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LINCOLNSHIRE
NATURALISTS' UNION.

TRANSACTIONS, 1905—1908.

VOLUME ONE.

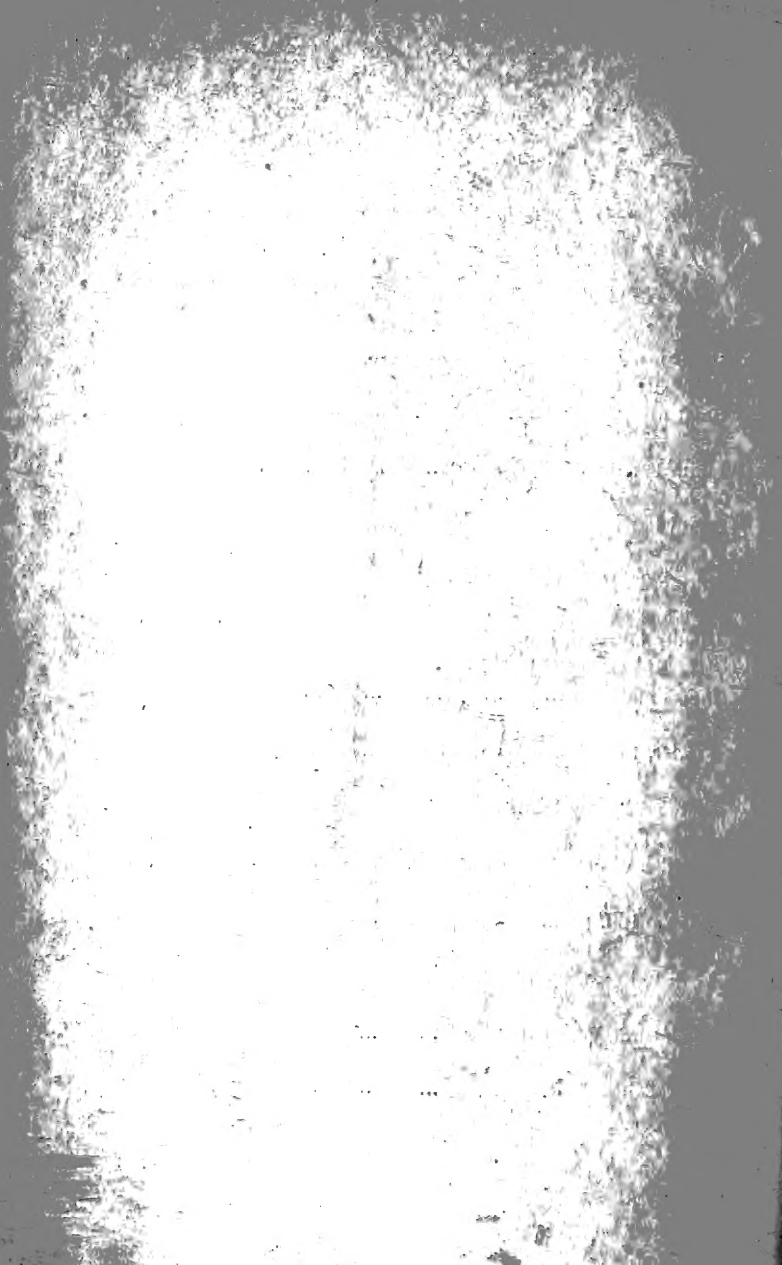
EDITED BY ARTHUR SMITH, F.L.S., F.E.S.





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LINCOLNSHIRE NATURALISTS' UNION.

FOUNDED JUNE 12th, 1893.

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VERTEBRATE ZOOLOGY.

President :—G. H. Caton-Haigh, Grainsby Hall, Grimsby.

Secretary :—P. A. Burton, Highfield, Gainsborough.

LIST OF MEMBERS

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Any Corrections in the List will be gladly received by the Secretary.

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 Woodruffe-Peacock, Mrs., Cadney, Brigg
 Woolward, Miss F. H., Belton, Grantham
 Wyatt, Rev. W., Broughton, Brigg

SUBSCRIPTIONS.

Members are reminded that Subscriptions for 1906 are now due, and should be paid to the Assistant Hon. Secretary, Mr. R. W. GOULDING, 20, Mercer Row, Louth, who will send receipts.

The minimum Subscription is 5/-, payable in advance. The payment of one sum of £5 constitutes a life member. Those subscribing 10/6 or more receive the "Naturalist" free, if they apply by letter to the Assistant Secretary.

OBJECT AND RULES.



The Lincolnshire Naturalists' Union was formed to promote the thorough investigation of the fauna, flora and physical features of the county, to bring together workers interested in the same pursuits, to increase the interest in, and study of, every branch of Natural History.

Field Meetings are held four or more times a year. There is also one annual general meeting, held at Lincoln, for the transaction of the business of the Society, and for the President's address.

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Ladies and Gentlemen desirous of becoming Members of the Union should apply to the Hon. Secretary for nomination papers. A new Member requires to be proposed and seconded, and the paper must be counter-signed by the President or one of the Vice-Presidents of the Union.

Correspondence with respect to Field and Sectional Meetings and organization generally should be addressed to Arthur Smith, Museum, Lincoln.

It is hoped that all Members will interest themselves in the work of the Union, especially by obtaining new members and communicating with the Sectional Officers respecting new records, etc.

NEW MEMBERS.—Members can greatly assist the Union by forwarding to the Secretary, the names of ladies and gentlemen whom they think at all likely to take an interest in the work of the Union.

Proposal Forms will be sent to any Member applying for them.

LINCOLNSHIRE NATURALISTS' UNION.

Statement of Account from 1st January to 31st December, 1905, including Museum Account.

	£	s.	d.
RECEIPTS.			
By Balance in Bank, 31st December, 1904 ...	39	7	4
" Museum Account ...	0	15	10
" Life Members' Donations (invested in Savings' Bank) ...	22	18	5
" Interest thereon ...	0	10	7
" Members' Subscriptions ...	23	9	0
" A. H. L. Melville, Esq., Life Member ...	28	5	0
" Bank Interest and Unused Cheques ...	5	0	0
	0	17	7
	<hr style="width: 100%;"/>		
	£97	14	9
	<hr style="width: 100%;"/>		
PAYMENTS.			
To Subscriptions to "Naturalist" ...	...	4	16
" Printing and Stationery ...	...	6	2
" Postage and Telegrams ...	...	5	6
" Expenses of Meetings ...	...	3	9
" Caretaker of Museum ...	...	2	10
" Life Members' Donations in Savings' Bank ...	22	18	5
" Interest ...	0	10	7
" Life Members, 1904-5 ...	10	0	0
	<hr style="width: 100%;"/>		
" Balance in Bank and Secretary's hands ...	33	9	0
	<hr style="width: 100%;"/>		
	£97	14	9
	<hr style="width: 100%;"/>		

Examined and found correct,

E. E. BROWN, Auditor.

15th January, 1906.

RESUME OF THE PAST FIELD MEETINGS OF THE UNION, 1893—1905.

Believing that members, who have recently joined the Union, will find some little interest in knowing where field meetings have been held in the past, and that old members will not be displeased to be reminded of what districts have been visited, this resume has been drawn up. The information contained in it will also be of some use in making future arrangements for visiting the varied surface of our wide county.

On June 12th, 1893, the first Field meeting was held at MABLETHORPE—a great day for lovers of nature. Many county naturalists, and also neighbours from adjacent counties, lent their aid in making the opening day a success. The outcome was the formation of the Lincolnshire Naturalists' Union, as now constituted.

The second meeting was held on August 7th, at WOODHALL SPA, and a goodly number of species were recorded.

May 24th, 1894, found the members at LINCOLN. The bank of the Fossdyke and Hartsholme Wood were investigated, and a general meeting was held in the evening. The late John Cordeaux, M.B.O.U., was in the chair, and vacated it on the election of Mr. F. M. Burton, F.L.S., F.G.S.

The fourth meeting was held at CLEETHORPES on July 5th, when the salt marsh flora lent an agreeable change from previous meetings.

The fifth meeting was held at LOUTH, on the 1st October, for a fungus foray in Burwell Wood. Mr. George Masee and Mr. Charles Crossland came to assist; and a good list was the result.

The sixth meeting was held in conjunction with the Yorkshire Naturalists' Union on June 3rd, 1895, when some of the largest and richest woodland in Lincolnshire was visited. APPLEBY, BROUGHTON, SCAWBY, TWIGMOOR, MANTON woods and common were investigated. Good records were exceedingly numerous; and the visit to the breeding-ground of the black-headed gulls was an interesting part of the programme.

On August 5th the seventh meeting was held at SLEAFORD, when 264 species of flowering plants were noted.

In the same month, on the 23rd, the eighth meeting was held at LINWOOD Warren and woods, a favourite ground for Lincolnshire naturalists. A fine botanical and entomological area.

The ninth meeting at LINCOLN, on October 3rd, was another great day in the history of the Union. In the morning members started for the Skellingthorpe and Canwick woods. In the afternoon the Museum was opened by the Right Rev. the Lord Bishop of Lincoln, and in the evening the annual meeting was held.

At GRANTHAM, on June 16th, 1896, the tenth meeting came off. Mr. H. Preston, F.G.S., led the party through the Ancaster and Willoughby quarries, and pointed out the notable geological features of the area.

The eleventh meeting was held at BOURNE on August 3rd. The botanical and geological studies were extremely interesting, and some good species taken.

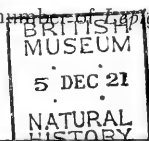
A meeting at GREAT COTES on September 8th constituted the twelfth Field day, the home of that great observer no longer with us, the late John Cordeaux, M.B.O.U., who entertained the visitors. The ground consisted of the salt marsh, the Humber, and on the land side the prolific little area known as Aylesby bog.

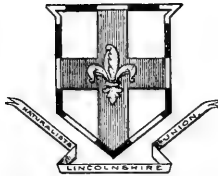
The thirteenth meeting, held June 9th and 10th, 1897, was at GAINSBOROUGH, for Lea and Scotton Commons. This has been a happy hunting-ground for all students of Natural History for over a hundred years.

The fourteenth meeting, held in conjunction with the Louth Society, on August 2nd, was at HOLBECK and TETFORD. The Rev. J. Conway Walter read a paper on "Hoe Hill." The district was an attractive one, both for antiquary and naturalist.

On August 26th the fifteenth meeting was held at BOSTON, for Wyberton Marsh. A large number of entomological and botanical records were made. The party was entertained to tea by Mr. and Mrs. Lane-Clayton, of Tytton Hall.

The sixteenth meeting was at LINWOOD on September 30. Fifty-four species of fungi, and sixty-one species of flowering plants, and a large number of *Lepidoptera* were recorded.





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FOUNDED JUNE 12th, 1893.

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1903-4
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 Smith, A., The Museum, Lincoln
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By Balance in Bank, 31st December, 1904 ...	39	7	4	To Subscriptions to "Naturalist"	4	16	0
" " Museum Account ...	...	0	15	" Printing and Stationery ...	...	6	2	10
" Life Members' Donations (invested in Savings' Bank) ...	22	18	5	" Postage and Telegrams ...	...	5	6	6
" Interest thereon ...	0	10	7	" Expenses of Meetings ...	...	3	9	7
" Members' Subscriptions ...	23	9	0	" Caretaker of Museum ...	...	2	10	0
" A. H. L. Melville, Esq., Life Member ...	28	5	0	" Life Members' Donations in Savings' Bank ...	22	18	5	
" Bank Interest and Unused Cheques ...	5	0	0	" Interest ...	0	10	7	
	0	17	7	" Life Members, 1904-5 ...	10	0	0	
				" Balance in Bank and Secretary's hands...	33	9	0	
				" Balance in Bank and Secretary's hands...	42	0	10	
					£97	14	9	

Examined and found correct,

E. E. BROWN, Auditor.

15th January, 1906.

RESUME OF THE PAST FIELD MEETINGS OF THE UNION, 1893—1905.

Believing that members, who have recently joined the Union, will find some little interest in knowing where field meetings have been held in the past, and that old members will not be displeased to be reminded of what districts have been visited, this resume has been drawn up. The information contained in it will also be of some use in making future arrangements for visiting the varied surface of our wide county.

On June 12th, 1893, the first Field meeting was held at MABLETHORPE—a great day for lovers of nature. Many county naturalists, and also neighbours from adjacent counties, lent their aid in making the opening day a success. The outcome was the formation of the Lincolnshire Naturalists' Union, as now constituted.

The second meeting was held on August 7th, at WOODHALL SPA, and a goodly number of species were recorded.

May 24th, 1894, found the members at LINCOLN. The bank of the Fossdyke and Hartsholme Wood were investigated, and a general meeting was held in the evening. The late John Cordeaux, M.B.O.U., was in the chair, and vacated it on the election of Mr. F. M. Burton, F.L.S., F.G.S.

The fourth meeting was held at CLEETHORPES on July 5th, when the salt marsh flora lent an agreeable change from previous meetings.

The fifth meeting was held at LOUTH, on the 1st October, for a fungus foray in Burwell Wood. Mr. George Masee and Mr. Charles Crossland came to assist; and a good list was the result.

The sixth meeting was held in conjunction with the Yorkshire Naturalists' Union on June 3rd, 1895, when some of the largest and richest woodland in Lincolnshire was visited. APPLEBY, BROUGHTON, SCAWBY, TWIGMOOR, MANTON woods and common were investigated. Good records were exceedingly numerous; and the visit to the breeding-ground of the black-headed gulls was an interesting part of the programme.

On August 5th the seventh meeting was held at SLEAFORD, when 264 species of flowering plants were noted.

In the same month, on the 23rd, the eighth meeting was held at LINWOOD Warren and woods, a favourite ground for Lincolnshire naturalists. A fine botanical and entomological area.

The ninth meeting at LINCOLN, on October 3rd, was another great day in the history of the Union. In the morning members started for the Skellingthorpe and Canwick woods. In the afternoon the Museum was opened by the Right Rev. the Lord Bishop of Lincoln, and in the evening the annual meeting was held.

At GRANTHAM, on June 16th, 1896, the tenth meeting came off. Mr. H. Preston, F.G.S., led the party through the Ancaster and Willoughby quarries, and pointed out the notable geological features of the area.

The eleventh meeting was held at BOURNE on August 3rd. The botanical and geological studies were extremely interesting, and some good species taken.

A meeting at GREAT COTES on September 8th constituted the twelfth Field day, the home of that great observer no longer with us, the late John Cordeaux, M.B.O.U., who entertained the visitors. The ground consisted of the salt marsh, the Humber, and on the land side the prolific little area known as Aylesby bog.

The thirteenth meeting, held June 9th and 10th, 1897, was at GAINSBOROUGH, for Lea and Scotton Commons. This has been a happy hunting-ground for all students of Natural History for over a hundred years.

The fourteenth meeting, held in conjunction with the Louth Society, on August 2nd, was at HOLBECK and TETFORD. The Rev. J. Conway Walter read a paper on "Hoe Hill." The district was an attractive one, both for antiquary and naturalist.

On August 26th the fifteenth meeting was held at BOSTON, for Wyberton Marsh. A large number of entomological and botanical records were made. The party was entertained to tea by Mr. and Mrs. Lane-Clayton, of Tytton Hall.

The sixteenth meeting was at LINWOOD on September 30. Fifty-four species of fungi, and sixty-one species of flowering plants, and a large number of *Lepidoptera* were recorded.

The seventeenth meeting was held at GRANTHAM, June 7th, 1898. A visit to Colsterworth and Woodthorpe Manor, the birthplace of Sir Isaac Newton, was part of the programme.

EPWORTH, July 14th, was the locality for the eighteenth meeting, and a fine ground it turned out to be. The rarest plants were *Andromeda polifolia* and *Alopecurus fulvus*.

The nineteenth meeting was held on August 18th at WOODHALL and TUMBY Wood. Mr. Preston spoke on the geological feature, and a fair day's work was done in all branches.

On September 5th joint meetings of the Lincolnshire Societies were held at HARTSHOLME Wood, near Lincoln, when, considering the lateness of the date, a fair amount of work was done.

The twenty-first meeting was held at SOMERCOTES and SALT FLEETBY on June 8th, 1899. The drive was from Louth, and a splendid field day was the result. Little thought the party of the dark shadow drawing near. Mr. John Cordeaux, who entertained the visitors, and gave such a fine account of the bird-life of the district, was, two months later, laid to rest in Louth cemetery.

On June 29th the twenty-second field meeting was held in conjunction with the Nottingham Society in the neighbourhood of NEWARK. Stapleford wood and moor on the Lincolnshire side were very productive.

The twenty-third meeting was held on August 7th, the rendezvous being BOSTON, for Freiston Shore, where the maritime flora and fauna were much in evidence.

On September 11th, at the invitation of the President (Dr. Lowe), a meeting was held at LINCOLN of the County Naturalists' and Scientific Societies. Parties went to Sudbrooke and Newball woods, Handley's pit, &c., whilst those interested in archæology visited the Cathedral and other places of interest. Tea was served in a large marquee in front of the President's residence.

The twenty-fifth meeting was held on June 13th, 1900, at HORNCastle, for Baumber and Sturton woods, bogs and lake. The Rev. J. Conway Walter (president) pointed out many objects of interest, and exhibited a magnificent collection of natural history and antiquarian specimens at his home.

The twenty-sixth meeting was at GRANTHAM on July 17th, Mr. H. Preston conducting the party, and making careful observations on the geology of an interesting area. The Rev. and Mrs. Giles entertained the members to tea at Little Bytham Rectory.

On August 6th the Lincolnshire and Yorkshire Unions held a joint meeting at FRODINGHAM and SCUNTHORPE. Two hundred and thirty species of plants were noted, many characteristic of bog and heath. The geology was interesting. A beautiful fault in the ironstone was clearly seen, and a curious formation of tufa, rare in Lincolnshire, was pointed out by Mr. Preston.

The twenty-eighth meeting was held at MABLETHORPE on August 30. The birthplace of the Union again provided long lists of maritime species in all branches, some local and rare.

The twenty-ninth meeting on September 29th again found the members at LINCOLN. The ground worked was near the villages of Harmston, Coleby, and Navenby. The limestone and upper lias was observed in quarries *en route*.

Torksey was the next place of meeting on June 11th, 1901. It was a distinct success. New county records were made.

The thirty-first meeting was held July 4th at REVESBY. The members were entertained by the Hon. Mrs. E. Stanhope. Miss Stow recorded a good number of mosses.

The thirty-second meeting was at SPALDING on August 30. A party drove to Crowland, and did good work. The best floral finds were *Juncus compressus* and *Alopecurus pronus*. A lecture on "Fenland Soils" was delivered in the evening to members of the Union and of the Spalding Gentlemen's Society by the Organizing Secretary (Rev. E. A. Woodruffe-Peacock).

The thirty-third meeting was held on July 10th, 1902, at DONCASTER and EPWORTH. Rain spoiled the day. But on the 11th, fine weather came for the joint meeting of the Lincolnshire and Yorkshire Unions at SCUNTHORPE.

The thirty-fourth meeting found the members again in the Grantham neighbourhood—CAYTHORPE and LEADENHAM. A district rich in all species was visited; and old limestone quarries, where *Cyclostoma elegans*, *Pupa secale*, &c., had recently been found.

CAISTOR was the fixture for the thirty-fifth meeting on August 28th. The fish-hatcheries at Hundon was visited; Normanby and Pelham Pillar woods were also found prolific areas.

The thirty-sixth Field day was at CAREBY Wood, Div. 16, on the 9th June, 1903. The day turned out very wet, and only enthusiasts continued working: they were repaid for their faith. On a fallen ash tree, lying in the east ditch of the British Camp in Careby Wood, *Lunax cinereo-niger* was taken. This species has now been recorded for both vice-counties by Mr. J. W. Taylor in his *Monograph*. The curious find of the day was an alien. Between Careby Wood and the Monks' Wood, Carlby, a grass new to the British flora was found. On identification it proved to be *Festuca maritima*, L., which loves a very arid limestone soil, like the edge of the Cornbrash "feathering out" on the great Oolitic clay.

The thirty-seventh Field meeting was at SUTTON-ON-SEA and HUTTOFT, Div. 11, on the 2nd July. Some members made a three days' stay, and much good work was done. Nothing unusually good was discovered. The much discussed questions about *Iris spuria* were fully gone into. We may never be able to prove this species to be a native, but it grows at Huttoft exactly like one, flowering, seeding, and growing from its own seed most luxuriantly.

The thirty-eighth meeting was at CLAXBY Wood, Div. 7, on the 31st of July. The ground there has been too well worked for forty years for anything very good to turn up; but a soil which grows within half a mile, the two *Chrysospleniums*, *Dipsacus pilosus*, *Veronica montana*, *Equisetum maximum*, with other good species, is always worth another visit.

The thirty-ninth meeting, combined with the annual general meeting, was for a visit to the deep bore for the water supply of Lincoln. Unluckily the borer was jammed and broken, and the machinery was not in working order on the day fixed. The explanations given by Mr. H. Preston, and the engineer of the works (Mr. J. H. Teague), from the specimens taken from the bore, supplemented by the presidential address, on "The Red Rocks Underlying Lincolnshire," brought the season's work to a fitting conclusion.

The fortieth meeting was at BARTON-ON-HUMBER on May 29th, 1904. This meeting was specially arranged to verify and obtain further specimens of *Alopecurus bulbosus*, Gouan, a species peculiar to unenclosed estuarine alluvium. It was found in plenty on the river side in South Ferriby. The flora of a wide series of soils was taken off. Many aliens were found in the lower and middle chalk quarries, *Lactuca muralis* being the best native species. *Helix nemoralis* proved almost absent; while *Helix cantiana* could only be found on *Urtica dioica* and *Barbarea vulgaris*.

The forty-first meeting was at HOLYWELL on June 24th. The following plants were found:—*Ranunculus parviflorus*, *Alyssum calycinum*, *Astragalus glycyphyllos*, *Hippocrepis comosa*, *Geum intermedium*, *Alchemilla vulgaris*, *Viburnum lantana*, *Cnicus eriophorus*, *Specularia hybrida*, *Anagallis cærulea*, *Gentiana amarella*, *Lithospermum officinale*, *Echium vulgare*, *Atropa belladonna*, *Hyoscyamus niger*, *Linaria elatina*, *L. spuria*, *Veronica polita*, *Melampyrum pratense*, *Scirpus caricis*, &c., in all, three hundred species and varieties. The soils were very varied, and resulted in the largest list ever made at a Union meeting.

The forty-second meeting was at SPILSBY on July 28th. On the Spilsby sandstone the following species were taken:—*Potentilla argentea*, *Salvia verbenaca*, *Ballota nigra flore albo*, *Poa compressa*, *Asplenium adiantum-nigrum*, *A. trichomanes*. On the chalky boulder clay *Paris quadrifolia*, *Pimpinella saxifraga dissecta flore roseo*, *Sanicula europæa*, *Calamintha clinopodium*. On the Kimeridge clay *Silene cucubalus puberula*. *Helix nemoralis tenuis* was taken by Mr. Stow, and at the meeting the same member exhibited the albino variety of *Helix lapicida*.

The forty-third meeting at RIPPINGALE Station, on the 1st of September, was a failure on account of the weather. About two hundred plants were noted, but all were species quite common on similar soils in other parts of the county. This is a district which must be visited again.

The forty-fourth Field meeting of the Union was held at LOUTH on Thursday, June 1st, 1905. Under the leadership of Mr. Carter, the chalk and boulder clay pits of Elkington, and the chalk quarries at Boswell and Fotherby, where the upper chalk

has been found, were visited. The botanists and entomologists went on to Acthorpe Wood, where the rest of the party joined them. The reports showed good work had been done. *Azeca tridens* had been turned up from its only recorded locality in the county; several good plants also, including *Veronica montana*, *Ranunculus sardous*, and *Bromus erectus villosus*. A fair number of *Lepidoptera* were recorded—*Nisoniades tages*—for the first time in this area.

The forty-fifth meeting was held at STAMFORD on Thursday, June 29th. It was a most successful day in the extreme inland corner of the county. Geologically the whole series of the Lincolnshire limestones of the county were seen in sections near the town, and on the clays of the Lower Estuarine were found some interesting plants. The botanists were rewarded by finding *Trifolium ochroleucon* in a new locality, growing in abundance, well within the county borders. Its rarity may be emphasized by the fact that it is only noted for 11 vice counties out of 112. Many other records were made from this district, as well as from the Newstead Mills, visited earlier in the day, which, among other plants, yielded *Cardamine amara* (from the only certain station in the county), *Œnanthe fluvialitis*, *Geranium columbinum*, *Salvia verbenaca* in abundance, *Malva sylvestris flore albo*, &c. Among the mollusca, some exceedingly fine specimens of *Limnea stagnalis* were found in an old pond on the Brick-hills, and some large, thin and translucent forms of *Helix cantiana*. A long list of micro-pond species were obtained from the pond just mentioned, as well as five species of water mites, which have been identified by Mr. George, of Kirton Lindsey.

The forty-sixth meeting was held at Scotton Common, under the guidance of Mr. F. M. Burton, vice-president. The assembling place was GAINSBOROUGH, and the Common was reached by waggonette. Spreading over different areas of the Common, the whole was worked as well as one day's investigation would permit. The larvæ of the Chocolate-tip Moth was seen frequently among the willow leaves, and the entomologists reported an excellent time, with a fair list of species as a result. The botanists found a long series of rare and interesting species, and made a good addition to their former notes, for Scotton Common is one of the most prolific places in the county.

The Sundews, *Drosera intermedia* and *rotundifolia* were in abundance, as was *Narthecium ossifragum*, *Anagallis tenella*, *Hypericum elodes*, *Gentiana Pneumonanthe*, with one specimen of the variety *flore albo*. The rare *Littorella juncea* was obtained, growing with *Scutellaria minor*, and the still smaller *Radiola linoides*. Many species of mosses were taken, and nine or ten liverworts. Reptiles were also in evidence in all parts of the Common—viper, common snake, lizards, frog and toad. Thus a large mass of material was procured, from which long lists have been compiled for the registers. For the arrangements of this meeting and the entertainment following, our thanks are due to Mr. F. M. Burton.

The forty-seventh Field meeting was held at MOORTOWN on Friday, August 25th. The only Lincolnshire locality for *Equisetum hyemale*, which was found in plenty. *Geranium pyrenaicum* was seen on the roadside in masses, having within recent years come down the slope from Nettleton. The soil was blown sand. On alluvium at the river head were found *Volulus sepium*, *Mentha viridis*, and *Potamogeton pectinatus*. In the woods *Vcrbascum Thāpsus*, *Sagina nodosa*, &c.; and in a stagnant pool, in a wood known as the Raspberries, was found floating in large numbers the liverwort *Ricciocarpus natans*. This meeting was one of the quiet ones, as few members turned up; but, nevertheless, over two hundred notes were made for the future flora of the county.

The forty-eighth meeting was held at LINCOLN on Tuesday, October 3rd, when Mr. Charles Crossland, of Halifax, met the members to go over the ground in search of fungi. The first noticeable feature at the assembly was that four ex-Presidents were present, as well as our ever present Chairman. The search was made along Gowt's Drain, Swanpool Plantation (which yielded a large number of species), Hartsholme to Hykeham Station, all members doing their best to secure specimens for verification. After tea the spoils were exhibited and named by Mr. Crossland, who also addressed the members on the subject. He also expressed his willingness again to assist in a similar way. Mr. Hawley helped Mr. Crossland in a most enthusiastic manner, and will accept the position of recorder for the Union. Eighty-five fungi records was the excellent result of this meeting.

BRITISH
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5 DEC 21
NATURAL
HISTORY.



**THE LATE
JOHN CORDEAUX, J.P., F.R.G.S., M.B.O.U.,**

First President of the Lincolnshire Naturalists'
Union.

The Presidents of the Lincolnshire Naturalists' Union.

JOHN CORDEAUX, J.P., F.R.G.S., M.B.O.U.

It was not on account of his fame as an ornithologist that the late John Cordeaux was elected first President of our Union. His 'Migration Reports,' 'Birds of the Humber District,' 'Anseres' in Fowhawk's 'British Birds,' or later 'Humber District Pamphlet,' good though they are, do not appeal alike to all Naturalists, but the kind, wide-hearted sympathy of the all-round worker did. Such a man naturally set many chords of interest vibrating when he was amongst us in the field, and he ever was there when he could be, for the Naturalist pure and simple, found time also to be geologist, anthropologist, antiquary and lover of dialect and folk-lore. Yet with all his student love of nature and mankind, the man himself far over shadowed his published works or momentary interests. He was the friend of a life time to those who were his intimates.

He knew our county and loved it, as it has been loved by few. When he took up his pen and wrote, the local reader could find the Tothill and Gayton-le-Marsh neighbourhood delineated in every paragraph of his work. It was into the willing ears of his intimates alone that his marvellous knowledge of "the clays" or true "marsh" of the Lincolnshire coast line was freely poured. Men and manners, beast and fowl, the history and anecdotes of the dead past, or illuminating flashes of wit on the eccentricities of the living present, always pertinent always kindly, made up his converse to those who thoroughly knew him. Well did Mr. Burton of Gainsborough, suggest the last time he was with us in the field, that "if a new name were ever required for the Louth-Saltfleet district, he had studied so thoroughly and knew so well, he would suggest Cordeaux-land as an appropriate appellation." "Cordeauxia," he chortled later as he referred to the not unpleasing compliment, "we must leave it to others—Rhodes for instance—to found new states. We must ourselves be content to observe simple facts, and as truly record them. We cannot all be

Darwins, inventing new methods of thought for old methods of investigation, but we can observe accurately, and help to build the foundation of all true knowledge." Then he went off into a vivid description of what Lincolnshire was like in the days before the drainage (circa 1600-1650). "When the storks and cranes were in larger or smaller flocks on the 'eys' and 'holmes' of the fenland; and the blackterns made the waters resound with an incessant noise as they flew over their surface or fed on the deeper meres on water-insects or small fish, or more quietly nested on the tufts just above the surface of the dark waters. There too the trampled battle grounds of the ruffs were common on every rising island of firmer peat; and our unique white herons here and there varied the marshscape amid their cinereous brethren." Picture after picture would follow one another from his well-stored mind. Everything of interest, when it was called for, at the happy moment when it was most appropriate to the subject under discussion. To one, never more than two friends at a time, was John Cordeaux in his best vein. His vivid imagination and strong memory dulled in the presence of numbers or on the lecturer's platform. A man had to be in full accord, and his welcomed guest, to get his very best from him. Cordeaux was no conversational protagonist like Johnson, nor intellectual giant like Huxley, who overawed even their intimates by the strength of masterful personalities and minds and trained tongues, and he quickly relapsed into silence, and remained there, if he were not understood and appreciated at his real worth.

No one had more sympathy with our county and its ways, either in the past or in the eternal now, than our first President. No one can regret more than we do that he left so little of his widely collected and intimate knowledge in print for his successors. Yet it was his constant complaint, when he was urged to write, that "it is so easy to write, and so difficult to find a subject to write upon freshly in these days." We all deceive ourselves and misjudge our own powers however acute we are.

THE STOAT AND ITS WAYS.

BY

REV. E. ADRIAN WOODRUFFE-PEACOCK, F.L.S.*

Of our four British mustelines—taking them in order of size from the largest downwards, the martencat, polecat, stoat and weasel—the most important on account of its daily depredations is the stoat. Every man's hand has been against it for over a century, and it still flourishes exceedingly. If it does not remain in undiminished numbers in those parts of England where the whole area is strictly preserved for game, yet it exists in such quantities that immigration is ever filling up the gaps which systematic trapping makes in any district. A gamekeeper has well written of it:—"The stoat has been able to escape extermination, simply because it is a migratory animal. If it were its habit to live in colonies like the rabbit, the last would long since have been extirpated. Its very solitariness has proved its refuge from such a fate. Stoats, indeed, accept as their family motto the policeman's advice, 'Move on!' and this has been their salvation."

That under peculiar circumstances they will quite suddenly disappear from a given neighbourhood is well known to a few naturalists. The fact has been noted in print, but no satisfactory reason has been assigned as the cause; and yet there is no difficulty about an explanation. An old and observant keeper suggested the right theory to me many years ago. His native dialect was more picturesque than any words of mine can be:—"There's not been a rabbit or bird taken by a stoat round these parts this summer. There aint none about. The fact is, a murrain took 'em all off this spring. They were botherin' me strangely on both sides of the 'coy—*i.e.*, his duck decoy—wi' my early ducklings; but wi' all my traps I didn't catch one. Then, suddenly, the old rats began their tricks, an' I went for 'em. Whilst I was rassing I found two stoats' nests, wi' young an' old both dead. There were five young in one an' seven in tother, an' 'the old mother' in both cases—all as dead as nits." The

* The Presidential Address to the L.N.U. for 1905.

"murrain" is nothing but canine distemper, or a disease so like it, which both dogs and mustelines are subject to, that no ordinary person can distinguish them. When dogs have it badly in a district the stoats are frequently all carried off; when ferrets get it, the dogs round less frequently take it and die. The murrain works wholesale destruction amongst polecats, stoats and weasels there can be little doubt, though I have found it most difficult to obtain circumstantial proof of the fact. An epizootic (as in the Ashby Decoy case just referred to) passes generally before it is observed.

The habits and ways of the stoat are like those of its three nearest relations, although it is naturally more of an open country, hedge and streamside species than the marten or polecat. It is essentially a hunter of living things, loving the warm blood of its victims, but apparently preferring their flesh—when it must eat it—"high" to fresh. It cannot climb down smooth, upright tree-trunks with the agility of the squirrel or marten, and yet will attack the nut-eater in its native tree-tops. It cannot follow the field mice and voles into their tunnels as easily as the weasel does, but they never escape from it in the open. It cannot swim under water for a lengthened period, like the otter, but it dives in taking its toll of trout, eels and coarse fish, weighing up to three-quarters of a pound. The polecat is not more bloodthirsty, or insatiable in its desire to kill for pure sport, or to keep its limbs and teeth lissom and sharp. So far as my personal notes extend, the world over record is held by the stoat which was captured at Penny Hill, there can be little doubt, from its having slept on the spot after a laborious night and full meal. This game little creature, which probably weighed only about twelve ounces at first, is recorded to have killed during one night eleven turkeys, thirty ducks and twenty chickens. It ought to have been stuffed, but I do not know whether it were. No fox record in my possession can be compared with this performance when we think of the relative size and weight of the two animals. The Tingewick Game Farm lost over a hundred pheasants killed by a single fox one night; but what was that to the little stoat's gargantuan feast! The fox's victims at the end of the year will total up to less than the stoat's; for reynard, with all his love of "a bit of

game," is not a "blood-sucker," like the stoat, and eats up his food fairly cleanly. On the other hand, if the stoat can only get into a warm corner, with plenty of game round him, he is a perfect epicure, and will take blood here, and blood there, every mouthful from a fresh victim, and let the rest of the carcase rot.

