself, it is true, but perhaps sufficiently like the parent, that used to feed it, to prevent its taking any alarm just before the attack is delivered, however close the enemy may be to him, and not to allow the rest of the tribe to take warning and avoid such contiguity in the future, as they perhaps might do did no such likeness exist. If, for instance, the young Herring Gull were to act in the same manner—which it probably does not—it might become an object of dread, as also, perhaps, the Lesser Black-backed Gull, in which the coloration is much more markedly different. Assuming, however, that the young one is pacific or passive, the Kittiwakes have no cause to fear it, whilst for the reasons suggested, they do not, in spite of what sometimes happens to them, dread the parent either. Thus both can stand unregarded in their midst, but supposing

that the mature Herring Gull were, in colouring, like the young, or, at least, had no resemblance whatever, either to the mature or young Kittiwake, is it not probable that it would become an object of dread to the young birds who thus suffer by it, so that they would either avoid it or mob it when it appeared amongst them? They did, in fact, behave in the first of these two ways on the occasion when I saw one of their number thus victimised. It took them indeed some time to realise that there was anything wrong, but at last they did, and then there was a sudden commotion of close-packed scurrying wings outwards, in a circle, from where the tragedy was enacting—a panic, in fact, but not a very pronounced one, for the birds went only a little way before coming down again on the water. Were these attacks made frequently, it would seem surprising that even young birds should not be both quicker to take alarm, in each particular case, and also more generally distrustful of the species from whom they thus suffered. But I do not think they are very frequent, and in this circumstance, together with some degree of resemblance between the preyed upon and preying species, we have two primary elements through which a true mimetic resemblance might, in time, be brought about. Even though, in this particular instance, the process may not have begun, and may never perhaps establish itself, still the facts present us with a possible clue to 'the initial stages' of some of those more or less puzzlingly perfect resemblances in nature which we find it so difficult to account for, but do not perhaps show much imagination or energy in trying to find out. As it appears to me, it is a better plan—that is to say it might often have better results—to fix our observation on some incomplete state of things, and try to reason out how it might grow into completeness, than to pay attention to culminations only, and speculate downwards without much observational searching to guide us. The beginnings of any striking development in nature—the 'run' or 'bower' of the Bower Birds, the courting display of the Blackcock or Birds of Paradise, the deceptive resemblance between a spider and a bird-dropping, or a humble-bee and a fly, parasitic upon it—are of course much less striking and, from that point of view, much less interesting than what they have ultimately led to. Somewhere, however, and probably scattered all about, they must exist, and in their discovery lies the solution of every such problem. We should therefore keep constantly endeavouring to discover them, and this is best done by developing an equal interest in what is ordinary, which we have so many chances of seeing, and what is extraordinary, where the opportunities for observation are so much fewer. For once, I believe, where the process of a thing may be deduced, it may be seen three

times—or perhaps three hundred. Facts at any rate are required as a basis of deduction. The relations of these young Kittiwakes and grown Herring Gulls present some facts which seem significant. Here we have a certain resemblance in coloration and marking, not indeed of one to the other, as thus differentiated in age, but of the two species when mature. The young Kittiwake however is as familiar with its parents' plumage as its own, and as the parent is many times larger than the chick in the nest, it grows up accustomed to see something of a certain appearance, very much larger than itself, by whom it is fed and in whom it has the greatest confidence. Moreover, it would often see—and still more often after it had left the nest—the Herring Gull itself, so that, so long as nothing occurred to make it distrustful of the latter, it would not have the slightest reason to be alarmed by its quite close presence. As soon, however, as these attacks began to be made upon it, this reason would exist, and in proportion as they became more frequent, its apprehensive wariness and power of discrimination between the real and apparent parent or parental stock, would become sharpened. Just in the same proportion however, should the taste for young Kittiwakes become more strongly developed in the kindred species, would the process of assimilation in size and colouration of the latter to the former tend to increase, and thus, through a channel that one could never have predicted, a foundation would have been established for one of those mimetic resemblances of which nature presents us with such extraordinary examples. At least, if any advantage were to be derived through this diet—and it should certainly be a nourishing one—such a result would be likely to follow. Whether it is actually now in process of manufacture, so to speak, I have not had sufficient opportunity of observation to allow me to conjecture. It may very well be that we see as yet only the pedestal and not even the toe of the statue that may some day be standing on it. But, after all, even that is something. Is there any case analogous to this, as imagined, in the insect world? Hornets prey largely and habitually on wasps, yet the latter do not appear to recognise them as enemies or make any particular effort to get out of their way. Yet caterpillars endeavour to escape the attack of the particular kind of Ichnemion fly parasitic upon them, and the larva of the Puss Moth has even special filaments from which it ejects over the enemy an acid which is sufficiently strong to be sometimes fatal. Bees, too, know and fear the Death's Head Moth, and insects of all kind do what they can to get clear of the armies of foraging ants that devastate the forests of equatorial Africa and South America. Why then does not the common Wasp fly in terror from the Hornet? Despite of what seem to our

human vision decisive differences between the two species, both in size, coloration and markings, there is yet a general resemblance, and if this is sufficient in nature to deceive the eye, at least in its practical working, then the initial stages of mimetic or protective resemblances would not seem really to present such difficulties as we are sometimes inclined to see in them.

I do not see that the question is much affected by the fact that in the above two instances, the species concerned are closely related to one another. One might suppose that a generic resemblance would make an excellent starting point for a mimetic one. I cannot indeed, at this moment, recall any case of the kind, but they may nevertheless exist, though the very fact of the propinquity would tend to obscure any subsidiary process through which the initial likeness might have been increased. But what holds for two related species must hold equally for two belonging to separated groups, as between which the chance of circumstance had brought about the same or similar correspondence, from which the process of convergence might commence.

The Kittiwakes now fly away from their bathing place by ones, by twos, by threes, sometimes by a few more, but not as a flock, and with intervals, which may be protracted ones, between each exodus. Some spread themselves over the land to feed, others, for the same purpose, seek the beach of the adjacent voe, but a few fly back to the place from which they came and where some have remained all the time. There are some, too, who fly first in a wild way over the waters of the loch, dashing and swooping down towards them and up again with hoarse clanging cries. They are not fishing but disporting themselves in pure joy—at least it seems so.

(To be continued).

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The Journal of the Board of Agriculture for September contains particulars of 'Experiments on the Preparation of Home-made Rennet,' by A. Todd and E. C. V. Cornish.

We have seen Volume X. of *The Animal World*, a monthly advocate of Humanity, which is issued by the Royal Society for the Prevention of Cruelty to Animals. It is excellently printed and illustrated by numerous beautiful photographs, most of which have a bearing upon the Society's aims. *The Animal World* is sold at 2d. a month, and should be in the hands of all who are interested in kindness to animals. It will particularly appeal to the young people.

We have received the *Thirty-eighth and Thirty-ninth Annual Reports and Proceedings of the Lancashire and Cheshire Entomological Society* (1s. 6d.), which contain 36 pages, and 11 pages separately paged, devoted to Sphinges (? of Lancs. and Cheshire). Besides the reports of the various meetings held during 1914 and 1915, the pamphlet includes the Presidential Address of Mr. R. Wilding, which contains a list of the additions to the British Insect Flora during the past twelve months.

FIELD NOTE.

ARACHNIDA.

Arachnids on the N. Wales Coast.—Among a number of species taken on the N. Wales coast during the latter half of July, 1915, the following are worthy of special record:—*Hahnia pusilla* C. L. Koch:—one female in the wood at the base of the Tower Hill, Abergele; a very rare British spider, on record for Delamere Forest, and for two Yorkshire localities, Hebden Bridge, and Sawley Moor, near Ripon. *Wideria melanocephala* Cambr:—two ♀s on the foreshore between Pensarn and Llandulas and three ♀s in the above-named wood; previously reported for Dorset, New Forest, Wicken Fen, Delamere Forest, Cumberland and Leinster. *Oxyptila sanctuaria* Cambr, ♂, ♀ at the base of herbage at Gogarth, Great Orme, and several ♂s in two places on Conway Mountain from procumbent furze; rare, and noted for Dorset, Sussex and Guernsey. I have had also examples to name from Epping Forest, and Aberystwith. Nearly all the specimens so far met with in this country have been males. *Anelasmocephalus cambridgi* Westw:—hill behind Cefn yr Osof Cave, Gwrych, from a mixture of moss, furze and dirt, and the wood at the foot of Tower Hill, Abergele, from humus; one example at each place; the rarest but one of our harvestmen, and easily recognised not only by its structure, but also from its peculiar habit of covering its body and limbs with dirt. Previously known from Dorset, Isle of Wight, Sussex and Cornwall, and I have had an example from Tring.—W. FALCONER, Slaithwaite.

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The Irish Naturalist for September contains a portrait of Lieut. Colin M. Selbie.

Knowledge for September contains notes on 'Fossil Otoliths,' by Col. C. E. Shepherd.

Knowledge for October contains a well-illustrated article on 'The History of Laboratory Heating Appliances,' by S. C. Bradford.

'Animals that break themselves up' is the title of an illustrated paper by C. F. Newall in *The Animal World* for October.

The Entomologist for October contains a paper on 'Biological and Systematic Notes on British Thysanoptera,' by C. B. Williams.

In an interesting report on 'British Odonata in 1915,' which appears in *The Entomologist* for September, Mr. W. J. Lucas gives particulars of a number of Lancashire and Cheshire records.

In *The Geological Magazine* for September, Mr. A. R. Horwood writes on 'The Upper Trias of Leicestershire.' We notice he briefly describes a new Triassic beetle, *Pterostiches grandia*, which we sincerely hope is a beetle.

Messrs. R. S. Bagnall and J. W. H. Harrison contribute 'Records of some New British Plant-galls, III. New Cecidomyd Galls found during the Summer,' to *The Entomologist's Record* for September. The list is extensive, and most of the records are from the northern counties.

NORTHERN NEWS.

We regret to notice the announcement of the death of Rolan Trimen, F.R.S., F.E.S.

Mr. G. Fenna writes on 'Astronomy in Shakespeare,' in the *Journal and Transactions of the Leeds Astronomical Society*, No. 23.

'Special Leaflet No. 65' can be obtained free from the Board of Agriculture and Fisheries, at Whitehall Place, London, and is devoted to 'Continuous Cropping.'

In the *Transactions of North Staffordshire Field Club*, Volume L., Mr. J. T. Stobbs gives a useful glossary of the geological terms in use in the North Staffordshire Coal-fields.

The late J. A. Harvie-Brown bequeathed his collection of books and manuscripts relating to the Natural History and Topography of Scotland as well as his natural history collections, to the Royal Scottish Museum, Edinburgh.

The suggested Excursions of the Yorkshire Naturalists' Union for 1917 are the following:—Maunby-on-Swale, Thornton-dale or Pickering, Garforth, Crosshills, Grassington, Market Weighton. The fergus foray is fixed for Helmsley.

We are glad to welcome a publication from the Liverpool Museum. It is a 'Handbook and Guide to the Replicas and Casts of Manx Crosses' there exhibited (20 pp., 4 plates, price one penny). There is a Preface by the Curator, Dr. J. A. Clubb; and the descriptions are by Mr. P. M. C. Kermodé, who has done so much to preserve the ancient stone crosses in the Isle of Man.

We have received the following valuable contributions from our friend Mr. T. Petch, B.A. B.Sc., who is in the Botanic Gardens at Peradenirya:—The Pseudo-Sclerotia of *Lentinus similis* and *Lentinus infundibuliformis*; Some Abnormalities of the Coconut Palm; Horse-Hair Blights; The Effect of Lightning on Coconut Palms; Henaratyoda Experiments. Most of them are well-illustrated.

