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NOTES ON THE GLACIAL GEOLOGY OF THE COUNTRY BETWEEN LOFTUS AND KETTLENESS.

BY FRANK ELGEE

In July 1907, I made a glacial survey of the country between Loftus and Kettleless. The result proved somewhat disappointing, very few striking features due to ice action being met with. No opportunity to make a further investigation of the area having since arisen, I propose in this paper to bring together my observations with a view to their being expanded at some future date.

Generally speaking, the district is intersected by two main valleys, that of Kilton Beck and its affluents, and that of Roxby and Easington Becks, with moderately elevated land between them. A wide amphitheatre of hills sweeps around Runswick Bay from Borrowby to Newton Mulgrave Moor, and thence via Mickleby and Barnby to Goldsborough and Lythe.

The chief glacial deposit of the district is boulder clay, but in some localities there are large spreads of gravel. One of these covers the country to the south of Loftus as far as Wapley, on the ridge dividing the eastern branch of Kilton Beck from Roxby Beck. Wapley itself stands upon it. A much larger spread occurs on Easington High and Roxby Moors towards the boundary of the drift. On the former moor, the ice margin is indicated by a line of fine gravelly moraine, first described by Professor Kendall. Not far from Tranmire, where a large overflow into Eskdale crosses the North Cleveland watershed, the following section was observed in a gravel pit :-

Moor Soil.
Fine gravel passing into coaly sand.
Few inches of fine gravel.
Fine sand at base.

The erratics here were mostly small and were Cheviot Porphyrites. In one place there was a patch of ruddy boulder clay near the surface.

According to Barrow (Survey Memoir, p. 67) these gravels can be seen passing under the Upper Boulder Clay in Eskdale, and that, therefore, they are of middle glacial age. But the exact relation of the red Upper Boulder Clay to the position of the ice front at the period of maximum glaciation is a very difficult question to settle and to which I have not yet been able to devote sufficient attention. It may be remarked that as the ice margin at its maximum extension is frequently indicated by gravel mounds not overlain by the red Upper Clay, it seems difficult to understand why gravel beds should underlie the red Clay on the lower grounds-supposing the two to be continuous-unless this clay indicates a readvance of ice at a later period but not to so great an elevation. Barrow states that very little Upper Clay exists at heights much above 400 feet but the patch noted in the Tranmire section occurred at an elevation of 700 feet.

Gravel mounds occur at Greenhow, near Ellerby Bank Top at Stump How, just north of Mickleby, and just north of East Barnby at Wade's Hill. These seem to form a line of irregular moraine, a fact rendered more probable from the circumstance that the watershed from Ellerby Bank Top to Wade's Hill is trenched by several shallow grooves falling and deepening on the slopes above Lythe Beck.

They are probably due to streams flowing from the melting ice margin as it stood along the watershed.

Overflow channels, with two exceptions, appear to be completely absent from the area, a fact that is somewhat surprising, seeing that the country is intersected by valleys whose drainage must have been obstructed by the retreating ice. The two exceptions are very insignificant but perfectly distinct. The most westerly occurs at the end of the ridge between Roxby and Borrowby Becks and stands at 550 feet, falls eastwards and is about 25 feet deep. Its chief peculiarity is the fact that the intake to the west is bifurcated, forming what Mr. Kendall has termed a "lateral intake." It arises from a retreat of the ice front at the intake end of the overflow, the impounded drainage then running into the first channel from another position. The channel thus somewhat resembles a letter Y laid horizontally, the two arms forming the intake. Although on a very small scale, it is, I believe, the only example of its kind in Cleveland.

The other channel occurs near Goldsborough and is called Stangoe Carr. It is a flat-floored trench falling eastward from 550-525 feet, and is cut in drift. Both this and the previous channel are indicative of obstructed drainage falling eastward for a very brief period

The courses of the streams in this area in relation to their old valleys and to the drift are too wellknown to need repetition here, and full details will be found In Barrows Memoir, page 68.

Finally must be mentioned two or three valleys, which though now streamless, can hardly be regarded as glacial overflows, owing both to their position and their form. One of them occurs near Moor House Farm, south of Roxby Village. It falls from 660 feet westwards down the eastern slope of Roxby Beck, to about 550 feet or even lower, and occupies the position a tributary would, except that it is perfectly dry. It is excavated in the country rock.

The other valley is close to Buck Rush Farm, near Kilton Pit. It falls eastwards on the slopes of Kilton Beck, and is about 25 feet deep near the farm. It has a flat floor; and lies at an elevation of between 475-400 feet, these altitudes representing the slope and not the depth of the channel. It is perfectly streamless and excavated in drift.

That these valleys once contained streams is obvious, but whether these streams were of glacial origin, or existed .at a time when the rainfall was greater, is not so obvious. Further investigation of the area will doubtless throw light on their origin.

NOTES ON-THE JURASSIC FLORA OF CLEVELAND.

BY REVEREND GEORGE J LANE F.G.S

In the month of September, 1908, the Yorkshire Geologists visited the Marske Quarries. Many specimens of plants were obtained on that occasion, and the task of further investigation was urged on Mr. Saunders and myself. To this

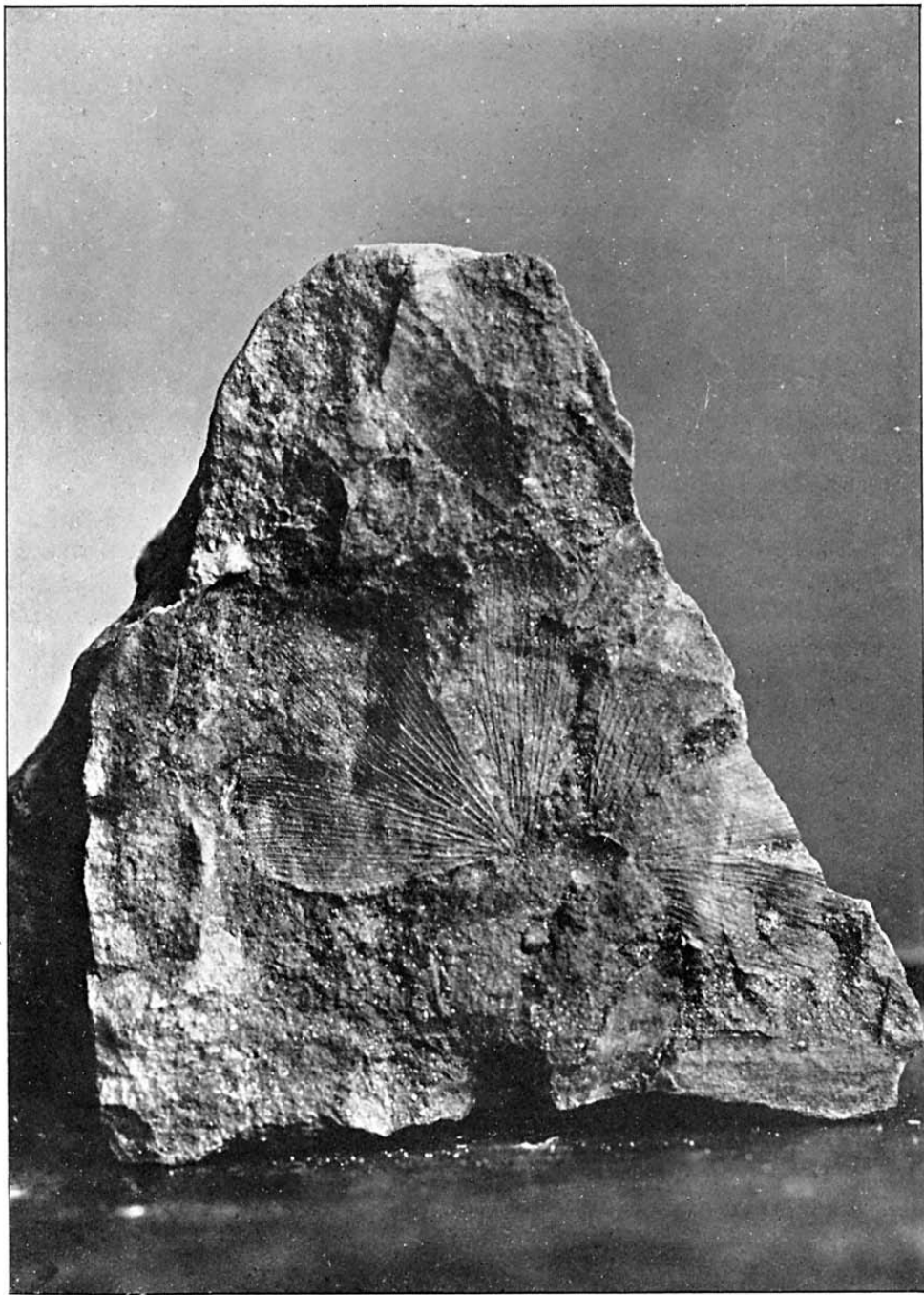
interesting work we addressed ourselves with vigour. A list of our finds was published in the Naturalist for March 1909, and further genera and species in my possession will appear in a later issue, as I have opportunity. Members of our Field Club are acquainted with the geological horizon of the Marske Quarry, so that any general description is superfluous and unnecessary. Difficult specimens of the plants obtained have been submitted to Professor Seward for examination. I also had the great honour of a visit from Prof. N Nathorst, of Stockholm, who determined all the plants in my possession, and encouraged me in the work: As stated in a previous number of the Proceedings of our Club, Mr. Elgee collaborated with me in determining the plants, and it is gratifying to him and myself to know that with few exceptions, Prof. Nathorst confirmed our results. As stated in my article in the "Naturalist," we; as a Club, acknowledge our indebtedness to the Rev. J. Hawell, who did some excellent pioneer work in the Marske Quarry, which resulted in the identification of seventeen species, finding for the first time in England a Dictyozamites, which was named after him Dictyozamites Hawelli.

The following list has been found by Mr. Saunders and myself.

I. EQUISETALES

Equisetites columnaris (Brongn).

" **beani** (Bunb.) ?



Ginkgo digitata (Brong.) from Inferior Oolite, Marske Quarry.

II. LYCOPODIALES-

Lycopodites, sp.

III. FILICALES-

Taeniopteris major (L. & H.)

" vittata (Brongn).

Sagenopteris phillipsi (Brongn) .

Cladophlebis denticulata (Brongn).

" haiburnensis (L. & H.) (see illus.)

Laccopteris polypodioides (Brongn)
Todites Williamsonia (Brongn).
Coniopteris hymenophylloides (Brongn).

IV. CYCADOPHYTA-

Flower of Williamsonia pecten (Phill.)
" " " gigas (L. & H.)
Williamsonia gigas (L. & H.)
" pecten (Phill.)
Otozamites beani (L. & H.)
" graphicus (Leek.)
" parallelus (Phill.)
" feistmantelli, Zign.
Nilssonia compta (Phill.)
" mediana (Leek.)
" tenuinervis, Nath.
" schauburgensis (Dunk.) (see illus.)
Dictyozamites Hawelli, Sew.

V. GINKGOALES-

Ginkgo digitata (Brongn.) (see illustration)
Baiera gracilis, Bunb.
" phillipsi, Nath.
" lindleyana (Sehimp.)
Czekanowskia murrayana (L. & H.)
Beania gracilis, Carr.?

.VI. CONIFERALES-

Cheirolepis setosus (Phill.)
Araucarites cone
Bagiophyllum williamsonia (Brongn.)
Brachyphyllum mammilare (Brongn.)

ROMAN REMAINS AT WHORLTON. By. REV. J. C. FOWLER B. A. F.G.S.

It is always interesting to watch excavations for you never know what may turn up. A year or more ago, during draining operations in the piece of land added to the old Churchyard the workmen came upon some broken pottery which I recognised as Roman. On taking the fragments up to the British Museum the Professor of the British Roman Department at once pronounced each and every fragment to be Roman, very coarse and of local make-there was no Samian ware.

This find proves occupation so I have now the satisfaction of having proved Whorlton (whatever Roman name it had) to have been a Roman settlement. In connection with this discovery it is interesting to note that one of the Earthworks across the road. N.W of the Old Church, has decided Roman look and appears to have been a four square Roman Station and it is worth mentioning that a Roman Road extended from Thornton-le-Street through Bullamoor and Deighton straight to

the Tees, and therefore only some five or six miles from this supposed camp-merely an outpost of course-and yet one of military importance. A large number of Roman Coins were found at Whorl Hill near the church a century ago but they did not prove settlement as coins may be found anywhere.

Dr. Atkinson discovered a Roman road in the Parish of Danby, but we cannot, so far link it up with Whorlton. The fragments of pottery are in the Museum at Middlesbrough and may be seen there.

MOORLAND RESEARCH IN 1909 BY FRANK ELGEE

The investigation of the Cleveland Moors having reached the systematic stage, it is proposed to embody the chief results in a series of annual reports in the Proceedings, of which this paper is the first. Many of the facts contained in the ensuing synopsis were the subject matter of a lecture delivered to the Club on November 6th, 1909.

CLIMATE

The climate of the moors is of great importance in their economy, and it will, therefore, be of value to place on record the atmospheric conditions of the moors from year to year. The effect of the weather of 1909 upon the moorlands was marked. Owing to the extremely heavy rains of June, July and August, normally dry moors became wet, moderately wet moors were half converted into bogs, and the wettest moors of the watershed and the slacks were almost impassable. On the moors just east of Saltersgate Inn, large pools, hollows and artificial drains were full of water on August 7th, after four days hot sunshine, which caused the submerged vegetation to putrefy and emit quantities of marsh gas.

Weather, such as we experienced during the year, would, if continual, produce a type of vegetation peculiar to the wettest moorlands. The saturation of the vegetation would, doubtless, lead the plants typical of wet moors to spring up on the normally drier moors. The absence of sunshine and saturation of the atmosphere caused the heather to develop fewer flowers than usual. This indicates a smaller absorption of food materials both from the soil and from the atmosphere. Although the inrolled leaf of the chief ericetal plants enables them to transpire under very unfavourable conditions, the super-saturation of the air with water vapour has this year clearly interfered with the process of transpiration. The moor soil was likewise cold and wet up to the end of July, a circumstance, which still further retarded the development of blossom.

On warm days, after rain, the water vapour that is being drawn from the damp moor soil and plants can be easily seen when the moor edge is projected against the skyline in proximity to the observer. The air, though clear, is seen to flow over the tops of the plants, and presents a somewhat similar appearance to heated air rising from a stove. In the local dialect this appearance is known as "summer geese" or "summer colts".