The food supply gathered together in the storehouses of stoats proves their thirst for blood as perfectly as it reflects the whole *feræ natura* of the locality where they are unearthed. By the banks of streams the water vole and common rat, with trout and other coarse fish, may be found, along with the waterhen and similar stream side loving birds. In spring the collection is varied with birds' eggs and young and a supply of frogs. On the stubbles and arable land the contents of the larder vary greatly, with the elevation and nature of the soil. Greenfinches and chaffinches generally form the bulk of the supply, with an occasional long-tailed field mouse, corncrake, plover, or leveret. Much depends upon the time of year the hoard is discovered. On grass lands the stoat's opportunities vary again. Blackbirds, thrushes, and "smaller fry" which feed along the hedge sides, or shelter in its cover, are frequent victims, with field mice and voles. A woodland store generally includes the squirrel, more often than not taken on the ground, but sometimes in its own nest, or while engaged in robbing birds of their eggs or young: much more rarely is it captured in its native branches. With it may be found the long-tailed vole, young pheasants, coppice-haunting birds, and the stoat's relation—the weasel.

In a sandy warren young rabbits form the bulk of the supply, with perhaps a pair of stone or whin chats, or a stone curlew, partridge, or young shield-duck. A sea coast dune would vary the supply again, but I have never discovered or seen the records of one. To my knowledge, too, the store of a grouse-moor stoat has not yet been recorded; though there can be little doubt that both localities furnish hoards. The neighbourhood of ponds on old grass pasture land is a favourite place for a collection. The treasured food varies much with the season. In the spring, leverets, eggs, and young waterhens may be discovered, with any of the smaller birds which come to drink and wash in the shallows. A stoat can leap six feet on to its quarry, and one bite

is sufficient to paralyse a full-grown hare, to say nothing of killing a small bird. The ways of the stoat can be observed wherever its stores are unearthed, but nowhere better, perhaps, than on the marshes, where migrants and nocturnal-feeding birds collect on the grass, or in the shallows, at certain periods of the year. In such places, during the day, possibly the ground is as barren as the ideal wilderness, not a wing can be discovered; but as "soon as the evening shades prevail" the birds assemble, and the stoat shakes himself and comes out of his lair ready to meet them. In his berth, according to the time of year, may be found the golden or the common plover, snipe, spotted crake, dotterel, small waders, and migratory birds. Woodcock I have no record of; yet I do not believe that there is any warm-blooded thing, of reasonable size, which does not at times form part of the stoat's "bag." After heavy snowstorms, before the frost has hardened the surface of the earth's white mantle, the stoat may be sometimes seen burrowing under the snow, as it runs along the soil seeking for an entrance into the runs from which the moles are busy casting up earths. A moderate frost prevents this curious form of hunting being visible. If other animals are perplexed by the loss of their usual feeding-ground, stoats are not. They betake themselves to the hedgerows and woods, where a cruelly hard existence has, for a time, forced animal creation into a narrow space, seeking the food and shelter which the open country denies to them. There—when other things are starving—stoats simply revel in a feast on birds, voles, mice, moles, hares and rabbits,—on everything which luck throws in their path. The fox himself, with all his size, strength and cunning, is a fool to a stoat.

For such small creatures—the body of a very large stoat is not a foot long—they are wonderfully strong, and always make a brave attempt to get their victims out of sight, generally into the cover of their underground store. Let it be what size or weight it will, even an old jack hare, a stoat makes a huge effort to move it. On the dead flat it can drag three times its own weight by sheer muscular strength, and down a slight incline can manage to move over four times its own weight by the leverage of forcing itself under its victim over and over again. When a bird or mammal is fairly small, the stoat must have had other game close

by, and have gone off hunting, if its quarry be found in the open. In my experience every stoat is either secretive by nature, or else imagines that some other stoat will be pouncing upon its kill. Whenever one is viewed going to earth, *at once* dig out the burrow; the owner will not leave its sanctuary till the very end is reached, then its efforts to escape will be frantic. If there be a "side-pocket" in the burrow, its evil-smelling food store will be there. By personal experiences in this way, any man can learn what one small animal is capable of doing in the way of providing for itself.

The question of supply, or of variety when it tires of one species of food—such as young rabbits—or the timidity and watchfulness its known presence causes—for every bird gives its warning cry on seeing a stoat—entirely governs the actions of the little outlaw. If a temporary home means "short commons," it is soon on the move along stream or ditch, by a hedge bank, or round the outskirts of a well-stocked game covert. In summer weather, when the ditches are quite dry, they form hidden and convenient roads which stoats never neglect to use. They have such a love of cover that they never come out in the open without sufficient reason. Most ground-nesting birds know this habit well, and prefer a meadow, sainfoin, clover, or ryegrass fields to fences along which vermin are constantly hunting.

So remarkably close does the stoat cling to cover during the hours of daylight that even an observant gamekeeper may not see one during a whole year. The weasel may be observed, or its voice heard, a dozen times to the stoat's once. I have been resident over fourteen years at Cadney, and, though always on the look out, have not once seen a stoat in the open during that period.* Yet the keeper's gallows-tree proclaims the certainty that they are, or rather were, as numerous there as elsewhere. The fact is, the whole *genus* are night, rather than daylight, hunters. The darkness not only protects them during their depredations, but it also renders their victims, both furred and feathered, much more accessible. The stoat is boldness personified, yet it gets its living by stealth rather than by fox-like cunning.

* Since these words were written, during the last month I have seen one. On the other hand, I have viewed the weasel often and the polecat once. I doubt whether the latter species—the founart, or fouldmart, as we locally call it—is now to be found in my parish,

The voracity of stoats is so great that Pallas declares, "in the course of a day"—*i.e.*, I presume, in twenty-four hours—"they would generally devour more food than was equal to their own body in weight." I have never kept them in confinement, but hardly think, judging by analogy from the ferret or domesticated polecat, that the daily average of regularly fed animals would be so high, though occasionally it might be the case. The matter is, however, of importance to game-owners. It shows why stoats collect such huge stores of food in their refuges; and why they die so rapidly—in three days and nights—when they are cut off from food and water in neglected box-traps. If traps are not visited every day with methodical regularity, the most humane trap for stoats is the large size spring rat-trap. Where their food abounds, stoats will not as a rule touch carrion, and baited traps are more or less useless. While in other parts, where animal life is more or less rare, as on moor lands, any bait, the more putrid by preference, will attract them from long distances. Early in the season, when they are near enough to view or scent them, the eggs of any kind of bird will bring them between the jaws of the trap. Keepers long ago discovered that, under all circumstances, the best lure to draw stoats to destruction is the dead body of one of their own species hung over or near the trap. If the mother be caught, all her offspring may be taken, to the number of a dozen if she has as many, without moving the trap. Even other wandering stoats, in no way connected with the family, which may have been destroyed entirely, are frequently taken too. Failing a dead stoat for a lure, a weasel or a polecat is nearly as attractive. Stoats, like weasels, hunt in packs, but only family packs in both cases, I believe. If two males meet they fight, I know; and have every reason to believe that when two family packs come across one another in their wanderings there is a battle royal between them for the hunting rights of the district.

When keepers and trappers have carefully studied the mode of life of the vermin they desire to capture, there is no difficulty in taking them. The stoat is no exception to this general rule. Lay your plans in a wily way, and your trap in its path, and there is nothing more easily taken than the stoat. If he be

hungry, carrion will draw him to the gin; if he be full to repletion, and has had his nap, he will approach out of sheer curiosity—which undoes so many of us—or a pure love of threading tunnels to discover what is within or on the other side of them. The only art required is to put the trap in the right place, that is, exactly in his path. "Once a stoat road, always a stoat road," is a true proverb, as every keeper knows to his cost. In a hedge the trap should be on one side of a gate-post, or crossways through the fence at a gap or "hedge-hole." The covering or box tunnel only requires to be long enough to hold the trap and to let the stoat pass through and over it; and long enough also to keep game and foxes free from harm. In dry ditches the tunnel should be at the bottom, well "bushed" to prevent the stoat going on either side or over it; and every "gate-road tunnel" should have its trap.

When the trap is found empty, the earth at both ends of the tunnel should be slightly scratched up with "the business end" of the gamekeeper's stick. This is said to suggest "rabbit" to the stoat, and to make it more inquisitive. It is absolutely useless to set a baited trap in an open field, or in the middle of a big game covert, unless there be a dry ditch, or drain carrying water, to cause the stoat to use the place as a "road." The very justly condemned pole-trap would not have destroyed as many stoats as it did if the animals were not so inquisitive, and the blood of their predecessors had not proved such an attraction, and caused them to climb twenty or more feet to investigate the circumstances.

There is another deadly mode of taking this species. It is so secretive, and yet at the same time so curious, that it falls a victim at once. "This craving," as a trapper has pointed out, "finds an illustration in the fact that when a stoat is on one side of a stream it is possessed by an idea that the opposite bank is just the right place for full investigation. The desire to get over the water may not always be keen enough to impel it to swim, though it will at times do this, but all the same it wants to be across as soon as possible. The result is, that the stoat carefully crosses every bridge which it meets with; it matters not whether the structure be the usual wide one for carrying a roadway, a

footpath plank, or merely a tree reaching from bank to bank, which the wind has blown down. No sooner is the stoat safely across, and 'working down' the fresh bank, than it wants to be back again. Thus it comes about that a stoat never neglects to cross a stream whenever means are available." The clever trapper takes full advantage of this peculiarity, and many stoats die in passage tunnels. The trap is simply placed in a tunnel, nailed to a rough larch tree laid across the stream from bank to bank, with a large furze or whin bush tied on the top of the tunnel to force the animal to use it. If the bushing be omitted, it may jump over, or run along the top of the tunnel, and so escape the trap.

A parish may abound in stoats, and yet none may be seen by the natives: their nests and food-stores may be plentiful, and yet no one may suspect their presence. So much is this the case, that only a few gamekeepers are keen enough to detect the stoat's home—unless they chance to see it run in—by the trail, or by the feathers and fur which so frequently cling round the entrance. No one knew this better than the late John Cordeaux, our first President. He loved to point out all such things to the fairly observant, and train his young friends in exact woodcraft. He once said to me, "All kinds of places are used for breeding-homes, store-houses, or 'hunting-boxes' by stoats. Nothing comes amiss to them, rabbit or rat burrows, hollow trees, dry-built stone walls, the larger birds' nests—a magpie's by preference—or a squirrel's drey." Forty years ago I remember a stoat's home and hoard being discovered under a heap of large stones, shot out of a cart by the wayside, ready to be broken by old men into road metal. Their ancient tongues wagged merrily over their find, to the discomfiture of the keeper who passed the spot several times every day of his life.

When found the female stoat's nest is always warmly lined and securely cosy: it seems to be carefully hidden from the male. I have never heard of the dog stoat being discovered with the mother or family, or assisting to hunt for them. A wandering stoat may occasionally visit the entrance of the burrow, but unless he is bent on mischief he never pushes his enquiries further, or the infuriated female drives him off. A male may be very rarely trapped at the entrance of "an earth," but has never been

known to leave food there. Plenty of proof exists that the male will destroy or maim the young at times. Tailless and injured stoats have been recorded, and from the peculiar character of their losses, the work of the male may be suspected. A photograph published in "The Gamekeeper," for May, 1905, showed a



stoat destitute of both forelimbs, taken off close to the body, not in the least like the way a trap could injure one. This seems to be a case in point. On the other hand, the female stoat is a devoted mother and passionately attached to her young; she will run any risk for them, even attacking man single-handed.

Stoats have a most marvellous power of scent. No breed of dogs known to me can approach them in the possession of that faculty: it is as highly developed as in the wild pig. They run directly along "a warm track" and cross and recross a cold one, but are rarely, if ever, "thrown out" in following up their game.

When from five to a dozen young are following their mother, the amount of destruction such a party causes is simply incredible. Carrion crows, sparrow hawks, magpies, and foxes can hardly be called good friends of the game-owner, but the largest family any of them rear is not in it with the stoat's brood.*

* I myself have known a pair of carrion crows to carry off forty chickens in three days from a fowl farm. One of the pair was shot, and left where it fell. Its mate only flew over the pasture once again: it took the position in at a glance, and shunned the spot for the future.

Young stoats must kill everything they meet with indiscriminately to learn the arts of killing and providing for themselves. Not one of their victims in a hundred is ever seen by the keeper, unless they are taken *flagrante delicto*. When the young are full grown, but still hunting with their dam, she may be distinguished at sight from them by her russet-brown colour, for the young are lighter, and when dead by her claws, teeth, and *mammæ*. The surest way of trapping her, I regret to say, is to use one of her own offspring as a bait. Stoats are so quarrelsome, greedy, and suspicious of one another that they never under any circumstances assemble in battalions for additional security, like rats. When men have been attacked by numbers, they have simply been the members of a family pack. When two or more are caught fighting they can be easily approached, if a man has a very strong stomach. At such times they are so indifferent to other external matters that two may be killed at once with a blow from a walking-stick. Fighting stoats, when only two are present, always turn out to be males, in my experience. Old doe rabbits have been known to recover their dead young on such occasions, and to send both stoats to "the right about," either well "kicked," or soundly beaten and "trampled on." A heavy doe rabbit is not always "the inoffensive" creature she looks, and against a rat, stoat, or weasel, stealing her young, can suddenly develop a pugnacity and quickness of resource which is as charming and amusing as it is rarely beheld.

The "chatter" or "shrill whistle" of the stoat is a very unfamiliar country sound. It may be heard when the dog stoats are getting ready for a fight, or the female calls her young to food she has taken, or when for a time she has lost sight of them in the thick cover. While hunting, the stoat is silent, in my experience; but while following in packs, when the chase is catching up the quarry, young stoats are said to "give tongue." I cannot say for I have never seen a pack under these particular circumstances. The mother gives forth a cry continuously when she returns and finds her young have been destroyed in her absence; and, overcome with trouble, runs aimlessly about, regardless of her own danger. At such times her "continuous whistling" can only be compared to a "singing mouse."

Few gamekeepers, in my experience, believe that the winter-white coat of the stoat is the royal ermine. It is not generally known, either, that the older stoats are the whiter their winter coats become in hard seasons, even in England. The only ermines I have personally examined have all been old dogs. There is also an albino stoat. From youth to age, summer and winter, it is always perfectly white without the black tip to its tail, and has the so-called "pink eyes." A winter-white weasel, which is not albino, is a very rare thing, even in the North of Scotland, but this cannot be said of the stoat. The published records of enormously large stoats, from 19 to $24\frac{1}{2}$ inches, are not to be depended on. An 18-inch stoat is an old giant. I have good reason to believe that both the polecat and the martencat are mistakenly called "stoats," by the badly informed, and at times records of both these species are published as those of the stoat. In the same way the stoat in Ireland is frequently called the weasel, because the weasel is rare there.

Stoats have few natural enemies—foxes, cats, and hawks on land, and the pike in the water, are the only ones of which I have any sufficient modern records. The polecat and marten may now be ignored as such, as the former is so thinly distributed at present as practically to have no effect upon the increase or decrease of stoats; and the latter is a rare wanderer, worth recording, in most counties in England. I have been informed it has been taken in the neighbourhood of Lincoln lately. The larger owls may occasionally pick up a young stoat in the gloaming, but I never remember finding their bones in the many casts I have examined. Foxes certainly kill stoats at sight, and dead ones have been found in the food stores in their earths. Cats also, at times, destroy a few, especially when they have kittens. Large and heavy rats will sometimes test all the stoat's powers and resources when they get into a place convenient for fighting; but even if it loses its own life, from wounds, after the fray, the stoat never gives in till the battle is won. Hawks also destroy a few of them, but not infrequently the stoat gets the better of the bird if it does not seize its lithe little quarry well forward. One old friend saw a sparrow hawk swoop successfully at one and rise, but it paid for its temerity with its life. The stoat tore open the

big artery under the wing, and the bird fell before it had flown two hundred yards. That incident reminds me that a stoat can fall thirty feet with a bird it has killed, or from a tree, without apparently much inconvenience, for it will run off the moment it touches the ground. Stoats are remarkably good swimmers, holding their heads high, like a dog's, and will take to the water to escape danger, or in hunting rats, voles, birds, or fish. In this way they occasionally fall victims to "the fresh-water shark," but whether pike find them "tasty morsels" I cannot say. As Mr. J. S. Harting suggests, "cold water may have the effect of silencing the enemies' guns:" nothing else does, I can testify.* Few dogs, except those specially trained for vermin hunting, will tackle a stoat, on account of its powerful aroma; many will rush in upon them as if they meant business, but their olfactory sense overcomes their ardour, and they sheer off to obtain fresh air before closing with them.

The marten and polecat have disappeared before the skill of the trapper, on account of their more open, easily observed, and stationary habits. The stoat, on the other hand, remains practically where it ever was, *i.e.*, wherever it desires to be. Without the cunning of the fox, it is far bolder, more courageous and daring. From a little animal, less than 18 inches long, all told, which out of pure "cussedness" will even sometimes attack man with apparent fearlessness, any deed of courage or destruction may be expected.

* A heron, standing immovable in the shallows by a stream side, is recorded to have speared, beaten to death, and then swallowed a stoat, which was attracted by the bird's scent while working along the bank. Strong though the stomach of the heron is, it could not stand so highly-flavoured a morsel, and at once vomited it. I have often watched the swallowing process with admiration in herons; but when the long neck is considered, a "boking" heron must be a sight for gods and men!

Your Hon. Secretary has been appointed to the Curatorship of the Museum at Lincoln. In future all Communications should be addressed to,

THE MUSEUM, LINCOLN.

NON-MARINE MOLLUSCA OF LINCOLNSHIRE.

C. S. CARTER, M.C.S.

Hon. Curator, Louth Ant. and Nat. Soc.

Since the publication, in 1887, of Mr. W. Dennison Roebuck's admirable paper "Materials towards a List of the Land and Freshwater Mollusca of Lincolnshire," which appeared in the *Naturalist* for that year, much good work has been accomplished by a number of enthusiastic collectors. Except for the very useful List compiled by Mr. H. Wallis Kew, published in the same *Journal* for 1902, and the various scattered notes, which have also from time to time appeared there very little, comparatively, is known of the amount of good work done during the last eighteen years.

The present list has been compiled in compliance with requests frequently made to me, to record, as far as space will allow, what has been done, and therefore what still remains to be accomplished. It is hoped that the enthusiasm of the past will not in any degree be diminished, but rather stimulated by successes to greater activity.

It is with regret that I have not been able to incorporate the whole of the records of Mr. Roebuck's great collection of Lincolnshire Non-Marine Mollusca. Its owner is at present abroad, and neither notes nor specimens are accessible, and the space at our disposal is also insufficient for doing justice to Mr. Roebuck's work as a Malacologist. I learn, however, that he contemplates publishing a list on his return, so we may all look forward with expectancy for the result of more than twenty years work in our County.

The classification and nomenclature adopted here is that published by the Conchological Society in 1904, except in some few cases amongst the slugs, where Mr. Taylor's Monograph has been followed.

When a species is common and generally distributed, only the first known record, and the Natural History Divisions of the County, for which it has actually been recorded, have been given.

The following List includes 109 species, 133 varieties and 3 monstrosities. A good list when we consider that of the 170 species, in the catalogue adopted, 26 species are either extinct or introduced. Only 144 species are left for comparison. There are several species which may be reasonably expected to turn up and I hope that attention will be directed to this end.

I take this opportunity of expressing my great indebtedness to Mr. J. W. Taylor for his kindness in verifying the identification of species and many varieties. This gives equal value to all the new records here published; I also desire to thank the numerous workers who have kindly assisted in so far working out the Mollusca of the County.

I shall be very pleased to receive further collections of Mollusca, together with locality, soil, and other notes, especially from those divisions for which we have few records.

For the purpose of economising space it has been necessary to use a long list of abbreviations as follows:—

W D R	Signifies	Mr. W. Dennison Roebuck.
H W K	"	Mr. H. Wallis Kew.
E A W P	"	Rev. E. Adrian Woodruffe-Peacock.
M P	"	Mr. Max Peacock.
C S C	"	Mr. C. S. Carter.
R W	"	Mr. R. Worsdale.
H P	"	Mr. H. Preston.
T S	"	Mr. T. Stow
W W M	"	Rev. W. W. Mason.
J E M	"	Mr. J. Eardley Mason (The late).
S C S	"	Miss S. C. Stow.
F H W	"	Miss F. H. Woolward.
S A	"	Miss Susan Allett.
H C B	"	Rev. H. C. Brewster.
J B D	"	Mr. J. Burt Davy.
F M B	"	Mr. F. M. Burton.
W E C	"	Mr. W. E. Clarke.
F W F	"	Mr. F. W. Fierke.
C T M	"	Mr. C. T. Musson.
E C	"	Mr. E. Collier.
A S	"	Mr. A. Smith.
A R	"	Mr. A. Reynolds.
† T B	"	Thomas Ball's List of Land and Freshwater Shells, all but five taken within a radius of 1½ miles of Brigg, published in "Young England" 1864, and reprinted in the Naturalist in 1894.
*	"	Mr. Roebuck's "Material towards a List of the Land and Freshwater Mollusca of Lincolnshire "The Naturalist" August 1887. PP. 245-272.
†	"	Mr. J. W. Taylor's "Monograph of the Land and Freshwater Mollusca of the British Isles."

Other Names appear in their respective places.

TESTACELLA HALIOTIDEA *Draparnaud*

Has been recorded for one locality only

- N. Gainsborough, 22-4-1893. F M B (F M B, Nat., Oct., 1898)

TESTACELLA SCUTULUM *Sowerby*

Recorded for one locality in N. Lines. The locality given for S. Lines. in Taylor's Monograph is in Northamptonshire.

- N. Nettleton House, 28-1-1903. S A, reports that "they were found in the coldest and dampest part of the garden"

LIMAX MAXIMUS *Linné*

A common species, recorded for numerous localities in N. Lines.

- N. *Well Vale, Alford, 14-4-1886. W D R Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

- S. *Boston, 8-9-1881. W D R

var. *cinereo-niger* *Wolf*

- N. Cadney, 30-9-1901. "Two examples found drinking at soft water tubs" E A W P (E A W P, Nat., Dec., 1901)

Howsham, on fallen ash, 7-8-1903. E A W P

- S. Careby Wood, on fallen ash, 9-6-1903. E A W P

var. *ferrussaci* *Moq.-Tand.*

- N. Hubbard's Valley, Louth, one example on beech tree, 1903
C S C

- S. Brandon Lodge, Grantham, 8-1-1889. Theodore Burt (W D R, Nat., Aug., 1889)

var. *fasciata* *Moq.-Tand.*

- N. *Haugham Wood, Louth, 15-4-1886. W D R. *Louth, 24-4-1886
H W K. *Alford, 16-4-1886. W D R. Aby, J B D (Journ. of
Conchology, Oct., 1891)

- S. Gt. Ponton, 31-7-02. W D R

var. *cellaria* *D'Argenville*

- N. *Alford, 14-4-1886. W D R. *Louth, 24-4-1886. H W K.
†Somersby, Sept., 1889. W D R. †Broughton, near Brigg,
Aug., 1902. F H W. †Kirton-in-Lindsey, Aug., 1902. E A W P

- S. *Ancaster, 17-4-1886. W D R

var. †*concolor* *Pini*

- N. †Louth, Sept., 1886. H W K

var. †*sylvatica* *Morelet*

- N. †Well Vale, Alford, April, 1886. W D R. †Broughton, near
Brigg, Aug., 1902. F H W

- S. †Near Boston, Sept., 1884. W D R

var. †*obscura* *Moq.-Tand.*

- N. †Alford, Sept., 1885. J E M

LIMAX FLAVUS *Linné*

Fairly plentiful where found

- N. *Louth, 24-4-1886. H W K. Bottesford, 1868-1900. E A W P.
Caistor, 19-9-1903. E A W P. Alford, June, 1890. J E M
Isle of Axholme. A R

- S. Court Leys, 30-7-1902. S C S. Caythorpe, 5-3-1902. S C S

LIMAX ARBORUM *Bouchard-Chantereux*

- N.** †Near Louth, Oct., 1885. R W Goulding. *Maltby Wood, Louth, "typical, a few under a log," 15-4-1886. W D R.
*Lincoln Road, Louth, 24-4-1886. HWK. Newball Wood, 11-9-1899 suspended by a three feet mucus thread from bushes. E A W P. Poolthorn Wood, Cadney, suspended, 13-3-1901. E A W P. Tumbly, suspended, 13-3-1893. E A W P. Isle of Axholme. A R
‡Ulceby-with-Fordington, Oct., 1889. J B D
S. Careby Wood, Grantham, June, 1903. E A W P
var. **bettonii** *Sordelli*
N. Jenny Wood, Louth. H W K (Nat., March, 1886)

AGRIOLIMAX AGRESTIS *Linnaeus*

Very much too common everywhere

- N.** *Great Cotes, 5-10-1883. W E C. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
S. *Boston, 8-9-1884. W D R. Divs. 13, 14, 15, 16, 17
var. **sylvatica** *Moq.-Taud.*
Common with the typical form
N. *Alford, 4-9-1885. J E M
S. *Ancaster, 17-4-1886. W D R. Fulbeck Grange, Dec. 28, 1888. J B D (W D R, Nat., May, 1889)
var. **albida** *Picard*
N. *Claythorpe, one, juv., pure snow white, 6-7-1887. J E M. Louth, one pure white, 11-11-02. C S C
var. **reticulata** *Moq.-Taud.*
S. Fulbeck Grange, 28-12-1888. J B D (W D R, Nat., May, 1889)
var. **tristis** *Moq.-Taud.*
N. *Tothby Farm, Alford, 14-4-1886. W D R
var. **rufescens** *Lessona and Pollonera*
N. Cadney, 30-10-1901. E A W P
var. †**albitentaculata** *Dum. and Mort.*
N. †Claythorpe, July, 1887. J E M

AGRIOLIMAX LAEVIS *Müller*

This active and interesting little slug is very plentiful under timber in the woods and other damp places near Louth.

- N.** *Muckton, 15-4-1886. W D R
*Haugham Wood, near Louth, 15-4-1886. W D R. *Sutton-in-the-Marsh, 16-4-1886. W D R. Maltby Wood and Haugham Pasture, near Louth, 1901. C S C. Hubbard's Valley, Louth, 1902. C S C. Bottesford. E A W P. South Kelsey, 1899. H C B. Brigg, 3-6-1895 (F W F, Nat., August, 1895). Isle of Axholme. A R. Jericho Plantation, Oxcombe, 13-5-1902. C S C. Maltby Springs, near Louth, 1902. C S C. Aethorpe Wood, September, 1904. C S C
S. Fulbeck Grange, 21-12-1888. J B D (W D R, Nat., May, 1889). Lincoln, 24-5-1894 (F W F, Nat., September, 1894)

MILAX SOWERBYI *Férussac*

Is recorded for three localities only—two North Lincs., one South Lincs. They are very abundant on a bank in Edward Street, Louth, and may probably be found equally plentiful, if searched for, in other localities

- N.** *Louth, 21-5-1886. H W K. South Kelsey, 1865. H C B
S. *Boston, 8-9-1884. W D R

MILAX GAGATES *Drap.*

Is recorded for one locality only

N. *Alford, 16-5-1886. J E M

— var. **plumbea** *Moq.-Taud.*

N. *Alford, 8-9-1885. J E M

VITRINA PELLUCIDA *Müller*

A very common species, recorded for numerous localities in N. Lines., but few in S. Lines.

N. †Brigg. T B. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

S. *Anwick, near Sleaford, 7-3-1887. C T M. Court Leys, 11-1901. S C S. Mere, 21-2-1902. W W M. Great Ponton, 31-7-1902. W D R. Dorrington, 28-4-1904. W W M

VITREA CRYSTALLINA *Müller*

A very common species, recorded for numerous localities in North Lines., but few in South Lines

N. †Brigg. T B. Divs. 1, 2, 3, 7, 8, 9, 10, 11

S. Grantham, 1900. R W. Little Ponton, 12-7-1902. R W. Great Ponton, 31-7-1902. W D R. Dorrington, 28-4-1904. W W M

— var. **complanata** *Jeffreys*

N. *Louth Park, 7-6-1887. H W K

VITREA LUCIDA *Drap.*

Only one recorded

N. Welton Wood, near Alford, 14-7-1900. C S C (C S C, Nat. August, 1902). Only one example under timber in a disused chalk-pit

VITREA CELLARIA *Müller*

A very common species, recorded for numerous localities in N. Lines.

N. †Brigg. T B. Divs. 1, 2, 3, 4, 5, 7, 8, 9, 10, 11

S. *Uffington, 1884. E C. *Ancaster, 17-4-1886. W D R. *Anwick, 17-3-1887. C T M. Mere, 21-2-1902. W W M. Great Ponton, 29-6-1902. R W. Little Ponton, 31-7-1902. W D R. Crowland, 31-8-1901. T Gelsthorpe

— var. **complanata** *Jeffreys*

N. Scunthorpe, 11-7-1902. One specimen. C S C

S. *Ancaster, 17-4-1886. W D R

— var. **albina** *Moq.-Taud.*

S. *Ancaster, 17-4-1886. W D R. Grantham VI.-1902. R W

VITREA ROGERSI *B. B. Woodward*This species has been variously recorded as **Zonites** (*Hyalinia*) **glaber** and **helvetica**

N. *Haugham, Burwell and Maltby Woods, numerous, 15-4-1886. W D R. *Cleethorpes, 16-4-1887. H W K. Jericho Plantation, Oxcombe, 28-5-1902. C S C. Donington-on-Bain, H W K. Wyham, 1900. C S C. Woodhall Spa. S C S. North Ormsby, 13-10-1900. C S C

S. Court Leys, XI.-1901. S C S. Grantham, VI.-1902. R W. Little Ponton, 12-7-1902. R W. Great Ponton, 31-7-1902, W D R

VITREA ALLIARIA Müller

A fairly common species, recorded for several localities

- N. *Sutton, 16-4-1887. H W K. North Ormsby, 13-10-1900.
C S C. Cadney, 23-5-1902. C S C. Laughton, 31-10-1898.
A S (A S., Nat., Dec., 1898). Mablethorpe, 1901. C S C.
Maltby Wood, 1901. C S C. Jericho Plantation, Oxcombe,
13-5-1902. C S C. Isle of Axholme. A R
S. Great Ponton, 29-6-1902. R W. Little Ponton, 31-7-1902.
W D R. Dorrington, 28-4-1904, W W M

VITREA NITIDULA Drap.

A very common species, recorded for numerous localities in North Lincs.

- N. †Brigg. T B. Divs. 1, 2, 3, 4, 5, 7, 8, 9, 10, 11
S. *Uffington, on fallen trees, IX.-1885. E C. *Ancaster,
7-4-1886. W D R. *Anwick, 7-3-1887. C T M. Court Leys,
XI.-1901. S C S. Mere, 21-2-1902. W W M. Near Lincoln,
24-5-1894. F W F (Nat., Sept., 1894). Grantham, VI.-1902.
R W. Great Ponton, 12-7-1902. R W. Little Ponton,
31-7-1902. W D R. Dorrington, 28 4-1904. W W M

VITREA PURA Alder.

Owing to the rejection of the name var. *margaritacea*, that variety being considered the type, a transposition of the records has been necessary.

Whether Thomas Ball's record should be under the type or variety I cannot say, but as it is the first record for the county, I place it first in order

- N. †Brigg. T B. *Well Vale, 14-4-1886. W D R. *Haugham
Pasture, near Louth, 13-5-1887. H W K. *Maltby Wood,
15-4-1886. W D R. *Hubbard's Valley, 13-5-1887. H W K.
Broughton, 1900. E A W P. Welton Vale, 2-7-1902. C S C.
— var. *nitidosa* Gray
N. *Tothby, 14-4-1886. W D R. *Grimoldby, 13-5-1887. H W K.
*Well Vale, 14-4-1886. W D R

VITREA RADIATULA Alder

- N. †Brigg. T B. *Donington-on-Bain, 19-8-1886. H W K.
*Greenfield Wood, Aby, 8-6-1887. J E M. *Louth, 15-4-1886,
W D R. *Kenwick, 13-5-1887. H W K. *Welton Vale,
13-5-1887. H W K. Burwell Wood, 1902. C S C
S. Great Ponton, 31-7-1902. W D R

ZONITOIDES NITIDUS Müller

Sparingly found in a few localities

- N. †Brigg. T B. *Canal Banks, near Louth, 15-4-1886. W D R,
Little Carlton, 1900. C S C. Poolthorn Cover, Cadney,
1900. E A W P. Isle of Axholme. A R.
S. Little Ponton, 12-7-1902. R W

ZONITOIDES EXCAVATUS Bean

Only once recorded

- N. Woodhall Spa, 7-8-1893 (F W F, Nat., Oct., 1893). "Taken on
dead leaves in a hedge bottom"

EUCONULUS FULVUS Müller

This is a particularly interesting little shell, being one of the two species recorded in 1678 by Dr. Martin Lister, who stated that he had "found it more than once in moss at the roots of large trees in Burwell Woods in Lincolnshire." This record was confirmed in 1886 by Mr. H. Wallis Kew finding it in Burwell Wood. It has been recorded for numerous localities in North Lincolnshire

N. *Burwell Wood. Dr. Martin Lister, *Hist. Animalium Angliæ* 1678. Divs. 2, 3, 7, 8, 9, 11.

S. Near Lincoln, 24-5-1894. F W F (*Nat.*, Sept., 1891). Gonerby Moor, January, 1903. R W

— var. **viridula** Taylor

N. Grisel Bottom, Burwell Wood, April, 1902. C S C One example under timber

ARION ATER Linné

A very common species, recorded for numerous localities in North and South Lincs.

N. *Great Cotes, 5-10-1883. W E C. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

S. Little Ponton, 31-7-1902. E A W P. Divs. 13, 14, 15, 16, 17, 18

— var. †**aterrima** Taylor

S. †Rippingale, September, 1904. H P

— var. **brunnea** Roebuck

N. *Grisel Bottom, Burwell Wood, 4-9-1886. H W K. Louth, VI.-1887. H W K. Well Vale, Sept., 1889. W D R. Cadney, 1902, and Tattershall, 1904. E A W P

— sub-var. **brunneo-pallescens** Roebuck

*Louth, 31-8-1886. H W K. Grisel Bottom, Burwell Wood, 8-1886. H W K

S. Careby Wood, 1904. H P

— var. **rufa** Linné

N. †Maltby, August, 1888. H W K

— var. †**succinea** Müller

N. †Haugham Wood, April, 1886. H W K

— var. **bicolor** Roebuck

N. †Louth, amongst *Tussilago farfara*, 1885. H W K

— var. †**marginella** Schrauck (= var. **swammerdamii**. Kala) sub-var. †**ignescens**

N. †Louth, October, 1886. H W K. Cadney, Aug., 1902. E A W P.

ARION SUBFUSCUS Drap.

Not so common as the other species.

N. *Maltby Wood, 24-4-1886. H W K. *Farlesthorpe, 25-5-1887, J E M. Well Vale, September, 1889. W D R

S. Fulbeck Grange, December, 1888. J B D. Careby Wood, June, 1903. H W Kirkby

— var. †**cinereo-fusca** Drap.