We are sure that all those who obtain so much enjoyment from rambles in the country, and who admire the ferns, primroses and violets growing in their natural surroundings will agree that strong measures should be taken to stop the trade carried on by those who merely go out to collect them for sale. In order to check the practice, we are glad to see that two of the horticultural journals, 'The Gardeners' Magazine' and 'Amateur Gardening,' have decided not to accept in future advertisements inviting orders by post for ferns and other wild plants, excepting from those who cultivate them for commerce.

Part III. of *A Bibliography of British Ornithology*, by W. H. Mullens and H. K. Swann, appears with welcome promptitude (Macmillan & Co., pp. 241-384, 6s. net). Three other parts are yet to appear. The present instalment contains the names from Oxley Grabham to W. Markwick, afterwards Everfield. Mr. Grabham's name is 'included on account of his having written the Avifauna in the *Victoria History* of his county.' Among the names included we notice the Gurneys, J. H. Harvie-Brown, C. C. P. Hobkirk, John Richard Jefferies, Jourdain, the Keartons, Professor Lebour, R. Lydekker, MacGillivray and H. A. Macpherson.

We are glad to see that the number of books on natural history subjects is at last having some effect on the members of the book trade. The following letter appears in a recent issue of *The Publishers' Circular*:—'In an editorial note in your issue of the 9th inst., an exceedingly stupid mistake occurs, which shows the writer's utter ignorance of human physiology. I refer to the "curate's egg." Let it be stated, Sir, now and for all time, that it was not the curate's egg. It was the hen's.—Your obedient servant, R. ATKINSON. P.S.—It might have been a duck's egg. I would not pledge myself to what it was, but only to what it was not.'

Yorkshire Naturalists' Union.

ANNUAL MEETING OF THE ENTOMOLOGICAL SECTION.

President: PROF. W. GARSTANG, M.A., F.Z.S. (LEEDS).

Two meetings will be held at Doncaster, by the kind invitation of Dr. Corbett, on **Saturday, November 4th, 1916.** Afternoon meeting at the Museum, to commence at 3-15 p.m.; to consider and pass the Sectional Reports for 1916, and to elect Officers for 1917.

Tea, at 5 p.m., will be provided near to the Museum. At 6 p.m., members will meet in the lecture room, Free Christian Church, Wood Street, for the evening meeting. Several addresses on entomological topics will be contributed.

Exhibits of all orders of insects are invited, and it is of importance that exhibitors should attach their names to their exhibits and label specimens with names and localities.

The various Secretaries earnestly solicit notes and records made during the season on entomological subjects in the county.

Officials of Affiliated Societies are requested to notify their members.

Secretaries: (Lepidoptera) A. WHITAKER and B. MORLEY; (Coleoptera) W. J. FORDHAM, M.R.C.S., F.E.S. Other orders, ROSSE BUTTERFIELD, F.E.S.

B. MORLEY (Sectional Secretary), Skelmanthorpe.

VERTEBRATE ZOOLOGY SECTION: ANNUAL MEETING.

President: W. H. PARKIN, Esq.

Two meetings will be held at the **LEEDS UNIVERSITY** at 3-15 p.m. and 6 p.m. respectively, on **Saturday, November 18th, 1916.**

Business at the afternoon meeting:—

To consider and pass Sectional Reports for 1916 and to elect Officers for 1917.

To consider and pass the General and Financial Reports of the Yorkshire Wild Birds Protection Acts' Committee for 1916, and to elect Officers and Committee for 1917.

To consider and pass the Report of the Yorkshire Mammals, Amphibians, Reptiles and Fishes Committee for 1916, and to elect this Committee for 1917.

The following paper (and probably others) will be given:—"Some Bird Observations on the Hills of the Upper Calder," by Mr. Walter Greaves. Any member or associate of the Yorkshire Naturalists' Union is invited to attend, and to bring notes, specimens, lantern slides, etc., or matters of interest connected with the work of the Section, and to take part in any discussion.

Will Officials of Affiliated Societies kindly notify their members?

A Committee Meeting of the Yorkshire Wild Birds' and Eggs' Protection Acts Committee will be held at 2-30 p.m. All members of the Committee are requested to attend.

A. HAIGH-LUMBY (Hon. Sec.), Nab Drive, Shipley.

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THE NATURALIST.

A MONTHLY ILLUSTRATED JOURNAL OF
NATURAL HISTORY FOR THE NORTH OF ENGLAND.

EDITED BY

T. SHEPPARD, M.Sc., F.G.S., F.R.G.S., F.S.A.Scot.,
THE MUSEUMS, HULL;

AND

T. W. WOODHEAD, Ph.D., M.Sc., F.L.S.,
TECHNICAL COLLEGE, HUDDERSFIELD.

WITH THE ASSISTANCE AS REFEREES IN SPECIAL DEPARTMENTS OF

J. GILBERT BAKER, F.R.S. F.L.S., GEO. T. PORRITT, F.L.S., F.R.S.,
Prof. P. F. KENDALL, M.Sc., F.G.S., JOHN W. TAYLOR, M.Sc.,
RILEY FORTUNE, F.Z.S.

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“Lo! Hull rears a lofty head among old England's towns;
There doth she in riches, just ways, and great trade arise;
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NOTES AND COMMENTS.

NEWCASTLE NATURALISTS.

The *Transactions of the Natural History Society of Northumberland, Durham and Newcastle-upon-Tyne* contain the following papers:—‘Megalichthys,’ a study incorporating the results of work on previously undescribed material, by Rev. S. G. Birks; ‘Two Newly-discovered Whin-Dykes on the Coast of Northumberland,’ by J. A. Smythe; ‘Terrestrial Acari of the Tyne Province,’ by the Rev. J. E. Hull. In his elaborate paper on Megalichthys the Rev. S. G. Birks describes an enormous number of specimens, but he would certainly save students considerable time if he explained which of these observations (if any) are new. His bibliography is pathetic, but it includes a reference to a paper by the Rev. S. G. Birks. The plates, by Messrs. Gill & Fletcher, are excellent. Dr. Smith’s contribution on the newly discovered Whin-dykes is of value, and the numerous records by Mr. Bagnall and others, and the Rev. J. M. Hicks’ report of the Field Meetings for 1911-2, contain many interesting records.

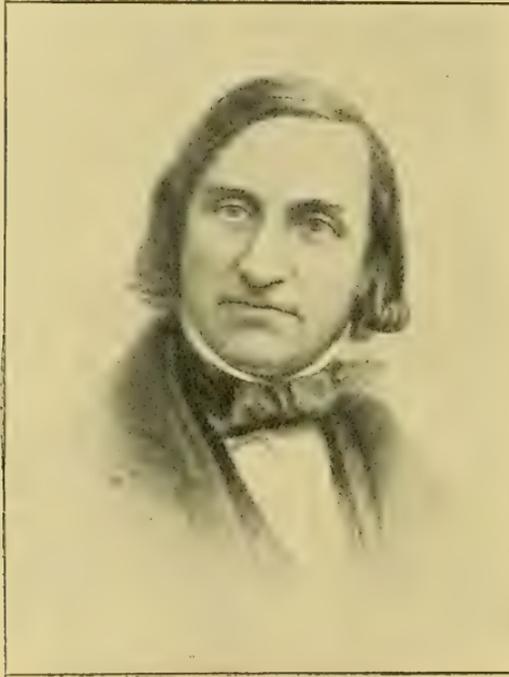
SHEFFIELD ARCHÆOLOGISTS.

We have received the *Transactions of the Hunter Archæological Society* (Sheffield), Vol. I., No. 2; a valuable publication, which has been carefully edited. There is no doubt that as time goes on, this publication will occupy an important place in the literature of the county. Among the contributors are S. O. Addy, R. E. Leader, G. A. Garfitt, W. Dickie, J. B. Mitchell Withers and J. R. Wigfull. Among the papers we notice ‘A Book on Feudal Aids made for the Earl of Shrewsbury in 1451,’ ‘The Castle Hill,’ ‘The Court leet of the Manor of Sheffield,’ ‘Wentworth Woodhouse,’ and ‘Literature and Archæology in Sheffield a Hundred Years ago.’ The last item is distinctly refreshing, and includes the following:—‘There is in existence an egregious volume entitled “The Life and Death of Llewellynn Jewitt, with fragmentary memoirs of his famous literary and artistic friends,” etc. It is by a certain William Henry Goss (with, of course, a portrait of the author). Llewellynn Jewitt became, I need hardly say, a well-known antiquary, and the first editor of *The Reliquary*. By some piece of posthumous ill-luck the telling of the story of his “Life and Death” fell into the hands of the self-advertising Goss, and the result is a book which, with its farrago of irrelevances, of fatuities, and of impertinent, egotistical intrusions is, without exception, the sheerest twaddle that ever masqueraded under the name of biography. In saying this I do not forget the seven volumes through which

John Holland fussed garrulously as Montgomery's Boswell. Still, even the insufferable Goss could not wholly eliminate some grains of corn from the bushels of chaff, and the best chapter is that in which Arthur Jewitt, Llewellynn's father, is allowed to give his own recollections.'

LIVERPOOL BIOLOGISTS.

Volume XXX. of the *Proceedings and Transactions of the Liverpool Biological Society*, for the season 1915-6, has

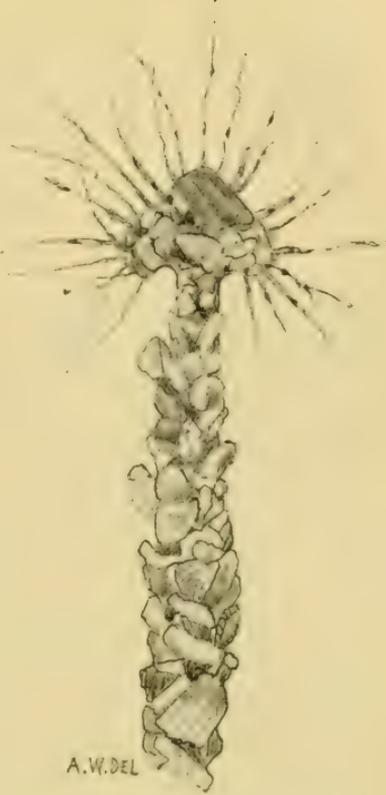


Edward Forbes.

been published. It is not so bulky as usual, but its contents are quite up to the familiar standard. Prof. Ernest Glynn, in his Presidential Address, deals with 'Bacteriology and the War, with Comments on the National Neglect of Science,' the latter part dealing with a chronic complaint. Prof. W. A. Herdman gives the 'Twenty-ninth Annual Report of the Liverpool Marine Biology Committee and their Biological Station at Port Erin,' including an address on the 'Life and Work of Edward Forbes,' a block illustrating which we are kindly permitted to reproduce.

WINE, LOVE, LEARNING.

Forbes founded a 'select students' club,' known as the 'Oineromathic' Club, the symbol of which was a silver triangle on which was engraved ΟΙΝΟΣ ΕΡΩΣ ΜΑΘΗΣΙΣ; the order of the words being suggestive; though on the triangle itself we find 'love' comes first, presumably in its natural order. Miss May Allen figures a copy of the prospectus of this Club which she found in an old book. The other items in the report are 'Report on the Lancashire Sea Fisheries' Laboratory,' etc., during 1915, by Prof. Herdman, Mr. A. Scott and Dr. J. Johnstone; and a note on the type of a rare Polychæte worm dredged west of the Isle of Man, by Mr. A. T. Watson. This Mr. Watson considers to be *Terebella (Lanice) seticornis*, an apparently new British record. We are able to reproduce Mr. Watson's drawing.