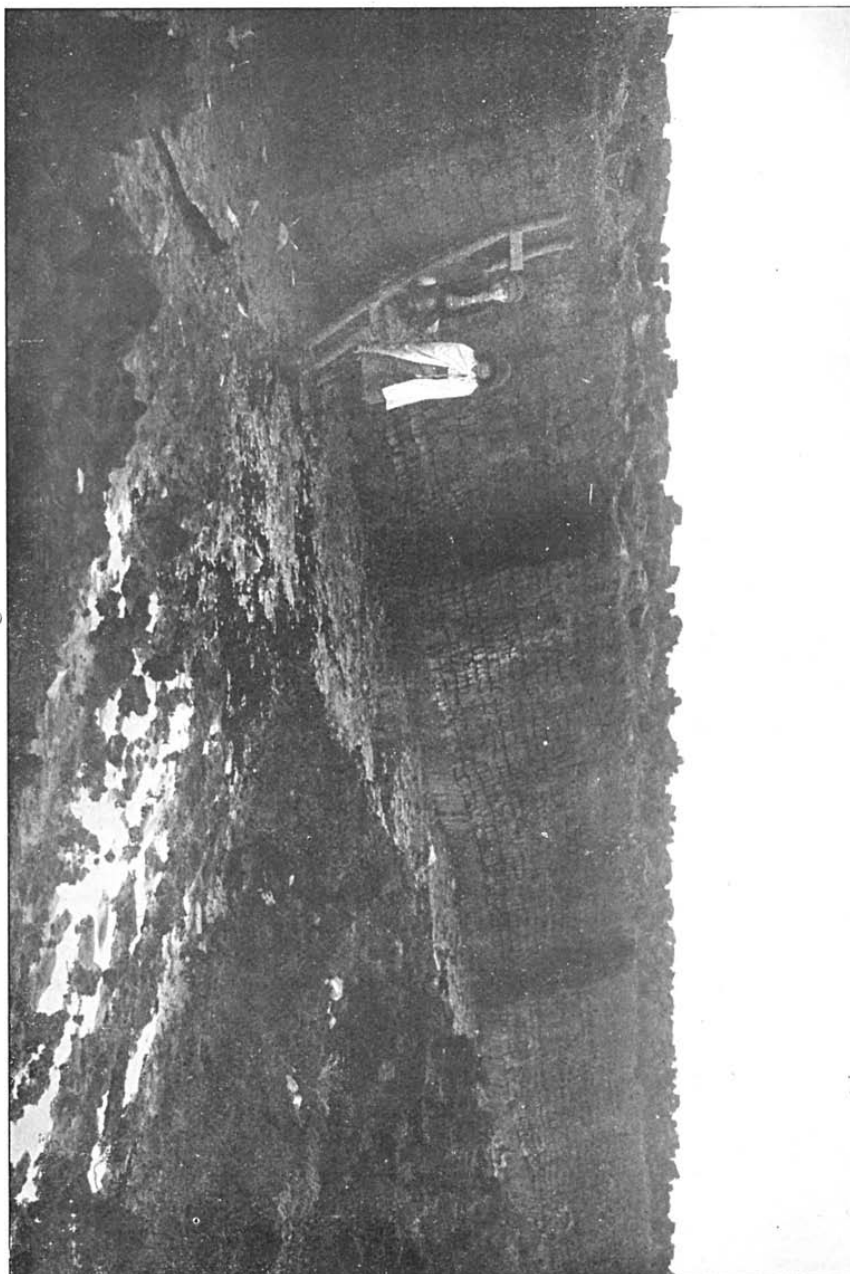
SWIDDENS

The bare spaces caused by burning the moor are called swiddens, and present special features of plant life differing considerably from those of the undisturbed surrounding vegetation. Special attention was directed to these swiddens during the year, and the results published in the Naturalist for January, 1910, under the title of "The Vegetation of Swiddens in North East Yorkshire." This paper dealt solely with the present appearance of the swiddens, but observations are still required which will elucidate the succession of species upon them. Hence it is proposed to follow the aspects of the burnt surfaces from year to year, and as it is necessary to commence with newly burnt swiddens, it will be advisable to note the dates on which they are formed.

The lower parts of Ewe Crag Slack were burnt in the spring and thousands of grit boulders rendered conspicuous on the sloped.

An extensive fire occurred on the summit of Kempswithen on Easter Sunday (April 11th) and took some hours to extinguish.

Pike Hill Moss Peat Holes, Glaisdale Head.



[Photo, Frank Elgee

PLANT ASSOCIATIONS

The survey of the moorland plant communities has been continued during the year, and though much interesting material was obtained, nothing of a very remarkable nature has to be recorded. Notes, more or less detailed, were made of the following moors:--

Stony Ridge Eriophoreta (Cotton Grass Moor)

Pike Hill Moss do.

Yarlsey Moss Large Juncetum

May Moss Erica tetralix Moor, the finest hitherto observed in N.E. Yorkshire

The above named moors are on the watershed and are very wet at all times.

GLAISDALE RIDGE (lower end). Nardus Moor.

FREEBOROUGH SKIRT (east of the hill). Molinietum (Flying Bent) on large scale.

BLOWORTH BECK. Extensive Junceta.

EASINGTON AND GIRRICK MOORS. Junceta and wet Calluna Moors with *Molinia varia*.

COLD MOOR. Bilberry Slopes.

STOCKDALE. Woodland Vegetation and Bilberry Slopes.

CRANIMOOR. Bilberry Slopes.

Besides the above, notes were taken of the Bilberry and Bracken Slopes in Westerdale, Danby Dale, and Baysdale. A hitherto undetected feature was the difference to be observed in slopes facing north and south respectively; the former being almost invariably wetter with Junceta and much Bilberry; the latter being much drier and more dominated by Bracken and Calluna. Observations were also made on the plant life of thick peaty moors other than *Eriophoreta*. No Sweet Gale was found within the areas investigated, a circumstance confirmatory of its restriction to the south eastern moorland region probably to the south east of a line drawn from the north of Robin Hood's Bay to the village of Hutton-le-Hole.

PEAT BEDS

Several Peat Beds have been examined with special reference as to their containing the remains of trees with results confirming previous conclusions, viz. :-that the higher moors were never forest or woodland, and that the slopes and slacks were formerly clothed with Birch and Oak. The following are the peat deposits in question :-

SLOPES OF KEMPSWITHEN. Trees, Altitude, 775 feet.

NORTH OF DANBY BEACON. Trees, Altitude, 900 feet.

PIKE HILL Moss: No trees, Altitude, 1,050 feet (see illustration).

STONY RIDGE. No trees, Altitude, 1,400 feet.

EASTERN HEAD OF FARNDALE. Trees, Altitude, 1,200 feet.

SEAVY HILL (near Trough House). No trees, Altitude, 1,390 feet.

THE SWANG, ST. HELENA, DANBY DALE (on ledge on side of valley). Trees, Altitude, 1,000 feet (see illustration).

Four kinds of peat deposits may now be recognised on the moors :-

- 1.-Hill peat on the flat high moors.
- 2.-Peat of the glacial slacks.
- 3.-Peat at the head of moorland valleys.
- 4.-Peat of moorland slopes.

The last three kinds almost invariably contain the remains of trees, the first never. During the coming year it is intended to ascertain definitely the character of the tree remains and the proportion of Birch to Oak established. Our peat beds present one marked contrast to those of Scotland. The Scotch deposits contain Birch and Pine in abundance; the Cleveland, Birch and Oak in abundance, but the Pine tree is rarely or never met with. Nor do the peaty beds of the watershed exhibit that denudation into peat hags which is conspicuous on the Scotch Hills (see Lewis, Peat Dep. of Scotland, Trans. Royal Society of Edin.)

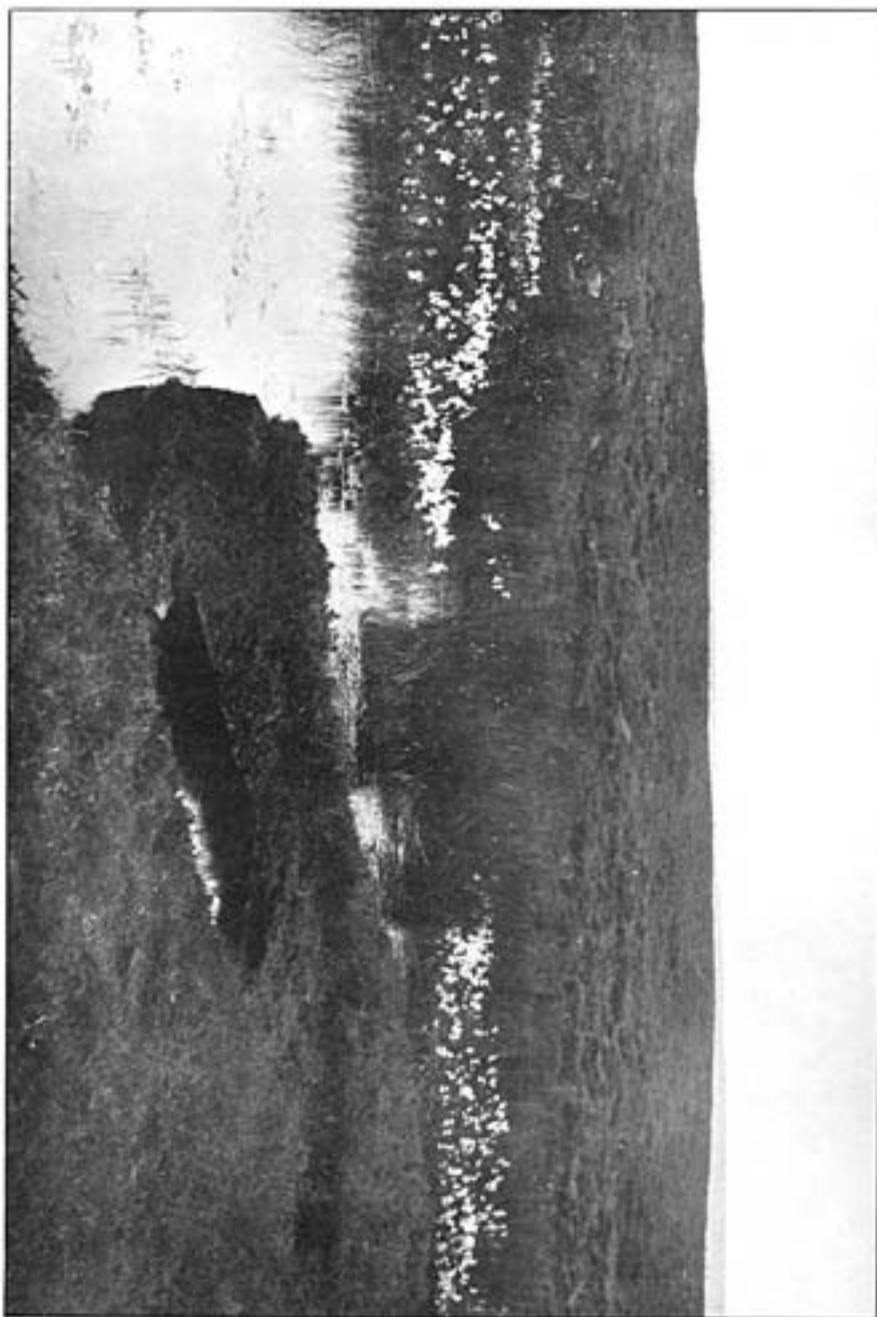
MOOR PAN.

Special attention was also directed to this important feature of moorland soils, and its existence proved in various parts of the moors where it probably covers a very large area. It has been noted at the ensuing localities :-

Great Ayton, Danby Low Moor, Rosedale Read Moors, at the head of Stockdale where a section several yards in length was observed in a gully, on the ridge between Glaisdale and Butler Beck, above the Kellaways Rock on Gerrick Moor, on Rudland Rigg between Farndale and Bransdale. In the last locality the section was very remarkable, the pan being contorted and nearly two inches thick. Pan is not always visible in sections owing to the action of frost, and therefore conclusions as to its non-occurrence must always be doubtful.

Cotton Grass (*Eriophorum angustifolium*) in fruit, Danby Dale, July, 1909.

Photo. Frank Elgee



Cotton Grass (*Eriophorum angustifolium*) in fruit, Danby Dale. July 1909. Photo. Frank Elgee

FAUNA.

Some work was done on the insects, especially Coleoptera and Lepidoptera, but no regular series of observations was made. Nevertheless some facts of interest have to be noted. *Scodiona belgiaria* was abundant on the Castleton Moors during the first week of June, whilst in May *Cnephasia politana* was numerous on the summit of Cold Moor at an elevation of 1,300 feet. At the same altitude *Radena glauca* occurred.

Whatever insects were collected were carefully labelled with full details as to their locality and altitude. A peculiar species of blind Centipede (*Geophilus, sp.*) was frequent on Kempswithen under stones.

A Viper was found dead by some visitors on Danby Low Moor near the Guisborough road. This snake is decidedly rare in this district. In the course of years of rambling on the moors I have only seen one, and that was on Sleights Moor, in August, 1907. Natives of the district confirm this rarity of the Viper. The name Hagworm is no clue to the presence of the snake for the same term is also applied to the Slow Worm, a totally different reptile.

In June, a deserted Curlew's nest was found on Kempswithen on a dry swidden, and a Grouse nest with newly laid eggs was found on Easington High Moor, on June 6th.

PHOTOGRAPHIC SURVEY.

Progress has been made with a photographic survey of the moors, and photographs have been taken of geological, archaeological and botanical subjects. Several prints of these were presented to the Club's Albums.

REPORT ON COLEOPTERA OBSERVED IN CLEVELAND.

By M. LAWSON THOMPSON, F.E.S.

The following Report on Beetles occurring in the Cleveland District is compiled from observations made during 1909, except in a few instances. Mr. G. B. Walsh, B.Sc., has kindly contributed some notes on local species, the result of his own examination of various localities within the area of our investigations. Notwithstanding the weather conditions being far from favourable during most of the season, our combined efforts have added some interesting insects to the list of previously recorded Cleveland Coleoptera, which now numbers 950 species.

Cychrus rostratus, L. On Eston Nab (G. B. Walsh).

Notiophilus substriatus, Wat. At Eston, on the Coast. June.

Dyschirius globosus, Herbst. At Eston Marshes; also near Goathland (Y. N. U. Meeting, 1903).

Bradycellus placidus, Gyll; **B. cognatus**, Gyll; **B. collaris**, Payk; and **B. similis**, Dej. On Eston Nab (G. B. Walsh).

Bradycellus verbasci, Duft. Near Eston, on the Sandhills.

Amara convexiuscula, Marsh. At Eston, on the banks of the Tees. Common in September.

Bembidium quinquestriatum, Gyll. On the banks of the Tees at Eston. September.

Aëpus marinus, Strom. At Eston, under masses of *Zostera* at high-water mark on the shore. May.

Coelambus confluens, F. At Marton (G. T. Rudd);

C. novemlineatus Steph on Eston Nab (G. B. Walsh).

Hydroporus umbrosus Gyll, and **H morio**, Dej. Eston Nab

Rhantus bistriatus Ber Marton, 1839. (Steph, Man. P.72). Eston Nab (G. B. Walsh).

Oxypoda opaca Grav. At Middlesbrough (G. B. Walsh).

Drusilla canaliculata F. On Eston Nab in nests of *Formica fusca* (G. B. Walsh).

Homalota aeneicollis, Sharp. At Saltburn, under bark. One specimen in 1896.

Homalota nigricornis, Th. At Eston, in a dead bird on the coast. One specimen in September.