N. †Uleeby-with-Fordington, October, 1889. J B D

ARION INTERMEDIUS Normand

This interesting little slug is very abundant in the neighbourhood of Louth.

N. Woodhall Spa, 7-8-1893. F W F (*Nat.*, Oct., 1893) Divs. 2, 5, 7, 8, 9, 10

S. Little and Great Ponton, 31-7-1903. W D R

ARION HORTENSIS Férussac

A very common species, recorded for numerous localities in North Lincs.

N. *Rigsby Farm, near Alford, 14-4-1886. W D R
Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

S. Ancaster, April, 1889, and Frampton Fen, near Boston, Sept. 1889. W D R Crowland, 31-8-1901. E A W P
Great Ponton, 31-7-1902. R W Careby Wood, June, 1903.
H W Kirkby

— var. **subfusca** *C. Pfeiffer*

N. *Sloothby, 4-8 1886. J E M Well Vale, Sept., 1889. W D R
Brigg, 3-6-1895. F W F (Nat., Aug., 1895)

ARION FASCIATUS *Nilsson*

A common species, recorded for several localities in N. Lines

N. *Skirbeck, near Boston, 8-9-1884. W D R
Divs. 3, 5, 8, 11

S. *Ancaster, 17-4-1886. W D R *Near Boston, 8-9-1884. W D R,
Great and Little Ponton, 31-7-1902. W D R

PUNCTUM PYGMÆUM *Drap.*

Has been recorded for a few localities, and is fairly plentiful where found

N. *Scawbery (Scawby), Sept., 1885. T Rogers. *Hubbard's Valley, Louth, 13-5-1887. H W K. Sand Hills, Mablethorpe, 1900. C S C. Cadney, 1900. E A W P. Kirton-in-Lindsey, 3-5-1901. E A W P

S. Little Ponton, 12-7-1902. R W

SPHYRADIUM EDENTULUM *Drap.*

Recorded for a few localities

N. *Broughton Wood, Sept., 1885. T Rogers. *Greenfield Wood Aby, 8-6-1887. J E M. Burton Lane Plantation, 3-6-1895. F W F (Nat., August, 1895). North Somercotes Warren, 16-7-1900. C S C (J W Taylor, Nat., Oct., 1900)

— var. **columella** *G. v. Martens.*
Only once recorded

N. Haugham Pasture, near Louth, 17-4-1904. C S C
Two examples found under timber with **Clausilia rolphii**

PYRAMIDULA RUPESTRIS *Drap.*

Only recorded for one locality

S. Great Ponton, 12-7-1902. R W
Locally abundant on walls and on railway embankment.
(C S C., Nat., Aug., 1902.)

PYRAMIDULA ROTUNDATA *Müller*

One of the commonest and most widely distributed species.
Recorded for numerous localities in North Lines.

N. †Brigg. T B. Divs. 1, 2, 3, 5, 7, 8, 9, 10, 11

S. *Uffington, 1834. E C. Divs. 13, 15, 16

— var. **turtoni** *Fleming*

N. Hubbard's Hill, Louth, 1900. C S C. South Kelsey, 1902.
E A W P

— var. **pyramidalis** *Jeffreys*

N. Jericho Plantation, Oxcombe, 13-5-1902. C S C

— var. **alba** *Mog.-Taud.*

N. †Brigg. T B. Scawby, 5-6-1895. "Plentiful." F W F (Nat., Aug., 1895) Grisel Bottom, Burwell Wood, 19-7-1900. C S C

- **m. scalariforme** Only one recorded
N. North Reston, 14-7-1900. Found alive under timber. The shell measured 6 mm. in height. C S C (Science Gossip, Aug., 1900, p. 96)

HELICELLA VIRGATA *Du Costa*

A common species recorded for numerous localities

- N.** †Brigg. T B. Divs. 2, 3, 4, 5, 7, 8, 10, 11
S. *Ancaster, 17-4-1886. W D R. Divs. 12, 13, 14, 15, 16, 17
 — var. **minor** *Taylor*
N. Red Hill, Goulceby, 1900. C S C. Cadney, 8-4-1904. E A W P
 — var. **subdeleta** *Taylor*
 So identified by Mr. J. W. Taylor. A common form with the type.
N. Red Hill, near Goulceby, 1900. C S C. Oxcombe and Ruckland, 1902. C S C. Kirton-in-Lindsey, Boston, Hibaldstow, and Cadney, 1901. E A W P
S. Crowland. E A W P. Boston and Surfleet. E A W P. Little Ponton, 12-7-1902. R W. Uffington, January, 1904. A S.
 — var. **depressa** *Requien*
N. Red Hill, near Goulceby, 1900. C S C
 — var. **leucozona** *Taylor*
N. Cadney Beck, 21-3-1904. E A W P
 — var. **radiata** *Hidalgo*
N. Cadney, 29-4-1901. E A W P
 — var. **subalbida** *Poiret*
N. Red Hill, near Goulceby, 1900. C S C. Cadney, 12-3-1900. E A W P. Ruckland, 1902. C S C. Hibaldstow. M and E A W P
S. Crowland, 1901. E A W P
 — var. **albicans** *Grateloup*
N. Red Hill, near Goulceby, 1900. C S C. Hibaldstow, Cadney, Howsham, and Ingoldmells. E A W P. Horncastle. M P
S. Uffington, January, 1904. A S
 — var. **hyalozona** *Taylor*
N. Red Hill, near Goulceby, 1900. Fairly plentiful. C S C
 — var. **alba** *Taylor*
N. Red Hill, near Goulceby, 1900. Fairly plentiful. C S C
S. Crowland, 1901. E A W P
 — **m. sinistrorsum** *Taylor*
N. *New Holland. T B. (Jeffrey's Brit. Conch., vol. 5, 1869).

HELICELLA ITALA *Linné*

A common species, recorded for numerous localities.

- N.** †Brigg. T B. Divs. 2, 3, 5, 6, 8, 11
S. *Ancaster, 17-4-1886. W D R. Divs. 13, 15, 16

— var. **minor** Moq.

- N. *Swaby Vale, near Alford, 13-5-1887. H W K
Hubbard's Hill, Louth, 8-8-1902. C S C

var. **hyalozonata** Cockerell

- N. Hubbard's Hill, 1885. H W K

var. **alba** Charpentier

- N. *Louth, January, 1886. H W K

Hubbard's Valley, Louth, 7-6-1887. H W K

HELICELLA CAPERATA Montagu

A very common species, recorded for numerous localities.

- N. †Brigg. T B. Divs. 2, 3, 4, 5, 7, 8, 9, 10, 11

- S. *Ancaster, 17-4-1886. W D R. Divs. 13, 14, 15, 16

— var. **major** Jeff.

- N. Hubbard's Hill, Louth, 1885. H W K. (Cockerell, "The Nat. World," 1885). The diameter of this shell is given as 5 in. Red Hill, Goulceby, 1904. C S C. One.

- S. Sapperton, 1902. S C S. One, the diameter of which measures 12 mm.

var. **ornata** Picard

Very common with the type, and recorded for numerous localities.

- N. *Sand Hills, Huttoft, 16-4-1886. W D R. Divs. 2, 3, 7, 8, 9, 10, 11

- S. Hall's Hill, Grantham, 31-7-1902. W D R.

— var. **alba** Picard

- N. Red Hill, near Goulceby, August, 1904. C S C. A few.

HELICELLA CANTIANA Montagu

Has been recorded for several localities. The Hibaldstow specimens are very fine ones; finer than any I have seen in Kent.

- N. †Brigg. T B.

Near Scotton Common. J. Hebden

*Lincoln. Rev A G Musson. Cadney, 1900, in Ancholme Drift. E A W P. Alive, 22-4-1900. M P. Cleatham, 29-3-1900, in Lincs. limestone walls. M P. Kirton-in-Lindsey, 28-2-1901. E A W P. Bottesford, May, 1900; Hibaldstow, 17-8-1900; Scunthorpe, 4-8-1900. M and E A W P. Horncastle and Boston, October, 1900. M P. Barton-on-Humber, 23-3-1896. H W K (Nat., June, 1896). Isle of Axholme, common. A R

- S. *Honington, 1875. Mr. J. Hawkins. Grantham, 1900. R W. Castle Bytham, 17-7-1900. W D R. Uffington, January, 1904. A S

— var. **rubescens** Moq.-Tand.

The predominating form on the Lincs. ironstone at Scunthorpe is referable to this variety.

- N. Scunthorpe, 11-7-1902. C S C

HYGROMIA GRANULATA Alder

Has been recorded for one locality only.

- S. *Ancaster, 17-4-1886. W D R

HYGROMIA HISPIDA *Linné*

A common species, recorded for numerous localities in North Lincs.

N. *Claxby, near Alford, 16-9-1885. J E M. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.

S. Near Lincoln, 24-5-1894. F W F (Nat., Sept., 1894). Little Ponton, 12-7-1902, and Great Ponton, 28-6-1902. R W. Court Leys, 11-19-1901. S C S. Dorrington, 18-2-1902, and Mere, 21-2-1902. W W M

— var. **subglobosa** *Jeffreys*

N. *Brocklesby (Jeffrey, Brit. Conch., 1862).

— var. **hispidosa** *Mousson*

A very common form, recorded for numerous localities. It is probable that Mr. Thomas Ball's record, *Helix hispida*, for Brigg, is referable to this variety.

N. †Brigg. T B. Divs. 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.

S. *Ancaster, 17-4-1886. W D R. Divs. 13, 14, 15.

— var. **depilata** *Alder*

N. Cleatham, 7-8-1900, on the Kirton limestone. E A W P

— var. **subrufa** *Moq.-Tand.*

N. *Louth Park, 7-6-1887. H W K. Hubbard's Hill, 1900. C S C. Scunthorpe, 10-7-1902. C S C

S. Little Ponton, 12-7-1902. R W

— var. **albocincta** *Taylor*

S. Great Ponton, 31-7-1902. W D R

HYGROMIA RUFESCENS *Pemant*

A common species, recorded for numerous localities.

N. †Brigg. T B. Divs. 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.

S. Grantham, 1900. R W. Mere, 21-2-1902. W W M. Great Ponton, 28-6-1902. R W. Uffington, January, 1904. A S

— var. **minor** *Jeffrey*

N. Broughton, 15-3-1903. E A W P.

— var. **globosa** *Taylor*

Three examples found at Hubbard's Valley, 1900-1, one of which was var. **alba**, were submitted to Mr. J. W. Taylor, who identified them as var. **globosa**.

N. Hubbard's Valley, Louth, 1900-1. C S C

— var. **rubens** *Moq.-Tand.*

N. Broughton, 15-8-1903, on Lincs. limestone. E A W P

— var. **albocincta** *Cockerell*

The common form, considered by Mr. J. W. Taylor to be the primitive one.

N. Howsham, 5-6-1901. E A W P. Hundon and Pelham's Pillar Wood, 28-8-1902. C S C. Hubbard's Valley, 1900. C S C. Kirton-in-Lindsey, 27-5-1904, and Broughton, 15-3-1904. E A W P. Little Cotes, September, 1902. A S

S. Grantham, 31-7-1902. Abundant everywhere. W D R

— var. **alba** *Moq.-Tand.*

N. Hubbard's Valley, Louth, 1900. Fairly plentiful. C S C (Nat., Feb., 1904). Nettleton, 13-3-1904. On blown sand. E A W P. Howsham, 5-6-1901. Boulder clay. E A W P. Broughton, 15-8-1903. Lincs. limestone. E A W P

ACANTHINULA ACULEATA Müller

Has been found in a few localities.

- N. †Brigg. Thomas Ball. Maltby Wood, 23-3-1896. H W K (Nat., June, 1896). Burton Lane Plantation, 3-6-1895. F W F (Nat., Aug., 1895). Haugham Pasture, 21-2-1904. C S C. Kenwick, June, 1905. In a Wood near Jenny Wood. C S C. Grisel Bottom, Burwell Wood, May, 1901. J. W. Taylor. Trusthorpe, 1900. One under a piece of timber on the Sand Hills. C S C. Gainsborough, 8-1-1901. F M B. Cadney, 1900. E A W P. Seawby, 27-8-1901. E A W P. Spilsby, 6-1-1903. C S C. Isle of Axholme. Only one found. A R

- S. Grantham, 1902. R W

VALLONIA PULCHELLA Müller

A very common species, recorded for numerous localities.

- N. †Brigg. T B. Divs. 1, 2, 3, 4, 7, 8, 9, 10, 11.
S. *Grantham (E. J. Lowe, Conchology of Notts, 1853). Divs. 15, 16.

VALLONIA COSTATA Müller

Common with the last species, and recorded for numerous localities.

- N. †Brigg. T B. Divs. 1, 2, 3, 4, 6, 7, 8, 9.
S. *Ancaster, 17-4-1886. W D R. Divs. 13, 15.

HELICIGONA LAPICIDA Linné

Has been recorded for a few localities.

- N. Well Vale, Alford, 12-6-1890. One dead specimen. J B D (W. D. R., Nat., July, 1890). Grisel Bottom, Burwell Wood, 23-3-1896. H W K (Nat., June, 1896). South Thoresby. J B D (Journ. of Chonch., Oct., 1891). Maltby Wood, 1902. One dead specimen. C S C

- S. *Uffington, on trees, September, 1885. E. Collier. Great Ponton, 1902. R W. Carey, 1904. T S.

— var. *albina* Menke

This beautiful variety has been recorded for one locality only. Several specimens were found in the walls on the Great Oolitic Limestone.

- S. Carly, 28-6-1904 T S.

HELICIGONA ARBUSTORUM Linné

A common species, recorded for several localities. E A W P reports taking this species in cop. with *Helix nemoralis*, in the parish of Cadney.

- N. †Brigg. T B. Divs. 1, 2, 3, 4, 5, 7, 8, 9, 10, 11.
S. *Uffington. E. Collier. Great Ponton, 28-6-1902. R W

— var. *alpestris* Ziegler

*Record by J. T. Lightwood, July, 1882, as found "On the Banks of the Witham."

- N. Hubbard's Hill, Louth, 1900. C S C. Wyham, 1900. C S C. Pelham's Pillar Wood, 28-8-1902. C S C

- S. Grantham. R W

— var. *conoidea* Westerlund

- N. North Ormsby and Wyham, 13-10-1900. C S C (Nat., Nov., 1900). Howsham, 1901. E A W P.

- S. Mere, 21-2-1902. W W M

— var. *canigonensis* Boubee

- N. Cadney. 2-1900. E A W P

— var. *fuscescens* Duchassaing

- N. Hubbard's Valley, Louth. 1900. C S C. Howsham, 5-6-1901. E A W P. Cadney, 1900. E A W P.

- var. *cincta* Taylor
 N. *Well Vale, near Alford, 14-4-1886. W D R. Wragby Road, Lincoln, 4-1886. Rev. W. W. Fowler. Cadney, 1900. M P. Nettleton, 1902. E A W P.

- var. *flavescens* Moq.-Tand.
 N. *Hubbard's Valley, Louth, 19-8-1886. H W K. *Haugham Pasture, near Louth, 13-5-1887. H W K. Cadney, 1900, M.P. Howsham 5-6-1901. E A W P. North Ormsby, 13-10-1900, some examples *conoidea*. C S C. (Nat. Nov. 1900.) Hundon and Pelham Wood, 28-8-1902. C S C. Normanby-le-Wold, May, 1905, S A. Isle of Axholme A. R.

- var. *albina* Moq.-Tand.
 N. Hubbard's Valley, Louth, one specimen, 1899, C S C. Howsham, 5-6-1901. E A W P. Kettleby Beck, 28-4-1904. E A W P.
 S. Mere, 21-2-1902. W W M.

HELIX ASPERSA Müller

A very common and generally distributed species, recorded for numerous localities.

- N. †Brigg. T B. Divs. 1, 2, 3, 4, 5, 7, 8, 9, 10, 11.
 S. *Grantham, 1853, E. J. Lowe. Divs. 13, 14, 15.

- var. *conoidea* Picard
 N. Mablethorpe, Sandhills, 1900. C S C. L. Cotes, Sept. 1902. A S.

- var. *globosa* Moq.-Tand.
 N. Sutton-on-Sea, Sandhills, 1900, one specimen. C S C.

- var. *minor* Picard
 N. Mablethorpe, Sandhills, 1900. C S C. Little Cotes, Sept. 1902. A S.

- var. *nigrescens* Moq.-Tand.
 N. Hubbard's Valley, Louth, 8-8-1902, one specimen approaching this variety. C S C. Howsham, 5-1901. E A W P.

- var. *undulata* Moq.-Tand.
 N. Little Cotes, 1900. A S. Hubbard's Valley, Louth, 1901, C S C.
 S. Little Ponton. E A W P.

- var. *flammea* Picard
 N. Hubbard's Valley, Mablethorpe, Wyham and Withern, 1900. C S C. Hibbaldstow, 28-3-1900, and Kirton in Lindsey, 5-1902. E A W P. Little Cotes, Sept. 1902. A S.

- var. *albo-fasciata* Jeffreys
 N. Kirton-in-Lindsey, 1902. E A W P.

- var. *zonata* Moq.-Tand.
 N. Mablethorpe, Sandhills, 1900. C S C. Kirton-in-Lindsey, 5-1902. E A W P.

- var. *unicolor* Moq.-Tand.
 N. Broughton. E A W P.

- var. *exalbida* Menke
 N. *Mablethorpe, Sandhills, 19-8-1886. H W K. Hubbard's Valley, Louth, 1901. C S C. (Nat. Dec. 1901). Kirton-in-Lindsey, 4-7-1902. E A W P.

- **m. cornucopia** Gmel
 Under the name *Cornucopia*. E A W P records an example
 N. Bottesford about 1865, a dead shell amongst Greater Perriwinkle (*Vinea major*). (Nat. June, 1901.)

[HELIX POMATIA *Linné.*

In 1902, E A W P informed me that "a Miss Moore, sister of the late Vicar of Bottesford, said, that when she was a young woman, she saw the shell of this snail in the refuse heap of a Roman Villa in the city of Lincoln. She spent most of her life on the continent and knew the species well."]

HELIX MEMORALIS *Linné*

A very common and generally distributed species. Recorded for numerous localities.

N †Brigg, T B. Divs. 1, 2, 3, 4, 5, 7, 8, 9, 10, 11.

S. *Grantham, 1853, E. J. Lowe. Divs. 13, 14, 15, 17, 18.

— var. *minor* Moq.

N. South Reston, 25-5-1900, one specimen—*libellula*, 00000 C S C. Louth, 1900, one *libellula* 00000, C S C Irby, November, 1903. AS Kettleby Beck, 19-1-1905 E A W P. This specimen is + *Conica* + *rubella* (123)00 (Nat. March, 1905.)

— var. *major* Fér.

N. Mablethorpe Sandhills, 1899, two specimens—*rubella* 00000 and 00300. C S C Hubbard's Valley, 1900, one specimen C S C

— var. *conica* Pascal.

N. *Grisel Bottom, Burwell Wood, Louth, one, *carnea* 12345, 19-8-1886. One *lutea* 00000 April, 1887. H W K

— var. *roseolabiata* Taylor

N. North Ormsby, 1900. Monks' Dyke Side, 28-5-1900. Mablethorpe Sandhills, 1900. C S C

— var. *albolabiata* Von Martens

N. North Ormsby 1900. Monks' Dyke Side, 1900. C S C

var. *bimarginata* Moq.-Tand.

Hubbard's Valley, 8-8-1902, two specimens. C S C

var. *rubella* Moq.-Tand.

A common variety occurring wherever the species has been recorded.

— var. *libellula* Risso

Apparently more common than the last.

— var. *albina* Moq.-Tand.

N. Wyham and Mablethorpe Sandhills, 1900. C S C. Hubbard's Valley, 31-8-1901. C S C.

— var. *castanea* Moq.-Tand.

N. Mablethorpe, Sandhills, 1900. Common. C S C. One specimen having the apex bright yellow.

— var. *hyalozonata* Taylor

N. North Ormsby, 1900, two specimens—*albolabiata*. C S C.

HELIX HORTENSIS *Müller*

Not uncommon.

N. *Grisel Bottom, Burwell Wood, 7-6-1887. H W K. Haugham Pasture, 19-8-1886. H W K. Maltby Wood, Fotherby, and North Ormsby, 1900. C S C. Ruckland and Haugham, One specimen from the latter named place had all five bands divided, giving it the appearance of a ten-banded shell. 1902. C S C. Hundon, 28-8-1902. C S C. Nettleton, 13-8-1904. S A. Spilsby, 4-3-1904. C S C. Reed's Quarry, Broughton, 30-5-1905. Messrs. T. S. and E A W P. Isle of Axholme, scarce—A R.

S. *Croyland, 1858, Bellars. Grantham, Mr. J. Hawkins. Sapperton. E A W P.

— var. *fuscolabiata* Von Martens

N. North Ormsby, 1900, one specimen. C S C.

- var. *albina* Moq.-Tand.
N. North Ormsby, 13-10-1900. C S C. (Nat. November, 1900.)
 Reed's Quarry, Broughton Wood, 30-5-1905. T. S. and
 E A W P.

- var. *lutea* Moq.-Tand.
 Common where the species is recorded.

- var. *lilacina* Taylor
N. Reed's Quarry, Broughton Wood, 30-5-1905, at Thrush Stones.
 T S. 2nd E A W P. (Nat. July, 1905.)

- var. *arenicola* Macgillivray
 Edgar Leopold Layard in a paper on Mimicry in Mollusca,
 incidentally refers to his finding in Lincolnshire over 50
 years ago, *Helix hortensis* var. *arenicola*. (Journ. of Conch.
 July, 1894.)

- N.** North Ormsby, 1900. C S C. Normanby-le-Wold, 1905. S A.
S. Sapperton. E A W P.

ENA OBSCURA Müller

A common species recorded for numerous localities.

- N.** †Brigg, T B. Divs. 2, 3, 5, 7 8, 9, 10, 11.

- S.** *Ancaster, 17-4-1886. W D R. Divs. 15.

- var. *albina* Moq.-Tand.
 This beautiful variety has been recorded for one locality
 only.

- N.** Hubbard's Valley, Louth, 1900. Fairly plentiful on the trees.
 C S C.

COCHLICOPA LUBRICA Müller

A very common species recorded for numerous localities.

- N.** *Claxby, near Alford, 16-9-1885. J E M. Divs. 1, 2, 3, 4, 5, 6, 7,
 8, 9, 10, 11, 12.

- S.** Near Lincoln, 24-5-1894. (F W F. Nat. September, 1894.)
 Divs. 13, 14, 15, 16, 17, 18.

- var. *lubricoides* Féruccac

- N.** *Haugham Pasture, 13-5-1887. H W K. *Hubbard's Valley,
 Louth, 13-5-1887. H W K. Trusthorpe, Sandhills, 1900.
 C S C.

- S.** Grantham, 1902, R W.

- var. *ovata* Jeffreys

- N.** Mablethorpe, Sandhills, 1900. C S C.

- var. *fusca* Moq.-Tand.

- N.** Grisel Bottom, Burwell Wood, 1901. C S C. Scunthorpe,
 11-7-1902. C S C.

AZECA TRIDENS Putteney

This species has been recorded for one locality only; the
 variety only has been found.

- var. *nouletiana* Dupuy

- N.** Acthorpe Wood, near Louth, 1-9-1904. C S C. (Nat. Dec. 1904.)

CÆCILIOIDES ACICULA Müller

Only three living examples of this species have been
 recorded although a good number of dead shells have been
 found. This species occurs in Mr. Thomas Ball's list in
 Young England 1864, but is one of the five species marked
 as not found within the 1½ miles radius of Brigg.

- N.** Lincoln, 18-1-1898, dead shell. J. H. Cooke. (Nat. March
 1898.) Hubbard's Valley, Louth, 1899. C S C. Redhill,
 Goulceby, 12-2-1900, dead shell, and 8-8-1904, two living ex-
 amples. C S C. Scunthorpe, 11-7-02. One living example

and 3 dead shells on the railway embankment. C S C. Cadney, 5-6-1902, several dead shells. E A W P. Kirton-in-Lindsey, 20-2-1903. E A W P. Isle of Axholme, only one found. A R.

S. Little Ponton, 30-7-02. F H W

JAMINIA SECALE *Draparnaud*

This species has been recorded for one locality only.

S. Hall Hills, Grantham, 1900, one specimen, and June 1902, one specimen. R W. (C S C. Nat. Aug. 1902.)

JAMINIA CYLINDRACEA *DaCosta*

A fairly common species, recorded for numerous localities.

N. †Brigg, T B. Divs. 3, 8, 9, 11.

S. Great Ponton, 31-7-02. W D R.

— var. *curta* *Westerlund*

N. *Grinoldby, 13-5-1887. H W K. Mablethorpe, Sandhills, 1900. C S C.

— var. *albina* *Moq.-Taud.*

N. *Mablethorpe, 1881, Rev. W. W. Fowler.

JAMINIA MUSCORUM *Linné*

A very common species, recorded for numerous localities.

N. †Brigg. T B. Divs. 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.

S. Great Ponton, 1900. R W. Divs. 15.

— var. *bigranata* *Rossm*

N. Mablethorpe, Sandhills, 1900. C S C.

— var. *edentula* *Clessin*

N. Mablethorpe, Sandhills, 1900. C S C.

— var. *albina* *Menke*

N. North Somercotes, Warren, 16-7-1900, two specimens. C S C.

VERTIGO MINUTISSIMA *Hartmann*

N. Cleethorpes, (Adams, L. E. The Collector's Manual of British Land and Freshwater Shells, ed. 2, 1896, p. 102.) E A W P. reports that it was found 5-7-1896, "under a piece of matting on very viscous *Cerastium Tetrandrum*."

VERTIGO PYGMÆA *Drap.*

Not uncommon, recorded for several localities.

N. †Brigg. T B. Recorded as *Pupa pygmaea*. *Mablethorpe. 1881. Rev. W. W. Fowler. Divs. 3, 8, 9.

S. Little Ponton. 20-7-1902. E A W P.

VERTIGO ANGSTIOR *Jeffreys*

Has been recorded for one locality only.

N. North Somercotes, Warren. 16-7-1900. Three examples found amongst coarse grass. C S C. (J. W. Taylor. The Naturalist, 1900, p. 291.)

BALEA PERVERSA *Linné*

Recorded for several localities.

N. *Rigsby, 3-3-1887. Isabel Mason. *Claythorpe, 6-7-1887. J E M. Coxey Hill, Louth. H W K. Grisel Bottom, Burwell Wood, 1896. H W K. Haugham Pasture and Haugham Churchyard, 1901. C S C. Little Cotes, September, 1902. A S. Aethorpe Wood, Louth, 1904. C S C.

S. Grantham, Hall's Hill, 30-7-1902. R W.

CLAUSILIA LAMINATA *Montagu*

A common species recorded for numerous localities.

N. †Brigg, T B. Divs. 2, 3, 5, 7, 8, 9, 10, 11.

S. *Uffington, September, 1885. E. Collier. Divs. 15, 16.

CLAUSILIA BIDENTATA *Ström.*

A very common species, recorded for numerous localities.

N. †Brigg, T B. Divs. 2, 3, 5, 7, 8, 9, 10, 11.

S. Grantham, 1900. R W. Divs. 15, 16.

— var. *gracilior* *Jeffreys*

N. Cadney, 5-6-1902. In Freshwater Alluvium. EA W P.

— var. *tumidula* *Jeffreys*

S. *Uffington, September, 1885. EC.

— var. *everetti* *Miller*

N. Hubbard's Valley, 1900. CSC. Claxby Wood, near Market Rasen, 17-5-1905. SA.

CLAUSILIA ROLPHII *Leach in Turton*

This very interesting species has been recorded for seven localities.

N. *Haugham Pasture, 13-5-1887. H W K. *Maltby Wood (Id.)

*Grisel Bottom, Burwell Wood, 7-6-1887. H W K. Well

Vale, Alford. 12-6-1890. J B D. (W D R., Nat. July, 1890.)

Tathwell, in a chalk pit near Kenwick Bar, two specimens,

11-5-1902. CSC. Claxby Wood, near Market Rasen,

17-5-1905. One slightly damaged specimen. SA.

S. Grantham, Ropsley Rise, 27-12-1902. R W.

SUCCINEA PUTRIS *Linné*

Not uncommon, recorded for several localities.

N. †Brigg, T B. Divs. 1, 3, 4, 5, 8, 10.

S. Grantham, 1900. R W. Great Ponton, 31-7-1902. R W.

SUCCINEA ELEGANS *Risso*

Apparently commoner than the other species.

N. †Brigg, T B. Divs. 2, 3, 4, 5, 7, 8, 9, 10, 11.

S. Grantham. Canal, 1902. HP.

CARYCHIUM MINIMUM *Müller*

Very abundant, probably our commonest species, recorded for numerous localities.

N. †Brigg. T B. Divs. 2, 3, 4, 7, 8, 9, 10, 11.

S. *Grantham. (E. J. Lowe, *Conchology of Notts.* 1853.) Divs. 15.

PHYTIA MYOSOTIS *Drap.*

As yet this species is only represented by a variety. It is recorded by Thos. Ball, but is one of the species marked as not found within the $1\frac{1}{2}$ mile radius.

— var. *denticulata* *Montagu*

N. Tetney Haven, 17-4-1902. H W K. and CSC. Humberstone Fitties and Grainthorpe Haven, 1904. CSC.

ANCYLUS FLUVATILIS *Müller*

A common species, though recorded for a few localities only.

N. *Stream, Hubbard's Valley, April, 1886, and Hallington Beck, near Louth, 13-5-1887. H W K. St. Helen's Spring and the

Stream, Louth, 1900. CSC. The Bain, Donington-on-Bain,

1902. CSC. The Eau, Withern, 1900. CSC.

S. Grantham, 6-1902. R W.

ACROLOXUS LACUSTRIS *Linné*

Recorded for several localities.

N. *Pond at Ailby, near Alford, 14-4-1886. W D R. Rigsby. J B D. (G K. Gude Journ. of Conch. April, 1892.) Woodhall Spa,

7-8-1893. (F W F., Nat., October 1893.) Brigg, 3-6-1893.

(F W F., Nat., August, 1895.) Ancholme Drift, Cadney, 1900.

EA W P. The Blow Wells, Tetney, 17-7-1902. G K. Gude

and CSC. Croxby Pond, 28-8-1902. CSC.

S. Fosdyke, Lincoln, 24-5-1894. (F W F. Nat. Sept. 1894.) Banks of Witham near Bardney, 21-4-1902.

LIMNÆA AURICULARIA Linné

Recorded for a few localities.

- N. †Brigg. T B. *Sutton-on-Sea in the drift at high-water mark, 12-1886. B. S. Dodds. *Louth Canal, 13-5-1887. H W K. Isle of Axholme. A R. North Kelsey, 1900. E A W P. South Kelsey, 24-6-1902. E A W P.

- S *Rejectamenta from between Lincoln and Bracebridge, Dec. 1884. C. T. Musson. Foss Dyke, Lincoln W. Nelson's Collection. Foss Dyke, Lincoln, 24-5-1894. (F W F. Nat. Sept. 1894.) Little Ponton, 12-7-1902. R W.

var. *albida* Jeffreys

- S. Crowland, 31-8-1901. T. Gelsthorp. Harlaxton, 1902. R W.

LIMNÆA PEREGER Müller

A very common species, recorded for numerous localities.

- N. †Brigg. T B. Divs. 1, 2, 3, 4, 5, 7, 8, 9, 10, 11.

- S. *Near Boston, 8-9-1884. W D R. Divs. 13, 14, 15, 16, 17, 18.

var. *ovata* Drap.

A common variety, recorded for several localities.

- N. *The Park, Bilsby, near Alford, 5-5-1886. J E M. Divs. 3, 4, 7, 8, 9, 10, 11.

- S. Fulbeck Grange, 28-12-1888. J B D. (W D R. Nat. May, 1889.) Ponds, Belton Park, Jan. 1904. R W.

var. *oblonga* Jeffreys

- N. A small pond, Little Carlton, 1900. C S C.

- S. Pond, Belton Park, 1904. R W.

var. *lineata* Bean

- S. Pond, Belton Park, 1904. R W.

var. *labiosa* Jeffreys

- N. Louth Canal, Keddington, 1900. C S C. 2 specimens.

LIMNÆA PALUSTRIS Müller

Very common in the Marsh Drains.

- N. †Brigg. T B. Divs. 1, 8, 9, 11.

- S. *Crowland Wash, July, 1886. T. W. Bell. Divs. 13, 14, 15, 16, 18.

var. *albida* Nelson

- N. *Pond by Louth Canal, 15-4-1886. W D R.

LIMNÆA TRUNCATULA Müller

A very common species, recorded for numerous localities.

- N. †Brigg. T B. Divs. 2, 3, 4, 5, 7, 8, 9, 10, 11.

- S. *Ancaster, 17-4-1886. W D R. Divs. 13, 15.

LIMNÆA STAGNALIS Linné

A common species, recorded for several localities.

- N. †Brigg. T B. Divs. 1, 2, 3, 4, 7, 8, 9, 10, 11.

- S. *Crowland Wash, July, 1886. T. W. Bell. Divs. 13, 15, 16.

var. *fragilis* Linné

- N. The Eau, Withern, 1900. C S C. Humberstone, 12-9-1902. C S C.

LIMNÆA GLABRA Müller

Has only been recorded for one locality.

- S. *A pool south of Lincoln, close to the railway, April 1886. Rev. W. W. Fowler.

AMPHIPEPLEA GLUTINOSA Müller

This very interesting species, has been recorded for two localities only, as yet. It was first recorded in 1894, by H W K., who found a single example floating down the large drain—Mar Dyke.—Saltfleetby, All Saints. It was not seen again until April 1902, when it was found in abundance in a drain near Tetney by C S C. and H W K.

On 22nd August, 1905, a very immature example was found in the Mar Dyke, near Saltfleetby Station.

- N. Saltfleetby, All Saints, January, 1894. H W K. (Nat. March, 1894). Tetney, April, 1902. C S C. and H W K.

PLANORBIS CORNEUS *Linné*

A common species, especially in the Marsh Drains.

- N. †Brigg. T B. Divs. 1, 2, 3, 4, 5, 8, 9, 11, 12.
S. *Rejectamenta from between Bracebridge and Lincoln, December, 1884. C. T. M. Divs. 13, 15, 16.

— var. *albina* *Mog-Taud.*

- S. *Near Lincoln, September, 1885. J. Hardy.

PLANORBIS ALBUS *Müller*

A common species, recorded for numerous localities.

- N. †Brigg. T B. Divs. 2, 3, 5, 7, 8, 9, 11.
S. *Rejectamenta from between Bracebridge and Lincoln, December, 1884. C. T. M. *Crowland Wash, July, 1886. T. W. Bell. Grantham Canal, 1902. H P.

PLANORBIS CRISTA *Linné* (= *nautilus* L.)

A very common species, recorded for numerous localities.