*Terebella (Lanice) seticornis.*

LIVERPOOL GEOLOGISTS.

Mr. E. Montag is to be congratulated upon the prompt appearance of Part 3, of Volume XII. of the *Proceedings of the Liverpool Geological Society*. With the exception of one short note on the Longmyndian Succession, by Mr. W. T. Walker, all the papers are on the Trias, in its various aspects. Mr. W. A. Whitaker's Presidential Address deals with Sand-banks and Sand-dunes; Mr. H. W. Greenwood writes on the Origin of the Trias; Mr. A. W. Harris on 'An exposure of Lower Pebble-beds at Mossley Hill'; Mr. D. A. Wray 'A Description of the Strata exposed during the construction of the new Main Outfall Sewer in Liverpool, in 1915,' which is accompanied by a valuable section, and Mr. T. A. Jones contributes 'Notes on some Ferruginous Nodules in the Permo-Triassic Sandstones of South-west Lancashire.'

THE TRIAS QUESTION.

Mr. Greenwood gives the following statement of our present knowledge of the Trias question:—(1) There is no true line of demarcation between the Permian Rocks and the Trias, hence the Permo-Triassic system must be dealt with as a whole. (2) We must realise that our present topography is, to some extent, a restoration of pre-Triassic and Triassic topography. (3) The Bunter and Lower Keuper are unconformable, and in places show by internal evidence, changes in source of origin, and still more in agents of deposition. (4) The materials of the various deposits of British Trias are proven to have been derived from different sources. (5) The materials of the various deposits show marked differences in grain condition, cementing material, chemical constitution and methods of deposition. (6) No general theory of river or desert origin is applicable to all or even any of the deposits. (7) The larger moiety of evidence points to arid conditions having prevailed throughout the interval of time between the close of the upper Carboniferous and the initiation of the Jurassic systems. (8) No true correlation of the Triassic or Permo-Triassic deposits of Great Britain exists.

LINCOLNSHIRE NATURALISTS.

The *Transactions of the Lincolnshire Naturalists' Union* for 1915 were received on October 31st. There are the usual Sectional Officers' Reports and the General (this is better than 'Organising') Secretary's Report. The Rev. E. A. Woodruffe Peacock writes on 'The East Fen' with a list of its plants; Miss S. C. Stow adds a further list of 'Lincolnshire Galled-plants,' and Mr. Arthur Smith has a lengthy note on 'The Fishes of Lincolnshire' with a list, which includes marine forms. This is a contribution to a neglected branch of Lincolnshire natural history.* The first paper is a Memoir of Mr. W. Denison Roebuck, who will no doubt blush on reading it. The writer, the Rev. E. A. W. Peacock, knows how to handle a trowel. And nearly all he says is true. But surely, even Mr. Roebuck will hardly claim the title of 'the creator' which is given him. Possibly, however, he *is* a species of trinity, in which case the heading to the memoir, 'Presidents of the L.N.U.,' may be accurate for once. An excellent portrait of Mr. Roebuck, who, by the way, was the President in 1909-10, is given as frontispiece.. He is in his robes as Master of Science. With the *Transactions* was issued, separately, a copy of Mr. H. Preston's address to the Union on 'Roman Remains at Saltersford,' as it was considered that the *Transactions* should be confined to Natural History, as that term is generally understood.

*In this list a period is sometimes put after the initials of an authority quoted; more often not. Why?

WILD LIFE.

We are glad to see that the excellent publication bearing the above title still appears regularly, and with its usual fine illustrations. The October issue has some 'Field Notes on Ring-Ousels,' by Mr. Ralph Chislett; Mr. E. Eykyn writes 'About Sand Martins'; Mr. E. E. Pettitt on 'The Pochard in Berkshire' and 'Early Nesting Reed-Warblers—and a Cuckoo.' Mr. Edmund Selous gives 'Some recorded, buried Facts about the Nightjar.' There are also 'Letters from a



Sand Martin at Nest-hole.

County Dweller,' some useful 'Notes from the Magazines,' and 'Correspondence.' One of the smaller illustrations we are permitted to reproduce herewith.

YORKSHIRE GEOLOGISTS.

Part 2 of Volume XIX. of the *Proceedings of the Yorkshire Geological Society* (pp. 41-74) has been issued. It contains the last paper written by the late Arthur Vaughan, on 'The Knoll Region of Clitheroe, Bowland and Craven.' Messrs. L. Richardson and J. W. Tutchter follow with a paper on '*Pteromya*

crowcombia Moore, and some species of *Pleuromya* and *Volsella* from the Rhætic and Lower Lias.' Though this paper deals principally with the fossils of Somersetshire, it will be of service to Yorkshire geologists in identifying the species enumerated, which are illustrated on two excellent plates. Mr. T. Sheppard's 'Bibliography of Yorkshire Geology, 1915,' enumerates 104 items published for the year. The Secretary's Reports and Treasurer's Balance Sheets for 1914 and 1915, and a list of Members, conclude the *Proceedings*. A slip informs us that Mr. Sheppard's Memoir on William Smith will follow as early as possible.

LONDON NATURALISTS,

We have been favoured with the *Transactions of the London Natural History Society* for the years 1914-5.* The former contains the first Annual Report in which the London Natural History Society wishes to emphasize the fact that its amalgamation with the City of London Entomological and Natural History Society has been justified. The present publication, therefore, commences a new series, which with the slight alteration suggested below, we trust will be but the beginning of a long series of Transactions. Besides the various reports of excursions, sectional branches, etc., the first part of the publication has a miscellaneous series of papers including the following: — The 'Presidential Address,' by L. B. Prout; 'The City of London Society,' by A. W. Mera; 'On Collecting and Breeding the Sesiidæ,' by L. W. Newman; 'British-Breeding Ducks,' by C. S. Meares; 'The Middle Ages in the Wey Valley,' by E. Chapman; and 'Gynandromorphism,' by E. A. Cockayne.

AND THEIR REPORTS.

The Reports for 1915 are very similar to those in 1914, and the recent *Transactions* also include 'The Presidential Address,' by Dr. Cockayne; 'Botany of the District,' by C. S. Nicholson; 'Flora of Epping Forest,' by R. W. Robbins; 'A Hawthorn Hedge in Middlesex,' by A. Sich; 'Treatment of Nature in Gothic Design,' by Miss Bagust; 'Life History and Variation of *Euchloë cardamines*,' by H. B. Williams. The first part of the Transactions contains 85 pages, and the second 87, each being separately paged. While congratulating the editor upon the excellent reports, and upon the general appearance of the Transactions, we should like to make a mild protest against the method of numbering the pages containing advertisements. In the second Volume, as they

* Published at Hall 20, Salisbury House, Finsbury Circus, E.C., at 3s. each part.

appear at the end, the error is not quite so bad, but in the first, the system of introducing paged advertisements in the text is vile. For example, in the middle of the Presidential Address, page 32 concludes with half a sentence, pages 33 and 34 are devoted to advertisements, and then page 35 continues with the second half of the sentence of the Address. The same sort of thing occurs in other places in the Volume, which means that when the advertisements are torn out for binding, or inserted at the end, several pages will apparently be missing.

SIR ARCHIBALD GEIKIE.

Sir Archibald Geikie, O.M., K.C.B., D.C.L., F.R.S., etc., in accepting the invitation of the Yorkshire Naturalists' Union to occupy its Presidential Chair, has paid the Union the greatest compliment it has ever received. Previously the Union has been honoured by having among its Presidents such well-known geologists as Sorby, Williamson, and Huddleston; and the valuable nature the work of the Union is doing is now demonstrated by the fact that Sir Archibald, who may be justly looked upon as the foremost geologist in the world, has accepted the Presidency. His receipt in 1914 of the Order of Merit was some recognition of his high standing in the Scientific World. He probably holds more honorary degrees, and is honorary member of more Scientific Societies at home and abroad, than any other geologist. His extraordinary work in connection with his geological maps and the preparation of geological memoirs, culminated in his appointment as Director-General of the Geological Survey. During his office, most of the valuable survey work in Yorkshire was accomplished. In addition, he is the author of an enormous number of popular geological works, in connection with which his charming literary style, coupled with his sound geological knowledge, has resulted in Sir Archibald Geikie being in the fore-front of popular scientific writers. Every Yorkshire Naturalist is grateful to Sir Archibald for his recent kindness to the Union, and will look forward with unusual anticipation to his presidential address next year, when he will doubtless have much to say of interest to all Yorkshiremen.

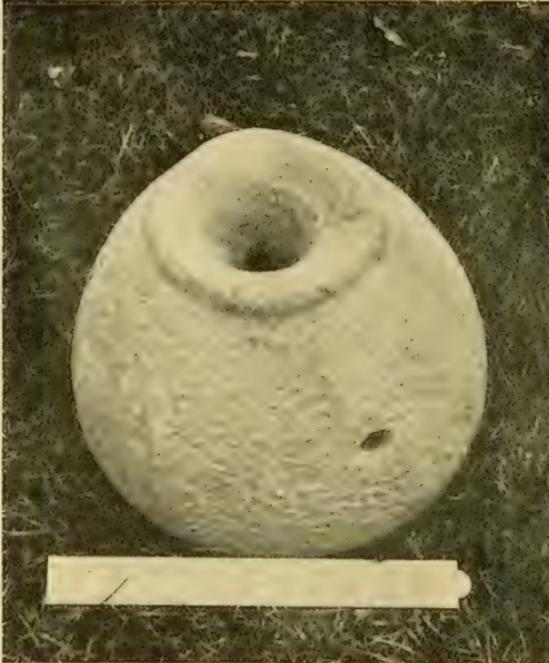
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An interesting Variety of the Robin.—At the present time there is a conspicuous variety of the Robin frequenting the central part of Harrogate. It is of normal colour, with the exception of the head and back of the neck, which is thickly spotted with white, making it a very conspicuous and interesting object.—R. FORTUNE.

A QUERN AT HUDDERSFIELD.

T. W. WOODHEAD, M.Sc. PH.D.

DURING excavations at the Dalton Gardens Reservoir, Huddersfield, on the estate of British Dyes, Ltd., on September 18th last, the quern, shown in the illustration, was found near the centre of the excavation, at a depth of 2 feet to 2 feet 6 ins. The specimen is an upper millstone and is in an excellent state of preservation. It is $9\frac{1}{2}$ inches high, and the circular base,



Quern found at Dalton Bank.

which is quite flat, is $12\frac{1}{2}$ inches in diameter. The funnel-shaped aperture above, in which the corn was placed, is 5 inches in diameter and surrounded by a well marked lip; the aperture narrows below to an inch in diameter at the base. When found, it contained a piece of much corroded iron, remains of which still adhere. This was doubtless the pivot, broken from the nether millstone, on which the upper stone was turned. On one side, as seen in the illustration, is a hole for the handle

used in turning the mill. This hole is three-quarters of an inch in diameter and $2\frac{5}{8}$ inches deep, and judging from its circular outline and smooth bore, has been drilled. The surface is evenly pitted and appears to have been worked with a pointed tool. The site on which it was found is immediately above a bed of coal-measure sandstone, but the quern is made of coarse millstone grit, outcrops of which occur three miles to the west; this stone, from its coarse texture and porous nature, rendering it eminently suitable for the purpose. The specimen has been presented to, and is preserved in, the Biological Department, Technical College, Huddersfield. The illustration is from a photograph taken by Mr. W. H. Sikes.