Phytosus balticus, Kraatz. At Eston, under masses of *Zostera* on the shore. May.

Hygronoma dimidiata, Gr. At Kildale, in a marshy place. Early in September.

Tachyporus pusillus, Grav. Common at Saltburn; Kildale.

Tachinus laticollis, Grav. At Middlesbrough (G. B. Walsh).

Heterothops binotata, Grav. At Eston, on the shore. May

Quedius umbrinus, Er. At Kildale, amongst rotting wood, in a marshy place. Early in September.

Leistotrophus nebulosus, F. At Kildale (G. B. Walsh).

Ocypus fuscatus, Grav. One specimen in September.

Philonthus splendens, F. at Kildale. (G. B. Walsh).

Xantholinus longiventris Heer. At Eston, on the Coast.

Lathrobium boreale, Hoch. At Saltburn, in May, 1893

Stilicus orbiculatus, Pavk. At Hutton Rudby (G. B. Walsh).

Stenus speculator Lac. **S. pubescens**, Steph.; **S. brunnipes**, Steph; and **S. impressus**, Germ Common at Marton (G. B. Walsh).

Stenus pusillus Er at Eston

Stenus junco F. **S. nitidiusculus**, Steph; and **S. similes** Herbst. At Kildale (G. B. Walsh).

Homalium septentrionis Th. In Saltburn Wood, amongst decaying fish used to attract beetles. One specimen of this rare Insect in July, 1894.

Homalium riparium Th. At Eston, in a dead bird on the shore.

Homalium striatum Grav. At Kildale in a marshy place.

Eusphalerum primulae Steph; Common at Kildale (G. B. Walsh).

Anthobium sorbi, Gyll. At Grinkle.

Proteinus ovalis, Steph; And **P. brachypterus**, F. at Marton also at Eston.

Megarthus affinis, Mull. At Marton (G. B. Walsh).

Choleva angustata, F. At Saltburn.

Choleva agilis, Ill. At Middlesbrough

Trichopteryx sericans Heer. Saltburn, in vegetable refuse July 1907

Subcoccinella 24-punctata At Kildale, in a marshy place

Scymnus suturalis, Thunb. Common at Scotch fir. Eston (G. B. Walsh); Grinkle.

Micropeplus porcatus, Payk. At Kildale, in a marshy place.

Cartodere ruficollis, Marsh. Common at Marton (G. B. Walsh).

Melanophthalma fuscata, Hum. At Eston, on the coast.

Atomaria fuscata, Sch. At Eston, on the coast

Byrrhus fasciatus, F. At Eston, on the shore

Aphodius rufescens, F. Common on the coast at Eston in dung. August.

Serica brunnea, L. At Kildale.

Corymbites quercus, Gyll. At Runswick; also near Goathland

Helodes marginata, F. At Kildale (G. B. Walsh); also at Runswick.

Cyphon coarctatus, Payk; and **C. variabilis**, Thunb. Common at Kildale and Runswick.

Ancistronycha abdominalis, F. At Great Ayton, May, 1900 (O. C. Hudson); also near Goathland (J. T. Sewell).

Telephorus paludosus, Fall. Near Goathland (YN.U Meeting, 1903-H. Ostheide).

Grammoptera tabacicolor, De G. Near Goathland (YN.U Meeting, 1903-H. Ostheide).

Pogonochaerus bidentatus, Th. Near Goathland (YN.U Meeting, 1903-H. Ostheide).

Leiopos nebulosus, L. At Kildale, June (G. B. Walsh).

Phytodecta pallida, L. Near Goathland (YN.U Meeting, 1903-H. Ostheide).

Luperus flavipes, L. At Kildale June (G. B. Walsh).

Longitarsus luridus Scop Common at Kildale.

Crepidodera smaragdina, Fond. At Runswick, July.

Tenebrio molitor, L. Common at Middlesbrough.
Rhinosimus ruficollis L and **R. viridipennis**, Steph. At Kildale (G. B. Walsh).
Apion radiolus, Kirby. Common at Runswick July; also *A. rethiops*, Herbst.
Otiorhynchus rugifrons Gyll. Near the coast at Eston (G. B. Walsh).
Hypera pollux, F At Kildale in a marshy place. One specimen early in September
Hypera trilineata, Marsh. At Saltburn.
Grypidius equiseti, F. At Runswick, on *Equisetum maximum*. July.
Eirrhinus acridulus L At Kildale, a marshy place.
Dorytomus pectoralis Gyll. At Runswick July.

CLEVELAND LEPIDOPTERA IN 1908

BY T. ASHTON LOFTHOUSE, F.E.S.

*Denotes Species recorded in Proceedings for first time.

During the Spring and Summer of this year I was unable to devote much time to working for Lepidoptera; on the few times that I tried "Sugar," in July, common moths came to it fairly freely, but, during August and early September practically nothing came at all; towards the end of September and in early October a few *Orthosia macilenta* were attracted at Kildale.

RHOPALOCERA **Crenonympha typhon**. A few specimens of this butterfly occurred at Glaisdale in July; they are much darker than the Scotch specimens of this butterfly I have seen, and some of the undersides approach somewhat the forms taken on the Lancashire Mosses; they seem to be a form in between the Scotch and Lancashire forms.

BOMBYCES, **Hepialus hectus**. This moth was flying freely near Battersby on the evening of June 25th, from 8 to 8-30, including males and females, the latter mostly being very dark, and some of the males were nicely marked.

TORTRICES.

***Tortrix podana**. Occurs in garden at Linthorpe, Middlesbrough.

***Tortrix viburnana**. On Moors at Glaisdale in July

Mixodia schulziana. On Moors at Glaisdale in July.

Pamplusia mercuriana. On Westerdale Moors.

***Coccyx taedella**. Among Spruce Fir at Ingleby Greenhaw in May.

***Dichrorampha tanaceti**. Flying freely about Yarrow at Normanby in early July.

***Argyrolepis hartmanniana**. Single specimen at Ingleby Greenhaw in June.

TINEAE. ***Scardia corticella**. Several sitting about on decayed Alder tree trunk at Kildale in July.

***Micropteryx thunbergella**. At Easby in May.

***Teleia proximella**. On Alder tree trunks at Ingleby Greenhaw in May.

Elachista kilmunella. Westerdale Moors in July.

***Lithocolletis trolichiella**. On Alder at Ingleby Greenhaw.

CLEVELAND LEPIDOPTERA IN 1909.

*Denotes species recorded in Proceedings for first time.

The conditions prevailing during the Spring and Summer were not very favourable, for the most part being sunless, wet and cold, with the exception of a few days in early August.

The first insects noticed were on February 20th, when *Phigalia pedaria*, *Hybernia leueophearia*, and a good number of *Hybernia rupicapraria* were noticed, although it was extremely cold.

BOMBYCES. *Nemeophila plantaginis* and Var. **hospita*.

Took a female specimen of this moth off a wall alongside Kildale Moors, from which I obtained ova, and succeeded in rearing a most interesting second brood of over one hundred specimens, which included about twenty-six specimens of the *Hospita* variety (in which the creamy yellow ground colour in the male is replaced by white), 31 type males and 55 females, some of which varied considerably.

Hepialus sylvanus. Very plentiful on one or two favourable evenings In August at Kildale

NOCTUAE. *Tapinostola fulva* Plentiful and variable about Bents on Eston Moors in September

Neuronia popularis. A female taken on Eston Moors in September.

Celaena haworthii. A few at heather bloom on Eston Hills.

Stilbia anomala. Specimens taken among Bracken at Kildale, also single specimen at Eston

Orthosia suspecta. Several at heather bloom on Eston Hills, mostly worn specimens, in September.

Orthosia macilenta and **lota.** At sugar at Normanby and Middlesbrough.

Anchocelis lunosa. Specimen at sugar at Normanby.

Xanthia citrigo At sugar at Normanby in September.

Polia flavicincta. Normanby.

GEOMETRAE. *Scodiona belgiaria*

Larvae fairly plentiful on Heath near Glaisdale, also noticed on moors at Kildale.

The specimens bred are much darker than southern examples of this insect.

Oporabia filigrammaria A few specimens in fine condition taken on Kildale moors at end of August.

Larentia salicata. Kildale

Coremia designata. Kildale.

PYRALIDES. *Scoparia angustea.* Normanby on sugar.

CRAMBI. *Crambus pascuellus.* Common and quite fresh on Marshes near Redcar at end of July.

Crambus inquinatellus. Common among Bracken at Kildale.

TORTRICES. *Peronea sponsana.* Normanby.

**Peronea comparana.* Few about hedge at Normanby also noticed at Kildale.

Peronea variegana. Plentiful about Normanby, including vars. *Albana* and *Semi-albana*.

**Penthina sororculana.* Danby.

Penthina dimidiana. In garden at Linthorpe.

Pardia tripunctana. Several at Kildale.
Grapholitha ramella. Among Birch at Ingleby Greenhow.
Grapholitha geminana. Kildale, flying in sun about Heath.
***Phloeodes tetraquetana.** Beaten out of Birch on Eston Hills.
Ephippiphora similana. Common among Birch at Ingleby Greenhow, also noticed at Eston.
Olindia ulmana. On leaves of Butterbur at Kildale.
Trycheris aurana. Staithes.

TINEAE.

***Tineae lapella.** Easby-in-Cleveland.
***Micropteryx calthella.** Easby-in-Cleveland.
***Gelechia mulinella.** Kildale.
***Gelechia celerella.** Redcar.
***Lita aethiops.** Near Kirby-in-Cleveland.
***Teleia notatella.** Redcar
***Glyphipteryx thrasonella.** Staithes and Kildale.
***Glyphipteryx fischeriella** Kildale
Argyresthia sorbiella. Danby.
***Argyresthia brochella.** Kildale.
Ornix anglicella. Kildale.
Coleophora discordella Redcar.
***Coleophora murinipennella** Redear.
Coleophora laripennella. Kildale.
***Coleophora gryphipennella.** Staithes.

THE SPIDERS OF THE MIDDLESBROUGH DISTRICT. **By J. W. H. HARRISON, B.SC.**

The above title, in general terms, describes the district that has produced the Spiders included in the following catalogue. Nevertheless, certain species have been included which have occurred on the Durham Coast, because these Durham localities have been worked previously by the Field Club for other groups.

An examination of the list will betray the fact that the bulk of the species belong to the *Theridiids* (*sens. lat.*) Several reasons may be given for this fact. First, the *Theridiidae* and *Argiopidae* are by far the most extensive of the families represented in Britain. Again, as no collecting was done for nine weeks in summer, other families, which mature during the summer months to a greater extent than the *Theridiids* do, have thus escaped observation in the adult condition. Probably, too, the sub-alpine character of the chief localities worked has further extended the list of this family.

The district is apparently a very rich one in *Arachnids*, and two species have been discovered new to Britain. One of these, *Hypselistes florens*, provides the first European record. The other has been recorded previously from France. Besides these, there are several species new to Yorkshire. These, amongst others, include *Erigone arctica*, *Troxochrus scabriculus* and *Cnephalocotes interjectus*. Other records extend the range of very rare and little known forms. Particularly worthy of notice in this group are *Caledonia evansii*, *Evansia merens*, *Leptyphantes nebulosus* and *Porrhomma miserum*.

In all, a little more than five months' collecting has produced these species. Investigations made further afield in localities of a more varied nature will considerably extend this list.

My thanks are due to the Rev. J.E. Hull, M.A., of Ninebanks, Northumberland who has kindly examined every specimen, whether its identification has been certain or not, in order to make the list as accurate as possible

ORDER I. -ARANEAE.

FAMILY -DYSDERIDAE.

Segestria senoculata (Linn.) This peculiar looking Spider is common everywhere in the district under bark, but is very abundant in the walls, which cross the moors. very abundant

FAMILY OONOPIDAE.

Oonops pulcher (Templ.) This curious pink species is not uncommon in the district. It occurred freely among stones and in dead leaves at Eston in spring, and also in hedge-side rubbish near Nunthorpe station in October.

FAMILY DRASSIDAE

Drassus lapidicola (Walck.) This species occurs abundantly under stones on the Moors at Eston and Ayton. Individuals may be obtained at all seasons, but adults were most plentiful in June.

Drassus troglodytes (Koch.) Common and widely distributed with the last species.

Clubiona trivialis (Koch) One or two examples were beaten from heather in May and June at Eston and in Lonsdale. Commoner at Eston in October.

Clubiona reclusa (Camb.) Shaken from hedge debris at Marton, Gunnergate, Nunthorpe and Eston in May and June. Females spun up with ova were very common on various plants at Hesleden in July.

Clubiona grisea (L. Koch.) A single adult female was shaken from *Artemisia maritima* in June in Greatham Marsh.

Clubiona holosericea (De Geer). One female at Black Hall Rocks, taken from *Iris pseudacorus*.

Clubiona lutescens (Westr.) Very common indeed in the Park in dead leaves, scraps of paper; also common on the waste ground between Grove Hill and North Ormesby. Rare at Nunthorpe and Black Hall Rocks. Adult in June.

Clubiona diversa (Camb.) Beaten not uncommonly from heather at Eston in April and October; Lonsdale in June.

Clubiona brevipes (Bl.) Beaten from alders by Mr. Walsh and myself in June. Rather a rare species.

Clubiona compta (C.L.K.) One of the most distinct of the *Clubiona*, very common in grass on Eston Moor. Less common at Marton in hedge-sides.

Anyphoena accentuata (Walck.) A somewhat uncommon species, but an adult female was beaten from Alders in Kildale Woods in June.

Micaria pulicaria (Sund.) I took this ant-like Spider from nests of *Lasius niger* at Eston and in Lonsdale. It is not recognised as a genuine mymecophile, although its appearance suggests such a habit.

Agroeca brunnea (Bl.) Not very common at Eston on the heather. Immature in July, but an adult male in October.

FAMILY-THOMISIDAE.

Xysticus cristatus (Clk.) This very common crab-spider has been found in May and June at Eston, Ayton and in Greatham Marsh. At Redcar in October.

Philodromus cespitum (Walck.) Common everywhere with the next species, from which it is but doubtfully distinct.

Philodromus aureolus (Clk.) Beaten with the last from whins, laurel, etc. Forms connecting it and *P. cespitum* occur on the continent.

Tibellus oblongus (Walck.) Shaken from long grass at Eston. This spider can perform the apparently impossible, by making itself invisible on a rush stalk.

FAMILY- SALTICIDAE.

Salticus scenicus (Clk) Common on Ash trees, walls, fences and gate posts. Can be seen any sunny day in June stalking its prey. I have seen it in town running up and down a wall at the top of Abingdon Road. There is a fairly strong colony on a fence near the Park.

Salticus cingulatus (Panz.) This rather rare spider has occurred freely in several places; abundantly at Ayton under bark on Larch trees, one in a wall at Lonsdale, commonly on *Pinus sylvestris* on Kildale Moor, and one on a gatepost at Nunthorpe.

FAMILY- AGELINIDAE

Cryphoeca silvicola (C.L.K) A very common spider among the pine needles and under bark at Eston and Ayton, and on Kildale moor. A northern form.