- N. †Brigg. T B. Divs. 3, 5, 8, 9.
S. Near Lincoln, 24-5-1894. (F W F. Nat. September, 1894.)

PLANORBIS CARINATUS *Müller*

A common species, especially in the Marsh Drains, recorded for numerous localities.

- N. †Brigg. T B. Divs. 1, 2, 4, 8, 9, 11.
S. *Rejectamenta from between Bracebridge and Lincoln, December, 1884. C T M. *Rejectamenta of dyke at Anwick, near Sleaford, 7-3-1887. C T M. Near Lincoln, 24-5-1894.) Grantham, 1900. R W. Little Ponton, 12-7-1902. R W.

PLANORBIS UMBILICATUS *Müller*

A very common species, abundant in the Marsh Drains, recorded for numerous localities.

- N. *Louth Canal, 15-4-1886. W D R. Divs. 1, 3, 4, 8, 9, 11, 12.
S. *Boston, 8-9-1884. W D R. Divs. 13, 14, 15, 16.

— var. *rhombea* *Turton*

- N. *Sutton-on-Sea, in drift at high-water mark, 4-12-1886. B. S. Dodd.

PLANORBIS VORTEX *Linné*

A very common species, abundant in the Marsh Drains, recorded for numerous localities.

- N. †Brigg. T B. Divs. 1, 2, 3, 4, 8, 9, 11.
S. *Rejectamenta from between Bracebridge and Lincoln, December, 1884. C T M. Divs. 13, 14, 15, 16.

PLANORBIS SPIORBIS *Linné*

Not so common as the last species.

- N. †Brigg. T B. Divs. 1, 4, 7, 8, 9, 11.
S. *Near Boston, 8-9-1884. W D R. Great Ponton, 31-7-1902. W D R.

PLANORBIS CONTORTUS *Linné*

A common species, recorded for numerous localities.

- N. †Brigg. T B. Divs. 1, 2, 3, 4, 8, 9, 10.
S. *Rejectamenta from between Bracebridge and Lincoln, December, 1884, C T M,

PLANORBIS FONTANUS *Lightfoot*

Recorded for a few localities, the finest examples I have collected were taken from a pond near Brackenboro' Lodge, Louth.

- N. †Brigg. T B. Woodhall Spa, 7-8-1893. (F W F. Nat. October, 1893.) Louth Canal, 1900. C S C. Tetney, 1902. C S C. Grainthorpe, 1904. C S C. Howsham, 1900. J. W. Taylor and W D R. North Kelsey on Caddis Cases. E A W P. Cleatham, 25-6-1902. E A W P. Stallingboro, September, 1903. A S. Brackenboro' Lodge, Louth, 1905. C S C.

- S. *Rejectamenta from between Bracebridge and Lincoln, December, 1884. C T M.

— var. *albida* *Nelson*

- N. * "Took about a dozen pure milk-white specimens with many of typical colour in a drain at Brigg." (T. Ball, Science Gossip, 17-4-1886.)

SEGMENTINA NITIDA *Müller*

Recorded for a few localities only, abundant in a drain near Saltfleetby All Saints Church.

- N. * (Grainthorpe, 16-4-1887. Miss Longley. Saltfleetby, 12-6-1893 (F W F., Nat. September, 1893.) Scotter Common, 7-5-1890. F W F. (J. W. Taylor, Journ. of Conch, July, 1890.)

PHYSA FONTINALIS *Linné*

A common species, recorded for numerous localities.

- N. †Brigg, T B. Divs. 1, 2, 3, 4, 8, 9, 11.

- S. *Rejectamenta from between Braecbridge and Lincoln. December, 1884. C T M.

— var. *curta* *Jeffrey*

- N. A pond, Little Carlton, 1900. C S C.

APLECTA HYPNORUN *Linné*

A common species, recorded for several localities.

- N. †Brigg. T B. *Ditch near Hallington Beck. 3-5-1887. H W K. A pond, Little Carlton, 1900. C S C. Cadney, 1900. M P. Huttoft Bank. abundant, 2-7-1903. C S C. A pond in Grisel bottom, Burwell Wood, 1-5-1901. W D R. Isle of Axholme. A R.

- S. Near Lincoln, 24-5-1894. (F W F. Nat. September, 1894.)

PALUDESTRINA JENKINSI *Smith*

Very abundant in drains and ditches near the coast.

- N. Tetney Haven, 17-4-1902. C S C. and H W K. (H W K. Nat. August, 1902.) Cleethorpes, 18-4-1902. H W K. Great Cotes, 9-1903. A S. Humberstone, 18-9-1902. C S C. Grainthorpe Haven, 1904. C S C. New Holland, July, 1905. W. Harrison Hutton. (Nat., September, 1905.)

— var. *carinata* *Smith*

- N. Cleethorpes, 18-4-1902. H W K.

PALUDESTRINA VENTROSA *Montagu*

Abundant in some of the drains near the coast.

- N. North Somercotes. H W K, (Nat. 1889.) Tetney Haven, 17-4-1902. C S C. and H W K. Humberstone, 18-9-1902. C S C. Barton-on-Humber, 1902. H W K.

PALUDESTRINA STAGNALIS *Basier*

Abundant in brackish water along the coast.

N. Saltfleetby. H W K. (Nat. 1889.)

— var. *albida* *Jeff*

N. Sutton, Skegness, etc. "Fairly abundant and fine." B. S. Dodd and J. T. Marshall. (H W K. Nat. December, 1889.)

— var. *barleei* *Jeff*

N. Skegness. J. T. Marshall. (H W K. Nat. December, 1889.)

BITHYNIA TENTACULATA *Linne*

A very common species, recorded for numerous localities.

N. †Brigg. T B. Divs. 1, 2, 3, 4, 7, 8, 9, 10, 11, 12.

S. *Near Boston, 8-9-1884. W D R. Divs. 13, 14, 15, 16, 17.

— var. *producta* *Menke*

N. *Chapel, 16-8-1886. J E M.

— var. *excavata* *Jeffreys*

N. Louth Canal, Keddington, one. 1900. C S C. Revesby reservoir, 5-7-1901. C S C.

BITHYNIA LEACHII *Sheppard*

A common species, abundant in the marsh drains, recorded for numerous localities.

N. †Brigg, T B. Divs. 1, 3, 8, 9, 11.

S. *Near Boston, 8-9-1884. W D R. Rejctamenta from between Bracebridge and Lincoln, December, 1884. C T M. Crowland, 1901. Rev. A. Thornley and E A W P. Lincoln, 24-5-1894. F W F. (Nat. September, 1894.) Little Ponton, 12-7-02. R W.

VIVIPARA VIVIPARA *Linne*

Recorded for a few localities.

N. River Trent, Gainsborough, 19-2-1890. Geo. Roberts. (Nat. March, 1890.) Revesby, reservoir, dead shell, 5-7-1901. C S C.

S. *River, Lincoln, 1849. (J. Hardy, sen.) *Rejctamenta from between Bracebridge and Lincoln, December, 1884. W D R. River Witham, Bardney, 21-4-1902. H W K. Grantham, 1902. R W. Little Ponton, 12-7-1902, R W. Foss Dyke, Lincoln, 25-4-1894. F W F. (Nat. September, 1894.)

VIVIPARA CONTECTA *Millet*

A common species, abundant in the marsh drains, recorded for numerous localities.

N. †Brigg. T B. Divs. 1, 2, 3, 7, 8, 9, 11, 12.

S. *Rejctamenta from between Bracebridge and Lincoln, December, 1884, C T M. Divs. 13, 14, 15, 16.

— var. *virescens* *Jeffreys*

N. *Brigg. T B.

VALVATA PISCINALIS *Müller*

A common species, recorded for numerous localities.

N. †Brigg. T B. Divs. 1, 2, 3, 7, 8, 9, 11.

S. *Near Boston, 8-9-1884. W D R. Divs. 13, 15.

VALVATA CRISTATA *Müller*

Not so common as the last species.

N. †Brigg. T B. Saltfleetby, 12-6-1893. F W F. (Nat. Sept. 1893.) Woodhall Spa, 7-8-1893. F W F. (Nat. October, 1893.) Louth Canal, Keddington, 1900. C S C.

S. Near Lincoln, 24-5-1894. F W F. (Nat. September, 1894.)

POMATIAS (=Cyclostoma) elegans Müller

This species is of special interest, having been first recorded for Lincs. in 1678, by Dr. Martin Lister, who stated in his Hist. An. Angl., that he found it in Yorkshire, and "also at Burwell Woods, in Lincolnshire," where it was refound in 1886 by H. Wallis Kew. This is still the only locality for which it has been recorded alive. Dead shells have been recorded for six other localities.

- N.** *At Burwell Woods. (Martin Lister, Hist. An. Angl., 1678.) Grisel Bottom, Burwell Woods, 19-8-1886. H W K. Well Vale, Alford, 12-6-1890., one dead specimen. J B D. (W D R. Nat. July, 1190.) Swaby, dead. J B D. (Journ. of Conch. October, 1891.) Jericho Plantation, Oxcombe, 4-8-1902. dead shells. C S C. Stenigot, near railway tunnel, 10-5-1904, several dead shells. C S C. Lincoln, Ironstone Workings, 1905, dead shells in Limestone Rubble from 1ft. to 4ft. below the surface. H P. (Nat. August, 1905.)
- S.** Little Ponton, 1899. R W.

— var. *ochroleuca* Moq-Tand.

- N.** Grisel Bottom, Burwell Wood, 1901. C S C.

NERITINA FLUVIATILIS Linné

Recorded for a few localities.

- N.** *River, Lincoln, 1849. J. Hardy, Sen. *Rejectamenta from between Bracebridge and Lincoln, December, 1884. C T M. Cadney, 1900. M P. The Trent, Newton Cliff, 1901. C S C. Brayford, Lincoln, 1905. Masham.

— var. *trifasciata* Colbeau

- N.** Cadney, 1900. E A W P.

DREISSENSIA POLYMORPHA Pallas

Recorded for a few localities.

- N.** †Brigg. T B. River Ancholme, Cadney, 1897. E A W P.
- S.** River Witham, Bardney, 21-4-1902. H W K. Grantham Canal, 12-7-1902. R W. Foss Dyke, Lincoln, 24-5-1894. F W F. (Nat. September, 1894.)

UNIO PICTURUM Linné

Recorded for a few localities.

- N.** †Brigg. T B. *Canal near Louth, 15-4-1886. W D R. Cadney, River Ancholme, 1891. E A W P. Bottesford, 1900. M P. Seawby Pond, 3-6-1895. F W F. (Nat. August, 1895.) Isle of Axholme. A R.
- S.** *Rejectamenta from between Bracebridge and Lincoln, December, 1884. C T M. River Witham, Grantham, 1902. Mr. J. Hawkins and R W.

— var. *curvirostris* Normand

- N.** River Trent, Gainsborough, 19-2-1890. Geo. Roberts. (Nat. March, 1890.)

— var. *compressa* Jeffreys

- N.** Louth Canal, Alvingham, 1900, abundant near the lock. C S C.

UNIO TUMIDUS Retzius

Recorded for few localities only.

- N.** †Brigg. T B. Louth Canal, Keddington, 1900, one specimen. C S C. River Trent, Gainsborough, 19-2-1890. Geo. Roberts. (Nat. March 1890.) Isle of Axholme. A R.

- S.** Little Ponton, 12-9-1902. R W. Syston Lake, 1902. F H W.

— var. *ovalis* Montagu

- N.** *In mud of wall of Roman Structure at Lincoln. (J. Hardy, sen.)

— var. *radiata* Colbeau

- N. *Witham drainage, Lincoln, April, 1840. (J. Hardy, sen.)
Trent, Gainsborough, 19-2-1890. Geo. Roberts. (Nat.
March, 1890.)

ANODONTA CYGNÆA Linné

Recorded for several localities.

- N. †Brigg. T B. Divs. 1, 2, 3, 5, 8, 9, 10.

- S. *Rejectamenta from between Bracebridge and Lincoln,
December, 1884. C T M. Belton Lake and Syston Ponds,
1902. F H W. Little Ponton, 12-7-1902. R W. Foss
Dyke, Lincoln, 24-5-1894. F W F. (Nat. September, 1894.)

— var. *anatina* Linné

- N. *Greenfield Wood Ailby, 8-6-1887. J E M. Divs. 1, 3, 5,
8, 9, 11, 12.

- S. Grantham Canal, 1902. R W.

— var. *zellensis* Gmel

- N. *Well Fish-pond, Alford, 14-4-1886. W D R.

— var. †*diminuta* Clessin

- N. Louth Canal, H W K. (J. W. Taylor, Monograph, Vol. 1.
P. 44.)

— var. *incrassata* Sheppard

- N. Louth Canal, Keddington, 1900. C S C.

— var. *radiata* Müller

- N. Louth Canal, Keddington, 1900. C S C.

SPHÆRIUM RIVICOLA Leach

Recorded for a few localities.

- N. †Brigg. T B. River Trent, Gainsborough, 19-2-1890. Geo.
Roberts. (Nat. March, 1890.) Fossdyke, North and South
Banks. 1901. E A W P.

- S. *Rejectamenta from between Bracebridge and Lincoln. Decem-
ber, 1884. C T M.

SPHÆRIUM CORNEUM Linné

A very common species, recorded for numerous localities.

- N. †Brigg. T B. Divs. 1, 2, 3, 4, 7, 8, 9, 10, 11.

- S. Rejectamenta from between Bracebridge and Lincoln, Decem-
ber, 1884. C T M. Divs. 13, 14, 15, 16.

SPHÆRIUM LACUSTRE Müller

Recorded for several localities.

- N. †Brigg. T B. Divs. 2, 3, 7, 8, 9.

— var. *ryckholti* Normand

- N. Saltfleetby. April, 1902. One specimen. H W K.

— var. *brochoniana* Bourg.

- N. Saltfleetby. H W K.

As the nomenclature of the genus *Pisidium* is only provisional in the list adopted, and is somewhat confusing, especially the species *pusillum*, *fontinale* and *subtruncatum*. It is thought advisable, for the present, to record them as identified by Mr. J. W. Taylor.

PISIDIUM AMNICUM Müller

Recorded for few localities.

- N. Saltfleetby. H W K. Hubbard's Valley, 1900. C S C. The
Eau, Withern, 1900. C S C.

- S. *Rejectamenta from between Bracebridge and Lincoln.
December, 1884. C T M. Witham Banks, Bardney, 21-4-1902.
H W K.

PISIDIUM HENSLOWIANUM Sheppard

Recorded for a few localities.

- N. Appleby, one taken from a drain near the Ancholme, April, 1902. H W K. (Nat. August, 1902,) Cadney, 10-3-1900. EA W P. (C S C. Nat. August, 1902) South Kelsey, four shells on a Caddis case, 1902. EA W P.
- S. Grantham, Canal, one specimen, August, 1902. H P.

PISIDIUM FONTINALE Drap.

- N. *Raithby, near Louth, 16-5-1887. H W K. Divs. 1, 2, 3, 5, 7, 8, 9, 11.

Specimens more truncated than those usually identified as *P. fontinale* were taken from a pond near Haugham in 1902, and submitted to Mr. J. W. Taylor who identified them as *P. subtruncatum* Malm remarking that it "is perhaps properly regarded as a form of *fontinale*."

PISIDIUM PUSILLUM Gmel

Abundant, recorded for numerous localities.

- N. *Rejectamenta of Main Drain, Chapel, 20-8-1886. J E M. Divs. 2, 3, 4, 7, 8, 9, 11.
- S. *Rejectamenta from between Bracebridge and Lincoln, December, 1884. C T M. Near Lincoln, 25-4-1894. F W F. (Nat. September, 1894.) Great Ponton, 31-7-1902. W D R.

— var. **striata** Taylor

A specimen taken from a small drain, choked with *Chara* at Tetney Haven was submitted to Mr. J. W. Taylor who identified it as var. *striata*.

- N. Tetney Haven. 17-4-1902. C S C.

PISIDIUM NITIDUM Jenyns

A common species, recorded for several localities.

- N. *Ailby, near Alford, 14-4-1886. W D R. Divs. 3, 9, 11.
- S. River Witham, Grantham and Great Ponton, 30-7-1902. W D R.

PISIDIUM OBTUSALE Pfeiffer

Recorded for several localities.

- N. Rigsby. J B D. (G K. Gude. Journ. of Conch. April, 1892.) The Moat, Lynwode, 4-8-1901. C S C. Small drain, Tetney Lock, 17-4-1902. C S C. and H W K. Huttoft Bank, 2-7-1903. C S C. Stream, Hubbard's Valley, 1901. C S C. Croxy Pond, 28-8-1902. C S C.

PISIDIUM MILIUM Held

Recorded for several localities.

- N. *Brick-pit, Donington-on-Bain, 7-6-1887. H W K. Revesby, pond by reservoir, 4-7-1901. C S C. Cleatham, 25-6-1902. EA W P. Tetney, 17-4-1902. C S C. Pond near Haugham, 4-8-1902. C S C. The Mead, Bolingbroke, 28-7-1904. C S C. Tathwell, pond, 23-7-1902. C S C.

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SOUTH FERRIBY CHALK QUARRY.

NOTES ON THE GEOLOGY OF SOUTH FERRIBY.

BY THOMAS SHEPPARD, F.G.S.
Curator, Municipal Museums, Hull.

Having been asked to write a few notes on the geology of the interesting district around the pretty Humber-side village, South Ferriby, I do so with every possible pleasure. In the first place because for some time I have tried to urge the Lincolnshire Society to publish an annual volume of Transactions, in order that the work now being done in this county might be definitely recorded; and in the second place because for many years I have taken a keen interest in the district under notice, and have spent there many pleasant and profitable days. It was along the fore-shore at South Ferriby that I first became acquainted with 'thunder-bolts,' and before I ever went to school, I walked up and down this little shingle beach, collecting these objects, whilst my guardians were sewing or knitting on the sands near Ferriby Hall. It was from the neighbouring chalk quarry that I saw my first 'fossil mushrooms' and 'fossil birds' tongues,' and the same neighbourhood also yielded my first "snakestones" and "shark's teeth." A Roman coin, washed from the cliffs, with the emperor's head surmounted with the 'spiky' crown was also in my early collection, and as each of these objects was described to me I yearned still more for further specimens and further information. This was a quarter of a century ago; and until recent years my summer holidays were regularly spent in this district; whilst now in these more fully occupied and busy days, no greater pleasure is mine than to ramble once again in the quarries and on the shore where my early geological lessons were learnt. True, my 'thunder-bolts' have lost their former mystery; they are now *Belemnites*, of various species; the 'fossil-mushrooms' are now known to be echinoderms, rejoicing in the name of *Discoidea cylindrica*; the fossil birds' tongues prove to be teeth of a species of shark (*Lamna*), and the 'snakestones' are the shells of cephalopods, known as *Ammonites*; but as I examine them with more modern eyes, they bring back to mind the former days when I was taught the local traditions, and when I was perhaps more eager to accept as facts all that was told me than I am to-day.

South Ferriby is situated on the northern escarpment of the Lincolnshire Chalk Wolds—on a slope which in pre-glacial times rose direct from the waters of the Humber, then a much more formidable river than it is to-day. Since that time however various glacial and post-glacial deposits have been formed on and around the chalk hills. These have occupied part of the bed of the older river, the present estuary being confined within much narrower limits. The later deposits have also added to the beauty of the scenery, contributed much towards the fertility of the district, and perhaps of more import at the present time, they have added many interesting chapters to the early history of the area.

The principal geological deposit around Ferriby is undoubtedly the Chalk. The Kimeridge clay occurs in places at the foot of the wolds, and in the village itself can be identified by the marshy nature of the ground, and from the *Belemnites* and *Gryphæa dilatata* (a large oyster-like shell)—characteristic Kimeridge species, which can be secured with a little digging. This dark soft clay can also be traced at the foot of the chalk towards Horkstow, Saxby, etc., though it is generally covered up by later beds.

The chalk wolds are roughly six miles in width, and reach a height of from 300 to 500 feet. At the Ferriby end they are about 100 feet in height. On the west the valley of the Ancholme forms a boundary, from which the chalk gently rises, and on the east the same rock terminates in a fairly steep slope, which the Geological Surveyors recognise as a buried sea cliff of pre-glacial age—a continuation of that which is known to be buried under the drifts of Holderness.

Of the Lower Cretaceous beds, though well developed in this county not far away, there is little or nothing at Ferriby. The first division of the Upper Cretaceous series however occurs, viz., the Red Chalk, and its position can be traced by a well defined line of springs which supply the village with excellent drinking water, notwithstanding that some are immediately below the church-yard!

The Red Chalk makes its first appearance on the foreshore towards the Ferriby Chalk pit, nearly a mile east of the Hall. At

low tide, when there is no great accumulation of mud, this bed can be distinctly traced close to the water's edge. It protrudes from beneath the Lower or Grey chalk, the beds of which at this point are at a high angle, due to the chalk having slipped towards the Humber in pre-glacial times. From this bed of Red Chalk a copious supply of fresh water is constantly flowing, and can be seen as clear water rising when the muddy waters of the estuary are covering them.

From this Red Chalk a number of fine *Terebratula biplicata*, *Belemnites minimus*, *Inocerami*, and other characteristic forms can be collected. There is also an exceptionally large number of sponges (*Ventriculites*,) apparently occurring here far more abundantly than in the Yorkshire sections of the same rock.

The bed evidently rises towards the west, as it again occurs near the horse-pond in the village, and at the bottom of the hill just opposite the blacksmith's shop. After a very heavy shower of rain, when the roads have been well scoured, I have seen it quite plainly crossing the road at the foot of the hill leading into Ferriby village from Barton, just below where the old pin-fold used to be. Further on in the village, in Mr. Havercroft's paddock, immediately east of the church, it can be traced, and the small *Belemnites* can be collected just above the spring at the side of the wood. The Red Chalk in the village contains a number of small pebbles, resembling those in the Carstone, evidently pointing to the beds being well down in the series.

With regard to the chalk proper: most excellent sections occur in the three or four enormous pits near the Humber side, as well as in smaller quarries on the high road between South Ferriby and Barton.

The quarries on the Humber side are perhaps the most interesting of the kind that we know of; and whilst they undoubtedly owe their present large size to the working in modern times, there can be little doubt that they are of very great antiquity. In all probability the Romans, who were always so ready to utilise local stone for a variety of purposes, were the first to open out the northern slope of the Lincolnshire wolds, and made the beginnings of the quarries which more modern requirements and appliances have so largely developed. Certainly the

Romans used chalk in making the foundations for the magnificent tessellated pavement at Horkstow—a little over a mile away—and also utilised it in the construction of some of the tesserae of which the pavement itself is composed. Chalk was likewise largely used in the construction of the fine Saxon church of St. Peter's at Barton—and it was brought into service in connection with the erection of various buildings in more modern times. The Inclosure Commissioners of 1769 allotted separate acres of chalk land in different parts of the lordship for the repair of public and private roads. Some twenty-five years ago Messrs. Lucas and Aird, the contractors for the Hull and Barnsley Railway, employed 100 men and 25 vessels in removing enormous quantities of 'cawk' as it is locally called, for the construction of that railway. It is said that at least £25,000 must have been expended in extracting the chalk from one of these Humber-side quarries alone. Material was also obtained from these pits for the making of the Hull, Goole, and Grimsby Docks, as well as for works in connection with the Aire and Calder Navigation. No wonder that the quarries are so large, and the sections are so fine.

All the pits on the south Humber bank are similar in general section—varying a little in height, etc., in accordance with the distance they have extended from the estuary. The section at South Ferriby can be described as typical of the series. It is reached by a most charming avenue extending from the jetty on the Humber side to the quarry. This is carpeted on its steep sides in the summer with a profusion of wild flowers—and the tall pine trees meet over-head. At one side of this path a small quarry has been cut, and shows the chalk dipping towards the Humber at a high angle. The section here exposed is evidently made into a mass of slipped rock such as is met with on most chalk escarpments. After about a quarter or a mile's walk in this narrow pathway, the chalk pit suddenly presents itself, and is a sight not soon to be forgotten. It is now being quarried on a comparatively small scale by Mr. R. Walker of Ferriby, and the dazzling whiteness of fresh 'falls' contrasts well with the grey colour assumed by the weathered material. The quarry has a perpendicular face about 60 feet in height, and is divided at a distance of ten feet from the floor by a dark marly band, the *Belemnitella plena* zone. The

nature and position of this 'black band' and its neighbouring marl beds are taken advantage of by the quarrymen who find in them a convenient position for boring for the purpose of receiving the cartridges for blasting.

Below the black band is the Lower or Grey Chalk, which is flintless and marly, and above it is the hard 'middle chalk,' with flints. The two rocks can be easily separated in quarrying and put to their respective uses.

As a rule the upper part of the section is quarried more quickly than the lower marly chalk, and there is therefore a ledge on the level of the black band, which can be walked along almost all the way round the pit. If this has been exposed to the weather for some time it is probable that the small round *Discoidea cylindrica** will be found in fair numbers on the flat surface, immediately below the dark marl. With it are associated numbers of *Terebratulæ*, *Rhynchonellæ*, etc.

Just above this lower chalk are occasionally found those enormous Ammonites, usually little more than casts, (though now and then the sutures can be traced) for which the quarries are perhaps best known to the collector of fossils. Two or three, fine examples ornament the entrance to Mr. Walker's house at South Ferriby, and a specimen measuring 2ft. 3ins. across is in our Hull museum. They are however obtained of even much larger size.

The black band, which is here about 8 or 10 inches in thickness, has yielded a number of the fossils from which the zone derives its name, viz., *Belemnitella plena*. It has been collected in all the pits, though strangely enough the fossil was only discovered in Yorkshire for the first time so recently as May 1905.† The belemnite can be readily distinguished from its shape, tapering towards both ends like a cigar.

Immediately above the black band the zone of *Inoceramus mytiloides* occurs, and is fairly full of the mussel-shaped bivalve

*These are still held to be 'fossil mushrooms' by the quarrymen who even cut 'stalks' to them in the chalk, giving them a striking resemblance to the mushrooms they are supposed to be.

†See Naturalist July, 1905, pp. 202-203.

after which the bed is named. Above this are other zones, but in none of the quarries is the Upper Chalk present.*

Mr. W. Hill describes these sections in his well-known paper "On the Lower Beds of the Upper Cretaceous Series in Lincolnshire and Yorkshire,"† and gives the following particulars of the section shewn "in the first of the three large quarries nearly two miles west of the railway station, Barton-on-Humber:—

		feet.
Middle Chalk.	? Zone of <i>Terebratulina gracilis</i> .	Hard white chalk with lines of flint in courses of unequal thickness, divided into massive blocks by irregular joints, which pass through many feet of material, passing down gradually but decidedly into
	35	
Lower Chalk.	Zone of <i>Rhync. cuvieri</i> and Melbourn Rock.	Hard rough yellowish white rocky chalk, weathering into thin flakes with uneven nodular surfaces, divided into beds of uncertain thickness, by persistent but thin bands of greyish marl, no flints
	10	
Lower Chalk.	Zone of <i>Belemnitella plena</i> .	Thin greenish-grey marly veins enclosing whiter marly chalk.
		1/4
	Zone of <i>Holaster sub-globus</i> .	Smooth grey marly chalk, weathering into thin laminæ.
		2
Zone of <i>Holaster sub-globus</i> .	Dark bluish-grey marly chalk, weathering into thin laminæ, centre darkest, the colour variegated with buff or lighter grey.	
	1	
Zone of <i>Holaster sub-globus</i> .	Very rough nodular chalk graduating to	
	3/4	
	Less rough, irregularly jointed whitish chalk	
Zone of <i>Holaster sub-globus</i> .	A remarkably massive course of whitish hard chalk	
	2	
Zone of <i>Holaster sub-globus</i> .	Bedded whitish chalk, separating by weathering into thin flaky pieces along green-grey marly veins	
	2 1/2	
		10

From this it will be seen that Mr. Hill estimates the Middle chalk in this quarry at 45 feet in thickness, and the Lower Chalk at 18½ feet, or a total of 63½ feet.

*The Lincolnshire pits are evidently lower down in the chalk beds than in the quarry at Hesse on the opposite side of the Humber, where even at the bottom, almost on a level with the water of the estuary, the *Belemnitella plena* zone is not reached, that is to say the Hesse quarries are entirely in the Middle Chalk.

†Quart. Journal, Geol. Soc. August, 1888, pp. 320-367.

The same author points out that the fossils in these pits are those which most commonly occur at the same horizon in the south of England. At the base of the chalk with flints, he found *Rhynchonella cuvieri*, *Echinoconus subrotundus* and *E. globulus* (?) *Inoceramus mytiloides* was very abundant at the top of the yellowish chalk, and *Rhynchonella cuvieri* occurred. *Belemnitella plena* was found in the blue-grey marl, and *Rhynchonella plicatilis*, *Terebratula biplicata*, and *Ostrea vesicularis* in the rubbly band below. *Holaster subglobosus* and *Discoidea cylindrica* were not uncommon in the lowest bed.

Mr. Hill estimates the thickness of the Lower Chalk in Lincolnshire as 75 feet.

In the Geological Survey Memoir dealing with North Lincolnshire* the following details are given of the Ferriby quarry, i.e., the one nearest the Hall:—

Middle Chalk.	{	Hard white chalk with flints (inaccessible) about	40
		Compact creamy coloured chalk	2
		Shale and shaly chalk	$\frac{1}{2}$
		Hard yellowish-white, gritty chalk, full of <i>Inoceramus</i> , in regular massive beds 12 to 18 inches thick, with partings of shale.	11
Lower Chalk.	{	Soft grey shaly marl, darker below, with a thin course of shaly chalk in the middle	2
		Greyish white thin bedded and shaly chalk	18
		Course of hard, compact, whiter chalk	
		Grey nodular chalk with irregular seams of shale	6

In this pit the Middle Chalk is estimated at $53\frac{1}{2}$ feet, and the Lower Chalk 28 feet, or a total thickness of exposed chalk of $81\frac{1}{2}$ feet.

The section just quoted was measured in 1883, since which date the face of the quarry has altered but little.

In 1902 when Messrs. Rowe and Sherborn were examining the Yorkshire Chalk, I had the pleasure of joining them in a ramble across the Humber. Their observations are printed in the Proceedings of the Geologists' Association.† In the Ferriby pit is

*The Geology of Parts of North Lincolnshire and South Yorkshire, 1890, p. 117.

†Vol. 18, part 4, 1904, pp. 202-203.

“ a fine Section of the *Holaster subglobosus*-zone, exhibiting an abundance of *Discoidea cylindrica*, capped by the “ black band,” here 1ft. 6in. to 2ft. thick,* and yielding *Actinocamax* [*Belemnitella*] *plenus*, and this again overlain by 18 feet of yellowish-grey, marly, flintless chalk, containing *Inoceramus mytiloides*; and the whole crowned by white flinty chalk yielding *Terebratulina gracilis*. The orthodox succession is here well shewn, and the ‘ black band ’ is clearly the normal development of the *Actinocamax plenus* zone in this area. It will be noted that the thickness of the *Rhynchonella cuvieri* zone at Barton (15ft. to 18 ft.) is also usually small, though greater than that on the Yorkshire coast.”

Amongst the fossils collected in South Ferriby quarry on this occasion were *Echinoconus castanea*, *Rhynchonella cuvieri*, *Terebratula semiglobosa*, *T. carnea*, and *Inoceramus mytiloides*. Dr. Rowe also records an example of *Salenia granulosa* in the next quarry towards Barton.†

A few other interesting records have been made in the Ferriby quarry. In the Transactions of the Hull Geological Society‡ Mr. J. W. Stather records a specimen of *Teredo amphibaena*, which, though not rare in the southern counties, does not appear to have been previously noticed in the north. *Teredo* is a burrowing shell, and the species referred to above is allied to the well-known ‘ ship-worms ’ which played such havoc by boring into the old timber-built vessels.

In the same Society’s Transactions for the preceding year is recorded the fin of a teleostian fish from the Ferriby quarry. This was obtained about 30 feet above the black band, and is the first record of the species it represents (*Protosphraena ferox*) in the north of England.

A further interesting discovery of fish remains was made so recently as 1905§ by Mr. H. C. Drake. It included a slab of marl with vertebræ, fins and other remains of a fish in very fair preservation. It was taken from the uppermost beds of the Lower chalk,

*Only the centre of this zone is really black.

†Loc. cit. p. 242.

‡Vol. 5. pt. 2. 1899-1900, pp. 41-42.

§Naturalist, October 1905, pp. 318-319.

just below the *plena* marls. The specimen is not complete but measures over a foot in length. Dr. A. Smith Woodward, who has examined it, says that in his opinion it represents a new fish, allied to *Thrissopater* of the Gault, and closely similar to *Thrissopater magnus* from the Lower chalk of Kent. This example, as well as many others from this interesting locality, can be seen in the geological gallery in the Hull museum.

The enumeration of these fossils may not be of very great moment to most people, but they at any rate serve to shew that even in a well-worked section such as that at South Ferriby, there is still much to be done,—and further, it is only by a careful examination of these organic remains that we are able to form a correct idea of the conditions which prevailed during the deposition of that soft *Globigerina*-ooze—at the bottom of an enormous ocean, which ooze has since been solidified and elevated, and weathered into hills and dales, forming the well-known wolds with which we are so familiar.

In common with other parts of the country, and also with the neighbouring county, Yorkshire, there is a great break, in time, between the formation of the chalk and the deposits which rest directly upon it. In some parts of England various beds of enormous thickness were deposited during the Tertiary period, but of these we have no trace near Ferriby. What was the state of things in North Lincolnshire during that long Tertiary epoch it is difficult to say. The River Humber was doubtless somewhere in its present position, though its channel may have been wider, and was then only a tributary of a much larger river which flowed northwards, somewhere near what is now the middle of the North Sea. That the Humber was wider in pre-glacial times is demonstrated by the fact that the old shelving shore of hard rock can still be traced above the present beach at Ferriby, between the Hall and the Chalk quarry.

The Great Ice Age adds the next chapter to the early history of this district. During that far-off time much of our country was covered by glaciers flowing into the seas from the high lands. The streams of ice on reaching the North Sea were met by ice in the form of a huge sheet which originated in the Scandinavian mountains. This was of such gigantic proportions

that it was able to divert a huge glacier, twenty miles wide, which came down Teesdale from the Lake District. The ice from the different areas consequently coalesced, and came down the east coast together. The front of the glacier undoubtedly formed a formidable barrier, several hundred feet in thickness, and as might be expected, it interfered with the normal drainage of the land. In this way the waters of the Humber were held back, and for a long time there was no outlet for the streams feeding the estuary. The result was the formation of a large lake. This was first described by the late Prof. Carvill Lewis in his book "The Glacial Geology of Great Britain." Lewis gave it the name of Lake Humber.

In accordance with the general behaviour of glaciers and ice streams this ancient ice-sheet left a heap of rubbish, known as a moraine, at the point where for a time the ice-front halted and melted. This rubbish consisted of boulders, pebbles, sand and mud, which had been carried along by the ice, some having been picked up near the place where it started, whilst more would be collected as the glacier proceeded on its way. In view of this, an examination of the contents of a moraine gives evidence of the course the ice took in its travel.