THE GEOGRAPHICAL DISTRIBUTION OF THE MOTHS OF THE SUBFAMILY BISTONINAE.

J. W. HESLOP HARRISON, M.Sc.

(Continued from page 362).

VII.—THE GENUS NYSSIA (DUPONCHEL).

Nyssia zonaria (Schiff.). Distribution:—N. and W. Ireland, N. Wales, N.W. England, Inner and Outer Hebrides,—in all cases on the coast. Central Europe as far west as Paris, (but excluding Holland and Belgium), Southern Scandinavia, Asia Minor and Armenia.

Nyssia zonaria var. *rossica* (Harrison) South Russia and Kirghiz Steppes.

Nyssia incisaria (Ld.). Armenia.

Nyssia alpina (Sulzer). The Alps—both of Switzerland and the Tyrol.

Nyssia italica (Harrison). Mountains of Italy from the Piedmont to Tuscany.

Nyssia græcaria (Boisduval-Staudinger). Greece, Macedonia, Albania, Bulgaria and the Island of Corfu.

Nyssia græcaria var. *istriana* (Stgr.). Carniola, Dalmatia, Istria.

Once more our attention is directed toward a genus, one of the exponents of which is found in the British Islands. As has been indicated previously, both from a consideration of the distribution of *Poecilopsis* and of that of *Nyssiodes*, this genus was evolved at some point to the north of what now constitutes the continent of Europe. Against this, it might be urged that possibly we are here dealing with part of the great Westward migratory horde of Tertiary times which brought *Palæonyssia* into Africa, and this is apparently emphasised by the close superficial, and to a certain extent, structural resemblance between *Nyssia zonaria* and *Nyssiodes lefuarius*. This, however, is negated by many very cogent reasons. In the first place, the genus is not primitive, and, judging from the evenness of its physiological divergence from *Lycia*, it is quite homogeneous, and consequently its members revolve like planets around one centre, and that central species is *Nyssia zonaria*. And the very close relationship between *Poecilopsis lapponaria*, a purely north western form of older origin, and *N. zonaria* is so pronounced as in itself to forbid any direct Eastern origin of the group.

Again, had these species advanced from the East, it is clear that they must have done so *via* the Caucasus or *via* Asia Minor. Necessarily, therefore, the more Alpine forms

should (like other animals and plants of similar proclivities, which have migrated or advanced from Siberia)* have left stranded colonies in those mountainous districts, and, in the case of the more primitive non-Alpine *N. zonaria*, similar colonies should be found amongst the Tertiary relicts † of the Altai Mountains of Turkestan, but no such colonies are known. What presses the illustration home is the significant absence of the Alpine forms from the Carpathians and the total lack of these or other species of the genus from the whole of Asia.

Thus we are driven along converging paths, which must be followed, to the opinion that the genus is of Northern origin, for it is there, and there only, that the desired contact with its nearest allies on all sides can be gained.

The central or parent species of the group being far from mountain or northern in its predilections would, very probably, soon after its origin, overflow into all parts of available Europe, both west and east, its access to South Russia and Asia being barred by the western extension of the Caspian Sea to the Sea of Azov, and up the Volga and Don valleys, in addition to the enormous development of the Aralo-Caspian Basin to the northward in Asia.

Therefore, in later Pliocene and Pleistocene times, when climatic conditions changed for the worse, *N. zonaria* occupied a fan-shaped stretch of country with its angles situated near Spitzbergen, the most westerly point of Britain, and in Asia Minor, but not extending to the southward on the west. From this area it had, perforce, to retreat. But when the Ice Age moved to its climax, local glaciers from the Alps, advancing to meet those from the Mountains of Scandinavia, severed the species into two sections, one of which massed itself in the Balkan Peninsula and Asia Minor which then, and for a long time afterwards, was continuous with Greece, Macedonia and Turkey; the other just as regularly contracted its area toward the West. Let us consider the latter portion first.

Sooner or later, glacial conditions supervened in the British area and the mountains there, together with the Scandinavian chain, gave birth to a system of glaciers, which, except in favoured nooks, ruthlessly destroyed much of the life of Western Europe, both of Britain of the present day, and that over which the North Sea now rolls.

Here, however, a very critical point is manifested, and

* Like the Edelweiss (*Leontopodium alpinum*) the Chamois (*Rupicapra tragus*) and the Apollo Butterfly (*Parnassius apollo*) to choose as illustrations familiar Alpine forms known to everyone.

† As illustrated by *Microbiston turanicus* and *M. lanarius* among insects, and by the Walnut (*Juglans regia*), *Trigonotes olgae* and *Moricandia tuberosa* among plants.

that is the rock upon which the rival theories of geologists, botanists and zoologists are shipwrecked. Did, or did not the coast line of Pleistocene 'Western Britain' approximate that of to-day? It seems to me we are all inclined to make a fetish of the 100 fathom line on the one hand, and of the 1,000 fathom line on the other, and that the result is chaos. If we argue from the accepted glacial geology of to-day, most of Great Britain and all of Ireland were overwhelmed with ice and incapable of supporting life. If we take the views of the botanists and zoologists, they can produce long lists of plants common to the British Isles and America, of plants, insects and slugs peculiar to Ireland and the Spanish Peninsula, and of bryophytes found only in the west of our islands and in various isolated localities in Africa and America; such, they urge, must have survived. Examples of such are:—the Irish Ladies' Tresses (*Spiranthes romanzoffiana*), Ireland and America; Blue-eyed Grass (*Sisyrinchium angustifolium*), Ireland and N. America; the Pipewort (*Eriocaulon septangulare*), Ireland, Scotland and America; the London Pride (*Saxifraga umbrosa*), Ireland, Pyrennes, Spain and Portugal; the weevil, *Otiorrhynchus auro-punctatus*, Ireland, France, Spain; the caddisfly, *Tinodes maculicornis*, the Kerry Slug (*Geomalacus maculosus*), and the following mosses:—*Philonotis wilsoni*, Wales, Scotland, Ireland, Fernando Po, *Myurium hebridarum*, Scotland, Azores and Canary Islands, *Daltonia splachnoides*, Ireland, West Indies and Mexico, *Sematophyllum micans*, Ireland, Scotland, England and America.

The two views are incompatible and, of a certainty, that of the botanist and zoologist, as emphasised by the above selection from many available examples, is on firmer ground. Either, then, the Glacial Period was not so rigorous as pictured, or the British Isles of Pleistocene times extended far to the South West and to more favoured localities. And, fortunately, direct evidence can be brought to bear on this. It is generally conceded that, just after the Ice Age, steppe conditions obtained in Europe as far west as East Anglia. Now, if it requires a distance from the Atlantic to South Russia to bring into being the steppes of to-day, surely this argues that, for an extension of these conditions to England, Western Europe possessed a configuration differing widely from its present one: and this, in turn, demands that Pleistocene Europe should stretch far to the west of our present limits. There, then, cut off from the rest of the habitable globe by leagues of ice, on low islands and coasts, kept warm by the Gulf Stream (probably) and by the Atlantic Ocean (certainly), favoured species survived; amongst them was *N. zonaria*.

At length the glaciers waned, and as they did so, the attenuated band of survivors attempted to spread, retreating as

the conditions periodically tended to deteriorate. But let us pause; under what conditions had these species persisted over the long stream of centuries? Century after century, they had been under maritime conditions, and these had become part and parcel of their being; species normally of general occurrence were now restricted to areas with an oceanic climate. Their endeavours to reconquer ground would have most success along the reopened coasts to the north, and thither a move was made. Now, however, the ocean was fretting away the land, and gradually our species was forced back until it occupied a coast line of West Britain following a line passing outside the Hebrides and the various isles of Western Ireland. Along it, on the coast sandhills, *N. zonaria* increased and multiplied. Still the Atlantic rollers pressed on, wearing away without cessation our western shores, and thus the Outer Hebrides, Clare and Arran Islands came into being; on them, isolated colonies were marooned. No respite was given; the waves must have their way. First the Irish Sea appeared as a huge landlocked gulf from the south; and resistance in the north was not prolonged, the huge basaltic barrier binding Ireland to Scotland gave way, and now Ireland was an island. On it, *zonaria* could only wend its way eastward, and that with difficulty, along the northern shore, reaching the Antrim coast ere its momentum was lost. The portion cut off in Scotland was in no better plight. Little colonies stayed behind on each little isle as it was formed, but the main body tried to gain ground on the mainland and with much success. Utilising the virgin and more favourable coast of South-western Scotland, it progressed, passing by degrees along the South of that country until England was reached. The same slow gain of ground was made and ever along the coast; finally, its outposts took their final stand on the Welsh coast of Carnarvonshire,

Thus we have traced the course of events which have caused *N. zonaria* and other insects and plants, which are not fastidious as to ground on the continent, to be maritime and western in their distribution in the British Isles. Of these, none are more significant in elucidating the past history of such forms than the moths *Anthrocera purpuralis*, *Anthrocera achilleae* and *Platyptilia tessaradactyla*.

Let us now examine the course of events in the east. Here we left a colony penned up in the South east of Europe and in Asia Minor. Soon after it arrived in Asia Minor, the Ægean Sea was formed, and with the steady wash of its waves, it bored its way into the Black Sea, and thus the fate of the western refugees was repeated. Two divisions now existed. With the advent of better conditions, very slowly, much more slowly than depicted in the case of *Poecilopsis pomonaria*,

but still following the same course, the species regained much of its lost ground. It did not penetrate far to the north, barely reaching Southern Scandinavia, where its advance was limited by climate; otherwise, it followed its relative and kept to much the same boundaries.

The contingent left separated in Asia Minor could now only pass out in one direction, and that it did to the north east, gradually flanking the Caucasus mountains round the coastal plain to emerge finally on the steppes of Southern Russia, and giving rise in its course through Armenia to the allied species *N. incisaria*. Once on the plains, the arid steppes worked their will, and out of the species was evolved the dwarfed local race I have called var. *rossica*. Under this guise, it spread in South Russia, eventually passing, with the contraction of the Caspian Sea, into the Uralsk and the lower slopes of the South Ural Mountains.

We must now consider the other species of the genus.

Very early in its being, *Nyssia zonaria* had reached the Alps of Central Europe and here had yielded the species *Nyssia alpina* which penetrated every valley and accessible mountain in Switzerland and the Tyrol, swinging right round to the Mountains of the Piedmont. But what was its fate during the Glacial Period? Was it, or was it not forced to retreat down the Apennines of sunny Italy? Possibly it was, but in my view the chances are that part yielded ground, but part remained.

The Flora and Fauna of the Alps was not wholly banished. If we grant that it was, then the difficulty of explaining the present Alpine animals and plants is enormous. Either we have to assume a wholesale Post-Glacial evolution of the endemic forms of all groups from worms upward and downward or, in the case of many plants and animals not confined to the Alps, a simultaneous evolution there and in the Altai and other Mountains of Central Asia—an absurdity, more especially when it is coupled with the fact that over ten per cent. of such plants fail in the Caucasus and a much heavier percentage in Asia Minor. Grant that part of *N. alpina* stayed in the Alps and it is plain that the species would have to have special adaptations to permit of its survival, and the special device adopted was the familiar one of passing several winters in the pupal condition. Of all species, *N. alpina* is the very worst in this respect, whole broods going over up to seven winters unchanged. Presumably, it did not persist in all its stations, but certainly it did in some, returning to its older posts as once more they became available.

The group which took refuge in the Apennines slowly, by reason of geographical isolation, diverged and yielded the species *N. italica* which, although close to *N. alpina* is quite

distinct as its heavier antennæ show. This form, with improved conditions, moved northward, coming once more into touch with *N. alpina* in the Piedmont.