Cryphoeca (Sp.?) An immature individual of the genus *Cryphoeca*, not referable to *C. silvicola*, was taken on Eston Moor. I believe the specimen was in a nest of *Lasius niger*.

Coelotes atropos (Walck.) Another northern spider found under stones on all the moors. Extraordinarily abundant in the quarry on the brow of Eston Nab.

Tegenaria derhami (Scop.) This is the common house spider of the district, although I have found both of the two common *Amaurobii* in houses here.

Textrix denticulate (Oliv.) Very common in the walls crossing the moors.

FAMILY-HAHNIIDAE

Hahn timer montana (Bl.) Common enough in moss on all the moors.

FAMILY -LYCOSIDAE.

Pirata piraticus (Clk.) Common in all the bogs in the Hills in June.

Trochosa ruricola (De Geer.) A very large wolf spider, found commonly under stones at Grangetown, Eston, Ayton.

Trochosa terricola (Thor.) Common under stones everywhere.

Lycosa amentata (Clk.) This, and the following species, are the blackish spiders one sees dashing about amongst the herbage in early summer. Common on all the moors, and also found at Redcar.

Lycosa lugubris (Walck.) Immature specimens were very plentiful at Eston in May.

Lycosa pullata (Clk.) Common everywhere.

Lycosa herbigrada (Bl.) Immature Individuals in early May on the North side of Eston Moor. A rare spider.

Lycosa palustris (Linn.) One in Lonsdale at the end of May

Lycosa nigriceps (Thor) Common on all the Moors. Was exceedingly abundant amongst *Erica teralix* and *Empetrum nigrum* in Normanby Intake Plantation in September.

FAMILY-DICTYNIDAE.

Dictyna arundinacea (Linn.) Immature examples were to be found in profusion in early spring, both at Eston and Ayton.

Dictyna uncinata (Westr) Not uncommon at Marton, Gunnergate and Nunthorpe. Chiefly on whins.

Amaurobius fenestralis (Stroem.) One of our commonest spiders. There is a very strong colony in Albert Road, which seems badly infested with ichneumons. I hope to breed this ichneumon and thus discover the species later. Although plentiful here from sea level to an altitude of 1000 ft. it is rare in the South and on the Continent.

Amaurobius similis (Bl.) Common in town in walls, greenhouses, etc Not uncommon at Marton and Redcar.

FAMILY-MIMETIDAE.

Ero furcata (Vill.) Common at Eston and Ayton: The cocoon, which curiously resembles a captive balloon with cable complete, was very plentiful under stones on Eston Nab in March and April.

FAMILY-THERIDIIDAE.

Theridion lineatum (Bl.) This is the very pretty, but common, spider which spins the herbage together in August.

Theridion sisypium (Clk.) Another very beautiful species beaten from gorse at Nunthorpe.

Theridion pallens (Bl.) Beaten from various trees-yew, laurel, etc., at Gunnergate, Nunthorpe, Lonsdale and Ormesby.

Steatoda bipuncta (Linn.) On old windows in a stable at Ayton in May.

Robertus lividus (Bl.) A perfect nuisance, under stones everywhere, from sea level to the highest moors.

Pholcomma gibbum (Westr.) Occasionally from grass in the Park and up Marton Road. Commoner at Eston.

FAMILY -ARGIOPIDAE.

SUB-FAMILY I.-LINYPHIINAE.

Ceratinella brevis (Wid.) Eston, in October, amongst dead leaves.

Ceratinella brevipes (Westr.) Several specimens were taken in Lonsdale in June.

Lophocarenum Mengii (Simon). I took several specimens of this somewhat local species from ants' nests and rushed at Eston in April and October.

Cnephalocotes interjectus (Cb.) This rare spider was very common indeed at Redcar. I saw more than thirty under one stone on the beach.

Cnephaloeotes elegans (Cb.) With the last-named species at Redcar, but only sparingly.

Tiso vagans (Bl.) Widely distributed in the district covered in these notes-Eston, Guisbrough, Hesleden and Middlesbrough.

Troxochrus seabriculus (Westr.) A male on the Redcar sand-hills. Also at Leven Bridge.

Troxchrus Sp.? Another species of this genus, in all probability *Tr. ignobilis*, occurs at Ayton.

Caledonia Evansii (Cb.) Fairly plentiful under old rubbish from a garden on the North side of Eston Nab. Also taken in Normanby Intake Plantation. This is a very interesting take, as it has only been taken in four localities previously.

Savignia frontata (Bl.) Common enough at Eston and in Lonsdale, both in spring and autumn.

Diplocephalus Beckii (Camb.) This very rare species has occurred in moss both at Eston and. at Ayton.

Diplocephalus cristatus (Bl.) Common .enough at Nunthorpe and at Redcar, also in Normanby Intake Plantation.

Diplocephalus latifrons (Camb.) Apparently quite common everywhere, even in the Park.

Diplocephalus fuscipes (Bl.) Common and widely distributed-Eston, Ormesby, and even in grass tufts in Middlesbrough.

Diplocephalus picinus (Bl.) Fairly plentiful on oaks and alders in Kildale Woods in June.

Tapinocyba praecox (Cb.) Shaken from moss in Lonsdale in June. A rare species.

Tapinocyba pallens (Carob.) Shaken from pinewood debris in Normanby Intake Plantation.

Lophomma punctatum (Bl.) In boggy holes on Eston Moor.

Lophomma herbigradum (Bl.) Rather plentiful everywhere on Eston Moor, but scarcer in Middlesbrough. Found amongst rushes and leaves.

Pocadicnemis pumila (Bl.) A curious little spider taken among grass at Hesleden. Also at Staithes.

Pepocranium ludierum (Camb.) Not uncommon on the Moors at Eston and at Lonsdale.

Metopobaetrus prominulus (Camb.) Two or three specimens were taken at Hesleden in July.

Minyriolus pusillus (Wid.) Amongst pine needles in Normanby Intake Plantation. Also in Wilton Wood.

Entelecara (Hypselistes), **florens** (Camb.) This very interesting addition to the British fauna was discovered in one of the bog holes on the northern slope of Eston Nab. Three specimens in all were taken-a male in October and two females in November. With the females a cocoon was found. This cocoon was the shape of a tabloid, and contained at the most thirty eggs. Similar cocoons were discovered amongst rushes near the brow of the hill.

This species had previously been reported from North America, and forms another member of the somewhat large group of animals and plants common to both hemispheres of which we have so many representatives in the Cleveland District. (See plate).

Evansia merens (Camb.) This mymecophile spider is very abundant in our district, and is just as common on the other side of the river. It occurs with *Lasius niger* and *Formica fusca*, both at Eston and in Lonsdale. Affected nests are easily distinguished, for the characteristic flat cocoon containing but few eggs may be found on the roofing stone of such nests. They are apparently two broods each

year in this district, for adults of both sexes followed by immature specimens may be found in spring, and there is a new generation of "babies" in September. A large number of the specimens found with *Formica fusca* on the Guisbrough side of Eston Moor are much darker and more clearly marked than Pickard-Cambridge's type.

Wideria antica (Wid) Found pretty commonly under stones and amongst the herbage in Normanby Intake Plantation, Eston and Lonsdale

Cornicularia cuspidata In sphagnum and rushes on Eston and Easby Moors.

Cornicularia unicornis (Camb.) Pretty generally distributed. Eston moor, Marton, Nunthorpe, etc. Generally beaten from tufts of grass.

Cornicularia vigilax (Bl.) I am informed by Mr. Falconer that he got this species in Coatham marsh

Notioscopus sarcinatus (Sim.) This species is new to Britain and has only previously been reported from Nuremburg, Germany, and the department of Aisne, France. It seems widely distributed in this locality in wet places on the moors, and is far from uncommon. Considering the remarkable structure of the male, it seems extraordinary that it should hitherto have escaped observation at other points in Britain. Localities:-Eston Moor(1). In the swamp in the middle of the moor.; (2) amongst moss on the edge of the stream near the mine. Lonsdale:-near the Alder wood in Sphagnum. Since I first discovered it, Mr Falconer has taken females at Boosbeck. Females may be taken all the year round, but the males seem to be adult in late October and Early November.

Walckenaera acuminata (Bl.) A northern spider, pretty generally distributed in this district. Found amongst dead leaves, etc.

Walckenaera nudipalpis (Westr.) Sparingly in boggy spots on Eston and Easby Moors

Gonatum rubens (Bl) A very variable spider seems equally at home on the highest moors and in the country lanes.

Gonatum rubellum (Bl) not common in Lonsdale

Neriene bituberculata (Wid.) Shaken very commonly from tufts of grass etc, at Eston and in Lonsdale, Redcar

Neriene cornuta (Bl.) One female on Eston Moor.

Dismodicus bifrons (Bl.) Very common on whin bushes at Nunthorpe, Gunnergate, Hesleden, &c.

Gongylidium rufipes (Sund.) Not very common amongst crowberry (*Empetrum nigrum*) at Eston and in Lonsdale.

Gongylidium agreste (Bl.) Found sparingly in October on Eston Moor and near the Toll Bar on Malton Road.

Gongylidium fuscum (Bl.) Occasionally turned up in Lonsdale. Not uncommon in Middlesbrough.

Gongylidium retusum (Westr.) Found in fair numbers under stones in Greatham Marsh. It seemed odd to take these and shrimps under the same stone. Also taken in Lonsdale.

Gongylidium tuberosum (Bl.) This was discovered fairly freely in June at Ayton amongst rushes and was not uncommon at Eston in October.

Gongylidium gibbosum (Bl.) Barely separable from the last species, but not uncommon at Eston and in Lonsdale.

Erigone dentipalpis (Wid.) Common on all the moors, and not uncommon near Middlesbrough.

Erigone atra (Bl.) Pretty generally distributed. Not uncommon amongst grass in the Park.

Erigone arctica (White). This species formerly considered so rare that Mr. Walsh's specimen taken among stack refuse at Marton formed the only Yorkshire record, has proved very abundant in all suitable spots. I took it at Grangetown in February, and in very large numbers at Redcar in November. Originally recorded from Spitzbergen.

Maso sundevallii (Westr.) Has been found not uncommonly at Eston, Guisbrough and Lonsdale, and once even in Middlesbrough.

Hilaira uncata (Camb.) This rare species seems of pretty general occurrence among Sphagnum on our moors, and has been taken in some numbers on Eston and Easby Moors and at other points in Lonsdale.

Coryphaeus distinctus (Sim) I had the pleasure of taking this species at Linthorpe on November 27th. This is the first published Yorkshire record. I only secured one female, but I had no chance of searching further, the weather was so bad.

Coryphaeus reprobus (Camb) Has occurred on the mudflats at Grangetown.

Tmeticus huthwaitii (Camb) Not uncommon under stones on the mudflats on both sides of the Tees Mouth

Macrargus rufus (Wid.) Rather common Normanby Intake Plantation, Eston Moor, Guisborough, Lonsdale

Plaesiargus abnormis (Bl) Common all the moors. I took one male specimen on Eston moor with a very curious fungoid growth on the abdomen.

Pedina scopigera (Grube). Amongst the rushes near the mine on Eston Moor.

Centromerus silvaticus (Bl) Wilton, Guisborough, Normanby on the moors and commonly at sea level at Redcar also at Linthorpe.

Centromerus expertus (Camb) Not common on the Wilton side of Eston Moor but apparently of more general occurrence at the Normanby side.

Centromerus prudens (Camb) Common enough at Eston and at Redcar, forming one of the few known examples amongst the Arachnids of species having both a maritime and a sub-alpine distribution.

Centromerus areanus (Camb.) A rare spider, but not uncommon in Lonsdale.

Centromeria bicolor (Bl.) This species is excessively common everywhere. I once took a female, having six instead of the normal eight eyes. This occurred near the Park.

Centromeria concinna (Thor.) Perhaps only a reduced form of the preceding, which it accompanies everywhere.

Porrhomma pygmaeum (Bl.) Not very common in Guisbrough Park Wood; also taken once near Middlesbrough

Porrhomma oblongum (Camb.) This spider occurs in Wilton Woods amongst pine needles, but is anything but common.

Porrhomma microphthalmum {Camb.) Another rare spider taken two or three times on Eston Moor.

Porrhomma miserum (Camb.) This seems to be the commonest of the genus in this neighbourhood, and is, apparently not uncommon in Lonsdale and on Eston Moor.

Shaken from moss at both places.

Sintula diluta (Camb.) A very small spider found amongst the debris in woods-Wilton, Normanby Intake, Guisbrough Park.

Mieroneta viaria (Bl.) Common at Eston and in Lonsdale, but has occurred sparingly in Middlesbrough.

Microneta subtilis (Camb.) This has occurred two or three times in Lonsdale.

Microneta conigera (Camb.) One female was found in the Pine Wood on Eston Moor.

Microneta rurestris (Koch.) Seems to be fairly common on Eston and Easby Moors.

Microneta gulosa (C.L.K.) , This spider recorded for so long as *M. sublimis* (Camb.) has occurred in Lonsdale and also in the borough, where I secured a fine pair early in November.

Microneta beata (Camb) A female apparently referable to this species was taken at Hesledon one exactly the same on Eston Moor.

(The genus *Microneta* is in a very unsatisfactory condition, and specimens belonging to two or three species not mentioned above have been taken chiefly on the moors, and with many others of the same genus are in the hands of Rev. O. Pickard-Cambridge awaiting identification.)

Bathyphantes nigrinus (Bl) Very common everywhere.

Bathyphantes gracilis (Bl) So far this species, which is usually very common everywhere, has only occurred sparingly and this in the town itself in dead leaves.

Bathyphantes concolor (Wid) Abundant and generally distributed even in town.

Bathyphantes variegatus (Bl.) Almost as common as the last and in the same localities.

Leptyphantes ericaeus (Bl) . Pretty common everywhere on the moors.

Leptyphantes pallidus (Camb.)-This seems to be a rare spider in our district and has only been taken on whins near Nunthorpe Station.

Leptyphantes obscurus (Bl) Another spider which is almost absent here but common in other places. I have beaten it from yews near Old Ormesby.

Leptyphantes Mengii (Kulcz) Common everywhere, from sea level at Grangetown to the highest moors I have visited.

Leptyphantes flavipes (Bl) A rare spider in the North but apparently not uncommon in Lonsdale.

Leptyphantes tenuis (Bl) Common enough under stones etc., on all the moors and also under stones and rubbish on the beach at Redcar.

Leptyphantes tenebricola (Wid.) A fair number were shaken from dead leaves at Linthorpe.

Leptyphantes Blackwallii (Kale). This has the same range as *L. Mengii*, but is even more common. Has been taken in the town.

Leptyphantes cristatus (Menge). Not very common, but has been taken in Wilton Wood and near Middlesbrough

Leptyphantes minutus (Bl.) I have only taken this spider once, at Normanby.

Leptyphantes nebulosus (Sulid.) This very rare spider has occurred in Abingdon Road, Middlesbrough, and under stones on the beach at Redcar. These are the first adults taken so far north in England.