There is evidence that the ice mass which once filled the North Sea and partly covered eastern England, also crept up the valley of the Humber. There is also evidence that its westernmost limit was reached precisely where Ferriby now is. There is certainly no true Boulder-clay with Scandinavian erratics visible to the west of this point.

Boulder-clay is perhaps the most characteristic of all the glacial beds. It is usually a tough tenacious deposit, crowded with pebbles and boulders of different sorts and sizes, a large proportion of which are scratched, striated and polished by the grinding and moving of the ice. Such a deposit occurs on the little stretch of foreshore to the west of Ferriby chalk quarry. It is full of striated far-travelled pebbles. On the opposite bank of the Humber, at "Red Cliff," near North Ferriby, is a precisely similar bed. In fact there can be little doubt that the two cliffs are the severed ends of a once continuous deposit which stretched across the Humber. This was a terminal moraine of

the great ice-sheet which did so much in forming the present superficial features of eastern England. In its final stages it left this huge rubbish heap, and if we examine it closely we shall be able to find in it many objects worthy of attention.

In the first place it will be seen that there are two distinct boulder-clays. Towards the chalk-pit, on the beach and at the foot of the cliffs, is a very hard purple boulder clay, crowded with stones. Upon this rests a foxey-red clay, of more earthy texture, and with fewer pebbles. The latter forms the principal part of the cliff. There are also various beds of sand and gravel and clay, which it will be as well to notice in detail. At one or two points as already stated, the pre-glacial Humber floor is seen at the foot of the cliffs, thus affording a good opportunity of studying the relationship of the different deposits.

The cliff line now being considered is under a mile in length. At its north-eastern end it is 15 feet in height, gradually rising to 20 feet in the middle. It then gently falls towards the Hall, and changes from clay to chalky gravel, sand, and finally sandy silt. The cliffs towards the south western end are not more than three or four feet in height above the beach. The general shape of the cliffs has been altered towards the middle by the extraction of gravel. Years ago Mr. Walker worked a large amount of chalky gravel from the field adjoining Chad's well on the west.* The result was the cliffs at this point were reduced from about fourteen feet in height to four feet.

As regards the direction of movement of the ice which formed this morainic ridge, a careful examination of the various evidences in the cliff confirms the views which have already been put forward. Some few years ago, on the top of the rock just above the beach, I noticed a slab of chalk which was most distinctly ice-marked. It was firmly embedded in the loose chalky rubble which occurs immediately on the top of the solid rock. The striations on this chalk were from the north east.† The

*I can just remember this gravel pit, and the planks which were put up the side of the excavation for the convenience of people walking along the cliff edge. This would be over 20 years ago. It has now been almost levelled by the plough.

†Geological Rambles in East Yorkshire, p. 173.

position of the boulder was in the foot of the cliffs, just under the place where until recently a cottage stood, about midway between the Hall and the chalk quarry.

Similarly, a study of the 'erratics,' or far-travelled boulders in the clays leads to the same conclusion. Amongst them are rhomb-porphry and other characteristic rocks from the vicinity of Christiania, which have found their way over the North Sea; black flints, (non-British), probably from the bed of the sea; Scottish rocks, Carboniferous Limestone and Basalt from Teesdale, an abundance of Liassic fossils from Whitby, and other specimens from the Yorkshire coast. There is also a fair proportion of fragments of Kimeridge shale with the usual crushed Ammonites and other fossils. These however have probably been derived from some outcrop in the vicinity. Most of the specimens just enumerated occur in the purple clay.

Perhaps the most interesting discovery made was in the form of a pebble of Shap granite, which was in the clay at a depth of 18 feet.* This I believe is so far the only record of this rock occurring *in the boulder clay* for Lincolnshire. A larger piece of the same rock is near the gate-post at the entrance to Mr. Milson's mill yard on the top of Barton Hill. The particular pebble found in the clay was unquestionably carried down from its home, Wastdale Crag in Westmorland, by the Teesdale glacier, then down the east coast and up the Humber by the aid of the Scandinavian ice, on the final melting of which it was dropped with other material in the moraine on the Humber side.

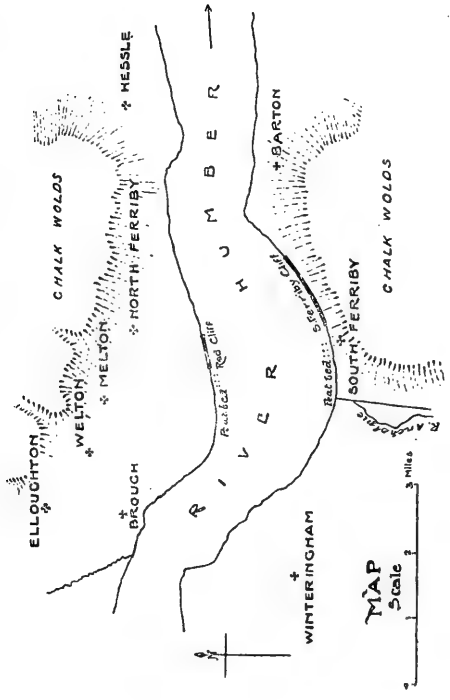
In a paper "On the drifts of the Humber Gap,"† Mr. J. W. Stather described these sections, and gave sketches of different parts of the cliffs. These are all included in the accompanying diagram, which may be taken as a fair representation of the cliff section from the chalk jetty to Ferriby Hall.

*Notes on the Occurrence of Boulders of Shap Granite, etc., in Lincolnshire, by the present writer, *Naturalist*, November, 1896. It is a matter of regret that the Lincolnshire Boulder Committee, which did so much good work at that time, seems to have since lost its energy.

†*Proc. Yorks. Geol. Soc.*, Vol. 13, pt. 2, 1896, pp. 210-220.



- 1.—Purple boulder clay.
- 2.—Upper or Hesse boulder clay.
- 3.—Laminated clay between the two boulder clays.
- 4.—Chalk valley gravel.
- 5.—Ripple-marked sandstone.
- 6.—Solid chalk,
- 7.—Humber silt.



A reference to the numbers on this section will perhaps make the following description clearer:—

In (1) we have the purple boulder clay, which occurs at the base of the cliffs and on the beach towards the east end of the section. It is exceedingly tough and crowded with boulders. In the same clay in the corresponding section at North Ferriby there is an extraordinary profusion of far-travelled erratics.*

(2.) The Upper loose foxey-red Clay, to which the name Hessle Clay has been given on account of its development at Hessle, on the north bank of the Humber. This contains only a very occasional large boulder, its erratics being usually small and few in number. Amongst them is a good proportion of porphyrites from the Cheviot Hills.†

(3.) This is a lenticular patch of finely laminated stoneless clay, which at this point occurs between the two boulder-clays. It is also found at other places in the section at the base of the Hessle clay.

(4.) An extensive deposit of fine angular chalky 'valley gravel,' the denudation of which largely contributes to the beach material—the white flat chalk pebbles known locally as 'checkers.' The gravel extends for a considerable distance, and attains a thickness of about ten feet. From its nature it has obviously not travelled far, and probably has been washed down from the chalk wolds just above, where there is a significant depression in the hill. This 'wash' or 'flood gravel' has occasional layers of very fine sand, resembling the blown sand at Sewerby near Bridlington. Pebbles of quartzite occur with the chalk.‡

(5.) In places upon the rubble at the top of the solid chalk is a somewhat puzzling layer of ripple-marked sandstone, two or three inches in thickness. This weathers out and can generally be

**Loc. cit.* pp. 214-215, for list of these.

†Mr. Jukes-Browne, in the Geological Survey Memoir, 1890, p. 150, states "at the east end of this section, where the cliff is about 20 feet high," the "purplish clay was seen to pass up into the reddish clay of Hessle type by a gradual change of colour, and without the intervention of any loam or sand." The section is evidently better now than it was in 1890, as the division between the two clays is most marked, and there is now no sign of any "gradual change in colour."

‡For the origin of these pebbles see papers by Mr. Stather and the present writer on "Quartzite pebbles on the Yorkshire Wolds," *Naturalist*, 1904, pp. 9 and 56.

found in slabs strewn about on the beach. It is very firm, being a natural concrete, made from the particles of lime and grains of sand forming the bed. Underneath it are embedded pebbles of chalk, etc., some of which protrude through the upper surface. Owing to the slipping of the clay it was for a long time difficult to define the precise relation of this bed with the others in the series. That the boulder clay rested immediately upon it seemed hardly probable, though once it was difficult to find that it was otherwise. A recent heavy tide however cleared the foot of the cliffs fairly well and shewed the true position of the sandstone. It rests directly upon the chalk rubble, is immediately covered by the stoneless laminated clay, which in turn is covered by the purple clay. The age of the sandstone appears to be just prior to the formation of the purple clay.*

(6.) Here the solid chalk is represented occupying the bottom 12 to 18 inches of the cliffs. The upper part is dislocated in places, and in other parts is curiously weathered. It contains deep 'pipes,' evidently of great antiquity (similar to those on the Yorkshire wolds), as the material they contain does not appear to have been derived from the over-lying clays. These pipes average 6 to 8 inches in diameter, and penetrate to a depth of two or three feet or more. On the beach they can be seen in section as circular clay patches in the chalk. It was at the south-west end of this outcrop in the cliffs that the glacially-striated slab of chalk already described in these notes was found.†

(7.) This bed consists of fine sandy silt, evidently an old deposit of the Humber. It forms the flat land in front of Ferriby Hall and towards Ferriby Sluice. At its north east end, where it is intermixed with coarse sand and gravel, it contains a large quantity of *Helix aspersa*, *Helix nemoralis*, and other land shells,

*Prof. John Phillips recorded a similar sandstone directly on the chalk at Hessele. I recently found it, on a level with the railway metals, just west of the bridge carrying Wold Field Lane over the railway.

†In the Geological Survey Memoir, 1890, p. 150, Mr. Jukes-Browne describes the section in the cliffs at this point as under:—

Soil and weathered clay (3 or 4 feet) passing down into reddish-brown sandy boulder clay	10 feet.
Red-brown clay and light coloured sand, interlaminated and resting on a layer of hard ripple marked sandstone	1 foot.
Coarse gravel of large rolled stones, grey chalk and red chalk among them, seen for	1 foot.
Hard grey chalk on the beach below	1 foot.

generally in a fairly good state of preservation, though discoloured. The examples of *H. nemoralis* are generally more broken.

In front of Ferriby Hall, and beneath the silt, is a fine bed of peat, which until a few years ago was well exposed, and was seen to be at least two and a half feet in thickness. In it was a fair amount of timber (oak, pine, etc), though the trees had rarely attained large size. It contained many bones of mammals and birds, amongst which the Red Deer (*Cervus elaphus*) (represented by a pair of antlers, skull and jaws, and numerous bones), the short-horned ox (*Bos longifrons*), and smaller mammals, and of birds the duck was recognised. There were also many bones of the horse and ox, but as several of these animals were buried in the vicinity in comparatively recent years, care must be exercised in recording them, though the bones found were well stained and in every respect resembled the others in the peat. Below the peat was a small accumulation of angular flints, which were often stained a curious cobalt blue colour.

This same peat bed occurs for some distance along the southern part of the estuary, as it also does along the north bank where it can be seen, under favourable conditions, at Hessle and North Ferriby. It was cut through during the construction of the Hull docks. At Barton and New Holland it is met with in the brick pits, from which localities the Hull Museum possesses several antlers of the Red Deer, and also portion of a skull and a fine pair of horn-cores of *Bos primigenius*.* The peat generally is found in the brick pits at a depth of about 20 feet.

In the preceding notes an effort has been made to give a resume of the geological features of the district from Cretaceous times to the so-called "submerged forest" or peat bed period. Soon after, if not during, the latter epoch, man first made his appearance in this area. One or two very fine British flint weapons have been found along the cliffs, as well as a number of gold and silver coins, also of British date. Of Roman relics several thousand have been discovered, the chief of which have recently come to light and will be described elsewhere, as they form another chapter in the history of the place. Anglo-Saxon and mediæval relics have been picked up on the same site.

*See Hull Museum publication No. 15, 1903, p. 6.

There are two matters however which may well come within the scope of these notes. I refer to the erosion of the coast and the formation of new land. With regard to the former, as in the case of the sea on the Holderness coast, so the Humber on the north Lincolnshire shore has washed the land away in recent times to a very serious extent. Without going further back than the brief period of my own existence, I can remember a field with a splendid avenue of tall elm and ash trees just to the north-east of the Hall. This has entirely gone. The trees were cut down one by one to 'save their lives,' and an odd "stool" or two lying on the beach alone remind us of the land that is no more. A hundred yards or less further on is a Roman well, surrounded by dressed stones, which twenty years ago was quite close to the cliffs. At present it is many yards away. Another well, now at low-water mark and covered with mud, and at a considerable distance from the cliffs, was high up on the beach within the memory of many inhabitants of Ferriby. Formerly a house stood on the cliffs towards the north east end. I can well remember a long garden in front of it, surrounded by pailings, outside which was a path along the cliff edge. The path went, then the pailings, slice after slice of the garden, and finally the house itself. In Mr. Stather's section drawn in 1896 this house is shewn, being then at the cliff edge. It has now disappeared and part of its site is washed away.

The coast in front of the Hall, and towards Ferriby Sluice is now protected by an apron of slag, etc., but this constantly requires repair. In the exceptionally high tides of a few years ago, as well as during the past summer (1905), the road leading from the Sluice to Wintringham was over-run by the tides, the bank having given way, and was for some time impassable. A new rectangular embankment has been made on the inside of the road.

Mr. Alderman Tombleson of Barton informs me that in 1844 he was taken round the grounds of Ferriby Hall and "there was a long garden path reaching far down into what is now the river. There was also a long row of great trees, where the rooks built, going towards the north east, and was called the long walk. In the days of the Racing Baronet, whose portrait is now at Scawby Hall, there was land enough between the Hall

and the Humber to exercise the racers upon. A plan of Wintringham made not more than 110 years ago shews that the first field beyond the Ancholme is all the land now remaining of a farm of 200 acres."

In an article on "A Trip to Read's Island," written in a local paper in 1883, it was stated that "there are persons living who can remember fox-hunting on the very ground now covered by water and over which vessels sail."

There are some interesting facts bearing on this question in a paper written half a century ago by the late James Oldham "On the Physical Features of the Humber."* He wrote:—"From a point near to Whitton, to another a little to the east of Ferriby, including a distance of about six miles of coast, very extensive ravages have taken place; and in my own recollection and knowledge of the shore, and from facts I have obtained, not less than 200 acres have been lost during the last 40 or 50 years, so that the line of coast at this locality forms a considerable bay, but filled in, in some measure, by an island. I met with one individual at Wintringham, who informed me that in one field of 14 acres he had constructed, within the space of about 20 years, seven new banks, and only about $3\frac{1}{2}$ acres now remain. Another field of about 17 acres is now reduced to about 2 acres. It is a tradition that about 100 years ago persons could make themselves heard and understood between the ancient Roman ferry at Brough and the Ferry opposite. It is now more than a mile from Brough to the nearest point on the opposite side."

In the Summary of the Reports of the Committee of the British Association appointed to make "Observations on changes in the Sea Coast of the United Kingdom.† It is recorded that "In the neighbourhood of Ferriby Hall, Barton Cliff and Barton Ness (Barton-on-Humber) the recorded loss is from 4 to 6 feet in $2\frac{1}{2}$ years." In view of the extracts that have been made we can hardly agree with a remark in the same report that "apparently erosion in the estuary of the Humber is not very serious."

In a previous report of the same Committee‡ it is recorded

*Report British Association, 1853, Hull Meeting.

†Brit. Assn., 1903, Southport Meeting.

‡For 1895. Ipswich meeting, p. 377.

by Mr. C. Fox-Strangways that at a quarter of a mile west of Ferriby Sluice, and at Ferriby Hall, 150 yards and 80 yards respectively have disappeared since the Ordnance Map for the district was made."

From the above facts it will be seen that the waste of land near South Ferriby is a serious matter to the landowners and farmers. Possibly the only persons to benefit are the antiquarians and geologists, who are thus enabled to pick up various relics and examine new sections as the cliffs are washed away.

But whilst this waste is going on, land is also accumulating near by. I refer to Read's Island. Apparently about 1820 no part of this land appeared above the water. After that date however a sand-bank, then known as Ferriby sand, formed, and increased in size. About 1840 the Reads of Burton Stather obtained it on a lease from the Crown, and it has since borne the name of Read's island. The lease expired about 1870, and the island was sold to the Humber Conservancy Commissioners, who had "obtained an Act of Parliament for changing the flow of the channel, embanking 575 acres immediately, erecting new buildings and making other extensive alterations.*

In 1853 Mr. Oldham records† that 80 acres were then embanked, but there was "beyond the banks more than double that quantity." He adds :—"From the time the island assumed its present state, or rather its climax of magnitude, a very deep channel existed between it and the Lincolnshire coast, which was generally used by river steamers coming down at low water; and during all this time the current has impinged with great severity on nearly the whole of the coast from Wintringham to South Ferriby, causing a serious loss to Lord Carrington, Sir John Nelthorpe, and others. Here again changes are going on, and instead of the deep channel on the south of the island, the current has taken a direction from about Brough to Ferriby on the north side of the island, leaving the south channel comparatively shallow; and I am also sorry to add considerable loss is taking place to the east end and north side of the fore shore of the island,

*White's Lincolnshire, 1882, pp. 293-294.

†"On the Physical Features of the Humber, Report, Brit. Assn. 1853,

and I shall not be much surprised if before very long, the whole island should take its departure."

The island however is still there, and at present has 450 acres under grass. Since Mr. Oldham's time the channel between the island and the mainland has shallowed more than once, and during the past twenty-five years steamboats passing between Goole and the sea have had to alternately take the north or south course according to the manner in which the channel changed.

Such is the geological history of the district around South Ferriby. Sir Walter Scott once wrote

"Breathes here a man with soul so dead
Who never to himself hath said
'This is my own, my native land!'"

That is precisely what I have endeavoured to say in the foregoing pages. I have not stopped however, at making the brief statement that South Ferriby is my birthplace, but I have tried to explain how that land came to be. This has taken a little longer to do!

COUNTY DIVISIONS.

Where, in any article, the localities are denoted by numbers, reference to the following list will give the District.

NORTH LINCOLNSHIRE.

- | | |
|-----------------------------|------------------------------|
| 1.—Isle of Axholme. | 7.—Market Rasen. |
| 2.—Winterton and Broughton. | 8.—Louth. |
| 3.—Barton and Caistor. | 9.—Saltfleet (Littoral). |
| 4.—Great Grimsby. | 10.—Horncastle and West Fen. |
| 5.—Kirton and Gainsborough. | 11.—Alford and Burgh. |
| 6.—Lincoln (North). | 12.—Boston and East Fen. |

SOUTH LINCOLNSHIRE.

- | | |
|----------------------|-------------------------------|
| 13.—Lincoln (South). | 16.—Bourn and Stamford. |
| 14.—Sleaford. | 17.—Swineshead and Donington. |
| 15.—Grantham. | 18.—Spalding and Holbeach. |

N. and S. denotes North and South Lincolnshire respectively, divided into two vice-counties by the River Witham and the Foss Dyke,

FIELD MEETINGS FOR 1906.

It is impossible months beforehand to arrange the date of Field Meetings finally; the following however have been provisionally suggested:—

1.—END OF MAY. Ludborough Railway Station, with drive to Donna Nook by Marshchapel. Home by North Somercotes Common and Grainthorpe, with time at all spots of interest.

2.—END OF JUNE. Donnington-on-Bain Railway Station, with a drive or walk round a most interesting country.

3.—END OF JULY. Rippingale Railway Station, with a walk or drive to Dunsby Wood, &c. (this meeting should come second, but is purposely put third on account of the flora).

4.—END OF AUGUST. Crowle Railway Station, with a drive to Belton.

5.—END OF SEPTEMBER. Long Sutton Railway Station, with a drive to the Wash Shore.

Horncastle, Skellingthorpe and Doddington have been suggested as places worthy of a visit. The neighbourhood of the first has been visited by the L. N. U. on several occasions. Skellingthorpe and Doddington as very central places are specially held over in case more distant fixtures fail the Executive Committee from unforeseen local circumstances.

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HISTORY.



F. M. BURTON, F.L.S., F.G.S.

Second President of the Lincolnshire Naturalists' Union.

The Presidents of the Lincolnshire Naturalists' Union.

F. M. BURTON, F.L.S., F.G.S.

It is a difficult matter even to attempt to write a fairly faithful sketch of one who has done so much, and who is so well known to the members of the Union, as Mr. Burton. He has taken such keen interest in research for over sixty years, that there are few indeed who can remember his earlier activities. Neither has he confined his efforts to any one branch of natural history: but with the energy and resource so characteristic of the man, has given his whole attention to one department, and then to another in succession.

Though geology has been Mr. Burton's favourite study, he has lived the life of the "all round Naturalist." Entomology first attracted him, as it has so many Naturalists who afterwards become distinguished. He made a fine collection of the Lepidoptera which could be taken round Lincoln, Grantham, and Gainsborough, as well as in other parts of the county as opportunity allowed. The specimens now form an invaluable possession. Many species that were fairly common in the "forties" and "fifties" have now become very rare, and in some cases extinct.

The Rev. Edward Thring was head-master of Uppingham while Mr. Burton was living there. And he says, "though not a naturalist, Mr. Thring took great interest in nature-study as an educational stimulus. He liked to see the various captures made, and to hear about the animals and plants of the district." It was something precious in those days to have any intellectual sympathy in nature-study; and it acted as a stimulus on our second President to continue in his work.

Marine Zoology also attracted Mr. Burton's attention. A peep at his collections will prove how far he went. No one who has not personally taken up this wide subject can appreciate the labour that has to be bestowed in determining the microscopic and greater wonders of marine life.

Conchology is represented by a long series of marine shells in the "Highfield" collection. Many were taken by dredging along the Lincolnshire coast, and elsewhere, in British waters. The Land and Fresh Water species have not been neglected, and a unique personal collection is the result.

Zoophytes, star-fishes, echinoderms and sponges have all received careful attention. The first has always been a favourite study, as the "Highfield" cabinets show.

Mammals and birds also have always been observed with the interest of the trained student; and anything of permanent value being recorded for the benefit of other workers.

Always disclaiming to be a botanist in the rigid sense of that term, Mr. Burton has ever been a keen observer and lover of plants. He has been a collector, too, in the best sense. His fondness for floral beauties, or rarities, did not end in the formal sheets of the herbarium. As soon as he resided at Gainsborough, he began to form a garden, and we do not remember another like it. Wherever he has wandered, in Europe or beyond it, Mr. Burton has collected with the eye of the connoisseur and the skill of the trained gardener. Switzerland, Tyrol, Norway, Canada, and the rocky mountains, have rendered up their treasures of beauty; and the plants may be seen growing at Highfield, as if in their own habitats, along with the marsh, or hill, species of Lincolnshire, and the gems of Scotland or Wales.

This garden is an intellectual treat, alike to the botanist and lover of beauty. It is not exclusively kept for the gratification of its founder. For many years the place has been opened to the Gainsborough public on their weekly half holiday during the summer months. Great numbers have availed themselves of this privilege, and yet Mr. Burton can state with pleasure that not the slightest injury has ever been done, though the people are not prevented from entering the extensive glass houses, where the orchids are flowering and being hybridized.

Geology has been Mr. Burton's favourite pursuit throughout his life, and wherever he has been it was always his special study.

From time to time, as there was occasion, our ex-president

has communicated articles to the pages of the old "Naturalist," edited by Messrs. B. R. and F. O. Morris. Two of these are, a review of Prof. Rymer Jones', "Classification of the Animal Kingdom," and an article on the "Collyweston Slate." To the new series of the "Naturalist," Mr. Burton has contributed a number of articles, principally relating to the geology of the Lincolnshire coast, as well as on general nature subjects.

In 1866 Mr. Burton discovered the Rhœtics near Gainsborough, and announced the fact in a paper to the British Association meeting at Nottingham the same year. When the beds were more fully exposed for observation in the railway cutting, he read a fuller article on the subject before the Geological Society in 1867. The British Association meeting at Sheffield in 1879 still found Mr. Burton ready to communicate fresh facts on the interesting beds which surround Gainsborough.

One great object of Mr. Burton's recent endeavours has been the establishment of a County Museum in Lincoln. He was from its commencement the Secretary and Treasurer of the Union's Museum Committee. This was only dissolved last March when the City Council took over the collections of the Society, and found for them a suitable, and an historically interesting home in the old Grey Friar's house within the city precincts. There they are safely lodged under the care of a curator, and Mr. Burton's object has been realised. He intends to leave his own private collections in their entirety to the County Museum; and part of his scientific library will accompany them. Few of us live to see our hopes take shape; and still fewer of us have the means of helping to contribute to our ideal.

The Union made Mr. Burton its second President for the years 1894-95. His two addresses from the chair were both on geology. "How the Land between Gainsborough and Lincoln was Formed" and "The Story of the Lincoln Gap."

He was one of the original members of the Union, and has seldom missed a meeting until the last year or two, when increasing age has necessitated his giving up long and tiring walks. Mr. Burton recently sat for the photograph which is here reproduced specially for the "Transactions."

A LIST OF LINCOLNSHIRE BUTTERFLIES.

BY G. W. MASON.

Barton-on-Humber.

The accompanying List includes the names of those species which occur and have occurred in the County, but several unfortunately are now extinct. The Nomenclature adopted is that of the "Entomologist" Synonymic List of British Lepidoptera by Mr. Richard South, F.E.S. Lincolnshire is or has been the habitat for 56 out of the 65 species there enumerated; and an examination of the sub-joined List will show that some of the rarest species were formerly found within our confines.

In the case of common species, only one record and the Natural History Divisions of the County for which it has been noted are given.

Most of the records are taken from the Register kept by the Lincolnshire Naturalists' Union. I have to acknowledge, also, the great help I have received from the Editor of the "Naturalist" in allowing me to search back volumes of that Magazine; as well as from many of the persons whose names are mentioned below for lists that they have kindly sent to me. In addition I have made an occasional extract from Newman's "British Butterflies," Barrett's "Lepidoptera of the British Islands," the "Naturalists' World," and Miller and Sketchly's "Fenland."

I have made use of the following contractions to economize space:—

R P A	Signifies	Mr. R. P. Alington.
F S A	"	Rev. F. S. Alston.
F P H B	"	Dr. F. P. H. Birtwhistle.
J W B	"	Mr. J. W. Boulton.
W H B	"	Mr. W. H. Brooks.
A B	"	Mr. A. Bullock.
F M B	"	Mr. F. M. Burton.
J W C	"	Mr. J. W. Carr.
W D C	"	Mr. W. D. Carr.

C S C	"	Mr. C. S. Carter.
Dr. C	"	Dr. Cassal.
R C	"	Mr. R. Charlton.
J C L-C	"	Mr. J. C. Lane-Claypon.
F C	"	Mr. F. Clayton.
J Co	"	Mr. J. Cordeaux (The late).
J Co	"	Mr. J. Coward.
R W G	"	Mr. R. W. Goulding.
A E H	"	Mr. A. E. Hall.
H W K	"	Mr. H. W. Kew.
J L	"	Mr. J. Larder.
F A L	"	Dr. F. Arnold Lees.
W L	"	Mr. W. Lewington.
G W M	"	Mr. G. W. Mason.
J E M	"	Mr. J. E. Mason (The late).
J F M	"	Mr. J. F. Musham.
F J N	"	Mr. F. J. North.
E A W P	"	Rev. E. A. Woodruffe-Peacock.
E P	"	Mr. E. Porter.
J P	"	Mr. J. Porter.
G H R	"	Rev. G. H. Raynor.
A R	"	Mr. A. Reynolds.
A S	"	Mr. Arthur Smith.
S C S	"	Miss S. C. Stow.
A T	"	Rev. A. Thornley.
L N U	"	Lincolnshire Naturalists' Union Meeting Reports.
E L W	"	Mr. E. L. Wood.
E W	"	Mr. E. Woodthorpe (The late).
||	"	Miller and Sketchly's "Fenland"—1878.
Nat.	"	The "Naturalist."
*	"	The "Naturalists' World," May, 1885.
†	"	C. G. Barrett's "Lepidoptera of the British Islands," 1893 edition.
‡	"	Newman's "British Butterflies"—an old edition.

PAPILIO MACHAON *L*

Has been recorded for the following places.

N. Witham Bank, Boston, about 1888, J C L-C.

S. Dawesmere, 4-1871, W. H. B. ||One taken in Bourne Fen in 1872, S. Smith.

APORIA CRATÆGI *L*

Recorded for one locality many years ago.

N. Gainsborough District, "I have seen several specimens taken by Mr. Baines many years ago, who states that it used to be fairly common," A T.

PIERIS BRASSICÆ *L*

Abundant. Migrations across the Humber in 1870 and 1876 have been recorded by the late Mr. J. Cordeaux.

N. Swinhope, R P A. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.

S. Hartsholme and Doddington, J F M. Divs. 13, 14, 15, 17.

PIERIS RAPE *L*

Abundant. Migrations across the Humber in 1870 and 1876, have been recorded by the late Mr. J. Cordeaux.

- N.** Broughton Wood, A E H. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.
S. Little Bytham, 17-7-1900, L N U. Divs. 13, 14, 15, 17.

PIERIS NAPI *L*

Abundant.

- N.** Saxilby, 21-5-1893, J W C. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.
S. Wyberton, J C L-C. Divs. 13, 14, 16, 17.

PIERIS DAPLIDICE *L*

One taken by Mr. Geo. Skelton in his garden in Bargate, Grimsby, 14-7-1894.

EUCHLOE CARDAMINES *L*

Common

- N.** Ashby (Brigg), Dr. C. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.
S. Wyberton, J C L-C. Divs. 13, 14, 15, 17.

LEUCOPHASIA SINAPIS *L*

- S.** || Bourne Wood, S. Smith.

COLIAS HYALE *L*

Has been recorded for several localities in North Lincolnshire

- N.** Louth, 4 taken in 1858, F C.; V. Crow; R W G.; 3 miles west of Louth, 1-9-1901, J L.; *" taken on the London Road, very rare," R W G., and H W K. Ailby, 1 specimen on the railway, 2-6-1892, by W. Houlden of Aby, E W. Little Coates, 11-7-1901, A S. Gainsborough District, about 20 years ago in numbers, Mr. Baines and F M B. Lea, F M B. Aswardby, (Spilsby), one, 20-8-1900, J C L-C. Owston Ferry District, A R.
S. Haverholme Priory, a few in 1901, J C.

COLIAS EDUSA *Fb*

Occurs some years pretty freely in some parts of the County.

- N.** Divs. 1, 3, 4, 5, 6, 7, 8, 10, 11.
S. Divs. 13, 14, 15, 17.
N. *Louth, "very common in 1877," R W G., and H W K.; 21 taken, F C.; 5-9-1892, J L. Market Rasen, W D C., F A L., and W L. Panton, three in 1892, G H R. Toft, G H R, Welton-le-Wold, 1858, R P A. Torksey and Gainsborough. F M B. Alford District, abundant in 1892, E W. Ailby, three in 1889, E W. Barton-on-Humber, F P H B., and G W M. Tumbly, 1898, F S A., and L N U. Aswardby (Spilsby), eight, 20-8-1900, J C L-C. Great Coates, 21-7-1900; Ravendale, 24-8-1900, Mr. Wood, Little Coates, 20-7-1906, R C. Owston Ferry District, A R.
S. Hartsholme and Doddington, J F M. Wyberton, one, 9-1892, J C L-C. Nocton, 1875, H F Wilson. Between Sapperton and Ropsley, 8-9-1900, S C S. Caythorpe (Court Leys), 15-9-1900, S C S. Lincoln Fen, 27-8-1905, J F M. Spike Island, 8-1895, J F M. Haverholme Priory, very common in 1901, J C.

— var. *helice* Hb

N. Market Rasen, 6-1892, W L. Ravendale, 1901, A S.

GONOPTERYX RHAMNI L

Common in some parts of the County.

- N. Louth District, recorded by H W K., R P A., V. Crow, R W G., C S C., and others. Market Rasen, one or two most years, W L. Lissington, 5-1877, F A L. Broughton Wood, 1874, Peacock. Panton, once, G H R. Bradley, 4-1901, A S. Alford, occasional, E W. Ashby (Brigg), Dr. C. Gainsborough, F M B. Newball, 29-5-1902, J F M. Howsham Wood, one, 3-4-1904; common enough all along the wooded portion of the Lincolnshire limestone, E A W P. Edlington, common, E. H. Bree. Barton-on-Humber, A. B. Hall. Owston Ferry District, A R. Mablethorpe, 22-8-1906, L. J. Lill.
- S. Wyberton, rare, J C L-C. Hartsholme and Doddington, J F M Lincoln, F M B. Haverholme Priory, common, J C. Caythorpe, 8-1886; Sapperton, 9-1906, S C S.

ARGYNNIS SELENE Schiff

Local.

- N. Saxilby, 21-5-1893, J W C. Market Rasen, common, W L. Linwood, F A L. and G W M. Legsby and Newball, G H R. Alford, a few most years, E W. Gainsborough District, F M B. Owston Ferry District, A R.
- S. Skellingthorpe, 5-6-1900, J F M. Hartsholme and Doddington J F M. || Bourne Wood, S. Smith.

ARGYNNIS EUPHROSyne L

Locally common in woods—commoner and more distributed than the last species.

- N. Broughton, 1895, A E H. *Louth District, R W G. and H W K Saxilby, 21-5-1893, J W C. Friesthorpe, 1857, R P A. Market Rasen, common, W L. Hatton, Legsby and Newball, G H R. Alford District Mother Wood (Aby), abundant; Hornby Wood (Aby), common; and Well Vale; E W. Ashby (Brigg), Dr. C. Gainsborough District, F M B. Pelham's Pillar Wood, G W M. Owston Ferry District, A R.
- S. Skellingthorpe, 5-6-1900, J F M. Hartsholme and Doddington, J F M. Lincoln, 1893, E P.

ARGYNNIS AGLAIA L

Local.

- N. Linwood, 1857, R P A. Market Rasen, a few each year, W L. Legsby, 1878, F A L. Saleby, one, 3-8-1890, E W. *Louth District, "not uncommon in the Woods 20 years ago," R W G., and H W K. Scotton Common, F M B. and G W M. Pelham's Pillar Wood, common some years, G W M. Woodhall Spa and Tumby, L N U.
- S. Skellingthorpe, 15-7-1902, J F M. Haverholme Priory, a few J C. || Bourne Wood, S. Smith.

ARGYNNIS ADIPPE L

Scarce.

- N. *Louth District, "very scarce," R W G. and H W K. Pelham's Pillar Wood, two taken more than 20 years ago, J W B. and another. Greenfield (Alford), 17-8-1890, one battered specimen, E W.
- S. || Bourne Wood, S. Smith.