Just as *N. zonaria* yielded *N. alpina*, so, by an even more abrupt mutation, the latter species gave rise to *N. græcaria*, and this somewhere in Carniola where *N. alpina* was not so true to its name. Then the new species spread along the Dinaric Alps, bifurcating as it reached the Balkan Mountains and the Pindus Range, the former migrants invading Bulgaria and the latter colonising Greece, while yet Corfu was attached to the Motherland. With its passage into the warmer and sunnier regions of Greece, it receded from its typical form and, under the same conditions which caused *N. italica* to separate from *N. alpina*, in the same direction. Thus, *N. alpina* bears somewhat the same relation to *N. italica* as *N. var. istriana* bears to *N. græcaria*, but with this difference, in the former case, the diverging is of specific value and in the latter, varietal. Probably, *N. italica* and *N. alpina* have, at one time, been totally disconnected for a considerable period, whilst under favourable condition, in the slightly or non-glaciated Balkan Peninsula, *istriana* and *græcaria* have never been so disjoined.

With this, our study of the wanderings of the species included in the genus *Nyssia* are completed.

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Partridge Perching in Tree.—Some friends of mine, shooting at Nun Monkton, on October 2nd, flushed a covey of partridges, one of which perched on the top of a Scots Fir, thirty feet high at least. There was no mistake, as the occurrence was witnessed by six people, and the bird was shot when he was induced to leave his lofty perch.—R. FORTUNE.

The Natterjack in Cumberland.—With regard to the recent notes in *The Naturalist* (ante pp. 330 and 347) on the occurrence of this toad in Cumberland, it should be mentioned that the species has been well known to resident naturalists for many years. Macpherson dealt fully with its distribution in our area in the 'Vertebrate Fauna of Lakeland,' and later in the Victoria History. While resident at Allonby he had numbers in the vicarage garden where I saw them. He found they were partial to the strawberry beds. I have myself met with it freely on the sandy beach between Maryport and Silloth, hiding in the daytime under stones. From the localities from whence it has been recorded its range evidently covers the entire length of the Cumberland littoral, with probably a blank in the mining area between Whitehaven and Maryport. Apparently it is only found on the coast in this county, or immediately contiguous thereto.—F. H. DAY, 26 Curock Terrace, Carlisle, 2nd Nov., 1916.

BOTANISTS AT AUSTWICK.

C. A. CHEETHAM.

The idea of sectional meetings at places of special interest to the section involved seems to be on right lines; last year the Botanical Section* investigated the alien flora at Dewsbury and Mirfield, and this being so successful, a further meeting was arranged at Austwick. The notes on pp. 246-247 in the August number cite some problems to be dealt with, and as a result of the excursion and the discussions in the field and during the evenings, some good work should now be possible. Dr. Woodhead's experience in field research work was an asset of value, and his suggestions put the plan of future observation on a better footing.

The *Silene maritima* was first visited. It grows luxuriantly on the limestone cliff faces, the stems quite shrubby, and although everything seemed fitting, it does not appear to spread from the vertical rock to the pavement above or the scree below. No reason could be assigned for this, unless it is the destruction by the feeding of sheep or rabbits; further notes as to this might be available from the coast stations, where the plant is abundant.

The peat deposits on the limestone summit of Moughton were examined next. Small sections were opened up in a varied series of positions, and a considerable uniformity was noticed:—the peat say up to 18ins. thick; then a very fine grey sand, in fact almost a clay, some 3ins. thick, full of rootlets; and below this a thin but very definite layer of 'moorpan' hard and resisting to the trowel, and with a metallic feel when cut with a knife; below this the soil was iron-stained, but gradually passing into fine yellow compact sand which varied in thickness up to 12ins. or 18ins., resting on the limestone rock.

A point which attracted special attention was the scarcity of rootlets below the 'pan.'

Other interesting plants were seen in the locality. Solomon's Seal and Lilies of the Valley on the scars and in crevices of the pavement, and Juniper in sheltered places attains to a height of 10 ft. with a girth of 21ins. at 9ins. above ground; in places the rigid fern was very abundant.

The next excursion was to a very different type of vegetation. Austwick Moss shows the succession of plants which have gradually reduced a large area of lake and swamp down to the present remnant, where the only open water is in recently cut turbaries. These are to be seen in varying degrees of

* Of the Yorkshire Naturalists' Union.

refilling, and a history of the process can be easily reconstructed from them. A small excavation showed the bed of the old lake to be of glacial drift, but no shell marl was seen.* At least one definite birch layer was noticeable in the peat. A series of pools was selected, carefully marked, and their contents noted. It is proposed to watch these and see if there is any periodicity in such floating plants as *Sphagna*, *Hypna* or hepatics and their algal coverings.

Interesting plants seen here include the Bog Myrtle, Floating Bur-reed, Mare's-tail, Small Bladder-wort, Cranberry, *Andromeda polifolia*, *Schœnus nigricans* and *Arundo Phragmites*.

The excursion was continued to Lawkland Moss, where the process of reclamation is nearly complete. Devil's Bit Scabious gave a distinct colour to the place, and other plants include Sneezewort, Angelica and Saw-wort. Although the attendance was small, the excursion proved successful, and should produce results as the ideas and suggestions are worked out later on. Quiet talk and argument on the spot help to settle or open up the way to the elucidation of problems which are only slowly tackled by single workers, and in this way the sectional meeting justifies itself.

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ORNITHOLOGICAL OBSERVATIONS AND REFLECTIONS IN SHETLAND.*

EDMUND SELOUS

(Continued from page 366).

OCTOBER 13TH.—At about 8-45, on my way to the Post Office, I saw the young Kittiwakes at their ablutions again at the same place. Coming back half an hour later, some of them were bathing elsewhere in the loch, as they floated on the water, whilst far larger numbers were assembled on a green knoll, near to but not adjoining it. They were preening themselves, for the most part, some standing, some sitting, on the greensward, sunning themselves, had that been possible (which it was not), and standing amongst them I counted seven or perhaps eight Herring Gulls, both young and old, but most of the former having almost acquired their mature plumage, though still much plainer than the parents, and with the bill not yet fully coloured. The Herring Gulls were not all in a group together, as, had they been Black-backs they probably would have been, but scattered throughout the assemblage, with the Kittiwakes all about them—even if two of them were near together, yet some of the latter were

†On the previous day, at the site of a tarn now drained near Sowthwaite, we saw there had been a considerable thickness of shell marl.

between them. The Kittiwakes seemed to repose the greatest confidence in these Herring Gulls—there were over a hundred and thirty of the former, exclusive of those that were bathing. Why this attendance, as it were, of the Herring Gulls on the young Kittiwakes?

I forgot to enter that, coming back yesterday, along the loch, I found a young but full-sized Herring Gull floating dead in the water, which seemed itself to have been treated as the Kittiwakes are by its kind. It was back downwards, and a cavity had been made below the breast through which some of the intestines had been pulled out and were hanging in strings. What bird could have done this? Possibly—though I have never seen any sign of it myself—a Great Black-back, but I could not help the disagreeable suspicion that it was the work of the mature Herring Gull itself.

Two of the last-named birds fishing in the voe, as the tide sinks, for something which they swim about and specially look for, either at the bottom of, or some distance under, the water, but without ever dipping the head till they plunge for it. The first of these birds to attract my attention was farther down the voe than the one I had watched some days previously, and, unlike that one, he did not fly up into the air before plunging, but either simply bobbed down his head and turned his tail up, like a tame duck in a pond, or else rose, as it were, on the water, or at most just a little above it. He made several plunges of this kind, but I could not see that he got anything, though he very well may have. The other Gull, which was fishing in the same bay and may have been the same bird as that of my former entry, rose every time, as that had done, decisively into the air, and plunged, as one may say, from the wing, always, as said above, after swimming irregularly about and peering down into the water in a way which made his object unmistakeable. He missed twice, as it seemed to me, but the third time came up with something in his beak, which he swallowed. It was obvious, from the bird's movements that what he was in search or pursuit of was in a state of motion, which precludes its having been some shell-fish attached to the rocks. Its appearance when brought up, did not at all suggest a fish, but seemed reconcilable allowing for the distance, with that of a crab, and, putting all the signs together, I think it is probably crabs that these gulls thus fish for.

Hooded Crows perch upon the seaweed-covered rocks at low water, and the glasses reveal motions of the bird which may either be tweakings at the seaweed, or pickings or peckings off of molluscs from the face of the rock—I think the latter, or, if both, this more particularly. They go much, also, amongst the loose dry stones, above high-water mark, of such beaches

as there are here, and I feel sure they turn over these stones, for I made out the required motion of the head and beak, as I have seen it in Jackdaws in England, when thus turning stones systematically. They also walk out upon the wet sands sometimes—as this afternoon—with the Kittiwakes, and with these they may come into collision, for I saw one being chased up the *voe* by a pair of them. The latter seemed very resentful, the pursuit was tenacious, and all disappeared round the head of the *voe*. When, after a little, the Kittiwakes returned, they met other crows flying over the *voe*, but these they did not molest nor were they disturbed by others of their kind on the wing. From this one may feel sure that this crow—now I come to think of it I am not sure that it was not a pair—had outraged the feelings of these two Kittiwakes in some way, probably by pilfering.

I had occasion this evening to remark the effect of sudden surprise on these wary birds. Coming back where the lower slopes of the hills that crest the shores of the *voe* often make small green hillocks or knolls, as I surmounted one of these, there, opposite me, on another, and at a very close distance, stood three of them, and though they instantly saw me they did not fly away. I stopped and they stood motionless, looking at me, and I at them, for perhaps a full minute before they recovered, as it were, from a state of stupefaction, and went off. The distance between us, in a straight line, could hardly have been more than a dozen paces, and I was in full view from head to foot. No crow, and hardly any bird, could have dreamt, under ordinary circumstances, of letting a man stand thus near to them, but they seemed rooted to the ground by the sudden apparition of one, against whose approach they had had no opportunity of guarding. On two occasions under something similar circumstances, I have noticed the same thing in the Pheasant and Woodpigeon.

I saw quite a number of starlings this afternoon congregated upon the backs of Sheep, especially one which must have had at least seven or eight upon it—one on the head. As many, perhaps, were on the grass underneath it, others about its feet, and it looked as if these were picking at them, and the wool, as it hung, but I could not absolutely make this out. The sheep thus attended, as well as another one that had two or three upon its back, did not seem positively to object, but they stopped feeding, and with their heads held forward and a little upwards, presented a somewhat foolish appearance—the ordinary appearance of the sheep here, by the way, has nothing foolish about it, to my thinking, nor their character either. After a little, all the Starlings flew away. The sheep, by their attitudes, might have been waiting to have their heads searched as by the Jackdaws (see notes below).