Linyphia clathrata (Sund.) Very common everywhere. I have taken it in hedges near the town from old bird nests.

Linyphia montana (Clerck.) Have beaten this from laurel near Gunnergate.

Linyphia triangularis (Clerck). Seems very sparingly represented in this district. Has only occurred at Eston.

Linyphia peltata (Wid.) Beaten fairly freely from the alders in Lonsdale.

Linyphia insignis (Bl.) Not uncommon in Wilton Wood, and once in dead leaves in Middlesbrough.

Drapetisca socialis (Bl.) Very common in the fallen twigs at the base of the firs in Wilton Wood.

Stemonyphantes lineatus (Linn.) Very common everywhere, generally spun up in dead leaves. Shaken from scraps of paper in the Park and elsewhere in the Borough.

Bolyphantes luteolus (Bl.) Rather common everywhere, but particularly so on the higher moors and on the coast sand-hills at Redcar.

BOLYPHantes alticeps (Sund) Only sparingly found amongst grass in Wilton Wood:

Tapinopa longidens (Wid) Not uncommon on Eston Moor and in Normanby Intake Plantation.

SUB-FAMILY II.-TETRAGNATHINAE

Pachygnatha De Geerii (Sund) This species is very common, but perhaps is most abundant in watery places. Has occurred in every locality from Redcar to the highest moors.

Pachygnatha Clerckii (Sund) As common generally as the last, but has not been taken freely near the town

Meta segmentata (Clerck) Very common everywhere. Most freely beaten from furze in localities where that plant is abundant.

Meta Merianae (Scop) Very common indeed under the ledges on the gateposts of the Park gates, and also at other points in the park and the Borough. Has occurred less freely at Marton and in Kildale

Nesticus cellulanus (Clerk) A lover of dark damp localities; has only been taken under stones near a brook running through a wood at Nunthorpe.

Zilla x-notata (Clerck) Very common everywhere, even In the Park.

Zilla atrica (Koch.) The same remark to this as to the last.

Epeira diadema (Clerck) This fine large spider known popularly as the "Garden Spider" is excessively abundant on whins on Eston Hills, and is common enough elsewhere. A slate-coloured form, occasionally replaces the brown type in this district.

Epeira cornuta (Clerck.) Widely distributed in damp places, but is not very common anywhere except at Hesleden. It is generally found spun up in rush heads. At Hesleden it is badly attacked by a small apterous ichneumon, which may be seen ovipositing in the cocoons.

Epeira quadrata (Clerck.) Another fine spider of wide but scanty distribution on the moors.

Epeira umbratica (Clerck.) A large but repulsive looking spider, found abundantly under bark on fences at Ayton and under alder bark in Lonsdale. At Ayton about 50 specimens were observed on one occasion.

ORDER II.-CHERNETIDEA. *FAMILY-CHERNETIDAE.*

Obisium muscorum (Leach). Very abundant everywhere on the moors under stones, in sphagnum moss and amongst debris of all descriptions. Found freely enough amongst dead leaves, etc., near Middlesbrough, and at Nunthorpe. Once shaken from seaweed in Greatham Marsh.

ADDENDA

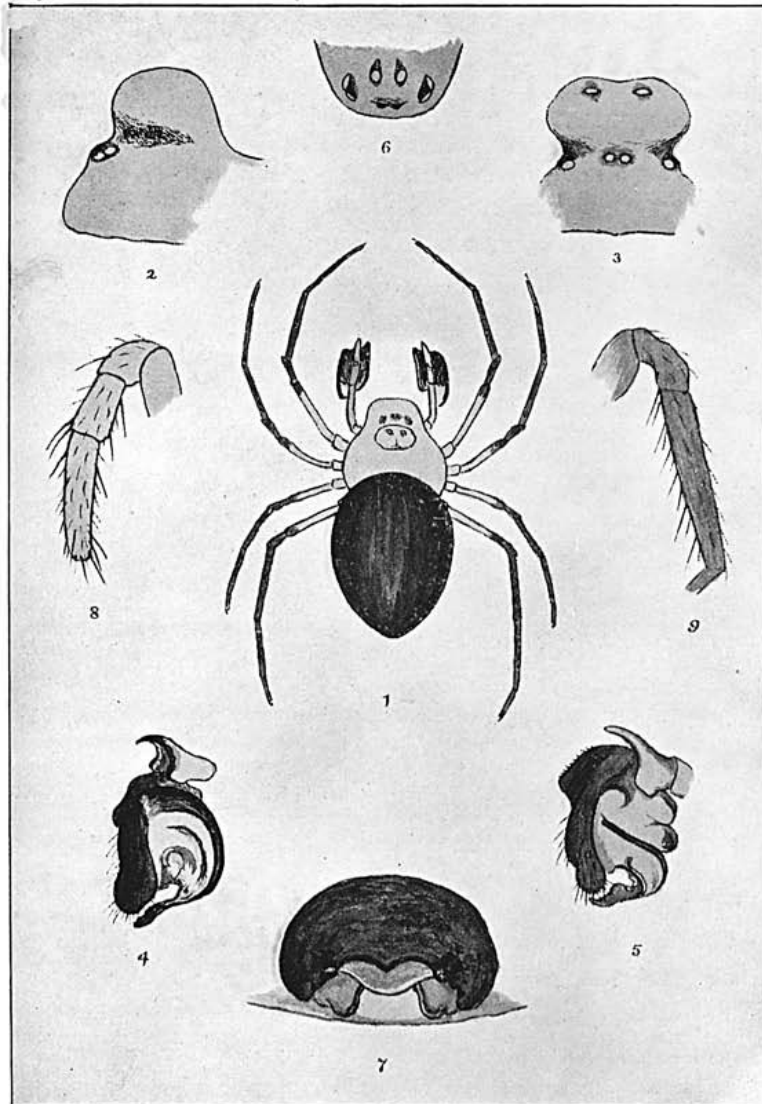
The following additional species have been captured since the above list was written
Xysticus erraticus (Bl.) Taken not uncommonly in the rubbish under whin bushes on Eston Moor.

Oxyptila trux (Bl.) Very common with the above.

Tarentula andrenivora (Bl.) One fine female on Eston Moor running over sandy ground.

Entelecara erythropus (West). Common at the Black Hall Rocks.

Cnephalocotes obscurus (Bl) One female amongst *sphagnum* on Eston Moor.
Troxochrus hiemalis (El) Very common amongst moss and dead bracken in Wilton Wood.
Dicymbium tibiale (El) One specimen from grass on Eston Moor.
Bathyphantes approximatus (Camb.) One female taken from flood refuse at Leven Bndge.
Linyphia pusilla (Sund) A male was shaken from a grass tuft overhanging the beck near Nunthorpe Station.
Tarentula pulverulenta (Clk) Common on all the moors.
Dicymbium nigrum (Bl) Not uncommon at Eston
Diplocephalus permixtus (Cb.). Fairly common in Lonsdale
Hilaira excisa (Cb) One female at Ayton.
Entelecara acuminata (Cb.)Several females at Hinderwell
Linyphia hortensis (Sund.). One female at Nunthorpe.
Dictyna latens (Fab) Very common at Staithes and Runswick Bay.
Meta menardii (Latr) One male in Lonsdale and a female not far from Ayton Station



Hypselistes florens, (cb.)

1. Male.
2. Caput of Male, side view.
3. Caput of Male, front view.
4. Left palpus of male, tarsus and tibia, side view.
5. Left palpus of male, tarsus and tibia, side view but rather more from behind and above.
6. Eyes of female, from above.
7. Epigyne of female.
8. Left palpus of female.
9. Female, tibia and patella of front leg.

LOCAL MARINE MOLLUSCA
BY T.W. SAUNDERS

The following list of Marine Mollusca has been compiled from specimens collected by me between Redcar and Bridlington during 1908 and 1909. All the shells have been examined by the Rev. F. H. Woods, Bainton Rectory, Driffield, who is an

acknowledged authority on the subject. The nomenclature adopted is that of the Conchological Society's list. The specimens from the Dogger Bank were brought in by a Staithes fishing boat. Specimens marked with an asterisk are additions to the late Rev. J. Hawell's list in the Proceedings, vol. I., page 19.

CHITONIIDAE.

***Craspedochilus cinereus** (Linn) Redcar, Saltburn, Skinningrove and Runswick Bay; common.

ANOMIIDAE.

Anomia ephippium (Linn); Redcar, Saltburn, Skinningrove, Runswick Bay, Whitby, Robin Hood's Bay, Bridlington; common.

* **Anomia patelliformis** var. *striata* (Loven); Redcar, Saltburn.

MYTILIDIE.

Mytilus edulis (Linn) ; Redcar, Saltburn, Skinningrove, Staithes, Runswick Bay, Whitby, Robin Hood's Bay, Bridlington; common.

NUCULIDIE.

***Nucula nucleus** (Linn) ; Skinningrove.

***Nucula nitida** (G. B. Sowerby) ; Skinningrove.

LUCINIDAE.

***Tellimya ferruginosa** (Montague); Skinningrove.

OSTREIDAE.

Ostrea edulis (Linn) . Redcar, Saltburn, Skinningrove, Staithes, Runswick Bay, Whitby, Robin Hoods Bay, Bridlington; common.

PECTINIDEA.

Pecten maximus (Linn) ; Staithes

Hinnites pusio (Linn), Redcar, Saltburn, Skinningrove, Staithes, Runswick Bay, Whitby, Robin Hoods Bay, Bridlington; common.

Chlamys varius (Linn) ; Redcar

Aequipecten opercularis . Redcar, Saltburn, Staithes, Runswick Bay, Whitby, Robin Hoods Bay, Bridlington; common.

KELLIELLIDIE.

Turtonia minuta (Fab) Runswick Bay, Redcar. Saltburn, Skinningrove; fairly common.

CYPRINIDAE.

Cyprina islandica (Linn) Redcar, Saltburn, , Runswick Bay, Whitby, Bridlington; R d ;Common.

SCROBICULARIDAE.

Syndosmya alba (Wood); Redcar, Saltburn.

Scrobicularia plana (Da Costa); Staithes.

TELLINIDAE.

Tellina tenuis (Da Costa) . Redcar, Saltburn, Skinningrove, Runswick Bay, Robin Hoods Bay, Bridlington; common.

Tellina fabula (Gronovius); Redcar, Saltburn.

Macoma balthica (Lin). Redcar, Saltburn, Skinningrove, Robin Hoods Bay, Bridlington; common.

DONACIDAE.

Donax vittatus (Da Costa); Redcar, Saltburn, Skinningrove, Staithes, Runswick Bay, Whitby, Robin Hood's Bay, Bridlington; common.

MACTRIDAE.

Mactra stultorum (Linn); Redcar, Saltburn, Runswick Bay, Robin Hood's Bay, Bridlington; common.

Mactra stultorum var.; Saltburn.

Spisula solida (Linn); Redcar, Saltburn.

Spisula elliptica (Brown); Saltburn.

Lutraria elliptica (Lamarck); Redcar, Saltburn, Skinningrove, Whitby.

VENNERIDAE.

***Dosinia lupina** (Linn); Redcar, Saltburn, Staithes.

***Clausinella fasciata** (Da Costa); Redcar, Saltburn, Skinningrove, Staithes, Runswick Bay, Whitby, Robin Hood's Bay, Bridlington; common.

Tapes virgineus (Linn); Saltburn.

Tapes pullastra (Montague); Redcar, Saltburn, Skinningrove, Runswick Bay, Bridlington; common.

Tapes pullastra var. perforans (Montague); Saltburn.

CARDIIDAE.

Cardium echinatum (Linn); Saltburn.

***Cardium tuberculatum.**

***Cardium fasciatum** (Montague); Redcar, Saltburn.

Cardium edule (Linn); Redcar, Saltburn, Skinningrove, Staithes, Whitby, Runswick, Robin Hood's Bay, Bridlington; common.

***Laevicardium norvegicum** (Spangler); Staithes

GARIIDAE.

Gari ferroensis (Chemnitz) Redcar, Saltburn

MYIDAE.

Mya truncata (Linn) . Redcar, Saltburn, Skinningrove, Whitby, Robin Hood's Bay, Bridlington; common.

SOLENIDAE.

Ensis ensis (Linn); Redcar, Saltburn.

Ensis siliqua (Linn) Redcar, Saltburn.

SAXICAVIDAE.

Saxicava rugosa (Linn) ; Redcar, Saltburn, Skinningrove, Staithes, Runswick Bay, Whitby, Robin Hood's Bay, Bridlington; common.

PHOLADIDAE.

Barnea candida (Linn), Redcar, Saltburn.

DENTALIIDAE.

Dentalium entalis (Linn) . Redcar, Saltburn.

PATELLIDAE

Patella vulgata (Linn) Redcar, Saltburn, Skinningrove, Staithes, Runswick Bay, Whitby, Robin Hood's Bay, Bridlington; common.

***Patella depressa** (Pennant); Staithes.

Helcion pellucida (Li) . Redcar, Saltburn, Skinningrove, Runswick; common.

Helcion pellucida var laevis (Pennant); Redcar, Saltburn, Skinningrove, Runswick Bay

ACMAEIDAE.

Acmaea testudinalis (Muller) Redcar, Saltburn, Skinningrove, Runswick Bay

Acmaea virginea (Muller); Saltburn.

TROCHIDAE.

Eumargarita helcina (Fab.); Redcar, Saltburn, Staithes.

Gibbula cineraria (Linn); Redcar, Saltburn, Skinningrove, Staithes, Runswick Bay, Whitby, Robin Hood's Bay, Bridlington; common.

***Gibbula cineraria .var. electissima** (Bean); Saltburn.

***Eumargarita graenlandica** (Chemnitz) ; Skinningrove.

Calliostoma zizyphinus (Linn) ; Redcar, Saltburn, Staithes.

LITTORINIDAE.

***Lacuna crassior** (Montague); Saltburn.

Lacuna divaricata (Fab.); Redcar, Saltburn, Skinningrove, Runswick.

***Lacuna parva** (Do. Costa); Saltburn.

Lacuna pallidula (Da Costa); Redcar, Saltburn.

Littorina obtusata (Linn); Redcar, Saltburn, Skinningrove, Staithes, Runswick Bay, Whitby, Robin Hood's Bay, Bridlington; common. .

***Littorina obtusata var. aestuarii** (Jeffreys); Redcar, Saltburn, Skinningrove.

Littorina rudis (Maton) ; Redcar, Saltburn, Skinningrove, Staithes, Runswick, Whitby, Robin Hood's Bay, Bridlington; common.

Littorina littorea (Linne); Redcar, Saltburn, Skinningrove, Staithes, Runswick Bay, Whitby, Robin Hood's Bay, Bridlington.

RISSOIDAE.

Rissoia parva (Da Costa) ; Redcar, Saltburn, Runswick; common.

Rissoia parva var. interrupta (Adams) ; Redcar, Saltburn, Runswick ; common.

Alvania punctura (Montague); Redcar, Saltburn, Runswick; common.