ARGYNNIS PAPHIA L

Locally common.

- N.** Broughton, 1896, G H R. *Louth District, "of frequent occurrence in woods and meadows adjoining," R W G. and H W K. Market Rasen, common, W L. Legsby Wood, common in 1896, G H R. Linwood, common 27-7-1901, G W M. Mother Wood, Alford, 17-8-1890, E W. Gainsborough, F M B. Tumbly, 1898, F S A. Between Woodhall Spa and Tumbly, 18-8-1898, L N U. Grimsby, 7-1901. E L W. Owston Ferry District, A R. Edlington Scrubs, 16-8-1905, E. H. Bree
- S.** Hartsholme, Doddington, and Skellingthorpe, J F M Bourne, 3-8-1896, R W G. Lincoln, E M B. Haverholme Priory, a few, J C. Ropsley Rice, 8-1884, T. Stow.

— var. *valezina* Esp

- S.** Skellingthorpe, two, 7-1896, W L.

MELITÆA AURINIA Rott

Very local.

- N.** Friesthorpe Ings, 1856, R P A. *Louth District, "very local only found in one moist meadow," R W G. and H W K.; in plenty 1905, F A L. and C S C. Gainsborough District, F M B. Newball, 12-6-1883, J F M. Hornby Wood (Alford), one 24-6-1891, E W. Formerly very abundant in a meadow at Rigsby near Alford, E W. Greenfield (Alford), one 19-6-1892, E W. Pelham's Pillar Wood, 10 or 12 about 20 years ago, all on one day, J W B. Market Rasen, common but local, W L. Linwood, F A L.

MELITÆA CINXIA L

†"There are old Records of its occurrence in Lincolnshire."
"Formerly occurred in Lincolnshire, for which County records from 1702 downwards are given," C. W. Dale's "History of our British Butterflies," p. 195.

VANESSA C-ALBUM L

There are no recent records.

- N.** *Louth District, "formerly very common in the woods and Elkington Pasture, none seen during recent years," R W G. and H W K. Morton Carr, Mr. Baines. Gainsborough District, F M B. and Mr. Baines. Owston Ferry District, formerly, H R. Maltby Wood, near Kenwick, about 40 years ago, H. H. Kew.
- S.** Skellingthorpe Woods, formerly abundant, F M B. ||Bourne, formerly, S. Smith.

VANESSA POLYCHLOROS L

There are no very recent records.

- N.** Newball, 3 seen in 1897, W L. Market Rasen, 1877 and 1878, F A L. *Louth, "none seen for about 18 years," R W G. and H W K. Maltby Wood, near Kenwick, about 40 years ago, H. H. Kew. Alford, bred from larvæ on drooping willow by R. Garfit, E W. Mother Wood (Alford), one taken, 3-9-1891, E W.
- S.** Hartsholme and Doddington, J F M. Wyberton, two in 1888, J C L-C. Lincoln District, F M B.

VANESSA URTICÆ L

Common.

- N. Legsby, G H R. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12,
S. Little Bytham, 17-7-1900, L N U. Divs. 13, 14, 15, 16, 17.

VANESSA IO L

Well distributed, and some years common in certain parts of the County.

- N. Barton-on-Humber, scarce, G W M. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.
S. Doddington. 1894. J F M. Divs. 13, 14, 15, 16, 17.

VANESSA ANTIOPA L

Rare.

- N. Louth, 1-9-1858, C. Clayton. *Louth District, "occasionally visits this neighbourhood, six were captured in 1874 in Mount Pleasant," R W G. and H W K. Waltham, autumn of 1872, "deep yellow border," J Co. Appleby, 27-10-1872, "border very deep," Mrs. Cross. Boston, 8-1872, I. W. Richards. Market Rasen District, Rev. W. Cooper. Croxby, 8-4-1898, G. Skelton. Gainsborough, "not uncommon some years, seven examples having been seen in Tillbridge Lane and one in my garden," F M B.; also taken by Mr. Baines. Barton-on-Humber, one example in the Hall Garden, probably about 1872, A. B. Hall.
S. Grantham, 5-9-1872, A. E. Ensor; 1872, T. Walpole. Bracebridge 11-9-1896, G. M. Ellison.

VANESSA ATALANTA L

Common.

- N. Swinhope, 1856, R P A. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.
S. Wyberton, J C L-C. Divs. 13, 14, 15, 17.

VANESSA CARDUI L

Irregular in appearance, some years very abundant.

- N. Swinhope, 1856, R P A. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.
S. Wyberton, 1897, J C L-C. Divs. 13, 14, 16, 17.

LIMENITIS SIBYLLA L

Recorded from two localities only.

- N. Gainsborough District, Mr. Baines. Langton (Horneastle), J. Conway Walter.
S. † "Formerly found in the South of Lincolnshire, but no recent captures seem to be recorded from this County."

APATURA IRIS L

Rare.

- N. Louth, 1858, F C. *Louth District, "rather rare, one seen in Burwell Wood in 1882," R W G. and H W K. Haugham Pasture, about 40 years ago, H. H. Kew. Market Rasen, 19-8-1893, W L. Newball, 7-1896, G. Henderson. Willingham, 1877-1879. F A L. Welton-le-Marsh (Welton Wood), one male and three others seen 25-7-1890, E W. and J E M. Gainsborough District, Mr. Baines. Cleethorpes, "caught in a hat," F M B. Gunby St. Peter, one 23-7-1890, E W. Between Woodhall Spa and Tumby, 18-8-1898, L N U.

- S. Hartsholme and Doddington, rare, J F M. Lincoln District, 1881, Canon Fowler. || Bourne Wood, S. Smith.

MELANARGIA GALATEA L

Once a common butterfly in Lincolnshire, but now much scarcer.

- N. *Louth District, "local," R W G. and H W K. Redhill, Goulceby, 5-8-1901, H W K., and 1906, T. Stow. Bigby to Caistor, 1873, J C. Newball Wood, 1881, Canon Fowler; and 15-7-1888, J F M. Wickenby and Linwood, common, W L. Middle Rasen, 1877-78, F A L. Gainsborough District, Mr. Baines, Pelham's Pillar Wood, "was the commonest butterfly there I have caught, five at one stroke of the net; have not heard of any being seen for over 10 years," J W B. (1905). Croxby, 8-1889-90, in numbers, A S. Alford, Well Vale, 20-6-1889, 2-7-1889, and 3-8-1890, abundant, E W. Mother Wood (Aby), one 3-8-1890, E W. Melton Wood, Barnetby, F M B. Greenfield, Alford, 3-8-1890, E W.
- S. † "It still exists, I believe, plentifully at Bourne, and over the chalk range of North Lincolnshire."

EREBIA ÆTHIOPS Esp

Probably extinct.

- N. *Louth District, "a few taken near Hubbard's Hills, in 1856," by the late Mr. T. W. Wallis, R W G. and H W K. Louth, a number of specimens taken in 1859 or 1860, F C.

PARARGE EGERIA L

Local and rather scarce.

- N. *Louth District, "none seen for several years past, formerly common in shady places in the woods," R W G. and H W K. Legsby Woods, 1877-78, F A L. Gainsborough District, F M B. Pelham's Pillar Wood, a few generally each year, G W M. Limber, 1902, F S A. Market Rasen District, W L. Irby, 1901, E L W. Habrough, 6-1902, F J N. Immingham, 6-1902. Roxton Wood, 6-1903, A S. Bradley Wood, 6-7-1906; Stallingborough, 16-8-1906, A B. Owston Ferry District, A R.
- S. Lincoln District, F M B.

PARARGE MEGÆRA L

Common.

- N. Market Rasen, common, W L. and G W M. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.
- S. Wyberton, abundant, 1897, J C L-C. Divs. 13, 14, 15, 16, 17.

SATYRUS SEMELE L

Scarce.

- N. Ashby (Brigg), Dr. C. Scotton Common, one 28-7-1905, S C S. Haxey and Epworth, 14-7-1898, L N U. Owston Ferry District, A R.
- S. Dunsby (Bourne), 31-7-1906, A S.

EPINEPHELE JANIRA L

Abundant.

- N. *Louth, R W G. and H W K. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.
- S. Wyberton, J C L-C. Divs. 13, 14, 15, 16, 17,

EPINEPHELE TITHONUS *L*

Fairly common, but inclined to be local.

- N.** Owston Ferry, J. W. Carter. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.
S. Wyberton, J C L-C. Divs. 13, 14, 15, 17.

EPINEPHELE HYPERANTHES *L*

Common.

- N.** Louth, G W M. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.
S. Little Ponton, C. O. S. Hatton. Divs. 13, 14, 15.

CÆNONYMPHA TYPHON *Rott*

Probably extinct.

- N.** Epworth, S. Hudson. Alford, two in 1888, E W.

CÆNONYMPHA PAMPHILUS *L*

Abundant in suitable localities.

- N.** Mablethorpe, abundant, H W K. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.
S. Wyberton, J C L-C. Divs. 13, 14, 15, 16, 17.

THECLA BETULÆ *L*

Rare.

- N.** Market Rasen, a few larvæ in 1896 and 1897, W L. Newball, common, G H R.
S. Skellingthorpe, 6-7-1895, J F M.

THECLA W-ALBUM *Knoch*

Local.

- N.** Newball, 1896, W L. Pelham's Pillar Wood, common some years, G W M. Market Rasen District, 1876-1880, F A L.
S. Skellingthorpe, 1901, J F M. Near Lincoln, 1893, J W C. Haverholme Priory, a few each year, J C. Hartsholme and Doddington, J F M. || Bourne Wood, S. Smith.

THECLA QUERCUS *L*

Not common.

- N.** *Louth District, "not common; seen hovering around vales in Maltby, Burwell and Muckton Woods," R W G. and H W K. Market Rasen, a few each year, W L.; a few 6-8-1906, J P. and G W M. Legsby, G H R.; and one larva in 1905, J P. Newball, G H R. Gainsborough District, F M B. Alford District: Ailby, Tothill Wood, Welton Wood, and Mother Wood (Aby), E W. Pelham's Pillar Wood, one larva in 1901, J P. Between Woodhall Spa and Tumbly, 18-8-1898, L N U.
S. Skellingthorpe, 6-7-1895, J F M. Near Sleaford, 1884, T. Stow.

THECLA RUBI *L*

Rare.

- N.** *Louth District, "one or two examples," R W G and H W K. Owersby and Bishop Bridge, 1877-79, F A L. Gainsborough District, F M B.
S. Haverholme Priory, a few each year, J C.

POLYOMMATUS DISPAR *Haw*

Though this Butterfly is now extinct, there is little doubt of its having occurred in the County. The Rev. A. Thornley records that he has seen some examples in the collection of Mr. I. Baines, of Gainsborough, and taken by a friend of his some 45 years ago on Morton Carr, near Gainsborough.

POLYOMMATUS PHLÆAS *L*

Common—A white form was once taken in Skellingthorpe Woods, F M B.

N. Market Rasen, 1877-79, F A L. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.

S. Skellingthorpe, F M B. Divs. 13, 14, 15, 17, 18.

LYCÆNA ÆGON *Schiff*

Rare.

N. Laughton Common, Gainsborough, F M B. Owston Ferry District, A R.

S. Hartsholme and Doddington, J F M.

LYCÆNA ASTRARCHE *Bgstr*

Rare.

N. Louth District, "included in the collection of 'Butterflies found near Louth 1863,' in the Mechanics' Institute, but is not now found," R W G. and H W K. Taken by Mr. Bailey of Louth.

S. Lincoln District, F M B.

LYCÆNA ICARUS *Rott*

Common.

N. Market Rasen, 1877-1879, F A L. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.

S. Bourne, 1896, R W G. Divs. 13, 14, 15, 16, 17.

LYCÆNA CORYDON *Fb*

Rare.

N. Kexby, I. Baines.

S. West Willoughby, 7-1892, S C S.

† "On limestone in Lincolnshire." ‡ "Common in Lincolnshire on chalk, T. H. Allis."

LYCÆNA ARGOLUS *L*

Rare.

S. Haverholme Priory, common in 1902, J C.

LYCÆNA SEMIARGUS *Rott*

It is hoped that this rarity still exists in its old haunts.

N. † Epworth. "as late as 1864, Mr. S. Hudson continued to find it, though not commonly, at Epworth, in the north of Lincolnshire. He wrote in the "Zoologist" for that year: 'I find it in meadows, but they are of large extent; and the insect appearing just before the grass is ready for the mower, prevents a proper search from being made for it.' This seems to be the latest record of the insect from that district." But in a letter to E A W P., written by the late

Mr. S. Hudson in 1903, it was stated that it was *not* extinct.
(Nat., 1904, p. 224.)

LYCÆNA MINIMA *Fues*

Rare.

N. Glentham, 1877-1879, F A L.

NEMEOBIUS LUCINA *L*

There are no recent records.

†“ Found in extremely restricted localities in Lincolnshire.”

†“ Lincolnshire, T. H. Allis.”

SYRICHTHUS MALVÆ *L*

Scarce.

N. Market Rasen, a few each year, W L. Linwood, a few in 1901,
G W M. Gainsborough District, F M B. Owston Ferry
District, A R.

S. Skellingthorpe, 4-5-1900, J F M. Haverholme Priory, common,
J C.

NISONIADES TAGES *L*

Locally common in some districts.

N. Market Rasen, common, W L. Hatton and Newball, G H R.
Legsby, G H R. and G W M. Near Aethorpe Wood, one or
two, 1-6-1905, G W M. Saxilby, common, 21-5-1893, J W C.

S. Skellingthorpe, 3-6-1900; Hartsholme, 6-7-1900, J F M.
Grantham, 16-6-1896, A T. Lincoln District, 1881, Canon
Fowler. Haverholme Priory, a few, J C. West Willoughby,
6-1896, S C S.

HESPERIA THAUMAS *Hufn*

Locally common in some districts.

N. *Louth District, “rare,” R W G. and H W K. Alford District.
Mother Wood (Aby), and Greenfield, E W. Gainsborough
District, F M B. Market Rasen, common locally, G W M,
Scotton Common, 28-7-1905, L N U. Pelham's Pillar Wood.
scarce, J W B. Between Woodhall Spa and Tumbly, 18-8-1898
L N U. Edlington, E. H. Bree. Owston Ferry District, A R

S. Lincoln District, F M B. Hartsholme, 5-7-1887, J F M. Haver-
holme Priory, common, J C.

HESPERIA SYLVANUS *Esp*

Common.

N. *Louth District, R W G. and H W K; Divs. 1, 2, 3, 4, 5, 6, 7, 8,
9, 10, 11.

S. Stamford, 21-6-1905, L N U. Divs. 13, 14, 15, 16, 17.

CARTEROCEPHALUS PALCÆMON *Pall*

Very local.

N. West Rasen, 27-5-1856, Rev. W. W. Cooper. Langworth and
Legsby, G H R. Saxilby, abundant 21-5-1897, J W C. Market
Rasen, a few most years, W L. Newball, 1893, E P. Linwood
F A L. and G W M.

S. Skellingthorpe, 3-6-1900, J F M. Bourne, Stainton's Manual,
Lincoln, Canon W. W. Fowler. Hartsholme and Doddington,
J F M.

LINCOLNSHIRE LIVERWORTS.

BY J. REEVES, F.L.S.

with

Miss S. C. Stow's List of Recorded Species.

The Liverworts, or *Hepaticæ* are a class of flowerless plants, forming, with the mosses—and ranking next below them in the plant scale—the order *Muscineæ*. This order stands between the *Algæ* on the lower side and the *Vascular Cryptogams*—club mosses, ferns, etc.,—on the higher.

The *Hepaticæ* received the names they bear from a supposed medicinal value; and there is no doubt that they have been used as a cure for liver complaints, though they are doubtless useless for such a purpose; they have, in fact, no economic use whatever. They are, nevertheless, a most interesting order of plants, and have been recently spoken of by Dr. Carvers as the most interesting group of all.

As is well known, they grow, in most cases, in damp places—in woods, on the borders of ditches, streams and pools, and in caves, while two or three float on the surface of stagnant ponds or ditches during the whole or a part of their existence.

The vegetative organs are, broadly speaking, of two different kinds; the thalloid or alga-like form, in which there is no differentiation into stem and leaf, the function of both being effected by the thallus; and the foliaceous form, in which there are stems and leaves. There are, however, intermediate forms, which cannot be properly called either thalloid or foliaceous.

Dealing first with a thalloid form, such as *Pellia* or *Marchantia*, we find a thallus or frond formed of a flattish mass of cells, with small scale leaves and rootlets below. Each thallus is commonly more or less heart-shaped; the growing apex is in a depression,

and one thallus overlaps another, so that large green patches are usually formed by such species. The epidermal cells contain stomata, more or less like those in the leaves of the higher plants.

In the foliaceous forms, e.g., *Lophocolea*, there is a well-marked stem, which, however, has no proper vascular-tissue, but is composed of simple elongated cells throughout. The true leaves are usually in two rows; they are simple in structure, having one cell only in thickness. There are often small scale leaves, as in the frondose forms, on the lower side of the stem, where rootlets are also found.

As the Liverworts depend on surface water—the rootlets only penetrating the ground for a short distance—there are many interesting developments for water-holding, ranging from a hollow leaf, or a lacinate leaf (which acts like a sponge), to a complicated pitcher, comparable with the vessels borne by *Utricularia*.

Dealing now briefly with reproduction in Liverworts, we find an interesting vegetative method, or budding. The buds, or gemmæ, may be simply borne at the ends of shoots, as in *Kantia*, or are formed in a “cup,” as in *Marchantia*, where the cup is circular, or as in *Lunularia*, where the cup forms only half a circle, or is semilunar in shape.

In the sexual mode of reproduction there is much variety, so far as the unessential elements—the spore bearer, etc., are concerned. But in the form of the essential elements there is, as would be expected, considerable uniformity. If we take a simple case, such as *Pellia*, we find that in the autumn a number of Archegonia, not visible to the naked eye, are developed at the apex of any female thallus, while antheridia are at the same time found embedded in the male thallus, appearing to the naked eye as small round spots. When the antheridia are ripe and the plant is wet enough, antherozoids emerge and swim about until they reach the archegonia, down the neck of which they make their way and fertilize the oosphere. As a result the sporogonium is developed, which consists, when mature, of a pellucid stalk bearing a dark-looking sphere at the top—a case filled with spores. The spore case bursts and the spores are disseminated and form new plants,

Among the spores there are often elaters, which are elongated spirally-marked cells, formerly supposed to aid in the dissemination of the spores, though this is now considered to be doubtful.

About 4,000 species of Liverworts are known to exist, and of these 230 or thereabouts are found in Great Britain. In Lincolnshire the conditions—intense cultivation with general absence of rocks, shade, etc.—are for the most part unfavourable to the growth of these plants; but from woods and ditches, from walls and trees, some 43 species have been gathered. Large quantities of *Pellia* and *Fegatella* are often found, but the quantity of most species found in one place is commonly small.

Four of the sub-orders are represented in the County:—

Jungermanniaceæ, including both frondose and foliaceous forms “fruit,” (*Sporogonium*) solitary, four-valved, valves splitting rarely torn, elaters present.

Marchantiaceæ, frondose, with somewhat complicated spore-bearing structures called *Capitula*, capsules with short stems split four to eight times at the apex, elaters present.

Ricciaceæ, frondose, fruit without valves and usually immersed in the frond, dehiscing irregularly; elaters absent.

(The fourth sub-order, the *Anthocerotaceæ*, which are frondose, the frond being thick and more or less orbicular, bearing a pod-like fruit without elaters, is not, so far as is yet known, represented in Lincolnshire.)

The list drawn up by Miss S. C. Stow, of Grantham, the Secretary of the Cryptogamic Section of the Lincolnshire Field Naturalists' Union is given below:—

MARCHANTIA POLYMORPHA L

Not uncommon in the County.
Divs. 1, 2, 3, 4, 5, 7, 8, 10, 13, 15.

FEGATELLA CONICA, Corda, (**CONOCEPHALUS**).

Common in the County.
Divs. 2, 3, 4, 7, 8, 9, 10, 11, 13, 15.

LUNULARIA VULGARIS *Mich*

Common in the County.
Divs. 2, 3, 4, 7, 8, 10, 15.

RICCIA GLAUCA *L*

Div. 7. Rasen, 21-4-1879; F. A. Lees.
Div. 13. Caythorpe, 1904; S. C. Stow.

RICCIA CRYSTALLINA *L*

Div. 7. Linwood, 16-8-1905; J. Reeves.

RICCIA SOROCARPA *Bisch*

Div. 13. Hartsholme, 3-10-1905; Rev. E. A. W.-Peacock.

RICCIELLA FLUITANS *Br*

Div. 5. Scotton Common, 29-7-1905; J. Reeves.

RICCIOCARPUS NATANS *C*

Div. 7. Moortown, 25-8-1906; A. Smith.
Div. 15. Cherry Holt, Grantham, 4-1904; S. C. Stow.

FRULLANIA TAMARISCI *L*

Div. 11. Alford, 1892; E. Woodthorpe.

FRULLANIA DILATATA *L*

Appears to be more frequent in the South, than in the North
of the County.
Divs. 3, 4, 7, 11, 13, 14, 15, 16.

LEJEUNEA SERPYLLIFOLIA *Dicks*

Div. 3. Howsham, 7-7-1892; J. B. Davey.
Div. 7. Linwood, Willingham, 1877-79; F. A. Lees.
Div. 13. Doddington, 30-6-1892; J. B. Davy.

RADULA COMPLANATA *L*

Not uncommon in the County.
Divs. 3, 5, 6, 7, 8, 11, 13, 14, 15.

PORELLA PLATYPHYLLA *L*

Div. 4. Bradley Woods, 1904; J. Reeves.
Div. 7. Tealby, Walesby, and Claxby Wood, 1877-79; F. A. Lees.
Div. 15. Great Ponton, 1898; H. Preston.
Div. 16. Careby, 9-6-1903; S. C. Stow.

LEPIDOZIA REPTANS *L*

N. 7., "on stones on the Greensand scarp of the chalk at
Tealby, 1877-79." F. A. Lees.
Div. 11. Halton Holgate; F. A. Lees.

ODONTOSCHISMA SPHAGNI *Dum*

Div. 3. Elsham, Wrawby Moor, 1877-79; F. A. Lees.
Div. 7. Linwood Warren, 1877-79; F. A. Lees.
Given for South also in Mr. Lees' List in 'Outline Flora.'

CEPHALOZIA BICUSPIDATA L

- Div. 3. Housham, 7-7-92; Rev. E. A. W.-Peacock and J. B. Davy.
 Div. 4. Roxton, 8-10-04; J. Reeves and A. Smith.
 Div. 5. Scotton Common, 29-7-1905; J. Reeves.
 Div. 7. "Wet mossy banks in the woods in many places,
 (Rasen, etc.," 1877-79; F. A. Lees.
 Div. 8. Brackenboro' Wood, 3-3-1899; J. Cordeaux, Fotherby,
 1904; J. Reeves.
 Div. 15. Grantham, 1898; H. Preston.

CEPHALOZIA LAMMERSIANA Hübn

- Div. 13. Stapleford Moor, 1898; S. C. Stow.
 Div. 7. Linwood Peat Warren, 1898; F. A. Lees.

CEPHALOZIA DIVARICATA Sm

- Div. 13. Stapleford Moor, 1898; S. C. Stow.

LOPHOCOLEA BIDENTATA Nees

- Very common both North and South.
 Divs. 2, 3, 4, 5, 6, 7, 8, 10, 11, 13, 14, 15, 16.

LOPHOCOLEA HETEROPHYLLA Schrad

- Div. 3. Cadney, 2-1901; Revds. Peacock and Mason.
 Div. 15. Stoke Rockford, 1898; H. Fisher.

KANTIA TRICHOMANIS B. Gr

- Not uncommon in the County.
 Divs. 3, 4, 5, 7, 11, 13.

KANTIA ARGUTA N. et M

- Div. 7. Wickenby Holt; F. A. Lees.

BLEPHAROZIA CIILARIS Dum

- Div. 7. Linwood Warren and Willingham Woods, 1878;
 F. A. Lees.
 Div. 3. Nettleton, 1899; S. Allett.

BLEPHAROSTOMA TRICHOPHYLLA L

- Div. 7. Willingham, 1877-79; F. A. Lees.

SCAPANIA NEMOROSA L

- Div. 2. Reed's Quarry, Broughton, 1898; F. A. Lees.

SCAPANIA IRRIGUA N

- Div. 5. Scotton Common, 29-7-1905; J. Reeves.

DIPLOPHYLLUM ALBICANS Dum

- Div. 7. Frequent in the Rasen district, 1877-79; F. A. Lees.
 Div. 13. Stapleford Moor, 1898; S. C. Stow.

PLAGIOCHILA ASPLENIOIDES Dum

- Not uncommon in the County.
 Divs. 2, 4, 7, 8, 11, 13, 15, 16;

CHILOSCYPHUS POLYANTHUS L

Div. 8. Brackenboro' Wood, 3-3-1899 ; J. Cordeaux.

Div. 8. Springs, Louth, 1904 ; J. Reeves.

JUNGERMANNIA INFLATA Schr

Div. 7. Tealby Woods, Claxby, etc., 1877-79 ; F. A. Lees.

JUNGERMANNIA BARBATA Schr

Div. 7. Linwood Warren, 1877-79 ; F. A. Lees.

JUNGERMANNIA VENTRICOSA Dicks

Div. 7. Legsby Woods, 1898 ; F. A. Lees.

MYLIA TAYLORI Gray

Div. 13. Stapleford Moor, 1898 ; S. C. Stow.

NARDIA SCALARIS Schr

Div. 5. Scotton Common, 29-7-1905 ; J. Reeves

N. and S. Lincs., F. A. Lees' List in 'Outline Flora.'

BLASIA PUSILLA L

Div. 7. Rasen neighbourhood (Usselby, etc.), 1879 ; F. A. Lees,

FOSSOMBRONIA PUSILLA L

Div. 13. Court Leys, Caythorpe, 1903 ; S. C. Stow.

FOSSOMBRONIA ANGULOSA Raddi

Div. 7. Linwood, 16-8-1905 ; J. Reeves.

FOSSOMBRONIA Sp

Div. 5. Scotton Common, 29-7-1905 ; J. Reeves.

PELLIA EPIPHYLLA L

Common in the County.

Divs. 2, 3, 4, 5, 7, 8, 9, 10, 11, 13, 14, 15.

PELLIA CALYCINA Tayl

Common in the North of the County, unrecorded for South.

Divs. 2, 4, 5, 7, 8, 9, 10, 11.

ANEURA PINGUIS L

Div. 7. Frequent about Rasen, 1877-79 ; F. A. Lees.

ANEURA MULTIFIDA L

Div. 7. Tealby Churchyard, Willingham House pondbank,
1877-79 ; F. A. Lees.

MERTZGERIA FURCATA L

Div. 7. Tealby, and Claxby Wood, 1877-79 ; F. A. Lees.

Div. 13. Court Leys, Caythorpe, 25-11-1898 ; S. C. Stow.

Div. 14. Cranwell, 6-3-1899 ; S. C. Stow.

Div. 15. Brandon, 10-1898 ; S. C. Stow. And Stoke Rockford,
1898 ; H. Fisher.

Divisions 1—12, are in N. Lincs., V. C., 54. 13—18, in S. Lincs.,
V. C., 53.

NATURAL HABITATS AND NATIVENESS.*

What is a natural habitat? Where, also, if such a thing is now possible in Lincolnshire, may one be met with in unsullied purity? I have often asked myself these questions. What is more, so far as my reading extends, I have never received an answer. Moreover, I am not aware that these questions have ever been considered in all their bearings for a country like Great Britain.

Indirectly H. C. Watson tried to simplify the riddle, but the mesh of the net he used for the purpose was too wide to catch all the fragments of information required for a satisfactory explanation. He showed us the way, however, if he did not arrive at the goal, or go very far on the road himself. Much though I admire his patient industry and methods, he singularly fails in getting at the truth he was indirectly seeking, despite his highly developed logicity. The terminology he employs is defective, for it is unusually difficult in application. The great error of his method is in treating species *per se*, as natives, denizens, colonists, or casuals, rather than in their varied relation to man the great disturber of nature. The astonishing thing is that such a time should have elapsed without a more natural method being suggested.

Now, with the exception of a few commons of Blown Sand with their included Peat bogs—and these have all been cut through by dykes—places where, speaking generally *Calluna* and *Pteris* are the predominating species, I doubt whether there is such a thing as “a natural habitat” in Lincolnshire, the second largest county in England.

If we consider the matter the state of the case becomes clear. The coast sand-hills are only semi-natural, most of them are

*Presidential address to the L. N. U. for 1906.

of human origin. They are made by throwing up a bank of Estuarine Alluvium, which arrests the moving sands, and directly causes the dunes. The original bank is so buried beneath the sand as to be lost to sight. Their flora is characteristic enough. It acts as an admirable binder to the loose and shifting surface; and as it is absolutely valueless for animal food—asses and goats being the only exceptions, for rabbits are not permitted—it remains practically untouched.

We have woods, and in some parts of the county soils of poor discription are heavily wooded, but in no spot known to me is there an old woodland, where human art has not forced nature out of her own negligent course. Roadsides, pasture and meadow too, are as conventional to the eyes that can read the truth, as the prosaic silt marsh which stretches in endless miles on a dead level under grass or arable cultivation. The whole alluvial area has all been reclaimed by periodical embanking from the salt-marsh, either during the Roman occupation, or since the departure of that practical race. The foreshore itself is an artificial production, thrown up by the sea in a short time on account of the effects of the contour of the bank of the last enclosure. Its flora, too, soon grows formal and artificial from heavy sheep grazing.

Signs of the all-dominating influence of man are everywhere, when natural habitats are sought in all their pristine purity. The tilth is not more changed in proportion by agriculture, than the pasture is by the grazing of stock, or the meadow by the regular cutting of hay. This is so much the case, that anyone who has a full analyses and notes of any given soil, can almost rewrite the stocking and cultivation history of grass or tilth on the same bed, be it clay, silt, or lighter soil.

Let us try to smooth down the harsh asperities and broken cadences of ravished nature as we will, the task proves beyond our utmost endeavour. As the shattered columns of the portico proclaim the heathen temple in classical lands, so the broken cycles our flora proclaim the dominating influence of man the whole county over.

Passing, with some fellow naturalists, through a field on the Marlstone Rock in South Lincolnshire, from which a crop of hay

had been taken some weeks before, a practical farmer exclaimed, "I can see this field is a pasture that has been meadowed." I had discovered the fact on entering it from the absence of *Heracleum* and *Anthriscus sylvestis* in the hedge, and other hay-land species on the feeding surface; but was hardly prepared for his immediate reply to my question—"How do you know?" "It is simple enough! From the presence of *Cnicus arvensis* and *Cnicus lanceolatus*," he replied. In a word he recognised at once—from the agriculturists point of view—that the selection of species was artificial, that it was a human product, as much as the wheat which grew in the field beyond the fence. Truly natural habitats and native floras on the rich soils of Lincolnshire there are none. Man with us has shaped the course of nature so long, especially since the great inclosure, following on the growth of the turnip as a field crop—dating from 1790—that everything has become more or less artificial.

Yet with these definite human characteristics everywhere, from the reclaimed silt and drained peat to the highest points of the wold and cliff hills, everything is natural enough within certain bounds. Man when regarded from the right stand-point is no more an excrescence and disturber in nature than the placid bullocks and quiet sheep, which make the pasture so different from the meadow flora by continual grazing. The human species causes a little more trouble perhaps in relegating the wider circle of its influences into the proper category of more permanent or of transitory fluctuations, nothing more. For surely man is as natural an influence on our rich soils, as the longwool sheep that crops, and thereby changes the herbage of its native hills, or as the Peregrine sowing oak, beech, or barley in the ash woods of the Liassic clays, from the torn crop of a ring dove, which had obtained a full meal on the escarpment of the Wolds. It is all very well for the sake of expediency and simplicity to make a distinct division, as between the British and South Kensington Museums, and to say, "Here man and man's work; there nature and nature's work." No such distinction exists in reality, nor can one be made in botany without violating the first principle of true observation, namely, that "what is found is natural."

In relation to man as a predominating factor in the botanical problem all we have to set ourselves to disentangle is, "what is permanent, and what is transitory." The former is natural, the latter accidental, semi-alien, or alien. No other criterion appears to be possible. It has the advantage of being simple and practical. It may be difficult to say whether a given species is "native, denizen, colonist or casual," under a certain environment, but it is easy enough to ascertain whether it is permanent or transitory. It is not difficult to demonstrate whether a plant is found in the majority of fitting situations, or whether it is peculiar to one locality, or at most a few under suspicious circumstances, under the same conditions of growth.

To help in this respect, and to escape from the difficulties and perplexities of the Watsonian system of terminology, I propose to class all species into various categories, as they stand in an intimate or more distant relation to man and his undertakings. Their position in a category or categories will at once settle their status. Samples only can be given here. Followers (1) of man, (2) of cultivation, (3) of commerce. Frequenters (1) of broken ground, (2) of waste ground, (3) of pasture, (4) of meadow, (5) of woodland, (6) of road-side hedges, (7) of field hedges, (9) of lakes, (10) of ditches, &c., are much more simply applied, even though the phrase lacks the sweet simplicity of the Watsonian word. Both should contain a distinct idea, or set of circumstances, unfortunately, in practice, this is what Watson words do not express.

Now as regards application. *Thlaspi arvense* is at best an uncertain "Follower (2) of cultivation" in Lincolnshire. It was introduced into Cadney parish with seed wheat some 40 years ago. Happening on a soil—dry arable Peat mixed with Chalky Boulder Clay—that exactly suited its requirements, it has remained till to day. It is confined as a semi-permanent species to the narrow band of mixed soil where it was originally sown. This spring while analysing the flora, which gradually and through many changes, wins back the bare patches the stone heaps leave by the road side after the metal has been used on the permanent way, I came across two isolated plants of *T. arvense*

miles away from its own place, on the soils of Chalky Boulder Clay and Sandy Glacial Gravel. Introduced without doubt, because it is transient; but by what means? A little reflection and the problem was solved. T. E., who carts the road stone has no land where *T. arvense* grows; but stay, he begged a few loads of mangels from his neighbour G. S., last winter, while he was busy carting the road metal. This plant grows freely on the latter's land where "the pie" is situated. There can be no doubt when the stone was shot out of the dry cart, the seeds left by the damp mangels came along with them. Here they are impermanent, because this species is not a Frequenter (3) of pasture, or (4) of meadow. When the roadside pasture returns with irresistible power, as it will in a few years, these places will know *T. arvense* no more. If the land, where it has flourished so well at Cadney for forty years, were sown down to grass (3), or planted as wood-land (5), it would quickly disappear there too; as it would also on the Lincolnshire Limestone (2), from which it was originally imported, though it is no true native there. With us *T. arvense* is not only a Follower (2) of cultivation, it is an uncertain one too. Though it is found round most local flour mills, it is generally absent from the most suitable soils; and even where there are allotments, it is often confined to one or two patches in a dozen or more.