This would have been very interesting to see, but it was denied me. Mr. Hay says he has often seen the Starlings thus perched on the sheep here, but more in the spring, and thinks it would be for the loose wool (the old pushed out by the new) to line their nests with, since, owing to the dip, the sheep would have no insects on them. But the Jackdaw I saw on the sheep's head was certainly searching it and the sheep in that instance held its head out in much the same way as did these two with the Starlings and had much the same expression. It would be interesting if Starlings, having originally thus perched on sheep for the sake of the insects upon them, continued the habit after they could no longer get these, here, perhaps, using them as perches, since there are no trees. In so far as the question of insects is concerned, sheep should be as much dipped in England as the Shetlands, but there are many more insects in the larger Island. Here, at any rate, the dip-theory must, I think, be given up, for not only does so large a bird as the Jackdaw find it worth his while minutely and laboriously to search sheep, but there is, I believe, a veritable commensalism between the two species, as evidence of which I make the following quotation from my notes above alluded to:—

‘The amount of intelligent reciprocity on the part of the sheep, at least, as shown by its keeping still, and thus facilitating the explorations of the Jackdaw, seems to vary in different individuals. For the most part, they do not object, but some shake their heads a little, as though bored in a mild sort of way. Others, however, or possibly the very same, upon other occasions—since even sheep may have their moods—show a much higher degree of intelligence, so that very interesting scenes may sometimes be witnessed. What, for instance, can be more interesting than to see one sheep with a Jackdaw on her head, standing still in the midst of a moving flock, whilst another one, having come up behind, lays her chin amidst the wool above her friend's tail and patiently waits to be operated upon in her turn? Nor does she wait in vain. The Jackdaw, having finished what he has had in hand, turns as a barber might turn towards a waiting customer, and walking sedately down the back of the one sheep, steps from it on to the head of the other, which he straightway commences to search. This search is minute and methodical. First the wool of the crown is examined, after which the beak is passed, in a quite professional manner, over the short black hair of the face, coming close to the ear, then closer till at last you seem plainly to see it inserted into the orifice, at least, if not into the deeper cavity of this sensitive organ. Of course, in a matter like this, where one cannot be very close and where everything must be made out through the glasses, it is difficult to be quite sure, but I believe myself, that the hairs or bristles inside the ears are

carefully examined, and anything worth consideration that may chance to be upon them, deftly and heedfully removed. This must be a ticklish affair for the sheep, and whilst it is proceeding one seems to see in her an expression as of flinching, even though she does not really do so. Sometimes, indeed, she does flinch, a little, but for the most part, she stands stock still, her head held rigidly though it is without the support she began with, for the first sheep, having been operated upon and her operator gone, has walked on after the others. And just as the sheep seems to feel her position, so the Jackdaw has, in some odd manner, the appearance of knowing what is expected of him. A sense of responsibility is all about him, and he acts with the greatest circumspection. This is not imaginary, but real. The facts, indeed, being as they are, it must obviously be the case. . . . It is my impression that the eye itself of the sheep is searched round in this way, by the Jackdaw. At the least his beak must often be very near to it, and when one considers the group of birds to which he belongs—that the Raven and Carrion Crow are his very near relatives—it really seems surprising that he should refrain from plunging it into what must seem to him—or would, at least, have seemed to his ancestors—a tempting and luscious-looking morsel. This shows, to my mind that it is only very gradually that sheep have allowed their heads, or rather their faces to be searched thus closely. Had no difficulty been experienced in the commencement, the eye, I believe, would have been attacked. At that period, however, when the Jackdaw was capable of acting in this way, the sheep would probably never have allowed him on her head. By the time he had established himself there he was much more civilised, and being suffered to approach nearer and nearer to the more sensitive parts, in proportion as he became more and more gentle, he is now unable (and of course has no inducement) to break through habits of very tender dealing which have been gradually growing from one generation to another.*

It will be observed that it is the head in particular which is thus searched by the Jackdaw, and this is just the part which, unless special pains were taken to push it down under the water into which sheep, to be dipped, are made to jump—which however is commonly done—would be least affected by the process.

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The Lancashire and Cheshire Naturalist for September contains 'A Preliminary List of diptera [of Lancashire and Cheshire]', by H. Bury. A comprehensive list of the diptera of these counties, by the late B. Cooke, appeared in *The Naturalist* for 1880.

* *The Saturday Review*, Feb. 7th, 1903. The facts were witnessed by me in a field near Cheltenham.

THE DISTRIBUTION OF SPIDERS IN THE EAST RIDING.

T. STAINFORTH, B.A., B.Sc.,

SPECIES.	1	2	3	4	5	6	7	8	REMARKS.
	Hull.	Holderness.	Shores of Humber, and Tidal Affluents.	Sand-dunes of Spurn, Easington and Welwick.	Hornsea Mere.	Wolds.	Derwentland, Houghton, Holme, Skipwith, etc.	Derwent Carri or Vale of York.	
DYSERIDÆ.									
<i>Dysdera crocata</i> C. L. Koch	×	×	×	×	×	×	×	×	Usually in or near buildings, or in chalk-pits.
<i>Harpactes hombergii</i> Scop.	Under bark or among moss.
<i>Segestria senoculata</i> Linn.	Very common under the bark of trees and on fences.
<i>Oonops pulcher</i> Temp.	
DRASSIDÆ.									
<i>Drassus lapidosus</i> Walck.	×	×	×	×	×	×	×	×	Very common under stones, logs, etc.
" <i>troglydytes</i> , C. L. Koch	Under stones, etc.
<i>Scotopheus blackwallii</i> Thor.	One ♀ at Ryehill. Occur in buildings.
PROSTHESIMA PETIVERII SCOP.									
" <i>latreilli</i> C. L. Koch	Sometimes observed in association with ants.
" <i>electa</i> C. L. Koch	In woods.
<i>Micaria pulicaria</i> Sund.	Usually in wet or marshy places.
CLUBIONA TERRESTRIS WESTR.									
" <i>grisea</i> L. Koch	Among underwood and be- neath hedges.
" <i>reclusa</i> Camb.	On bushes and trees.
" <i>lutescens</i> Westr.	On bushes and among herbage.
" <i>neglecta</i> Camb.	

SPECIES.	LOCALITIES.							REMARKS.
	1	2	3	4	5	6	7	
	Hull.	Holkerness.	Shores of Humber and Tidal Affluents.	Sand-dunes of Spurn, Easington, and Wehwick.	Hornsea Mere.	Wolds.	Derwentland Houghton, Holme, Skipwith, etc.	Derwent Carrs or Vale of York.
<i>Clubiona holosericea</i> De Geer	×		×	×	×	×	×	×
" <i>pallidula</i> Clerck		×						
" <i>diversa</i> Camb.								
" <i>trivialis</i> L. Koch								
" <i>subtilis</i> L. Koch				×				
" <i>comita</i> C. L. Koch								
<i>Chiracanthium carnifex</i> Fabr.								
<i>Zora maculata</i> Bl. (<i>spinimana</i> Bl.)								
<i>Anyphæna accentuata</i> Walck.								
<i>Agarca proxima</i> Camb.				×				
<i>Scotina gracilipes</i> Bl.								
DICTYNIDÆ.								
<i>Dictyna arundinacea</i> Linn.		×	×					×
" <i>incinnata</i> Westr.	×	×						×
" <i>lateus</i> Fabr.								
<i>Protadia subnigra</i> Camb.				×				×
<i>Amaurobius levox</i> Walck.				×				×
" <i>similis</i> Bl.	×							
" <i>lancestratis</i> Stroem.	×							
AGELENIDÆ.								
<i>Cæloletes atropos</i> Walck.								

On the cliffs at Speeton and Hessele.

SPECIES.	LOCALITIES.								REMARKS.
	1	2	3	4	5	6	7	8	
	Hull.	Holderness.	Shores of Humber and Tidal Affluents.	Sand-dunes of Spurn, Easington, and Westwick.	Hornsea Mere.	Wolds.	Derwentland, Houghton, Holme, Skipwith, etc.	Derwent Garts or Vale of York.	
<i>Linyphia triangularis</i> Clerk	
" <i>pellata</i> Wid.	
" <i>impigra</i> Cambr.	
" <i>pusilla</i> Sund.	
" <i>hortensis</i> Sund.	
" <i>clathrata</i> Sund.	
<i>Leptyphantès minutus</i> Bl.	
" <i>nebulosus</i> Sund.	
" <i>leprosus</i> Ohl.	
" <i>alacris</i> Bl. (<i>terricola</i> C. L. Koch)	
<i>Leptyphantès blackwallii</i> Kulcz.	
" <i>cristatus</i> Menge	
" <i>obscurus</i> Bl.	
" <i>pallidus</i> Cambr.	
" <i>tenuis</i> Bl.	
" <i>ericæus</i> Bl.	
" <i>mengii</i> Kulcz.	
" <i>tenebricola</i> Wid.	
<i>Hullhousia misera</i> Cambr.	
<i>Plectoneta globosa</i> Wid. (<i>Bathyphantès variegatus</i> Bl.)	
<i>Bathyphantès concolor</i> Wid.	
" <i>approximatus</i> Cambr.	
" <i>ingratus</i> Westr.	
" <i>pallatus</i> Cambr.	
" <i>parvulus</i> Westr.	

In gardens.

In marshy places.

SPECIES.	REMARKS.							
	1	2	3	4	5	6	7	8
	Hull.	Holderness.	Shores of Humber and Tidal Affluents.	Sand-dunes of Spurn, Eastington, and Welwick.	Hornsea Mere.	Wolds.	Derwentland, Houghton, Holme, Skipwith, etc.	Derwent Gars or Vale of York.
<i>Gonyldiellum vivum</i> Cambr.					
<i>Tiso vagans</i> Bl.					
<i>Erigone longipalpis</i> Sund.					
"								
" <i>promiscua</i> Cambr.					
" <i>dentalpis</i> Wid.					
" <i>atra</i> Bl.					
" var. <i>tautosquens</i> Sim.					
" <i>spinosa</i> Cambr.					
"								
" <i>arctica</i> Wh.					
var. <i>maritima</i> Kulcz.					
<i>Lophomma punctatum</i> Bl.					
" <i>hebridatum</i> Bl.					
" <i>subaequale</i> Westr.					
<i>Dicymbium nigrum</i> Bl.					
" <i>tibiale</i> Bl.					
"								
<i>Nerene rubens</i> Bl.					
" <i>rubella</i> Bl.					
<i>Entidia cornuta</i> Bl.					
" <i>bituberculata</i> Wid.					
<i>Typhlocrestus digitatus</i> Cambr.					
<i>Dismodicus bifrons</i> Bl.					

Very characteristic of the banks of the Humber, Hull and Ouse where tidal.

See *Naturalist*, 1914, p. 32. At Saltend Common, near Hull, the only known British station.

Weedley Springs, South Cave.

Boynton Woods.

SPECIES.	LOCALITIES.							REMARKS.
	1	2	3	4	5	6	7	
	Hull.	Holderness.	Shores of Humber and Tidal Affluents.	Sand-dunes of Spurn, Eastington, and Welwick.	Hornsea Mere.	Wolds.	Derwentland, Houghton, Holme, Skipwith, etc.	Derwent Carts or Vale of York.
<i>Ceratinella brevis</i> Wid.			×	×	×	
" <i>brevipes</i> Westr.	×				×	×	
MIMETIDÆ.								
<i>Ero furcata</i> Vily. (<i>thoracica</i> Wid.)	×				×	×	×
EPEIRIDÆ.								
<i>Tetragnatha extensa</i> Linn.	×	×					×
" <i>solandrii</i>	×						×
<i>Pachygnatha degeerii</i> Sund.	×	×			×	×	×
" <i>clerckii</i> Sund.	×	×			×	×	×
" <i>listeri</i> Sund.	×						×
<i>Meta segmentata</i> Clerck	×						×
" <i>meriana</i> Scop.	×						×
<i>Cyclosa conica</i> Pallas							×
<i>Cercidia prominens</i> Westr.							×
<i>Zilla x-notata</i> Clerck							×
" <i>atrata</i> C. L. Koch	×	×					×
<i>Epeira diademata</i> Clerck	×	×					×
" <i>cucurbitina</i> Clerck	×						×
" <i>sturmi</i> Hahn.	×						×
" <i>umbratica</i> Clerck.	×						×
" <i>quadrata</i> Clerck.	×						×
" <i>cornuta</i> Clerck.	×						×
" <i>patagiata</i> C. L. Koch	×						×

On reeds.
On reeds and trees in damp woods.