***Manzonina costata** (F., Adams); Saltburn.

Anoba striata (J. Adams); Redcar, Saltburn, Skinningrove.

Cingula semistriata (Montague); Redcar, Saltburn, Skinningrove; common.

***Cingula trifasciata** (T. Adams); Redcar.

SKENEIIDAE.

Skenia planorbis (Fab.); Redcar, Saltburn, Skinningrove.

CAPULIDAE.

Capulus hungaricus (Linn); Redcar, Saltburn.

CYPRAEIDAE.

Trivia europaea (Montague); Redcar, Saltburn, Skinningrove, Staithes, Runswick Bay, Whitby, Robin Hood's Bay, Bridlington; common.

NATICIDAE.

Lunatia pallida; Saltburn.

***Lunatia catena** (Da Costa); Redcar, Saltburn, Skinningrove, Staithes; Common.

***Lunatia Alderi** (Forbes); Redcar, Saltburn, Skinningrove, Bridlington; common.

CERITHIIDAE.

Bittium reticulatum (Da Costa); Saltburn.

PYRAMIDELLIDAE.

***Spiralinella spiralis** (Montague); Redcar.

TURRITELLIDAE.

Turritella communis (Lamarck) ; Redcar, Saltburn

APORRHAIIDAE.

Aporrhais pes-pelecani (Linn) ; Redcar, Staithes.

BUCCINIIDAE

Buccinum undatum. (Linn) ; Redcar, Saltburn, Skinningrove, Staithes, Runswick Bay, Whitby, Robin Hood's Bay, Bridlington; common.

Neptunea antiqua (Linn); Redcar, Saltburn, Skinningrove, Staithes, Runswick Bay, Whitby, Robin Hood's Bay, Bridlington; common.

Volutopsis norvegicus (Chemnitz) ,Dogger Bank.

Beringuis turtoni (Bean), Dogger Bank.

Tritonofusus gracilis (Da Costa) , Redcar Skinningrove,Staithes, Whitby, Bndlington.

***Donovania minima** (Montague) ; Skinningrove.

MURICIDAE.

Ocinebra erinacea (Linn); Bndlington

***Trophon clathratus** (Linn); Saltburn

Purpura lapillus (Lmn), Redcar, Saltburn, Skinningrove, Staithes, Runswick Bay, Whitby, Robin Hood's Bay, Bridlington; common.

NASSIDAE

***Nassa reticulata** (Linne), Redcar, Saltburn, Skinningrove, Staithes, Runswick Bay, Whitby, Robin Hood's Bay, Bridlington; common.

PLEUROTOMIDAE.

***Bela turricula** (Montague); Redcar, Saltburn, Skinningrove

Bela rufa (Montague); Redcar, Saltburn, Skinningrove.

***Bela trevelyana** (Turton) Skinningrove

***Clathurella linearis** (Montague) Skinningrove

Mangelia costata (Donovan); Skinningrove.

TORNATINIDAE.

***Tornatina truncatula** (Brug.); Redcar, Saltburn.

***Tornatina obtusa** (Montague). Redcar

***Diaphana hyalina** (Turton) Saltburn

***Diaphana expansa** (Jeffereys); Skinningrove.

PHILINIDAE

***Philine catena** (Montague); Skinningrove.

LAMELLARÜDOE.

***Velutina laevegata** (Pennant); Skinningrove.

SECRETARY'S REPORT FOR 1908-9

In presenting my First Annual Report, I have pleasure in stating that the past season has been a very successful one. The Summer and Winter Meetings have been as well attended as we have known them to be, and the work done by the Members of the different Sections has been of a most valuable character.

SUMMER MEETINGS.-Eight Meetings were held during the summer, and, with two exceptions-those at Middleton-in-Teesdale and at Swainby-the weather conditions were fairly favourable. The excursions were held at the following places :-Hutton Rudby, Boulby, Middleton-in-Teesdale, Roxby, Swainby, Ralph Cross and Westerdale, the Falling Foss, and Castleton; the average attendance being 19 to 20. At the Middleton and Swainby Meetings, heavy rain prevented any outdoor work; this was very disappointing, since a large number of Members attended both excursions.

I have to acknowledge the great assistance I have received from the following Members in making arrangements:-Messrs. T. J. Cozens, H. Frankland, Rev. J. C. Fowler, T. W. Saunders, and J. W. R. Punch. At the Hutton Rudby excursion, Messrs. Alexander Park and Wilson gave the Members the benefit of their local archaeological knowledge.

An outcome of the Middleton-in-Teesdale Meeting, when the Club met the Members of the Durham County Naturalists' Society, was an invitation for the Members of the Darlington Naturalists' Field Club to join our Society in the Swainby excursion. Bad weather spoiled this Meeting, which would otherwise have been a most successful one. The Rev. J. C. Fowler kindly entertained the Members of both Societies to tea.

Our Members also enjoyed the hospitably of Mr. and Mrs C. Hood at the Westerdale Meeting, and of Mr. and Mrs. J. W. R. Punch at the Castleton Meeting, and the thanks of the Club are due to them for their kindness.

A few Members attended the Y N U. Meeting at Osmotherley, on August Bank Holiday. When I say Osmotherley, I mean Northallerton; for though ostensibly held at the former village, it was really held at Northallerton. This was not without its compensations, the most pleasurable part of the Meeting being undoubtedly the long drives from the town to the foot of the hills and back again.

The Club are indebted to Mr. T. C. Hutchinson, of Saltburn for permission to visit the Boulby Alum Quarries.

WINTER MEETINGS:-Eleven of these have been held, but, with one or two exceptions, the attendance thereat has been very moderate. When it is borne in mind that the lecturers themselves to no little inconvenience and trouble in preparing their lectures, it is somewhat discouraging to have to record such meagre attendances.

The Exhibition Meeting arranged for October 17th was, for some unaccountable reason, a complete failure, only seven members attending and no exhibits being sent in, although Mr. Henry Simpson had been good enough to arrange microscopes and to have one or two special objects for inspection. Usually, these exhibition meetings are very successful.

General lectures, not dealing with any branch of science were given on "Richard Jeffries" by the Rev. George Lane; and a Y.N.U. lantern lecture by Mr. Godfrey Bingley, of Leeds, entitled: "From Cornwall to Shrewsbury". Mr. G.B. Walsh also gave us a physical lecture on "Rest and Motion".

Our thanks are due to the lecturers for giving their papers, to the Literary and Philosophical Society for the use of their rooms, and to the authorities of the Dorman Memorial Museum for allowing two meetings to be held there.

We are indebted to Mr. Simpson for reports of our meetings in the local press, and to the editors of the "Star", "Echo", and "Gazette" for inserting the same.

WORK OF THE SECTIONS.-This, on the whole, has been of a most valuable and interesting character, and in reporting upon it, I have included the work done .at the Summer Meetings, and the different kinds of Lectures we have had during the winter. My thanks are due to the Sectional Secretaries and Members for notes, enabling me to make this report.

ARCHAEOLOGICAL SECTION.-In reporting upon the work of this Section, the Secretary, Mr. Fallow, says that he has been unable to do any local research during the past year, most of his time having been spent at the Record Office.

At the Hutton Rudby Excursion, the Archaeological features of the Church were kindly explained by Messrs. Alex. Park and Wilson. North of the Church, and parted from it by a distinct moat, a rectangular mound of considerable dimensions

was pointed out. It was formerly the moot hill, round which the public assembled for the transaction of business.

On the occasion of the Boulby Meeting, Easington Old Church was examined, and the Club are indebted to Mr., Stubbs for pointing out various objects of interest, and the site of ancient earthworks, etc.

At the Roxby Meeting, St. Nicholas Chapel of Ease was studied. It contains one of the finest monumental brasses in the district, dating back to 1523.

At the Swainby Meeting, the Rev. J. C. Fowler kindly explained the Archaeological features of Whorlton Church and Castle.

BOTANICAL SECTION.-Mr. Cozens reports for the Botanical Section as follows:- I have been asked to contribute a few notes regarding the work of the Botanical Section during the past year. To my mind, the excursions were admirably planned, so that a good many parts of the immense area of the Cleveland district were investigated in turn, purely rural districts, alternating with sea-side localities, and these again, with the moors and more isolated spots which the various Sections had never, or very little, specially studied. To two of these latter places I regret bad weather kept me from going.

As in the previous year a great departure from the ordinary scheme of summer meetings was introduced, a visit being arranged to some spot outside the Cleveland area, and this excursion, as in last year, drew forth the best muster of the season. I refer to the Middleton-in-Teesdale. Unfortunately, the weather marred what I am sure would otherwise have proved a most enjoyable meeting.

The first excursion was fixed for the delightful spot, Hutton ruddy, on May 9th, but the season was not sufficiently advanced to meet with a great variety of plants, nothing specially being noticed, although had we been able to go through Skutterskelf Woods, *Aconitum napellus* might have been seen. Near the same spot by the Leven side there is a remarkable growth of *Conium maculatum*, the plants sometimes reaching 5 to 6 feet in height.

The Meeting, however which had been looked forward to with considerable expectancy was that fixed for Teesdale on June 13th. The writer had communicated with friends in Middleton, who were lovers of plant life, and obtained a promise that they would, if possible, procure some of the gems of that unique district. Mrs Ford, the wife of the rector, and Miss Dent, a keen botanist, troubled themselves in this matter, and it was indeed fortunate for us they did so, for their endeavours were of great assistance, the rain commencing to descend immediately we left the train, and continued persistently until we took our departure, thus shattering all our good intentions-but it was not all disappointment. There were several varieties of plants awaiting us, notably *Gentiana verna*, *Bartsia alpina*, *Geranium rotundifolium*, *Galium boreale*, *Primula farinosa*, and *Trollius Europaeus*.

Some of the members who feared not the inclement weather made a little excursion by the Skear's Beck, where the *Astrantia major*, one of the rarest of our plants, was pointed out, with *Saxifraga umbrosa* and *Lymachia nummularia* in

close proximity. The *Botrychium lunaria* was found, and several species of the liverworts were also noticeable, as were a great variety of mosses and lichens.

At the High Force, other naturalists from Durham County exchanged courtesies, and we were able to examine several species, which they had gathered earlier in the day before the rain stopped investigations. Amongst those inspected were *Viola lutea* and *Potentilla fruticosa*.

The excursion fixed for July 11th, at Swainby, was a duplication of the one at Middleton-Jupiter Pluvius intervening, and by ubiquity spoiling it. Remarkable features noticed on the tramp from the Station to Swainby were the immense quantities of *Agrimonia eupatoria* on each side of the road, the *Bryonia dioica* on the hedges, and the luxuriance of the *Lonicera periclymenium*, which in one spot on the slope of Whorl Hill grew so densely that it some distance away the hedge presented a patch of crimson and gold. This phenomenon was only noticeable in this district, and the writer wonders whether the geological formation had anything to do with it. This leads me to suggest the wisdom of mapping out the various localities, according to their soil and keeping a record of the plant life of each particular soil. For instance, round Stokesley there are distinct lines of separation between the various formations-the Trias (Red and Green Marls and Gypsum), the Lower Lias (Shales) Alluvium, Rhaetic bed outcrop, and the Whin Dyke, and I have noticed a considerable diversity of growth.

I was prevented from attending the meeting at Sleights for the Falling Foss, therefore my knowledge of what took place is limited, but from my experience of the Falls in Teesdale, I should imagine the growths of the *Cryptogams*, or so-called flowerless plants on the wet rocks would be plentiful and worthy of investigation.

The last meeting of the season at Castleton, on September 5th, produced a fairly good muster, but the weather again somewhat marred the enjoyment. The Quarry by the Station proved interesting, the *Cheiranthus cheiri* and *Matricaria parthenium* thriving in the interstices of the rocks. The walk across the moor produced nothing of interest, except the abundance of *Calluna vulgaris (alba)* *Drosera rotundifolia* and *Empetrum nigrum*, as it proved to be the period when vegetation is on the wane.

With regard to my own individual work round this district, I cannot chronicle anything fresh, except *Scutellaris galericulata* at Turkey Nab; *Alchemilla alpina* (evidently been brought into the place), *Claytonia perfoliata*, *Aconitum napellus*, and *Helleborus viridis* at Ingleby; *Daphne laureola* and *Ononis spinosa* at Tanton. I have been told that *Gagea lutea* is to be found in one of Mr. Wynne-Finches' plantations close to Stokesley, and I hope to make sure of the record shortly.

During the year, Dr. Smith, of Leeds, and the Hon. Sec. made a botanical survey of the South Cleveland Moors at Easter, and of the Hambleton Moorlands in August, on the occasion of the Y.N.U. Meeting. Some of the results of these surveys were given in the Hon. Sec.'s lectures on "Moorland Types" and "The Cleveland Moors," but full details will appear in Dr. Smith's botanical maps of Cleveland, which will be issued shortly.

. Mr. H. G. Scruton, B.Sc., lectured on March 6th on the "Function and Structure of the Leaf," and a discussion followed on the adaptations of the leaves of ericetal plants.

CONCHOLOGICAL SECTION.-Mr. T. W. Saunders reports for this Section, and states that between Whitby and the Mouth of the Tees he obtained about 60 species of marine shells, one of them being a very good specimen of the Sunset Shell (*Psammobia jerroensis*) from Saltburn. From sea coal he has also obtained multitudes of small shells, which have still to be determined. 300 of these minute shells will lie on a threepenny piece.

Mr. Saunders records 39 species of Land and Freshwater Mollusca, including that rare northern slug, *Limax tenellus*, taken at Osmotherley at the Y.N.U. Meeting. It was identified by Mr. Denison Roebuck, and constitutes a new record for the Cleveland area. Mr. Saunders was also fortunate enough to find two examples of *Achatina acicula* at Hutton Rudby. The only other record for this species in the district is that of Dixon and Watson, who found it in flood refuse near the River Tees at Middlesbrough. Its occurrence at Hutton Rudby proves that it is an inhabitant of Our area.

ENTOMOLOGICAL SECTION.-This Section has been very active as usual. Mr. Lofthouse the Secretary, reports on the *Lepidoptera* as follows :-

The past season, so far as my experience goes, has been very little different from the two preceding years; for certain reasons, I was unable to do anything in Entomology until the end of May and much less than usual during the summer months. April, May and June were, on the whole, very cold, and so far as my experience goes insects were very little in evidence. From July into the Autumn, moths came to "sugar" much more freely than has been the case during the same period in recent years, but the species were of the commonest, the Yellow Underwing (*T. pronuba*) being more than usually abundant. On an evening towards the end of June one of the "Swifts" (*Hepialus hectus*) was noticeably abundant flying about over the over the Bracken near Battersby from 8 to 8-30 p.m., some of specimens were very well marked and one or two interesting forms were noticed. In November, the Death's Head Moth occurred at Redcar

So far as I know, no additional species in the "Macros " has been added to the local list during the past year, but in the *Tortrices* I have at least six additional species, and about the same number of *Tineae*. It may be interesting to note here the number of species of *Lepidoptera* that have been recorded in our Proceedings or that I know as having been taken in the Cleveland district up to the present time, viz.:-

Butterflies	23 species.	
Hawk Moths, Bombyces and Notodonti		47
Noctuae	156	
Geometers	125	
Other Orders to end of Tortrices		132
Tineae	90	
Total	573	

In addition to above, between 30 and 40 additional species are recorded in the Yorkshire List for the Cleveland district, mostly by the late Jno. Sang, of Darlington.