Another such case is that of *Hypochaeris glabra*. During the last thirty years it has been diligently sought for by Messrs. F. A. Lees, W. Fowler, H. Fisher, and Miss S. C. Stow, on soils which appear ideal for it, if it were with us permanently. Mr. H. C. W. Hawley found it between Coningsby and Tunby, on Old River Gravel, on arable land in 1902. It has remained there till to-day, but only as a rare Follower (2) of cultivation, nothing more, even on such a suitable soil.

Such cases are simple and amenable to analysis. Are the so called complicated cases much more difficult? Take *Urtica dioica* as a fair example. It has so attached itself to man, that if you are on a coach ride on the wildest Scotch or Irish moors, and an isolated bed comes into view, the driver may point it out with his

whip, and remark "There was a shepherd's shealing there once, that bed of nettles shows it." His reasoning would be true, though Mr. Reid has demonstrated this species to be interglacial from the D bed at Hoxne in Suffolk. It is, therefore, as old, if not much older than man in Eastern England. Here I may pause a moment to say the value of this geo-botanical work can hardly be over-estimated. Mr. Reid's admirable and careful analyses, have given us a Key to many an otherwise insoluble problem. May he have many other successors in his special line of enquiry.

To return. There was however, no doubt a time when *Urtica dioica* flourished in a definite area without the least human aid; that is not the question which interests us in trying to understand its peculiar position to-day. It is now in a state of semi-dependence. Who can to-day define the limits of its present position? It has nothing to do with cultivation properly so called, but rather with an increasing soil fertility—with nitrogen and potash. Would not, such species be best entitled "Followers (1) of man?" The other common species *U. urens*, is even more dependent on man than its congener, and can only be compared to *Ballota nigra* and other house-stead or village frequenting plants. The difficulties that a species like *Urtica dioica* bring in its train are not ended when we have fully analysed its peculiarities, and placed it in its own category. It is found in the richest pastures we have; and its presence causes a marked change in their flora, unless the scythe comes too frequently to permit them to develop. By destroying the pasture grass, with its clustering annual stems, to a certain extent it acts like a tith crop, and a whole tribe of Followers (2) of cultivation, and Frequenters (1) of broken ground, such as *Stellaria media*, *Bursa*, *Veronica agrestis*, *Lamium album* and *L. purpureum*, &c., according to soil and situation, find a foothold along with it. They obtain soil room amid its stems, and are protected by its well armed leaves from the ravages of stock. All these species can live on in pasture which is so sandy and poor that competition is not keen, but none of them can

survive in the rich feeding pasture to which I refer, where the turf is like a well kept lawn in closeness.

It is just the same with "broken ground" or "barren spots" left temporarily without a covering on such rich soils. As for instance, the places where stock stand and cut up the turf, or where a tree has been blown up by the roots and has torn the soil, or the spaces left by the burning of hedge and ditch rubbish. The first year they are covered with the animals of cultivation, the second with annuals and biennials growing thickly together; during the latter part of the second and third year perennials are added, and continue to win till the turf gains the upper hand, and conquers the spot.

Everything being so artificial although so natural around the botanist in fertile districts such as Lincolnshire, the great difficulty is to get a just criterion by which to judge complicated cases. A more than unusually striking example of this want is found in the little parish of Newstead, on Ancholme, by Brigg. This farm was a Gilbertine Priory, founded by Henry II. in the 1173. The portion I have to refer to is a bed of Sandy Glacial Gravel, rising above the Peat level of the Ancholme fen around. In the days before the foundation, and till long after, Newstead was an island, called Rucholme, i.e., Rook-island, in the charter conveying it. In the middle of one of its pastures, even of only medium or fair quality, is a round barrow, most probably of Neolithic age. Not very far away is found a grass-covered gravel pit from which the material for the barrow may have been obtained. Geologically the material is exactly the same. This pit presents a curious botanical problem. When it was first or last used, it is quite impossible to say. It is far larger than would be required for supplying the barrow material, and may have been requisitioned by the Priory people when they made their "causeys," as they rightly called them, to Cadney on the North, and Hibaldstow on the South, over the fen level. There is no evidence, beyond the fact that such a gravel was certainly obtained for the purpose, and that this is the only pit near, and carriage was an almost insuperable difficulty in early times.

Let that be as it may. The close pasture has conquered all the pit which was originally 12 feet deep, with the exception of the steep slope of its former face. There with difficulty, but greatly aided by the incline, the following species still retain a foothold.

Alchemilla arvensis, *Bursa pastoris*, *Cerastium arvense*, *Erophila vulgaris*, *Geranium molle*, *Stellaria media*, *Trifolium dubuim*, *Trifolium striatum*, *Veronica arvensis*.

Of these species, *Bursa* is not quite typical, or perhaps I should say it is the sandy pasture form, purple stalked instead of green, with purple sepals, and purple white petals. *Trifolium dubuim* is the native wild plant, and not the seedsman's variety. *T. striatum* is a rare plant in Lincolnshire. It has only been recorded on eight other occasions. Its nearest localities known being 16 miles off in a bee line on the west, and 18 on the east.

It might be urged on the lines that Mr. Dunn argues in his "Alien Flora," that man—perhaps Neolithic man—formed this pit for his barrow material, and gave all these species a foothold. Consequently they are "alien" in the Watsonian sense. This much is allowed, and anything else in reason. For instance that the Priory people after 1173—long after, if any one requires it—used the pit. Ask anything in justice, and it shall be willingly conceded. Still the extremest case is given away.

The pit has not been used for ages; that must be clear to any geologist, soil student, or botanist, who studies it. Then why have these species retained their hold so long despite the all-conquering turf around? Stock, rabbits, and birds seeking grit stones, have all helped to keep little broken patches on the slope of the old working face. The spot was called Rook-island in the vernacular before 1173, and these birds still breed in the next field; and I have myself seen them "gritting" on the old pit face. What is more important is, I said this pasture even under modern cultivation is only of "medium or fair quality." It is what is locally called a "holding pasture;" one that can grow the bone and muscles of young stock well, but which cannot fatten them.

Therefore it must have been a very poor pasture indeed before it reached its present state of fair productivity.

Now while it remained unenclosed and fairly natural, it would certainly be the "native"—I can find no other word but "natural"—home of such species as are now forced to survive on the working face of the old gravel pit.

This excavation is only one instance of many similiar phenomena scattered all over the county. Because the circumstances are purely artificial at the spot named it has been purposely selected; the more complicated the problem the better as an illustration. In many places there are natural escarpments much steeper and more varied than the one in the Newstead gravel pit, and everywhere like circumstances are producing similar results. In all such places the so called "doubtful native species" live on, contending for a footing with the most adverse conditions in the face of more predominant species. They do more. They are ever ready to colonise any bare spots or "open turf" in their neighbourhood, as broken ground on escarpments, beck bank, &c., which even in flat Lincolnshire are not so uncommon, as might be imagined, from purely natural causes.

All the nine species named above from the old pit are met with as Frequenters of very poor sandy pasture, and of broken ground, nearly all as Followers (2) of cultivation. All are to be discovered in artificial combinations where they meet with less powerful competition. Yet if they be sought for in their native habitats, seaside sand dunes, inland dunes, beck banks and escarpments, that is, in the naturally open turf of poor soils or broken ground, they can be proved to be as truly native as anything we have in our existing flora, which, to say the truth, is now wholly artificial. These species, and others like them, we may candidly admit, are most certainly dependent on man generally under existing circumstances for the chance of growth; but they are just as certainly "truly native" *at the right place in the floral cycles* of such soils as suit their specific requirements. Yes, but only a careful Rock-Soil analysis, which not only considers all localities separately, but also the different circumstances of each set of similar localities separately too, can demonstrate their nativeness with scientific precision.

Additions to Lincolnshire Non-Marine Mollusca.

C. S. CARTER.

Since the publication of the List in the Transactions, 1905, interesting additions have been made to our list, notably 4 varieties of *Limax maximus*, one of which is at present a nondescript but in the hands of Messrs. Taylor and Roebuck for description: of the other three, each of which have been identified by W. Denison Roebuck, F.L.S., one is referred to sub-var. *mulleri* Moq, another to var. *aldrovandi* Moq-Tand, which I believe, has previously only been recorded, in the British Isles, for Dorset, Gloucester W., and the Isle of Man, the other to var. *bicolor* Taylor, which has previously only been recorded for the Isle of Man. Those marked with* are new to our list.

Unfortunately the season has not been one of the most favourable for Mollusca, it having been very hot and dry. Nevertheless, owing to the exertions of Mr. J. F. Musham of Lincoln, I am able to give records of more or less common species for divisions for which we had no previous record.

I again desire to thank those workers who have kindly assisted in increasing our knowledge of the Mollusca of the County, and to repeat my appeal for further collections and notes of Mollusca.

LIMAX MAXIMUS *Linné*

— *sub-var. *mulleri* Moq

N. 6. Nettleham pit, 21-9-06, J F Musham and A Smith.

— *var. *aldrovandi* Moq-Tand.

N. 8. Garden, 8, Bridge Street, Louth, 1903. C S C.

In a letter dated December 17th, 1906, Mr. Musham informs me that on the occasion of the recent Annual Meeting of the L.N.U., Mr. Roebuck identified var. *aldrovandi*, amongst his slugs collected in High Street, Lincoln.

— *var. *bicolor* Taylor

N. 8. Garden, 8 Bridge Street, Louth, 11 p.m., 10-7-1906. C S C.

VITRINA PELLUCIDA *Müller*

S. 13. Skellingthorpe Wood, 20-10-06. J F Musham.

VITREA CELLARIA *Müller*

S. 13. Canwick Pit and Cross Cliffe Hill, 16-5-06. J F Musham.

VITREA NITIDULA *Drap*

S. 13. Canwick Pit, 16-5-06. J F Musham.

VITREA PURA *Alder*

S. 13. Skellingthorpe Wood, 20-10-06. J F Musham.

— **nitidosa** *Gray*

S. 13. Skellingthorpe Wood, J F Musham.

ZONITOIDES NITIDUS *Müller*S. 13. Canwick Pit, 7-10-06. Skellingthorpe Wood, 20-10-06.
J F Musham.**EUCONULUS FULVUS** *Müller*

S. 13. Skellingthorpe Wood, 20-10-06. J F Musham.

ARION ATER *Linné*— var. **brunnea** *Roebuck*

N. 7. Linwood, 4-6-06. J F Musham.

ARION INTERMEDIUS *Normand*

N. 1. Isle of Axholme, Aug., 1906. A Reynolds.

S. 13. Skellingthorpe, 20-10-06. J F Musham.

SPHYRADIUM EDENTULUM *Drap*— var. **columella** *G. V. Martens.*

N. 8. Hubbard's Valley, Louth, 31-9-06. Vernon Howard, M.A.

PYRAMIDULA ROTUNDATA *Müller*

N. 6. Nettleham Pit, 21-9-06. J F Musham.

HELICELLA VIRGATA *Da Costa*— var. **subdeleta** *Taylor*

N. 3. Uleby, Nov., 1906. C S C.

HELICELLA ITALA *Linné*— var. **hyalozonata** *Cockerell*

N. 8. One at Redhill near Goulceby, Sept., 11-1906. C S C.

S. 15. Sapperton, 6-8-05. T Stow.

HELICELLA CAPERATA *Montagu*— var. **major** *Jeff.*N. 8. Chalk Pit, near Utterby, 28-11-1906. C. Davies-Sherborn,
F.G.S., F.Z.S.**HYGROMIA HISPIDA** *Linné*

S. 13. Canwick Pit, 16-5-1906. J F Musham.

HELICIGONA LAPICIDA *Linné*

S. 15. Sapperton, 6-8-05. T Stow.

HELIX ASPERSA *Müller*

N. 6. Nettleham Pit, 21-9-06. J F Musham.

ENA OBSCURA *Müller*

N. 6. Nettleham Stone Pit, 26-8-06. J F Musham.

CÆCILIOIDES ACICULA *Müller*Gretwell Iron Mines, just below the surface dead,
5-7-06. J F Musham.**JAMINIA CYLINDRACEA** *Da Costa*

S. 15. Sapperton, 6-8-05. T Stow.

CLAUSILIA LAMINATA *Montagu*

N. 6. Nettleham Pit, 21-9-03. J F Musham.

CARYCHIUM MINIMUM *Müller*

S. 13. Skellingthorpe Wood, 20-0-06. J F Musham.

LIMNÆA AURICULARIA *Linné*

S. 13. River Witham, Boultham, 14-11-05. J F Musham.

LIMNÆA PALUSTRIS *Müller*

S. 13. Boultham Dyke, 18-5-06. J F Musham.

LIMNÆA TRUNCATULA *Müller*

N. 1. Folly Dyke, Big Turbary, Belton, L.N.U. Meeting, July, 1906. C S C.

PLANORBIS CRISTA *Linné*

— *var. *lævigata* *Adami*

N. 8. Ponds, Coxey Hills, near Louth, July, 1906. Walter Markham.

PLANORBIS FONTANUS *Lightfoot*

North Delph, Monks Abbey, 31-10-06. J F Musham.

PHYSA FONTINALIS *Linné*

S. 13. Hykeham, 28-11-05. J F Musham.

BYTHINIA TENTACULATA *Linné*

**Monst. decollatum* *Jeff.*

N. 9. Small drain, Saltfleetby-all-Saints, Easter, 1906. C S C.

BYTHINIA LEACHII *Sheppard*

*Numbers of decollated forms of this species were also found associated with the last named species, on the occasion of the Leeds Conch. Club excursion to the district. Easter, 1906.

VALVATA PISCINALIS *Müller*

Mr. J. F. Musham informs me he has found this species common in the stomachs of eels at Snarford.

VALVATA CRISTATA *Müller*

N. 1. Folly Dyke, Big Turbary, Belton. C S C. L.N.U., Meeting, July, 1906.

NERITINA FLUVIATILIS *Linné*

— *var. *cerina* *Colbeau*

S. 13. River Witham, Boultham, 17-9-06. J F Musham.

UNIO PICTORUM *Linné*

S. 13. Boultham, 14-11-05. J F Musham.

UNIO TUMIDUS *Retzius*

S. 13. River Witham, Boultham, 14-11-05. J F Musham.

ANADONTA CYGNÆA *Linné*

— var. *anatina* *Linné*

S. 13. Boultham, 7-19-05. J F Musham.

SPHÆRIUM RIVICOLA *Leach*

(Dead), River Bank, Bardney, 27-12-05. J F Musham.

PISIDIUM AMNICUM *Müller*

S. 13. River Witham, Hykeham, 14-10-06. J F Musham.

NOTES ON LOCAL OCCURRENCE OF NERITINA FLUVIATILIS.

BY

JOHN F. MUSHAM, LINCOLN.

This shell is found in the vicinity of Lincoln in the River Witham from Stamp End lock to Bardney bridge, north side of river, oddly on raked out weed.

On the under sides of large sub-merged stones, and on the brick work of culverts. This year the river being exceptionally low has given me a good opportunity to prove the above statement.

I cannot find it in the Foss-dyke from Lincoln to Saxilby. They occur however plentifully in the "Main drain" emptying into the Foss, on West side of the Racecourse, on the submerged base of the brick hauling bridge crossing the above. The Foss side of the same bridge has none on anywhere, and the same holds good of the bridge higher up the Foss, connecting it with Skellingthorpe basin.

The shell does not, as far as I can trace, occur in Brayford, although reported as there; but there are quantities of dead ones on and near the North Wharf, brought with sand from the Notts. portion of the Trent.

It can be taken oddly in the Upper Witham from Brayford Bridge to Aubourn amongst raked out weed.

There is a strong colony of small ones on the stonework of the sluice near the Lincoln Laundry and under the large stones strewing that side of the river bed.

Higher up the river on the West side is an old brick culvert on which var. *cerina* (Colbeau) occurred this summer. This I believe is a new record for the County.

RARE LINCOLNSHIRE PLANTS.

BY

REV. E. ADRIAN WOODRUFFE-PEACOCK, F.L.S.

Cyclamen Hederæfolium, (Ait.)

This species can only be a planted or escaped alien with us. The records for it are as follows:—John Gerarde's *Herbal*, 1597, 'It is reported to me by men of good credit that *Cyclamen*, or Sowbread, groweth on the hills of Lincolnshire.' Thomas Johnson's edition of Gerarde's *Herbal*, 1633, reprints this statement, but he adds, very properly, 'I cannot learn that this (species) grows wild in England.'

My other records are;—Mausoleum Woods, Brocklesby, 1860, W. H. Flowers. The same place, 1879, William Cook. He took a root into his garden, and the County Herbarium specimens were from that root. The same place, 1882, Mr. Marshall, of Brocklesby. The same again, 1886, Mr. Harrison, of Ulceby. In every one of these cases I had the evidence of other witness to confirm the fact. I have heard, but have no proof, that this species has been taken "as a wild plant" at Bonby; but I have no confirmation of the fact up-to-date.

The *Cyclamen* is not a native of England. Professional gardeners tell me, it can resist our greatest frosts provided the whole tuber is covered with soils, and the ground porous, so as to give rapid drainage. The Lincolnshire plants I have seen are all the variety *ficariifolium*, Syme. The soil it was lately found on is Sandy Glacial Gravel. It looks as if the species had been at some time either (1) purposely planted for ornament, (2) or introduced by accident with trees, or (3), that it is a remnant of the 16th century introduction of this species as swine's food. Such evidence as we have seems to point to the last supposition as the most likely. It is Mr. F. A. Lee's suggestion.

THE COUNTY MUSEUM.

The County Museum is now an accomplished fact.

The Greyfriars, a thirteenth century monastic church, has been splendidly restored and effectively lighted and heated.

Your Secretary has been appointed curator, and it now remains for each member to do his best in assisting to make this Institution what it is designed to be. The main object is to have specimens that will portray the history of our County—its antiquities and Natural History. Several members have already materially assisted, and it is asked that all will keep diligently on the look out for desirable acquisitions, so that what now remains in the County can be brought together for protection and preservation in a central position. Then all may see what our shire has done in History and its contribution to scientific knowledge.

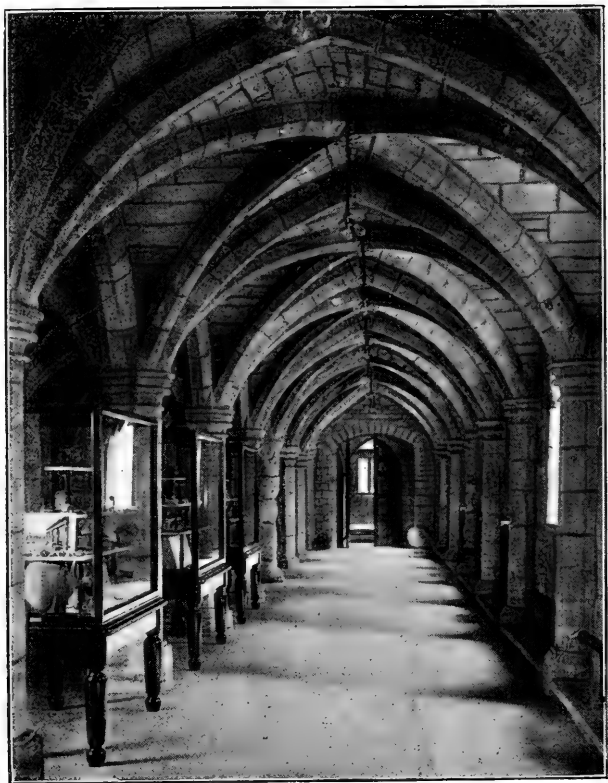
The collection of the Union, which until recently was stored in the Castle, has been removed and is being arranged for exhibition. There are many gaps in the series of specimens which it is hoped will be filled up by members and others interested.

The Antiquarian Section bids fair to becoming a valuable record of our County's history.

The Dean and Chapter have deposited a large number of Roman remains, and Arms Utensils found in the Witham in 1787. Roman and Mediæval pottery is well represented, and a fine series of Flints.

It is earnestly desired that every member of the Union will take this appeal to heart so that a worthy collection will result.

NOTE ON THE SEEDING OF *RANUNCULUS FICARIA*, (LINN). In pasture and meadow it is very common on sandy glacial gravel at Cadney. On 24-5-04, it was in full seeds all over. There had been no "spring frosts" which is most unusual with us. During the thirty years I have observed I have never seen it like this before. As far as I can make out this species is fertilized by a small fly (*Dipteron*). It passes from flower to flower, and rests on the inner parts to enjoy the sunlight in April and May. The slightest frost destroys the fertilised seeds at once, I find.



LOWER STORY, COUNTY MUSEUM, LINCOLN.

BRITISH
MUSEUM
5 DEC 21
NATURAL
HISTORY.

NOTES ON THE BIRDS WHICH INHABIT SCOTTON COMMON.

BY THE REV. F. L. BLATHWAYT, M.A., M.B.O.U.

It is my intention in this paper to give some account of the birds I have seen on Scotton Common at intervals during the last seven years. This essay therefore must not be regarded as an exhaustive account of the past and present avifauna of that district, but rather as a sketch of the bird life of the Common as it exists at the beginning of the 20th Century.

The writer is well aware that much of the ancient glory has departed and that many species have been banished from the district. So much however still remains that during Spring and Summer the Common is certainly one of the most interesting bird resorts in the whole County. Mr. F. M. Burton, of Gainsboro', has kindly sent me a few notes on the rarer birds which were met with on the Common some 40 years ago, and a few remarks on these will not be out of place here. **Ruffs** and **Reeves** nested there in those days and specimens from the district may be seen in our Museum. The late John Cordeaux states in his list of the Birds of the Humber district, that the last eggs of this species were taken on the Common in 1882. The **Norfolk Plover** or **Stone Curlew** used to inhabit the sandy hill to the West of the Common, but eggs apparently have not been found there since 1886. The **Dunlin** also is said to have nested among the heather in former days, but does not appear to do so at the present time.

Until about 1882, the Commons of N. W. Lincolnshire were favourite resorts of the **Short-eared Owl**, several pairs remaining to nest among the grass and heather, the birds doubtless finding a plentiful supply of food. At the present day it seems that this species is only an Autumn and Winter visitor to our County. A pair of **Bitterns**, which may be seen stuffed in the County Museum, were shot on the Common about 50 years ago,

and these were probably visiting an ancient home of their ancestors. Other rarities such as **Pallas' Sand-grouse**, and the **Selavonian Grebe** have, on occasion, put in an appearance. But, as already remarked, it is not my intention in this paper to write a past history of the birds of the Common. Such a history would be of very great interest if undertaken by some qualified person. These few remarks therefore are all that I can here give to satisfy a "*laudator temporis acti*."

The writer first visited the Common early in the year 1900, and has made frequent expeditions to the place since, chiefly in Spring and Summer, as opportunities offered. Careful notes have been kept on the birds observed, and so what follows in this paper may be considered the result of personal observation, for which the writer is responsible. On this account the reader is asked to forgive the frequent use of the first personal pronoun.

Among the smaller birds, the most characteristic species which haunt the Common during the nesting season are the **Wheatear, Whinchat, Stonechat** (a pair or two), **Willow Wren, Sedge Warbler, Meadow Pipit, Linnet, Reed Bunting** and **Skylark**. On one occasion, May 27th, 1901, I came across the **Grasshopper Warbler**, evidently nesting, and I have heard the **Reed Warbler** singing among the tall reeds at the margin of the ponds where a pair or two probably breed. **Lesser Redpolls** also haunt the birch trees which fringe the Common and a search would doubtless reveal their nests. The **Long-eared Owl, Green** and **Greater-spotted Woodpeckers** are among the scarcer birds which inhabit the woods on the edge of the heath, and the **Kestrel** may often be seen hovering in the air on the look out for an unwary field-mouse or lizard. On a summer's evening, about the time of year when the little blue flower *Pinguicula* may be looked for on the Common, the curious rattling cry of the **Nightjar** may often be heard, but it takes a very careful search to enable one to find the eggs, looking like two flints on a bare patch among the heather.

Several colonies of **Black-headed Gulls**, consisting probably of more than a thousand pairs in all, nest on the ponds

and "flashes" about the Common. Most of the birds occupy a shallow irregular piece of water of small extent, on one side of which is a thick growth of bracken, and the nests are placed among the rushes at the margin, in which case they are fairly substantial structures, or on the small islets which here and there appear above the water, nesting materials in these cases being almost dispensed with. The usual complement of eggs is three, but I have found six in one nest, possibly the produce of two female birds, and it is not very unusual to find four eggs in the same nest. The eggs of this species vary greatly in shape, size and colouring, the two extremes resembling in colour and marking eggs of the Jackdaw and dark specimens of those of the Herring Gull. Early in March the birds begin to arrive in small numbers at their breeding quarters from their Winter haunts on the mud-flats of the Humber and the sea coast. At first most of their time is spent in following the ploughmen at work in the neighbouring fields, and scrambling for the worms and grubs laid bare by the ploughshare. Doubtless they often vary their diet, and once I noticed quantities of dismembered and partially devoured toads round the ponds, which I set down as the work of the gulls, though I had no direct proof that such was the case. The time for egg-laying depends somewhat upon the forwardness of the season, but the first eggs are usually laid during the first fortnight of April, the young appearing in the middle of May. Some of the birds are very bold if their young are handled, and more than once a screaming parent has swooped down upon me and struck me sharply on the back of my head. As soon as the young can fly their parents take them away to the coast, and not a bird of this species will be seen on the ponds after the close of July. Anyone visiting a large colony of these gulls for the first time will not easily forget the occasion. The whirling white wings above, the incessant almost deafening screams and laughing notes of the birds, and the numerous downy chicks floating on the water or crouching among the reeds, all help to form a lasting impression upon the mind. Local Naturalists should be thankful that at least three such colonies are to be found in our own County.

I have met with six species of **Ducks** on the Common, and

have found four of these breeding there. To judge from the number of drakes seen about in parties during April, when the ducks should be sitting, I should say that at least twenty pairs of **Mallard** breed near the gull-ponds, and perhaps an equal number of **Teal**. The pretty whistling notes of the drakes of this latter species may often be heard in the Spring, and I have more than once come across a duck teal and her brood of tiny ducklings amid the rank heather. Toward the end of March about a dozen pairs of **Shovelers** arrive on the ponds to breed, the drakes being in very handsome plumage at that time. The birds begin to sit during the latter half of April, and I have several times come across their nests very well concealed in tufts of dry grass or rushes. The female when leaving her eggs sometimes tries the "broken wing trick" in order to draw away the discoverer of her nest. During late Summer and Autumn large flights of ducks consisting of young and old of these three species may be seen about the common, made up largely of home bred birds. At this season the drakes are in the "eclipse" or "brown" stage of plumage. In Winter I fancy many of the birds spread over the flooded lands in the vale of the River Trent, being joined doubtless by many migrants from the Continent of Europe. In April three or four pairs of **Sheld-ducks** usually appear on the ponds and much chattering and squabbling takes place. Not more than one or perhaps two pairs remain to breed. The eggs are laid at the end of a burrow in the sand among the heather, and the young are hatched out about the middle of June. On June 22nd, 1903, I saw a pair with four ducklings of a few days old on one of the ponds. These latter were exceedingly active little creatures, diving very cleverly and staying a long time beneath the water. I caught one of them with great difficulty, and on being released it immediately dived, and I could watch it for some time travelling at a good pace not far below the surface, and paddling vigorously with its webbed feet. The parent birds showed great anxiety until I had moved away, the female being particularly demonstrative and flying close up to me while I was standing in the water.

. **Wigeon** and **Pochard** also inhabit the ponds but I have

no evidence that either of these species remains to nest. I have seen a pair of the former as late in the Spring as April 28th, and once I saw a drake, perhaps a wounded bird, on July 24th. This species is, I think, chiefly a passing visitor to the Common in early Spring, and the same may perhaps be said of the Pochard, which I have only noticed on the ponds in the month of March.

A pair of **Little Grebes** nest regularly on a large shallow pond known as "The Greenhole," in company with three or four pairs of **Coots**; and numbers of **Moorhens** skulk about in the swampy spots, their nests and eggs often catching the eye of the visitor, even in the midst of a colony of gulls.

There are yet several interesting species nesting on the Common not yet mentioned in this paper. **Lapwings** inhabit the place in numbers, and a keeper takes their eggs systematically, beginning about the end of March and gathering about 250 in the season. At the end of July, young and old birds are seen about the Common in large flocks.

Quantities of **Snipe** also nest among the heather, but more particularly among the coarse grass-lands towards the river Trent, near a pond known as the "Ferry Flash." In Spring the sharp cries and the peculiar "drumming" noise produced by this species may be heard on all sides. Much controversy has arisen over the question as to how this sound is produced, and though few Naturalists now hold to the exploded theory that the sound is produced from the bird's throat, yet the following extract from my note-books may prove of interest to some. "Scotton Common April 28th, 1904. Snipe very excited, and were continually circling about over the marsh, uttering sharp cries of "chip-chip" or "drumming." I watched the latter process carefully through my prism glasses. Just before the noise is heard the bird may be seen to spread out its tail like a fan, the outer feathers on each side standing well apart from the rest. The bird then takes a head-long dive towards the ground, and the wings, and I think the tail feathers also, vibrate rapidly while the sound is produced. The wings do not touch the tail feathers during the process, I am practically sure of this." The noise which is peculiarly like the bleat of a goat is certainly produced by the action of the bird's

wing and tail feathers upon the air, during the slanting downward flight, and as it is very rarely heard except in the breeding season, it is probably of the nature of a signal either to mate or young.

Redshanks come to the Common to breed in the middle of March, and a pair or two nest by the gull-ponds, where I have found eggs in May, laid in the middle of a tuft of grass on a little mound rising from a shallow pool. Their shrill cry however is heard more frequently on the marshy land to the west of the Common, towards the River Trent, where the keeper often comes across their eggs in spring while he is engaged in "plovering." Parts of these lands are now undergoing the process of "Warping," so perhaps in the near future many Plovers, Snipe and Redshanks will be driven to breed on the higher ground of the Common.

The **Wood Pigeon** often builds its scanty nest in one of the small birch trees on the heath, and quite a number of **Stock Doves** breed on the drier parts of the Common. These latter birds lay their two eggs in a rabbit hole or a scrape in the sand among the roots of the heather, the nest, made roughly of twigs and dry grass being sometimes three or four feet from the entrance. The sitting bird reveals the nesting hole by dashing out with a great clatter almost under the feet of the intruder. This species must rear two or three broods in a season, as I have found them sitting in the middle of April and also early in September.

Towards the end of July, when clusters of yellow stars of the Bog Asphodel gleam in the swampy places and the purple heads of the Plume Thistle (*C. Pratensis*), nod in the breeze, and the first Marsh Gentian is opening its bright blue corolla to the early Autumn sun, a handsome little stranger, the **Green Sandpiper**, invariably puts in an appearance, and frequents the muddy margins of the gull-ponds. These little birds as they dart away with shrill alarm notes, showing their conspicuous white-upper tail-coverts during flight, always fill me with interest. No absolute proof exists that the species has bred in Britain, so the two or three seen yearly on the Common are probably hatched somewhere in the land of the mid-night sun, and are spending a week or so by the ponds on their way to a warmer winter home. Naturalists tell us that they lay their eggs in old nests of Thrushes,

Jays and other birds, at elevations reaching to thirty-five feet from the ground, a curious spot indeed in which to expect to find the eggs of a wading bird.

In Autumn **Heron**s frequent the ponds and I have seen as many as seven rise together from their fishing and flap lazily away. **Hooded Crows** roam about the heath in Winter but disappear to their northern breeding haunts in Spring, and small flights of **Golden Plover** and **Curlew** put in an occasional appearance between Autumn and early Spring. **Buzzards** have from time to time been shot in the neighbourhood, and the **Peregrine Falcon** frequently pays a 'flying visit' and takes toll of the pigeons and ducks. I have quite recently seen an immature example of this bold species which fell to a keeper's gun some three years ago while it was harrying the wild-fowl which frequent the pools and marshes on the Common.

Many Naturalists better acquainted with the district than the writer, could doubtless add other interesting bird-notes to the above sketch. During the Winter months I have scarcely ever visited the Common, and so there may be many bird-visitors at that season, of which I know little or nothing. It must however be apparent from these notes that a visit in Spring or Summer should well repay an ornithologist any trouble it might cost him. In these days of drainage and reclamation of land, it is very refreshing to the Naturalist to find here and there patches in almost a primeval state. Scotton Common is still one of these primitive spots, and that it may long remain so, and bear its witness to an interesting localized fauna and flora, is surely the wish of all our County Naturalists.

ERRATA.

Since "Lincolnshire Butterflies" has been printed off, it has been found by Mr. Musham that *Thecla Betulae* reported for Skellingthorpe, have been wrongly labelled, they are non-county specimens, hence his record must be deleted.

OUR PLATES.

The photo block of Mr. F. M. Burton is from a photograph by E. W. Carter, Gainsborough.

The Museum is from a block kindly lent by Mr. Critch, of Lincoln, the photograph was taken by Mr. Horace, Leeds.

A THRUSH STONE.

While walking along Cadney Beck in February, 1905, Mr. A. Smith pointed out to me a Thrush Stone under a hedge on the Red Carr arable Peat. Next day I collected all the shells round it, and the following is my analysis.

<i>Helix nemoralis</i> var. <i>libellula</i>	-	-	-	693
+ <i>roseolabiata</i>	-	-	-	24
+ <i>undulata</i>	-	-	-	10
+ <i>albolabiata</i>	-	-	-	2
var. <i>rubella</i>	-	-	-	286
+ <i>undulata</i>	-	-	:	8
+ <i>roseolabiata</i>	-	-	-	1
<i>Helix arbustorum</i>	-	-	-	25
var. <i>cincta</i>	-	-	-	4
<i>Helix cantiana</i>	-	-	-	5
<i>Helix hispida</i>	-	-	-	1
<i>Dreissensia polymorpha</i>	-	-	-	1
			—	
			1060	

I have found more shells at a Thrush Stone on the Estuarine Alluvium of the Trent, but never quite such a variety at one stone. In this case some 300 which had been in the peat water were not added, because they were unrecognisable for classing. I should judge another 400 were left in the ditch. There was not a really interesting shell in the whole taking. The thrushes gather them on the Freshwater Alluvium of the Beck bank. Curiously enough within 300 yards is a spot where *Helix nemoralis*, 12,045, is fairly common.

Entomological Notes from Grimsby District, 1906.

LEPIDOPTERA.

1. **Melanargia galatea**, one worn specimen taken on the wing at Ravendale by Dr. Felton, July 15th, 1906.
2. **Colias Edusa**, two specimens were taken at Little Coates by Mr. A. Bullock and Mr. R. Charlton, July, 1906. I saw a specimen on the railway embankment near Waltham, August 29th, 1906.
3. **Vanessa Io**, one taken at Tetney by Mr. R. Charlton, Junr., June, 1906.
4. **Nola albulalis**, one specimen of this very rare moth was taken on the wing in Bradley Wood by my friend Dr. Felton, August 19th, 1906.

COLEOPTERA.