One ♀ Birkhill Woods, Cottingham.

In shrubberies and woods.

In Woods.

THOMISIDÆ.										
<i>Xysticus cristatus</i> Clerck	✓	✓	✓	✓	✓	✓	✓	✓	×	×
<i>rochi</i> Thor. . . . .	..	..	..	..	..	..	..	..	..	..
" <i>erraticus</i> Bl. . . . .	..	..	..	..	..	..	..	..	..	..
<i>Oxyptila atomaria</i> Panz.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
" <i>pratensis</i> C. L. Koch	..	..	..	..	..	..	..	..	..	..
" <i>trux</i> Bl. . . . .	..	..	..	..	..	..	..	..	..	..
<i>Philodromus dispar</i> Walek.	..	..	..	..	..	..	..	..	..	..
" <i>aurantius</i> Clerck.	..	..	..	..	..	..	..	..	..	..
" <i>cespitosus</i> Walek.	..	..	..	..	..	..	..	..	..	..
<i>Tibellus oblongus</i> Walek.	..	..	..	..	..	..	..	..	..	..
PISAURIDÆ.										
<i>Pisaura mirabilis</i> Clerck.	..	..	..	..	..	..	..	..	..	..
LYCOSIDÆ.										
<i>Pirata piraticus</i> Clerck.	×	×	×	×	×	×	×	×	×	×
" <i>laticans</i> Bl.	..	..	..	..	..	..	..	..	..	..
" <i>virucola</i> De Geer	..	..	..	..	..	..	..	..	..	..
" <i>terricola</i> Thor.	..	..	..	..	..	..	..	..	..	..
" <i>picta</i> Hahn. . . . .	..	..	..	..	..	..	..	..	..	..
<i>Tarentula andrenivora</i> Walek. . . . .	..	..	..	..	..	..	..	..	..	..
" <i>puberulenta</i> Clerck.	..	..	..	..	..	..	..	..	..	..
<i>Lycosa amentata</i> Clerck.	..	..	..	..	..	..	..	..	..	..
" <i>nigriceps</i> Thor. . . . .	..	..	..	..	..	..	..	..	..	..
" <i>purbeckensis</i> F. O. 13. Camb.	..	..	..	..	..	..	..	..	..	..
" <i>minor</i> . . . . .	..	..	..	..	..	..	..	..	..	..
" <i>pullata</i> Clerck.	..	..	..	..	..	..	..	..	..	..
" <i>lugubris</i> Walek.	..	..	..	..	..	..	..	..	..	..
" <i>herbigrada</i> Bl.	..	..	..	..	..	..	..	..	..	..
" <i>palustris</i> Linn. . . . .	..	..	..	..	..	..	..	..	..	..
Near Hull (1907).										
×	×	×	×	×	×	×	×	×	×	×
On the Wolds at Weedley.										
×	×	×	×	×	×	×	×	×	×	×
One ♂ at Houghton Woods.										
×	×	×	×	×	×	×	×	×	×	×
Very common at the sides of ponds, ditches, etc.										
×	×	×	×	×	×	×	×	×	×	×
Common in sandy places especially on the coast. Bridlington.										
×	×	×	×	×	×	×	×	×	×	×
Pulfin Bog, River Hull.										

SPECIES.	1	2	3	4	5	6	7	8	REMARKS.
	Hull.	Holderness.	Shores of Humber and Tidal Affluents.	Sand-dunes of Spurn, Eastington, and Welwick.	Hornsea Mere.	Wolds.	Derwentland, Houghton, Holme, Skipwith, etc.	Derwent Gars or Vale of York.	
SALTICIDÆ.									
<i>Salticus scenicus</i> Clerck	×	×	×	×	×	×	×	×	
" <i>cingulatus</i> Panz.									
<i>Heliophanus cupreus</i> Walck.									
" <i>flavipes</i> C. L. Koch									
<i>Hyetta niioyi</i> Luc.									
<i>Euphrys frontalis</i> Walck.									
" <i>æquipes</i> Cambr.	×								Brantingham Dale.
<i>Attus pubescens</i> Fabr.									
<i>Erarcha falcata</i> Clerck.									In buildings, gardens and greenhouses.
<i>Hasarius adansonii</i> Sav.	×								Among heather and on the lower branches of bushes.
PHALANGIDEA.									
PHALANGIDÆ.									
<i>Liobunum rotundum</i> Latr.					×			×	
" <i>blackwallii</i> Meade									
<i>Phalangium opilio</i> Linn.	×	×	×	×		×	×	×	
" <i>parietinum</i> C. Koch									
" <i>saxatile</i> C. Koch									In greenhouses and hot-houses.

In Memoriam.

TWO BARNSELY NATURALISTS.

WILLIAM BARRACLOUGH.

THE Barnsley Naturalist and Scientific Society has lost, in the persons of William Barraclough and Benjamin Turner, two of its oldest and strongest supporters. Both gentlemen were also members of the Yorkshire Naturalists' Union.



William Barraclough was a native of Barnsley, and, when quite a young man, joined the Barnsley Naturalists' Society, which had then been in existence but a few years. At the time of his death, he was the oldest member of the Society. In 1876, he was elected Honorary Secretary, an office which he filled for three years, being the third member to hold the position. He was then elected Honorary Treasurer; this office he held until the close of 1886, being the second member to fill the post. In 1896, he was again elected to this position,

Naturalist,

which he occupied at the time of his death. The various offices which he filled cover a continuous period of 41 years, a record of service which will be difficult to equal. Valuable as his services in the positions named undoubtedly were, his most enduring work may be said to have been in connection with the Society's Museum. He had watched over it from its very small beginnings, and seen it grow by means of purchases and gifts (of which he himself was responsible for many) to its present gratifying extent. For fifteen years, he was the sole curator, and during the past four years, jointly with another member. Ornithology was his favourite subject, and it was only natural that this bias should be reflected in the collections of which he had charge. Antiquarian subjects, especially such as had a bearing on the past history of his native town, likewise appealed to him. Both his own private museum and that of the Society gradually became enriched by objects illustrative of this particular study. It may be said with truth that the Society's Museum is his memorial.

He was the senior member of the firm of J. Barraclough and Sons, the Union Foundry, which was founded in 1848 by his father.

He was also a Freemason, being a member of the local Lodge "Friendly."

For some time, he had been in failing health, and on the 16th September he had a seizure at Summer Lane Station, Barnsley, from which he failed to recover, passing away on the 25th September, in his 63rd year, and was interred on the 27th in the local cemetery. In addition to the family mourners and other friends, all the workmen from the Union Foundry attended, and also representatives of the Barnsley Naturalist and Scientific Society, and the Lodge of Freemasons. He leaves a widow and three children, two sons and a daughter. We regret to say that his second son, 2nd Lieutenant W. Barraclough, has since died of wounds received in France.

BENJAMIN TURNER.

Benjamin Turner was a native of Armley, and after qualifying as an architect and surveyor, came to Barnsley, eventually becoming a partner in the firm of Wade and Turner which was founded in 1868. Though by no means what is called a public man, his keen interest in Church matters allied him with St. George's Church, of which it is not too much to say, that in a very real sense, he was a pillar. Regular in attendance, and assiduous in his duty as a Churchwarden, a position he had held continuously for twelve years, his loss will be a great one to the Church of his choice.

Equally devoted to the Barnsley Naturalist and Scientific Society, he was elected President in 1889, being the 11th in

the succession of Presidents. He filled the chair for a period of eight years successively, and on retiring, he was elected to another office. In fact, from 1889 to the time of his death, a period of twenty-eight years, he was continuously in one office or another. A few years ago, his friends in the Society presented him with a framed portrait of himself, as some token of their appreciation of his many services. This he accepted, but almost immediately requested the Society's acceptance



of it. It now hangs in the meeting room of the Society, side by side with those of Thomas Lister and Dr. W. J. Lancaster, two former Presidents. It is no exaggeration to say that he watched over the interests of the Society in a manner truly paternal. Ever ready to do what he could to further its aims, by his wise forethought and counsel, yet he did not let precept suffice. It was his happiness to provide the Library with useful books and furnishings, and the Museum with desirable specimens, or much needed cases. He was a man of fine commanding presence, good to look upon; truly one

of Nature's Noblemen. Take him all in all, we shall not look upon his like again.

After a few days' illness, he passed away, October 6th, in his 76th year, and was interred in the Churchyard of St. Bartholomew's, Armley. He was a bachelor. Representatives of the Society attended the funeral, which took place on October 11th, exactly a fortnight after that of his old friend, Mr. W. Barraclough, which he had attended. It is now made public that the deceased gentleman, amongst numerous other charitable bequests, has left to his Society the sum of £100.

E.G.B.

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The Birmingham and Midland Institute Scientific Society has issued its annual and valuable 'Records of Meteorological Observations, taken at the Observatory, Edgbaston, 1915, by Mr. Alfred Cresswell,' at 2s. In addition it has published Mr. Ernest Crocker's Presidential Address (21 pages) entitled 'Science as Enemy and Ally.'

The Report of the Natural History Society of Northumberland, Durham and Newcastle-on-Tyne, shows that the work of this excellent Society and its Museum has still further been interfered with, by the fact that the Curator, Mr. E. L. Gill, is in France on ambulance work, and that the caretaker has died. Under the care of the assistant Curator, Mr. H. Fletcher, some progress has been made, which is detailed in the Report.

At the Annual Meeting of the Lincolnshire Naturalists' Union, held at Lincoln on November 9th, the Rev. F. L. Blathwayt mentioned that in June last he went to see the work of a pair of starlings nesting in a barn at Black Moor Farm, Doddington. For about a fortnight the birds persevered in pushing hay and straw through a hole in the roof, but there being no support, the stuff all fell through to the ground below, and formed a large pile, four feet six inches high and four feet wide at the base, and weighing, he was told, 10 lb. The attempt was at last given up. Mr. Guy W. Mason was elected president for the year, and the Rev. F. L. Blathwayt vice-president. The secretary, treasurer and sectional officers were all re-elected.

'Enquirer' writes as follows:—'I should be much obliged if any of your readers could tell me what are "Terlalogims." From the facts before me I infer that there are several classes of them, one of which is called "Index Terlalogims," but I do not know the names of the others. They would appear to present great variations, for 2,300 coloured figures can be purchased for £2. They have been studied by an author named Wood. This is all the knowledge I have been able to acquire up to the present; but any further information would be gratefully received.'

We must confess that, at first, the enquiry puzzled us, but as we were asked a little while ago to pay a visit to a suburb of London, in order to see a toad's nest in a gooseberry bush, we naturally felt our correspondent was of this harmless variety. It appears, however, that on the cover of a certain well-known natural history journal, a copy of 'Wood's Index Terlalogims' was offered for sale. We found that the editor of the journal had no control of the advertisements and knew nothing of the matter; but the publishers kindly allowed us to see the MS. for the advertisement, and we must admit that, from a compositor's point of view, the word was clearly 'Terlalogims,' but, as the printer explained, 'naturalists are generally successful writers' (even in the letter by 'Enquirer' who is a naturalist of some standing, the word looks like 'Julalogirus'!). The book offered for sale, of course, should have been Wood's *Index Testaceologicus*.

In Memoriam.