I should say it will be possible to add from 250 to 300 species to the above number for the district, mostly *Tortrices* and *Tineae*.

T. A. LOFTHOUSE

Mr. Lawson Thompson reports that he was unable to do any work amongst local beetles last year, most of his investigations having been carried on in other districts of Yorkshire.

At the Y.N. U. Osmotherley meeting the Hon. Sec. Read a paper on "The Problems of the Fauna of North-East Yorkshire" in which the history of various local insects was dealt with.

Under this Section may also come the following report on the spiders of Cleveland from Mr. G.B. Walsh:-

Some preliminary work has been done on the spiders of the district, and already thirteen species have been added to the North Riding List, of which one is new to Yorkshire, and in the case of two others, there is only one previous record. One, Pseudo-Scorpion, has been added to the local list.

G.B. Walsh

It is gratifying to report that some work is being done on the "neglected group" of animals for which this district affords a splendid field of work.

Mr. Wash's lecture on "Parasites" held on February 27th, dealt very largely with insects, and several of the more conspicuous local insect parasites were on exhibition.

GEOLOGICAL SECTION:-I have pleasure in stating that this Section has also been doing valuable work in the district during the past season, and its secretary, Mr. J.J.Burton, reports thereon as follows:-

During the past Session, the fieldwork of the Geological Section has been interesting, but somewhat restricted, as the excursions have been planned to give all Sections of the Society an opportunity of making investigations and records rather than to give special opportunities to any particular section. One of the most interesting days of fieldwork was on the occasion of the visit to Boulby, where, under the leadership of Mr. T.W. Saunders, the huge quarries of Alum Shale were visited, and its characteristic fossils obtained in abundance. The occasion was made memorable by not only a visit to the vast remains of the old Alum Works, consisting of kilns, boiling and evaporating vats, etc., but by having the opportunity of examining the last sample crystals made at the works, which had by a fortunate accident, been preserved amongst a quantity of untreasured remains. Here, the dogger underlying the estuarine-series of the inferior oolite was examined, and on this and other occasions, the broken-up and worn fossiliferous contents were noted and it is hoped on identification that much light will be shed on the obscure problem of the condition and nature of the pre-existing strata from which this formation was derived. At the Alum Quarries, the dogger is of a very ferruginous nature, and is about four feet in thickness, but is variable in this respect and also in its lithological character. The enormous thickness of the Alum Shale (*zone of ammonites communis*) is well shewn in the workings of these old abandoned quarries.

The Geological Section had also an opportunity on the subsequent visit to Roxby of identifying the dogger outcrop on the opposite side of the valley, and of noting its general position corresponding to the cliff exposures. On this occasion, too, were noted some very fine examples of current bedding in the exposures in a sandstone quarry, and photographs were taken of them.

The visit to Hutton Rudby, under the guidance of the Rev. J. C. Fowler, gave the members an opportunity of noting the Rhaetics in the Leven, where there were some fine exposures with layers and pockets of veined and clear gypsum intercalated in the strata. Not far away in a borehole at East Harsley, the same strata appears to have been cut through, but the contractor having charge of the boring operations, not being a geologist, did not carefully preserve the material from the boring, but an uncertain twelve feet seems to be in the position where one might expect the Rhaetics to occur. As a source of water supply, the boring was unfortunately a failure, but it will be of interest to preserve a record of the strata passed through and this will be obtained.

Again, under the guidance of the Rev. J.C. Fowler, the members visited Whorlton and found much food for discussion as to the conditions under which Whorl Hill became cut off from the main moorland.

Some of your members had an opportunity of visiting Richmond on the invitation of the Yorkshire Geological Society, and of a close inspection of the remarkable glaciated surfaces of the limestone in Barton and Forcett Quarries, and also of inspecting on the spot the physical features which have led some authorities to the conclusion that the Tees in ancient times flowed down Gilling Valley into the Swale.

The opinion generally come to on this occasion was that it was possible, but that the arguments in favour were not strong enough to accept the theory as demonstrated, and that the arguments against were very difficult to meet. On a later occasion, by the kindness of the same society, the geological members were invited to the excursion to Saltburn and Whitby. Under the leadership of Professor Kendall, the coast from Whitby to Saltwick was examined, and further investigation of the dogger was made. On the following day the plant bed at Marske was, by permission of the landowner, very carefully explored. The writer engaged two competent miners, and by the aid of drills and picks and crowbars and a few shots, a large quantity of rock was dislodged and new exposures made, with the result that on this and on subsequent visits by members of our own Society, a large number of new varieties to the district were obtained. These have since been identified, and a record made of them. About 40 different varieties were obtained.

The excursions to Castleton and Iburndale provided good work for Geological study.

The general result of last season's fieldwork may be considered to have been very satisfactory. Much detail work has been done by Mr. Elgee, and some of this has been given to the members during the winter season. The members may be congratulated upon having found the man who has the true field spirit in him with the opportunity of indulging in it, and their thanks are due to him for his generous desire to give the members the benefit of his original researches. He has carried out Professor Lamplough's ideal, where he recommends to all the cultivation of the amateur spirit in scientific enquiry.

As a result of the visits to Richmond and Marske, the Middlesbrough Dorman Museum will have its Geological cases enriched.

It should be added that Messrs. Lane and Saunders have published the results of their researches at the Marske Quarry in a paper in the "Naturalist" for March, 1909, entitled "Fossil Plants from the Marske Quarry." They have in this investigation made frequent use of the Hawell Bequest at the Dorman Museum, and Professor Seward, of Cambridge, has kindly assisted in the identification of doubtful species.

At the Saltburn Meeting of the Y.G.S., Mr. F. Elgee read a short paper on the "Glaciation of North Cleveland," which has since been published in their Proceedings.

Only one Geological lecture was given during the winter, viz. that of Mr. J. W. Patterson, of West Hartlepool Technical College, on the "Elements of Micro-Petrography," illustrated by beautifully coloured lantern slides taken on Lumiere Plates.

VERTEBRATE SECTION.- Two Zoological lectures were given during the Winter. At the Dorman Museum, Sir Alfred Pease explained the habits and haunts of the African, Indian and other Mammals in his unique collection, in a most entertaining and interesting manner.

Mr. Arthur Whitaker, of Barnsley, gave a Y.N.U. Lantern Lecture on the "Habits of Bats," on which subject he is an authority. It would be an interesting branch of research for some of our members to take up, seeing that practically nothing is known of the Bats of the Cleveland district.

Mr. A. Beckwith reports that he has done a good deal of work amongst the birds at Teesmouth South, and has furnished notes dealing with the arrival of autumn migrants.

A Dormouse was found Girrick Woods in January, a new record for the Cleveland district.

MEMBERSHIP This stands at 110 an increase of one over last year. During the year 7 members resigned, and the following eight new members were elected:- messrs. C.H. Goodwin, J.R. Ritson, J.G. Smiddy, T. Smith, J.E. Stead, H. Waddington and Miss E. Clapham.

PROCEEDINGS These are now in the printers hands, and I hope to issue them to members during the coming month.

YORKSHIRE NATURALISTS' UNION Seeing that it is now nearly ten years since the Y.N.U. held an annual meeting at Middlesbrough, I would suggest that an invitation be sent to them to hold their Annual Meeting in 1910.

GENERAL To encourage a more active local interest in our Society, I think it would be a good plan if any of our members could arrange to give lectures in

Middlesbrough and district on Geology, Natural History etc, to the general public. I feel sure that they would arouse interest in the work of the Society, lead to an increase of membership, increase the sale of our Proceedings, and lead to further investigation being done in Cleveland. I for one should be pleased to lead the way in such an undertaking.

It is also gratifying to state that our members are beginning to make use of the collections in the Museum, and have in their turn presented specimens to the museum Collections.

FRANK ELGEE
HON. SEC.

SECRETARY'S REPORT FOR 1909

I have pleasure in presenting my Second Annual Report upon the work accomplished by our Society during the past season. Taken as a whole, the work of the Club in 1909 has been up to, if not beyond, the standard of previous years, but active investigations were seriously interfered with by the wet and cold weather.

SUMMER MEETINGS Eight excursions were arranged for the summer, but only six of these were held. The Middleton-in-Teesdale Excursion, arranged for June 26th, had to be abandoned owing to excessive rain, whilst the Ayton Meeting, arranged for July 24th, was not held, owing to various unavoidable alterations in the dates of the July Meetings.

Fine weather attended all six Meetings, the average number of Members present being, however, somewhat small considering the interesting nature of the localities visited. The most successful excursion was that to the Marske Quarry, on May 8th, with an attendance of between 20 and 40. Messrs. Lane and Saunders kindly acted as guides, the latter gentleman superintending the blasting operations.

Mr. T. J. Cozens kindly acted as guide at the Cold Moor Excursion, on May 22nd, whilst at the Runswick Bay Meeting of the Y.N.U., in July, Mr. J. J. Burton guided the geological party. At the Goathland Meeting, in September, Messrs. Frankland and Punch led the Members over very interesting ground. Our thanks are due to these gentlemen for their kind offices, as well as to Mr. Senior, of the Zetland Estate, for permission to visit and blast Marske Quarry, to Mr. J. L. Dugdale for permission to visit the woods at Crathorne, and to Sir Francis Ley, for permission to visit his rock garden at Crunkley Gill, and for placing one of his gardeners at our disposal to act as guide.

A few of our Members attended the Y.N.U. Meeting at Runswick Bay in July.

WINTER MEETINGS Eight Winter Meetings have been held, but, with one or two exceptions, the attendance at these has been lamentably small, but this has been compensated for by their quality. The members who contributed to the Meetings having, more or less, dealt with their own investigations. This I take to be the chief object of our winter meetings, viz. to expound and read papers on our own work. It is so easy to

degenerate into a mere magic lantern entertaining Society, so that it is refreshing to have to report to the contrary.

Our best thanks are due to the lecturers for their papers, and to all who have in any way contributed to the success of the exhibition meetings.

A suggestion made by Mr. Frankland that the different Sections should assist in having exhibition meetings, has only partially been carried out. Still a start has been made with this, which may be the seed of future development.

I would venture to suggest for your consideration that we limit our summer and winter meetings to one per month. The small attendance at many of the meetings seems to demand this. In this way we would hold 12 meetings per annum, 5 summer and 7 winter meetings, exclusive of the Annual. With regard to the Field Meetings, we have now visited most parts of Cleveland, and to prevent too much repetition, a limitation of the number of excursions seems desirable. Fuller arrangements, too, could be made for these meetings, and they might, in many instances, be extended to the whole day.

Our thanks are due to Mr. Simpson for kindly reporting our meetings in the " Gazette," "Star" and " Northern Echo."

WORK OF THE SECTIONS I have included here the work done at the Summer Meetings and the nature of our Winter Meetings.

ARCHAEOLOGICAL SECTION There is little to report in this Department. The Rev. J. C. Fowler discovered some fragments of Roman Pottery at Whorlton, which were on view at the Exhibition Meeting on March 5th.

At the Crathorne Meetmg, Members were enabled to examine, under the guidance of the Vicar the 14th Century Church there.

On February 12th our President gave a most interesting and original address "On Details of Norman Architecture," illustrated with special lantern slides.

BOTANICAL SECTION Little work appears to have been done by this Section. During the year I paid special attention to moorland plant communities, the results of which I had the honour to lay before you in a lantern lecture on "Moorland Research in 1909" on November 6th. Some details of moorland plant life also appeared in the " Naturalist" for January and February, under the title of "Vegetation of swiddens in N.E. Yorkshire"

In July, & again in September, Dr. W.G. Smith, of Edinburgh, and myself botanically surveyed part of the South Cleveland Moors and Mulgrave Woods, and the shore vegetation at Runswick Bay.

Dr. Smith's botanical map of the district is rapidly nearing completion, and will probably be issued this year. It will form a valuable contribution to local plant geography. One fact has come out very clearly, that the English Maple is a very characteristic tree in some woods near the sea, and also inland. The lowland woods are dominated by oak and ash, the upland woods by oak and birch.

CONCOHOLOGICAL SECTION Mr. T.W. Saunder reports on this as per his notes in this part of the Proceedings.

Mr. Saunders also had a choice collection of rare marine shells on exhibition on March 5th.

ENTOMOLOGICAL, SECTION The usual work has been done in this Department by Messrs. Lofthouse, Thompson, Walsh, and Sachse.

To Mr. Walsh we are also indebted for an interesting lecture on "Insect Myths and Superstitions"! on December 4th.

GEOLOGICAL SECTION A successful exhibition meeting of this Section was held at the Museum on October 9th, and a full report of the season's work presented by the Secretary, Mr. J. J. Burton. On March 19th, the Rev. G. J. Lane delivered a most instructive and original address on "The Jurassic Flora."

Mr. Burton's report is as follows

REPORT OF THE GEOLOGICAL SECTION.
Presented at Meeting, held on October 9th, 1909.

The past Session has been one of considerable disappointment, as the weather generally has been so bad that outdoor investigation could only be pursued under physical discomfort, but members of this Section have done good work in between meetings when opportunity offered, and I must mention in particular the work done by the Rev. G. L. Lane and Mr. T. W. Saunders in investigating the fossil flora of Marske and Upleatham Quarries, also the plant beds at Whitby and Castleton. Some of the results of their investigations have been published in the "Naturalist." The most noteworthy records as supplied to me by Mr. Lane are as under

1.	Zamites Sp.	Marske.	New, not recorded in Seward's catalogue
2.	Taxites zamiodes.	Marske.	New record for Cleveland - Do.
3.	Nilsonia tenuicatus.	Marske.	
4.	" schauburgensis	. Marske	Do. A <i>wealden</i> species ,
5	Todites williamsonia.	Marske	New record for Marske
6.	Zamites buchianus.	Marske.	New record for Cleveland A <i>wealden</i> species.
7.	Pterophyllum Sp.	Marske.	New record for Cleveland. Not catalogued by Seward
8	Cladophlebis lobifolia.	Marske	New record for
9	Coniopteris hymenophylloides.		Marske

10	Williamsonia	Whitby
	gigas	
11	Cladophlebis	“
	denticulata	
12	Williamsonia	“
	pecten	
13	Taeniopteris	“
	major	
14.	" minor	“

It is a signal honour to our Field Club, through Mr. Lane, that the publication of his short paper in the "Naturalist" caused Professor Lamplough to ask me to put Mr. A. Newall Arber, M.A., of Cambridge University, in communication with him, but perhaps the greatest honour the Club, and also Mr. Lane personally, have received, was a visit from Professor N Nathorst, of Stockholm, who is reputed the greatest authority on Paleobotany on the continent. After an inspection of Mr. Lane's collection, he congratulated him on his success.