T. H. NELSON, J.P., M.Sc., M.B.O.U.

YORKSHIRE Ornithology has sustained a heavy loss by the death of T. H. Nelson, which occurred at Harrogate on Sunday, November 5th.

Mr. Nelson has for a great number of years occupied a



foremost position among the Naturalists of Yorkshire. He was formerly an active member of the Yorkshire Naturalists' Union, but of late, unsatisfactory health has considerably curtailed his field activities. The area of the Tees mouth has always been his happy hunting ground, and his records from this district have been numerous, interesting and valuable. It was on the Durham side of the Tees upon some shooting of his that the Reeve nested successfully a few years ago. He possessed a valuable collection of eggs and birds, most of the latter being obtained in the Tees mouth area.

Despite his activities, he did not publish any really important work until his "Birds of Yorkshire" appeared. His field notes, scattered in the pages of 'The Ibis,' 'Zoologist,' 'Naturalist,' 'Field,' 'British Birds,' etc., were, however, both numerous and valuable. For a considerable time, he acted as referee for Ornithology for *The Naturalist*.

When Mr. Eagle Clarke left Yorkshire, a substitute had to be found to undertake the writing of 'The Birds of Yorkshire.' The unanimous choice of the Executive Committee of the Union fell upon Mr. Nelson, and it would have been impossible to select anyone better fitted for the task. The work was in a true sense 'monumental,' an example of the best kind of county avi-fauna, and one which will stand for all time as a fitting memorial to the author. The present writer was closely associated with Mr. Nelson during the progress of this work, and can bear testimony to the great and unceasing care which was exercised by him to ensure that every statement contained therein was thoroughly reliable. In order that this should be so, the labour entailed was enormous, thousands of references and notes had to be carefully investigated and sifted, some of them time after time, before they were admitted. The results of his labours are universally recognised to be as near perfect as it is possible for works of this kind to be.

When the University of Leeds decided to confer the Honorary Degree of M.Sc. upon a certain number of members of the Yorkshire Naturalists' Union, as an acknowledgement of the great work done in connection with Natural Science by the Union and its individual members, they rightly selected Mr. Nelson to receive the honour on behalf of Yorkshire ornithology. In another direction he was honoured by being placed upon the Commission of Peace for the North Riding, his presence upon the bench being frequent.

Mr. Nelson was of a kindly and somewhat quiet disposition, a good friend, and one who will be missed by a large circle of friends and fellow naturalists, whose sympathies will go out to Mrs. Nelson (who took a keen and active interest in all her husband's work) in her great trouble.—R. F.

—: o :—

In "More New Cecidomyid Galls" in *The Entomologist's Record* for November, Messrs. R. S. Bagnall and J. W. H. Harrison record many northern county species.

To a note on '*Sphaeriestes (Rabocerus) gabrieli*,' by Prof. T. Hudson Beare, in *The Entomologist's Monthly Magazine* for November, 'G.C.C.' adds a note to the effect that 'The insects representing *S. foveolatus* in the collection of the British *Coleoptera* in the National Museum are referable to *S. gabrieli*, as are those (from Scarborough) in my own collection.'

NEWS FROM THE MAGAZINES, etc.

The Zoologist for October contains some short notes on Yorkshire birds and insects.

Dr. E. J. Russell writes on 'Chalking: a useful Improvement for Clays Overlying the Chalk' in *The Journal of the Board of Agriculture* for October.

Dr. J. A. Clubb writes on 'The Educative Value in Public Museums of Introductory Cases to Animal Groups' in *The Museums Journal* for November.

The Animal World for November contains the following short papers:—'Newts,' by Edward Step; 'Sea-Birds: The Poetry of Flight,' by F. G. Aflalo; and 'Animals that break themselves up,' by C. F. Newall.

In *The Entomologist* for November, Mr. J. W. H. Harrison writes 'Concerning Certain Cynipid Galls in Durham, Northumberland and North Yorkshire,' and Mr. W. G. Clutton records *Erebia blandina* and *Larentia flavicinctata* at Grassington.

A *Punch* joke:—Private Brown, (inspecting mud on tyre): 'You must have had a wonderfully interesting ride. I see you've been in the Lower Silurian, Old Red Sandstone, Crystallite and Metamorphic districts.' We presume that 'Crystallite' is the joke?

Wild Life for September contains papers on 'The Peregrine Falcon,' by Rev. D. A. Scott; 'The Storm Petrel and Manx Shearwater,' by A. Whitaker and T. M. Fowler; 'Some New Facts about the Nightjar,' by A. M. C. Nicholl; 'Sexual Selection in Birds,' by Edmund Selous.

We have received the *Annual Report of the Scottish Marine Biological Station* for 1915. It is well written, well printed and well illustrated. It contains 50 pages and is an excellent record of a good year's work at Millport. It would be still more interesting if all the illustrations were described, common objects though some of them are.

In *The Journal of Conchology* for October, Mr. B. R. Lucas states that a good mixture to prevent the objectionable fungoid growth in improperly cleaned land-shells consists of linseed oil, 10 per cent.; benzol, 90 per cent., and 2 grammes of thymol crystals. The proportion of linseed oil can be reduced for small spinous shells, and increased to give lustre to big shells.

Mr. G. C. Crick has made a critical study of the specimen from Settle, described as *Goniatites vesiculifer* by Dr. Hind, in the *Proceedings of the Yorkshire Geological Society*. His paper is printed in Vol. XII., part 1, of the *Proceedings of the Malacological Society*. He concludes that the English fossil is certainly very near to, and probably identical with, De Koenick's species.

The Proceedings of the Coventry Natural History and Scientific Society for the year ending March, 1916 (30 pages), contains a useful illustrated summary of the field meetings and lectures during the year. It is edited by Mr. H. J. Wheldon, and is sold at the very low price of 6d. A year earlier, the first part of this Society's publication appeared, containing a record of its work from the Society's inauguration in 1909, to 1915.

We have received *Hull Museum Publications* No. 106 (Quarterly Record of Additions, No. LII.), by T. Sheppard, M.Sc., 24 pp., illustrated, price one penny (Hull: A. Brown & Sons, Ltd.). The items include:—Sixteenth Century Powder Horn; Rare Type of Tinder Box; Musketry Fuse Holder; Iron Nutcrackers; Rare Type of Powder Tester; Two Hitherto unknown Seventeenth Century Tokens of Halifax; Antarctic Photographs for the Pickering Museum; French and German War Trophies; Recent additions to Collections; Staffordshire Pottery; The Little Walshingham Font; The Old Hull Whaler 'Truelove'; The Yacht 'Queen of England'; Turner's Pictures of Hull in the Wilberforce Museum. The last item is written by Mr. H. E. Wroot.

CLASSIFIED INDEX.

COMPILED BY W. E. L. WATTAM.

It is not an index in the strictest sense of that term, but it is a classified summary of the contents of the volume, arranged so as to be of assistance to active scientific investigators; the actual titles of papers not always being regarded so much as the essential nature of their contents.

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CORRIGENDA.

- Page 51, for "Linnean Society" read "Literary and Philosophical Society, Manchester."
- „ 55, line 15, for "Gardners" read "Gardeners."
- „ 78, lines 21 and 25, for "Hausobrecht" read "Haussknecht."
- „ 107, line 11, for "Haliphlus" read "Haliphus."
- „ „ „ 27, for "P" and "P" read "L" and "L."
- „ 108, lines 5 and 6, for "fasciata Marsh" read "bihamata Thoms."
- „ „ „ 28, for "Protinenus" read "Proteinus."
- „ 109, „ 21, for "Liocoma" read "Liosoma."
- „ „ lines 40-1, for "ovulum Hern" read "laeviusculus Mann."
- „ „ bottom line, for "Fond" read "Foud."
- „ 110, top line, for "areas" read "avens."
- „ „ line 4 from bottom, for "praencta Furb" read "pracusta Fieb."
- „ 311, line 22, for "man" read "view."



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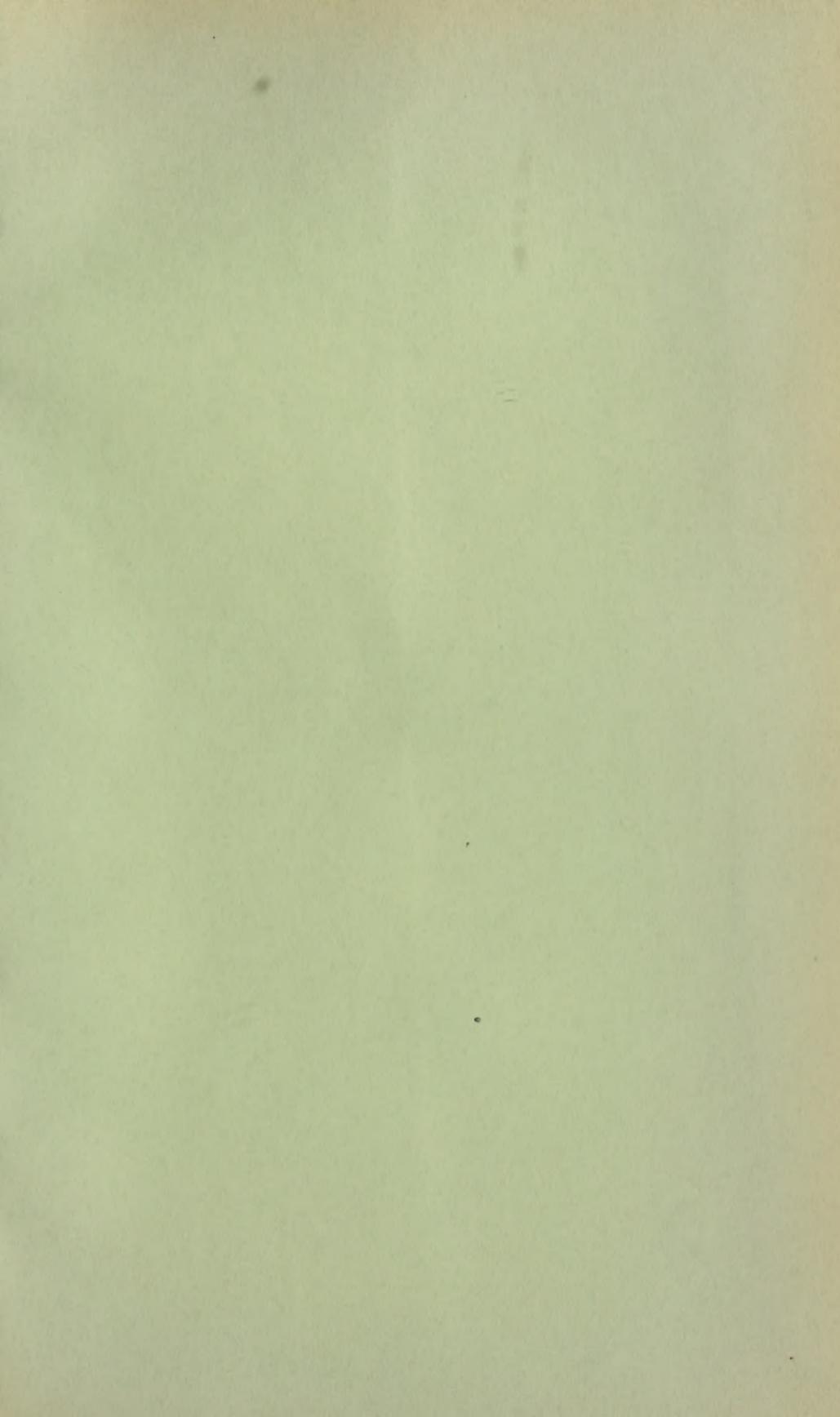
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