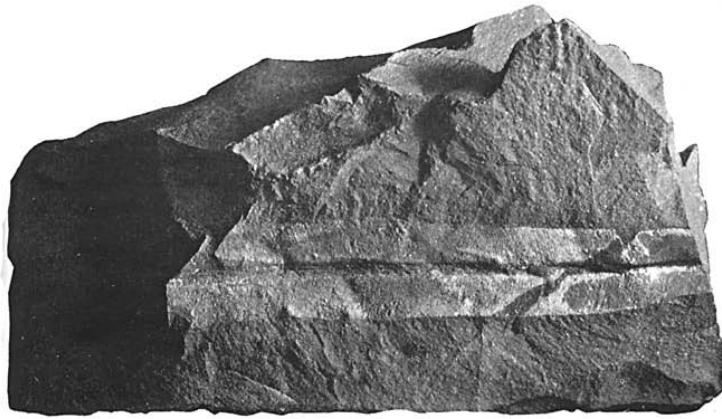
At the Meeting at Marske Quarry the attention of the members was drawn by Mr. Saunders, to a very interesting example of a wash-out, where the seam of ironstone had been almost denuded by some ancient stream, and the gully thus formed filled in with boulder clay. Cases of this sort in a mine are not unknown in mining operations, and when they occur they cause much trouble. Mr. Saunders is sending to the meeting a section of faulting at Boulby Mine, a section of the main seam of Cleveland ironstone shewing the pecten bed and the two-foot seam at Brotton, also a section of the coast between Redcar and Ravenscar.

There was a very interesting meeting at Runswick Bay when the coast section and the Kettlewell Alum Quarries were investigated. Perhaps the most interesting part of the excursion was an examination of the streams which flow into the Bay over the boulder clay which has filled up the old river valley. The beds of the streams are composed almost entirely of erratics, which have been washed out of the clay. Here we found many big blocks of basalt from the Whin Sill, much Teesdale limestone, many granites from the Cheviots, and boulders of Shap granite of all sizes. One boulder from Shap would weigh about three tons.

At Goathland there was an interesting meeting, but not much time for investigation, and the Geologists would do well to have a field day to themselves in this district, as the glacial and solid geology will well repay study; and we are there getting close to oolitic exposures which do not exist in our immediate neighbourhood.

One interesting observation only indirectly connected with Geology was made at Beck Hole, viz. the presence of a considerable slag tip and the "old bear" of two small blast furnaces. These furnaces appear to have been erected by the Whitby Iron Co., Limited, in 1859, but into blast in 1860, but when blown out and dismantled I have not yet been able to ascertain, but hope to do so for the purposes of a record. The stone used was the dogger or top bed as it is variously named.

J.J. Burton



Nilssonia Schaumburgensis (Dunk.), Marske Quarry.
Hitherto only recorded from the Wealden. Specimen identified by Professor Nathorst.



Cladophlebis haiburnensis, L. and H., Marske Quarry.
Only two specimens of this species have been recorded from Yorkshire.

VERTEBRATE SECTION. -I have no report for the Vertebrate Section, but we are indebted to Mr. A. L. Kershaw for a Lecture on " Birds," on February 19th.

MICROSCOPY SECTION A successful exhibition meeting under the auspices of the Microscopy Section was held in March., and the other Sections also contributed to the success of the meeting;

MEMBERSHIP Our membership now stands at 112. During the year 8 new members were elected and 4 resigned. We appear to have reached the maximum number of members, since for some years past the number has remained very nearly the same, 110-120.

Y.N.U. ANNUAL MEETING As you are aware, the Y.N.U. accepted our invitation to hold their Annual Meeting at Middlesbrough, on December 17th, 1910, and although it seems somewhat early to mention arrangements for that date, I would suggest that a small Committee be formed to deal with the matter.

PROCEEDINGS Another part of Proceedings was issued during the year, a few copies of which have been sold.

Papers for another part have been gathered together.

In conclusion, I would like to thank all those members who have assisted me in my work. I am especially indebted to our President and to the Hon. Treasurer for valuable suggestions and help during the past year.

FRANK ELGEE,
HON. SEC.

Edited by
MIDDLESBROUGH ;
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The completion of the Second volume of the Transactions is an interesting event. We hope this record will be succeeded by many more volumes of like kind, as time goes on. The contents are varied, of more than local interest, and touch upon the Flora of the Jurassic age, Entomology, Archaeology, Botany, and other branches of Science.

The love of nature in all its aspects is certainly spreading abroad, and is a cheering sign of the times: the widening of scientific culture amongst all classes must, at all events, make life fuller and richer, and certainly happier. The pursuit of science is a bright spot in many a hard-worker's life, and he often follows his heart's hobby with more energy than his daily work: it is to him an inspiration, a joy deeper than words can express, or perhaps his friends understand; a delight of the highest order.

To nature then we go with all her treasures, which she never withholds from the diligent student.

Beautiful Cleveland satisfies the members of the Club, so far, and seldom do we wander to some "Terra aliena," although sometimes we do make an excursion beyond its bounds.

There is surely plenty to employ the keenest observer between a live beetle and an extinct mammoth, and between "The Cedar of Lebanon and the hyssop that groweth on the wall."

J.C. FOWLER

LIST OF MEMBERS

Addison, H., Woodlands Road, Middlesbrough.
Allison, F. W., Guisbrough.
Allott, Miss M., Ashbury, Westwood Avenue, Linthorpe.
Appleyard, Miss T, Laceby House, The Avenue.
,Appleyard, Arthur, do. do.
Atkinson, Miss, Windsor Road, Linthorpe.
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 Clapham, Miss E., St. John's School, Middlesbrough.
 Clarke, W., 153, High Street, Stockton.
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 Constantine, Joseph, J.P., Harlsey Hall, Northallerton.
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 Elgee, Frank (Hon. Member), Dorman Museum, Middlesbrough.
 Elgee, T. C., 23, Kensington Road, Middlesbrough
 Emerson, J. J., J.P., LLD. Easby Hall, Great Ayton.
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 Frankland, H., The Crescent, Linthorpe.
 Gilbert, Harry, The Avenue Linthorpe
 Gjers, Lawrence J P Busby Hall, Northallerton
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 Goodwin C. H. 17 Turner Street, Redcar.
 Hallimond H T Exeter Street, Saltburn
 Harwood R Westbourne Grove Redcar
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 Hood Mrs. C., Woodlands Road, Middlesbrough
 Hood, C., Woodlands Road, Middlesbrough
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 Outhwaite, H., 21, Albert Road, Middlesbrough.
 Pearson, F. W., 39, Granville Road, Middlesbrough.
 Pease, J. H. J.P. Carlbury Hall, Darlington.
 Punch, Mrs., Hastoe House, Middlesbrough.
 Punch, J. W. R., Hastoe House, Middlesbrough.
 Reed, Frederick, Hartburn Lane, Stockton.
 Ridley, Thos. Coatham, Redcar.
 Ridsdale, F. D., Linthorpe Road, Middlesbrough.
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 Robinson, Dr. A. S., B.A., Dundas Villa, Redcar.
 Robson, Miss J., Park Road N., Middlesbrough.
 Sachse, W. Asgard, Linthorpe.
 Sadler Sir, S. A., J.P., Preston-on-Tees.
 Sanderson, Mrs., Middleton-one-Row.
 Saunders T., W., High Street Brotton
 Scholes, Alfred, 20, Spring Street, Stockton.
 Shaw, Fred, Grove Hill, Middlesbrough.
 Simpson, Henry, 17, Turner Street, Redcar.
 Smiddy, J. G., 1, Aske Road, Middlesbrough.
 Smith, J. Fothergill, 121, High Street, Redcar.
 Smith, Thomas, 102, Cromwell Road, South Bank.
 Snowdon, Dr., Ravensthorpe, Hutton Rudby.
 Stead, J. E. F.R.S., Queen's Square, Middlesbrough.
 Stephens, G. W., 7, Cleveland Terrace, Redcar.
 Stuart, Dr. C. Great Ayton.
 Taylor, J. G., 3, Outram Street, Stockton.
 Thomas, W. H., Roman Road, Middlesbrough.
 Thompson, M. L., F.E.S., Gosford Street, Middlesbrough.
 Titley, Miss L. C., 19, Spring Street, Stockton.
 Turton, R. B., J.P., Kildale Hall, Gosmont.
 Waddington, Herbert, 13, Princes Road, Middlesbrough.
 Walsh, G. B., B.Sc., 6, Lancaster Road, Middlesbrough.
 Walton, Sir Joseph, Bart., M.P., D.L., J.P., Saltburn.
 Ward, A. E., Highfield, Highfield, Eaglescliffe Junction.
 Ward, T. F., Park Road S., Middlesbrough.
 Whiteley, J. W., Zetland Terrace, Saltburn.
 Williams, Dr. W. J., Grange Road W., Middlesbrough.
 Wilson, T. R., Dovecot Street, Stockton.
 Wood, E. W., Albert Road, Middlesbrough.
 Woolston, T., 22, Wilson Street, Middlesbrough.

LIST OF PUBLICATIONS received by the Society as Donations or Exchanges
 which are deposited at the Dorman Memorial Museum, Middlesbrough, and may
 be seen on application to Mr. Baker Hudson, Hon. Librarian to the Club.

"The Naturalist," 1886-1909.

Cleveland Naturalists' Field Club " Record of Proceedings,"
 1889-1909, V ols. 1 and 2.

Yorkshire Naturalists' Union Transactions, parts 15.
 Baker's " North Yorkshire."
 Crossland & Masee's "Fungus Flora of Yorkshire."
 Weardale Naturalists' Field Club Transactions, vol. 1, part 1,
 part 2.
 Hull Scientific & Field Naturalists' Club Transactions, vols. I., II. III.; vol. IV., part 1.
 Proceedings of the Yorkshire Geological Society, vol. 14, part 1-Hawell's "Peat
 Deposit at Stokesley."
 Proceedings of the Yorkshire Geological Society-F. Elgee's "Glaciation of North
 Cleveland."
 Vale of Derwent Field Club Proceedings, vol. II. and IV.
 Proceedings of the Darlington & Teesdale Naturalists' Field Club, vol. 1.
 Transactions of the Leeds Geological Association, part 14, 1905-8.
 Bradford Natural History & Microscopical Society-Recorders Reports for 1906.
 Elgee's " Origin of the Cleveland Moors," 1907.
 Fawcett's" Historic Places in the Derwent Valley."
 Salt's " List of Plants Collected chiefly in the neighbourhood of Sheffield."
 Keeble & Gamble's" The Colour-Physiology of Hippolyte varians."
 Keeble's " Observations on the Loranthaceae of Ceylon."
 Keeble's " The Hanging Follage of certain Tropical Trees"
 Gurney's "Diurnal Birds of Prey."
 Smith's " Botanical Survey for Local Natural History Societies"
 Grant's "List of Pease's Somaliland Collection of Birds"
 1" Geological Maps of the following districts:-
 Ure and Nidd ; Middleton-in-Teesdale and Brough; Weardale and Bishop
 Auckland;South Shields and Seaham; Tyne and Mid-Durham;Hartlepool and
 Durham; Tees from its mouth to Croft; Thirsk;Stokesly and Northallerton; Malton,
 Pickering and Helmsley; Sandsend and Scalby; Scarborough and Filey

BALANCE SHEET, DECEMBER 31ST, 1910

	RECEIPTS				PAYMENTS		
	£	s	d		£	s	d
Balance brought forward	26	6	5	Cheque Book	0	2	0
Subscriptions for 1909	19	15	0	Printing Proceedings	16	8	6
Subscriptions Arrears	9	7	6	Yorkshire Naturalists' Union-Subs. And Levy	0	19	7
Subscriptions 1910 (in advance)	0	10	0				
Proceedings	0	6	0	Lt. & Phil. Society-Subs.	0	10	6
Bank Interest	0	7	0	Jordinson & Co., Ltd.-Printing Album &c	5	15	0
					0	6	0

	Lecture	0	13	0
	Expenses- Lantern, &c			
	Postages	2	12	0
	Balance at Bank carried forward	32	5	4
£59	11	11		
		£59	11	11

H.FRANKLAND
HON. TREASURER

Conditions and Advantages of Membership.

MEMBERSHIP.-The Terms of Membership are the subscription of an annual sum of not less than 5s. Members receive the Proceedings, copies of all Circulars for Summer and Winter Meetings, Associate Card of Membership of the Yorkshire Naturalists' Union, have access to the Society's small Library, and also the privilege granted by the N.E.R. for travelling at reduced rates at excursions.

WINTER MEETINGS.-A Series of Meetings are held during the Winter months, particulars of which are sent out in the Autumn. The Secretary will be glad to hear from Members willing to give papers.

THE LIBRARY, which consists of works on Science, Natural History and Archmology, is placed (on loan) in a case in the Dorman Museum, and is accessible to Members on application to the Hon. Librarian, Mr. Baker Hudson. Donations of works on the above subjects, especially those relating to Cleveland, are at all times acceptable.

HA WELL BEQUEST.-Under the will of the late Rev. J. Hawell, M.A., F.G.S., Members have the special use of the Library of geological, concho logical, and other works, as well as access to the large and valuable collections of Mollusca and Fossils bequeathed by him for the benefit of the Cleveland Naturalist's Field Club and the Dorman Museum. These may be inspected at any time by Members at the Museum, on application to the Curator or his Assistant.

Any persons interested in the work of our Society are invited to become Members, even if they are not able to be active Members. Their support would be valuable, and would also show that the work of the Society was not altogether unappreciated.

Proceedings of the Cleveland Naturalists' Field Club.

VOLUME II.-CONTENTS.

PART I.-(Six Illustrations.) Life of Rev. J. Hawell, by Rev. J. C.

Fowler; History of Easby; Cross bills and Buzzards in Cleveland, by F. R. Atkinson; Black Rat at Middlesbrough; Cleveland Brasses, by T. M. Fallow; Gravel Deposit in Lonsdale, F. Eidge; Lepidoptera and Coleoptera Notes; Meteorological Record, . **Price**

Two Shillings.

PART 2.-(Nine Illustrations.) Notes relating to Ingleby Greenhow, by the Rev. J. Hawell; the River Tees, its Marshes and their Fauna, by R. Lofthouse; the Ruff in the North of England, by T. H. Nelson; Cleveland Lepidoptera and Coleoptera; Secretary's Reports.

Price Two Shillings.

PART 3.-(Seven Illustrations.) The Fauna of Cleveland, Past and Present, by Frank Elgee; Jurassic Plants from the Cleveland Hills, by Rev. G. J. Lane; Large Glacial Boulder at Whorlton, interesting Geological Discovery, and Counter Temp. Edward HI., by the Rev. J. C. Fowler; Cleveland Lepidoptera in 1906-7; Cleveland Coleoptera; Secretary's Reports'.

Price Two Shillings.

Previous numbers of the Proceedings of the Cleveland Naturalists' Field Club may be obtained of the Hon. Sec., Mr. Frank Elgee, Dorman Memorial Museum, Middlesbrough. Members may obtain single parts at a reduction of 20 per cent. on published prices.