1. **Bembidium paludosum**, PANZ. On June 4th, 1906, at Linwood I took fifteen specimens on a mud flat at the side of a stream; they occurred in large numbers, at one place only, running about very swiftly in company with *Elaphrus cupreus* and *E. riparius*. This locality is unfortunately outside our district but makes a good county record.
2. **Dichirotrichus obsoletus**, DEJ. I consider this a very uncommon insect here. I took one specimen on Humberstone fitties on September 30th, 1906. Of course *D. pubescens*, PAYK., occurs in great numbers there and also on the north side of the Humber.

I am certain that many mistakes are made in relation to these two species and this is due to the great sexual differences in *D. pubescens*, the female of which is larger and lighter in colour than the male, and is mistaken for *D. obsoletus*, and thus difference in colour is not one due to maturity.

I had often brought them home and tried to get them to pair but failed. However on September 30th, last I was fortunate enough to find many paired at Humberstone, and then on the same day after a long search I was delighted to find my first specimen of *D. obsoletus*.

I find a previous record of *D. obsoletus* for the County, August 26th, 1897, "West foreshore," Rev. A. Thornley.

I think the record of *D. obsoletus* and *D. pubescens*, (Hull Scientific and Field Naturalist's) being "very common on the mud of the Humber foreshore" must be wrong. *D. obsoletus*, has quite a southern distribution.

3. **Hydroporus Halensis, F.** I took one specimen in running water at Ulceby, August 12th, 1906.

WILLIAM WALLACE, M.B.

Grimsby.

December 25th, 1906.

Dianthæcia irregularis, Hafn.-echii, Bork. in North Lincolnshire. Mr. A. Reynolds, of Owston Ferry, has recently presented to the Lincoln Museum a bred specimen of this local insect. He states that he took the larva about 10 years ago on Viper's Bugloss (*Echium vulgare*) in the neighbourhood of East Ferry. The late Mr. C. G. Barrett in his excellent work on the Lepidoptera of the British Islands remarks that it is apparently confined to that portion of Norfolk and Suffolk known as the Breck-sands. Bury St. Edmunds, Luddenhams, Thetford, Brandon, Eriswell, Elvedon, and Icklingham.

G. W. MASON.

Barton-on-Humber.

NOTES ON
THE PAIRING
OF
"LIMAX
MAXIMUS."



Fig. 1.

C. S. CARTER, LOUTH.

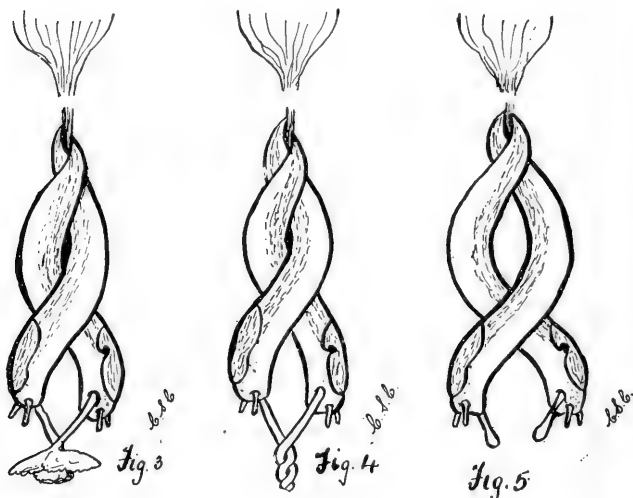


Fig. 2.

Others like myself, since the publication of H. Wallis Kew's valuable paper "On the pairing of *Limax maximus*" in *The Naturalist*, August, 1901, have probably been more desirous of observing the pairing of those slugs and have made frequent excursions at night for that purpose. It was not, however, until the summer of 1906, my desire was gratified by that curious phenomenon, when I was also able to make some rough sketches at various stages, from which the accompanying figures have been made.

On July 17th, 1906, at 10-30 p.m., accompanied by an entomological friend who was "sugaring," I went to Hubbard's Valley, about a mile from Louth, whither I had frequently gone before for the same object—to observe slugs. The meteorological conditions were not very favourable, the day having been hot and dry and the night still somewhat the same. The only slugs we saw were a few examples of *Limax maximus*. At 11-20 p.m., to our delight, we found a pair of that species already suspended by a mucous thread, about 15 inches in length, from the slightly sloping trunk of an ash tree on the footpath. The point on the

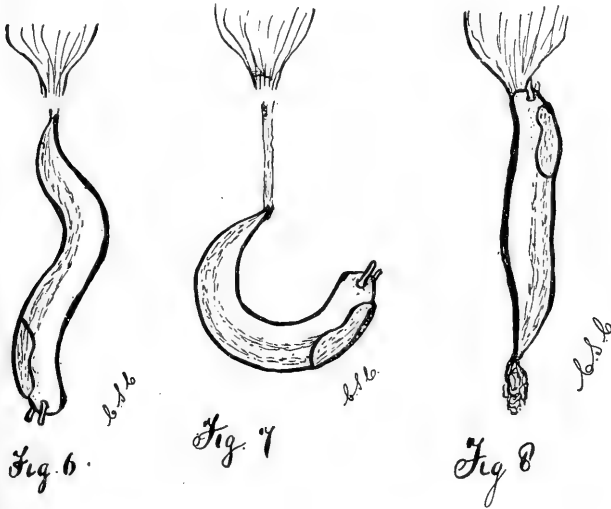
tree at which the thread was attached was about 5 feet from the ground, the slugs being about $3\frac{3}{4}$ feet from the ground. One of the slugs was a little larger and darker than the other. At the time we first saw them they were loosely twisted round each other and their genital organs were protruding, (fig. 1), by 11-25 those organs had come into contact and they began to twist more closely round each other, (Fig. 2). In about 2 minutes more



their genital organs had become inflated and assumed the form of a frilled umbrella with a spherical form beneath, (Fig. 3); in about another 2 minutes the inflation of those organs had disappeared and they began to untwist, (fig. 4), and were quickly withdrawn. By 11-30, they had separated, (fig. 5), and the larger slug fell to the ground, leaving the other alone suspended (fig. 6).

During the whole time the above described performances took place the slugs kept up a continuous gyration. After about 5 minutes spent in contortions (fig. 7), the suspended slug succeeded in reaching the mucous thread, thus forming a loop, and

commenced to crawl up it, reaching the point on the tree at which the thread was attached by 11-40 p.m. It will be seen from the above observations that in this case the period of actual "copulation" was not more than five minutes; Baudelot, quoted by Mr. Kew in his admirable paper, gives "15—20 minutes" as the time "copulation lasts."



SUGGESTED FIELD MEETINGS FOR 1907.

MAY 20TH. By invitation of the President Rev. A. Hunt, M.A., Welton will be visited on Whit Monday.

JUNE. Eagle.

JULY. Broughton near Brigg.

AUGUST. Spalding district, (a 2 days meeting).

SEPTEMBER. Grantham district.

Mr. and Mrs. C. F. Paddison have invited the Union to visit Low Ingleby, Saxilby, and kindly wish to entertain the members.

The usual circulars will be issued with full particulars before each meeting.

FIELD MEETINGS, 1906.

The first meeting of the year, and the Forty-ninth Field meeting of the Union was held on May 31st, in a district not previously visited by the members. Detraining at LUDBOROUGH, the party drove through the marshes to NORTH SOMERCOTES. DONNA NOOK was the outlying point of the journey, and though the working part of the day was short owing to the lengthy journey to the ground a successful day resulted.

The soils crossed were Purple Boulder Clay, Estuarine alluvium—Terraces of the same above the present level of highest spring tides—Sand Dunes of old Sea Beach now inland, and the modern Sand Dunes and Fitty Marsh of the present shore.

About 130 species of plants were observed, but none of them could be called very rare. The following are some of the best. *Anthriscus vulgaris*, *Apium graveolens*, *Artemisia maritima*, *Carex arenaria*, *Cerastium tetrandrum*, *Cynoglossum officinale*, *Dipsacus sylvestris*, *Echium vulgare*, *Erythraea pulchella*, *Festuca rubra*, *Glaux maritima*, *Hippophae*, *Juncus Gerardi*, *Juncus maritimus*, *Lacluca virosa*, *Lunaria annua*, an escape, *Marrubium vulgare*, *Myosotis collina*, *Myriophyllum spicatum*, *Orchis incarnatum*, *Psamma arenaria*, *Rumex hydrolapathum*, *Stellaria holostea*, *Triglochin maritimum*, *Valeriana olitoria*.

The mollusca observed were few *Arion minus* under a log, *Helix itala*, and *H. nemoralis* var. *rubella* was twice as plentiful as *libellula* at Thrush Stones. The first named variety also showed much the heavier and more confluent banding.

Paludetrina Jenkinsonii was found in the marsh drains.

The *Lepidoptera* noted was.

Pieris rapae, *Lycæna icarus*, *Pieris napi*, *Euchelia Jacobææ*, *Cænonympha pamphilus*, *Elachista rufocinerea*, Larvæ of *Aspis udmanniana*, *Porthesia similis*, *Zygæna filipendulae*, *Bombyx quercus*, *Arctia caja*, *Diloba cæruleophala*, *Odonestis potatoria*, *Abraxas grossulariata*, *Cheimatobia brumata*, and a few others as yet undertermined were taken.

COLEOPTERA.

Dyschirius nitidus, *Hister cadaverinus*, *Pogonus chalceus*, *Notoxus monoceros*.

Neuroptera. A strongly marked specimen of *Limnophilus affinis* was taken and a few Diptera and Hymenoptera.

The fiftieth Field meeting was held at DONINGTON-ON-BAIN, on June 28th. The sandy soil of the district yielded some 120 species of plants, which is rather under the average day's records. The best were *Ægopodium*, near house, *Aira præcox*, *Arenaria serpyllifolia*, *Bartsia Odontites*, *Carduus crispus*, only on clay *Carex disticha*, *Carex hirta*, *Cerastium arvense*, in pastures as well as on the railway embankment, *Certophyllum submersum*, *Digitalis*, clearly an escape. *Epilobium obscurum*, *Filago germanica*, *Galium uliginosum*, in all damp spots; *Hydrocotyle*, *Chelidonium majus*, *Listera Ovata*, was the only orchidaceous plant seen on the Tealby Clay. *Lycopsis arvensis* was rare, *Ornithopus purpusillus* was the characteristic species of the Spilsby Sandstone mixed with Claxby Ironstone. *Polygonum amphibium* and *Potamogeton crispus* were in masses on Benniworth Haven, and *Rosa urbica* made the hedgerows lovely. *Scabiosa arvensis*, was hardly in flower, *Scilla nutans* was big with seed in the shady wood, *Scleranthus annuus* was unusually rare for so sandy a soil, *Senecio sylvaticus* was in much evidence at times, *Sherardia* rare. *Sonchus crispus* was hardly in flower, *Stellaria uliginosa* on Fresh water alluvium in seed.

A Geological visit to the Louth district is always a great attraction. Whether the object of that visit be to study the divisions of the Chalk rock; the fine sections of Boulder Clays; or the physical effects of the Glacial Period; all alike, contain problems of unique interest to the Geological Student.

Our visit to this district on this occasion was mainly to study the Lower Cretaceous or Neocomian Rocks of Lincolnshire, and the railway authorities had not only kindly consented to our visiting the classical cutting in the Neocomians at Benniworth Haven, but had also sent workmen to open out the section and to assist the members in their search for fossils. A new County Museum having been opened at Lincoln, it was desired to

collect fossils and Rock specimens illustrating the Neocomian series. Thanks to the facilities afforded the Union, some good representative specimens were obtained.

The typical sub-divisions of the Lower Cretaceous rocks in Lincolnshire are :—

	Carstone.
Tealby Beds.	{ Tealby Limestone,
	{ Tealby Clay,
	{ Claxby Ironstone.
	Spilsby Sandstone.

The floor of the ancient sea upon which these rocks were laid down was the Clay now known as Kimmeridge Clay, the uppermost member of the Jurassic rocks in Lincolnshire; and the junction of this clay with the Spilsby Sandstone is marked by a layer of rolled phosphatic nodules which contain fossils derived from the Kimmeridge Clay, indicating a line of unconformity between the two beds. The dry land of the Jurassic age was slowly subsiding, and in the shallow water which was then encroaching on what is now Lincolnshire, the Lower Cretaceous beds were formed. The first deposit in these shallow waters was the Spilsby Sandstone; and following this, in the varying depths of the encroaching sea, the Tealby Beds, and the Carstone, were laid down. Whilst this was going on a thick bed of Marine Clay known as the Speeton Clays, were accumulating in Yorkshire; and about at the same period the great Fresh Water and Estuarine beds of the Wealden Formation were being accumulated in the South East of England. In Lincolnshire there is a more complete succession of Marine deposits of Lower Cretaceous Age than is to be found in any other part of England.

Passing Eastwards along the railway from Donnington-on-Bain, some good sections of the Spilsby Sandstone are seen. A very interesting form is seen in the Sand-pit close to the station. Here the Sand is fine-grained, pale yellow or green in colour, and often stained a deep red by the presence of iron oxide. Microscopically the grains exhibit much rounding as though subjected to wind action, other sections along the Railway shew the variable character of this sandstone. Sometimes it is a grey caf-

careous grit, but more generally the cement has been removed by the solvent action of rain and replaced by iron oxide, often making it into a friable brown or white Sandrock. Unweathered boulders of Spilsby sandstone occur in various localities, and from these a large suite of fossils have been obtained. Altogether the bed forms an interesting study both physically and palæontologically.

Between this Sandstone and the Carstone above, the Tealby beds occur. The lower clays and ironstone are crowded with oolitic grains of iron oxide, about the size of millet seeds.

These oolitic grains are formed of alternate layers of oxide and silica, and are nearly spherical in shape, and have a smooth polished surface. It is from the Earthy beds of the Ironstone that the greatest number of fossils are found. In the Benniworth cutting many fine specimens of *Trigonia* were obtained, besides *Pecten*, *Exogyra*, *Cuccullœa*, *Lucina*, *Lima*, *Belemnites*, &c.

The Ironstone beds pass gradually up into the Tealby clay, a tough pale blue, homogeneous clay, well seen in the brick pit near Donnington Station. The Tealby Limestone is not well seen in the locality visited. The highest bed of the series, the Carstone, are well seen at the west end of Withcall Tunnel where the Red chalk, which forms the basal bed of the upper chalk, rests unconformable on it.

The Carstone is unfossiliferous save for a few derived specimens found in phosphatic nodules, and consists of coarse sands composed of quartz grains with numerous pebbles of Lydian stone, yellow and brown phosphates, and debris from the Tealby Clays and other older Neocomian beds. Further subsidence of the Neocomian sea brought in the great Cretaceous ocean in which were deposited all our Chalk rocks, beginning in Lincolnshire with the Red Chalk, the three zones of which are so beautifully seen in the Withcall section.

The shells observed were the following: *Helix aspersa*, *H. rufescens*, *H. nemoralis*, and varieties *libellula* and *roseolabiata*, *H. hortensis*, *Succinea putris*. *Physa fontinalis*, *Limnea peregrina*, *Sphærinum corneum*, *Planorbis albus*, *Valvata piscinalis* and *Anodonta cygnea*.

The dull day was not congenial to insects so few were seen. Small Copper, Small Heath, Cinnabar, and on the grasses and rushes the pupæ of Five Spot Burnet were numerous.

The fifty-first meeting of the Union was held July 31st, at DUNSBY Wood near RIPPINGALE.

From a botanists point of view the visit was a success. The President and the Rev. W. W. Mason had thoroughly worked Dunsby about 12 years ago and little remained to do but verify their facts, nearly every species that they had formerly recorded were rediscovered, *Vicia sylvatica* being the only important exception. *Anglica sylvestris* was not so common as formerly. The rare grass *Agropyron caninum* was again in evidence, *Calamagrostis epigeios* was in its old place. *Campanula trochelium* was all over the Chalky Boulder Clay, along with *Carex sylvatica* in the wood. *Chelidonium majus* was only found in Rippingale village, along with *Sedum album*, *Centranthus rubex* and *Matricaria Parthenium*.

Cornus sanguinea and *Euonymus* were local. *Cnicus acaulis* sporadic, and *C. eriophorus* very rare, only one plant was found on this occasion as on the last. The wood form of *C. palustris* was common enough. *Corylus* was covered with nuts, and the squirrels were there waiting for them. *Dipsacus sylvestris* was taken by a ditch on the Cornbrash. The *Epipactis* again could not be found in flower, but careful reconsideration of all circumstances makes it out to be *media*, *Erythraea centaurium* made the wood bright along with the inconspicuous flowers of *Circaea lutetiana* and the fruit of *Fragaria vesca*. *Festuca elatior* was on the Cornbrash. *Galium Aparine* was unusually rare, but *G. Witheringii* conspicuous in the wood and ditches. *Hypericum perforatum* was on the clay and the variety *angustifolium* on the Cornbrash. *Leontodon hirtus* and *hispidus* were also found on the more solid or lighter soils in the same way. *Malva moschata* was on the Boulder Clay where it was brashy as well as on the Cornbrash. *Melampyrum pratense* was found just outside of the wood, but not in flower. *Enanthe fistulosa* was common in the isolated field ponds. *Pimpinella major* on the Cornbrash. The *Polygala* on both sides was *typica*. The hybrid *Potentilla reptans* × *silvestris*

(*P. itala*), was found among a mass of the parent species. In leafage like the latter parent, in foliage like the former, but not quite so large.

Prunella vulgaris was in four colour shades, purple, red, pink and white. The Batrachian *Ranunculi* were past naming with certainty. At one spot in the wood the *Rumex sanguineus* was the true typical plant, elsewhere only the variety *viridis*. *Salix cinerea* was the only species seen, it was common. *Sanicula europæa* was very rare, *Scilla nutans* long past the seed. Both *Scrophularia* were taken, *Sonchus arvensis* was confined to tilth, *S. asper* widely distributed. *S. oleraceus* only in Rippingale village. Both forms of *Valeriana officinalis* were found but *sambuceifolia* was much the more frequent. *Vicia sepium* was local on the Cornbrash. *Viola riviniana* still flowering in the wood, *Volulus sepium* preferred the lighter soil. Over 200 soil and locality notes were taken, and a day's work rich in facts was the result.

The wood is a very fine one and the wealth of Insects pointed out the fact that a systematic working of this area was necessary. This branch of Natural History was not worked as the Entomologists of the Union were unable to be present.

The fifty-second meeting was held on August 28th at CROWLE. The dry weather had made sad havoc with the plants in the "Isle" Keuper Marl, Blown Sand, Sand and Gravel, and Estuarine Alluvium, were all fairly dried out. One soil was no better than another in that respect. The Turbaries were as far gone as the limy marl. Belton Turbary is so eaten off by cows that nearly everything of interest is destroyed. The Flora of the Epworth Turbary is much more natural. The best plants were *Achillea Ptarmica*, *Alisma ranunculoides*, *Betula alba*, *Buda rubra*, *Centaurea scabiosa*, on Keuper Marl, *Chara*, *Chrysanthemum segetum*, on Blown Sand, *Cnicus palustris*, *C. pratensis*, *Cynoglossum officinale*, *Deschampsia flexuosa*, *Drosera rotundifolia*, *Erica tetralix*, and var. *floræ albo*, *Eriophorum angustifolium*, *Euphrasia officinalis*, *Galium palustre*, only in a ditch. *Glyceria fluitans*, eaten to death by cows. *Hippuris vulgaris*, *Hottonia palustris* in ditch. *Hydrocotyle* with leaves two to five inches across. *Hypericum perforatum*, *H. quadrangulum*, *Juncus acutiflorus*, *J. obtusifolius*, *J. supinus*,

Lastræa felis-mas, *Leontodon hirtus*, *Lycopus europæus*, *Lysimachia vulgaris*, *Matricaria inodora*, was in every soil by way sides. *Molina varia*, *Nardus stricta*, *Ænanthe fistulosa*, *Onopordon acanthium*, two fine plants in a stack yard. *Potentilla procumbens*, growing in large quantity by Folly drain and on Belton Turbary was the find of the day. *Quercus pedunculata*, was all over the same Turbary as seedlings. *Ranunculus Flammula*, *Sagina nodosa*, at Epworth Turbary side with *Sagina procumbens*, *Salix repens*, *Scabiosa succisa*, and *Utricularia vulgaris* in Folly Drain.

Insects seen at this meeting were *Pieris brassicæ*, *P. rapæ*, *Vanessa urticæ*, *Epinephele tithonus*, *C. pamphilus*, *Polyommatus phloæas*, *Lycæna icarus*, *Plusia gamma*, *Hydroecia nictitans*, *Cidaria testata*, Larvæ of *P. bucephala* in large numbers.

The fifty-third meeting was held in the neighbourhood of LOUTH, for a Fungus Foray, on October 11th.

The Greasy Field was visited, and Mr. Carter read a description of the Fauna and Flora of this area.

The season was late for general botany but about 200 notes were made and the rarer specimens taken for the County Herbarium.

Fungi were worked for all the way and Mr. H. C. Hawley took away with him some 104 species, the most interesting of which were *Tricholoma panæolum*, *T. saponaceum*, *Clitocybe odora*. *Pholiota radicata*, *Stropharia inuncta*, *Hypholoma epixanthum*, *Panus torulosus*, *Boletus rufescens*, *Polyporus adustus*, *Hydnum aureum*, *Peniophora cinerea*, *Coniophora umbrina*, *Helotium claro-flavum*. *Helotium fagineum* most of which were new records for the County.

At the Annual Meeting held at Lincoln in December, it was resolved that, owing to the erratic manner in which the Transactions of 1895, were paged that the series now being issued annually be paged from 1905. The part thus ignored contained two valuable articles one by the late John Cordeaux, and another by Mr. F. M. Burton. It was decided to again print these in a future part so they may be retained in our pages.

It is hoped that members will support our publication by sending articles and notes for publication, and will record their observations and notify the Sectional Secretaries as early as possible so that the registers may be kept up to date, and so assist in compiling the lists published from time to time.

LIST OF OFFICERS.

PRESIDENT.

Rev. Alfred Hunt, M.A., Welton Vicarage, Lincoln.

VICE-PRESIDENTS.

(Resident in the County.)

F. M. Burton, F.L.S., F.G.S., Highfield, Gainsborough.

Rev. J. Conway Walter, B.A., Langton Rectory, Horncastle.

H. Preston, F.G.S., Hawthornden Villa, Grantham.

Rev. E. A. Woodruffe-Peacock, L.Th., F.L.S., F.G.S., Cadney.

HON. TREASURER.

J. S. Sneath, 32, Tentercroft Street, Lincoln.

HON. SECRETARY.

Arthur Smith, F.L.S., F.E.S., The Museum, Greyfriars, Lincoln.

HON. ASSISTANT SECRETARY.

R. W. Goulding, 20, Mercer Row, Louth.

SECTIONAL OFFICERS.

GEOLOGY.

President :—F. M. Burton, F.L.S., F.G.S., Highfield, Gainsborough.

Secretary :—H. Preston, F.G.S., Hawthornden Villa, Grantham.

Boulders :—Rev. Canon Rowe, Lincoln.

BOTANY.

President :—Rev. W. Fowler, M.A., Liversedge, Normanton.

Phænogamic Secretary :—

Rev. E. A. Woodruffe-Peacock, L.Th., F.L.S., F.G.S.

Cryptogams :—Miss Stow, 23, Avenue Road, Grantham.

Fungi :—H. C. Hawley, Tumbly Lawn, Boston.

CONCHOLOGY.

President :—W. D. Roebuck, F.L.S., Hyde Park Road, Leeds.

Secretary :—C. S. Carter, M.C.S., Bridge Street, Louth.

ENTOMOLOGY.

President :—Rev. A. Thornley, M.A., F.L.S., F.E.S., The Gables,
Nottingham.

Secretary :—G. W. Mason, Barton-on-Humber.

VERTEBRATE ZOOLOGY.

President :—G. H. Caton-Haigh, Grainsby Hall, Grimsby.

Secretary :—Rev. F. L. Blathwayt, M.A., M.B.O.U., 5, Monk's Leys
Terrace, Lincoln.

NEW MEMBERS.

Bulpit, J., Pelham Villas, Beacontorpe, Cleethorpes.

Bullock, A., Museum, Grimsby.

Cade, H. M., Ropsley, Grantham.

Dickinson, J. E., 79, West Parade, Lincoln.

Footman, Ald. M. H., Lincoln.

Gresswell, W. K., Freeman Street, Grimsby.

Grierson, Dr. G. A., Dudley Street, Grimsby.

Heely, F. W., 10, Yarborough Street, Grimsby.

Noble, Rev. Wm. F. S., Little Steeping Rectory, Spilsby.

Wilson, A. E., 4, Dixon Street, Lincoln.

LINCOLNSHIRE NATURALISTS' UNION.

Statement of Account from 1st January to 31st December, 1906.

RECEIPTS.		PAYMENTS.	
	£ s. d.		£ s. d.
By Balance in Bank, &c., 31st December, 1905	42 0 10	To Subscriptions to "The Naturalist"	... 4 5 6
" Life Members' Donations (invested in Savings' Bank) ...	33 9 0	" Printing and Stationery ...	... 3 8 7
" Interest thereon ...	0 15 10	" " "Transactions" and Blocks for illustrations ...	... 11 13 0
" Members' Subscriptions including "The Naturalist" ...	34 4 10	" Postage and Telegrams ...	... 5 12 2
" Transaction and Reprints sold ...	31 1 7	" Expenses of Meetings ...	... 2 9 3
" Bank Interest ...	0 10 11	" Caretaker of Museum (to March)	... 2 10 0
		" Life Members Donations in Savings' Bank ...	33 9 0
		" Interest ...	0 15 10
		" Balance in Bank and Secretary's hands	34 4 10
			45 14 10
			<u>£109 18 2</u>
	<u>£109 18 2</u>		

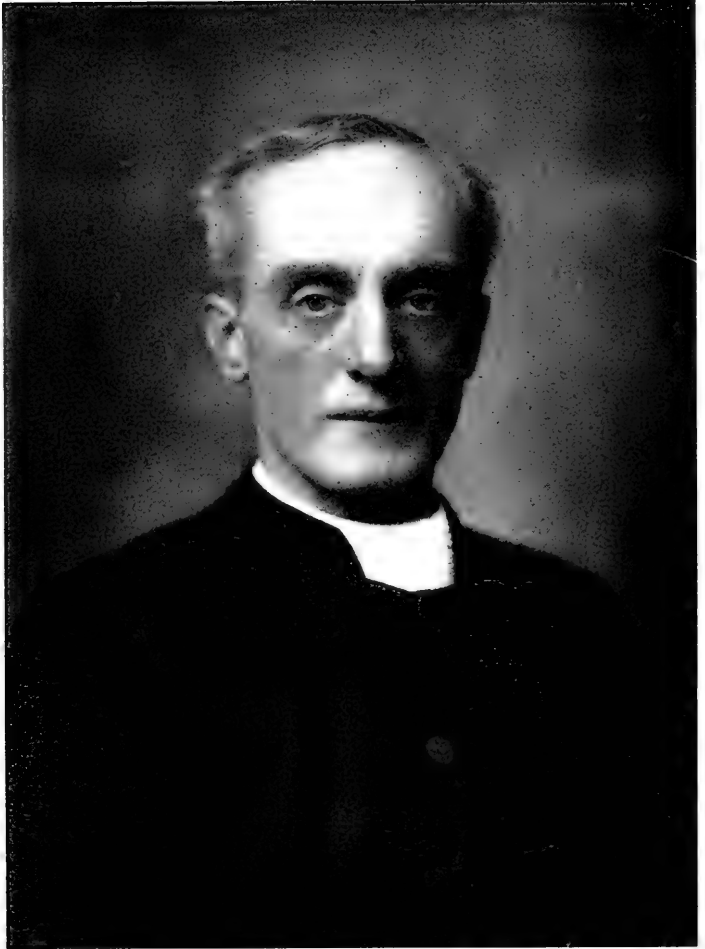
Examined and found correct,
E. E. BROWN, Auditor.

14th January, 1907.

BRITISH
MUSEUM

5 DEC 21

NATURAL
HISTORY.



REV. CANON W. W. FOWLER, M.A., D.Sc., F.L.S., etc,

Third President of the Lincolnshire Naturalists' Union.

The Presidents of the Lincolnshire Naturalists' Union.

CANON FOWLER, M.A., D.Sc., F.L.S., F.E.S.

An Appreciation.

By Rev. A. Thornley, M.A., F.L.S., F.E.S.

I think it was in 1890, that I first met Canon Fowler. It came about in this way, I had been a few years in a country parish, and was much interested in the life round about me. It seemed a good opportunity for learning something about the animals, birds and insects which frequented my Parish. I knew something of these things, but not enough to satisfy my aspirations. I wrote to the Editor of the Entomologist's Monthly Magazine asking him to advise me on the best book on beetles. Singularly enough I got a letter in reply from the Rev. W. W. Fowler, Headmaster of the Grammar School, Lincoln, not only advising books, but inviting me to go over and see him. As the distance between us was not very great I went, and thus met for the first time, one whose kindness, keenness and generosity have been impressed upon me only the more deeply by the lapse of time. My experience has been that of many others; and it would be impossible to say how many rising Entomologists have owed any success to which they have attained to Canon Fowler's help and encouragement. His life is many sided, and it would be impossible in a short notice like this to say much of his work as a Schoolmaster or a Clergyman. What I have to say will be

chiefly in connection with his scientific work, and largely with that work as connected with the County of Lincoln.

In the year 1893, a number of Lincolnshire Naturalists met together with the object of founding a society for the proper investigation of the Natural History of the County. This Society, which took the name of "The Lincolnshire Naturalists' Union" has done, and is doing, admirable work on behalf of the County Natural History. It is needless to say that Canon Fowler took a hearty interest in this movement, and in 1897, was unanimously elected President, which office he held for two years. If any reader of "The Naturalist" will compare the record of Lincolnshire Natural History as summarized in the index of that Magazine for the year 1893, with the summary for last year, they will appreciate the great advance in Natural History studies which has been the result of the activity of the Union, under the clear-sighted guidance of its first Presidents, and its energetic Secretaries.

In 1878, Canon Fowler was elected a Fellow of the Linnean Society; and was further honoured in 1904, by being placed on its Council.

It is however as an Entomologist that he is best known, and particularly as an original worker, at the Group of Coleoptera, or Beetles, although he has done excellent work at other groups. Canon Fowler was elected a Fellow of the Entomological Society of London in the year 1880; was Secretary in 1894 and 1895, and was President for two years, from 1901—1903, inclusive. I believe he was a most popular President, adding to high attainments a great charm of manner.

Interested as he was in our insular fauna, he nevertheless found time to work out some large collections from foreign countries. Thus he contributed a splendid monograph on the Hemiptera Homoptera, to the "Biologia Centrali-Americana" a colossal work projected as long ago as 1879, by Messrs. Godman and Salvin. In 1887, was published "The Coleoptera of the British Islands," an exhaustive work in 5 vols., as well as a large paper edition, with 2,300 coloured figures. The demands upon his time made by a work of this description, must have been exceedingly

heavy. It supplied a crying need, and I have no doubt the number of Students of the Coleoptera, has practically been doubled by the timely publication of this book. That he found time for such tasks amidst his other arduous duties, is a proof of the energy which he throws into all the work of his life.

In 1906, the University of Oxford conferred upon him the degree of Doctor of Science, and surely there never was a more worthy recipient of the honour.

There is not much time left to dwell upon the personal traits of the subject of this brief memoir. The present writer who has known him for some years is particularly struck with his unfailing kindness and generosity in helping brother scientists. Boxes of insects, books, all were lent freely to those who needed information and encouragement. "Keep them a week or so" he would sometimes say, and then add, "you can take any examples you like, so long as you leave me half a dozen." He was never so happy as when imparting information, or giving sound advice from his long experience.

This short appreciation, far too short, is only a small payment of that debt of gratitude which the present writer owes to Canon Fowler.

Note on peculiar Conchological find.

Mr. H Preston, F.G.S., reported the occurrence of dead shells of *Cyclostoma elegans* in Limestone rubble at Greetwell, near Lincoln, in the "Naturalist," August, 1905. Visiting the Ironstone workings in company with Mr. A. Smith and myself, this spot was pointed out and we have made observations from time to time.

It would appear that at some time past, a fissure in the Limestone was filled in by the "wash" of lime from the adjacent ground, bringing in the shells with it, until the whole was filled in with a paste-like mass, something like that used by plasterers. A tram track was cut through it, and exposed a section which has been worked into from time to time, and among the rubble has been found fine specimens of *Cyclostoma elegans* in quantities, in good condition, the colour being slightly obliterated, but in many cases quite distinct, many specimens have the operculum still intact. This species is not found living in the neighbourhood. *Helix hortensis* and *itala* found here do not occur living within sixteen miles, and *Helix lapicida*, which occurs here is not found living nearer than about twenty-four miles. *Helix arbustorum*, *H. rotundata*, *Zonites cellaria* and *Cochlicopa lubrica*, and a solitary specimen of *Limnæa stagnalis* have also been picked out.

J. F. MUSHAM.

ADDRESS TO THE LINCOLNSHIRE NATURALISTS' UNION.

Delivered at Lincoln, May 24th, 1894.

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

*President (1893).**

In rising to address you on this occasion, I am not unmindful of the fact that I have been elected first President of the Lincolnshire Naturalists' Union, and I wish now, in the first place, to thank you for having placed me in so honourable a position. The object of our Society is intended to bring about a thorough and systematic investigation of the Natural History capabilities of the county, carried on year by year, a publication, if possible, from time to time, of the results, and an endeavour to create amongst all classes of the population an intelligent interest and correct appreciation of the various natural phenomena which surround them.

It is somewhat of a reflection on this great county that so little has been done hitherto for the cause of science; this indeed, becomes painfully apparent when we consider the excellent results shown by the enterprising naturalists in the two neighbouring counties of Norfolk and Yorkshire. In the former, the

*This address was originally issued to members in "Transactions" 1895. That issue being made up of reprints, etc., led to erratic numbering. To secure the above paper it was decided by the members at the last Annual Meeting to publish it in our present "Transactions," being of special interest to the County.

“Norfolk and Norwich Naturalists’ Society” was formed in 1870, and published their first report; the number of members is now 250. The “Yorkshire Naturalists’ Union” came into existence previous to 1883, and the number of its members is nearly 600. Both these, like our own, had small beginnings; they have, however, succeeded in extending the knowledge of Local Natural History. In looking forward to the future I can see no reason whatever to think that our own Union will not be equally successful, and certainly in this great and diversified county it will never either lack material to work on or fall short in variety and interest of subjects.

So far, our efforts have been individual ones, and isolated and spasmodic; now, as a united band and numbering specialists in various branches, we shall become a representative body having a local habitation and name, and have much greater facilities for an exchange of opinion and for the proper collection and diffusion of facts. It must not, however, altogether be inferred that nothing has hitherto been done by the sons of Lincolnshire for the increase of physical science; indeed, we have just cause of pride to see in our roll of honour such names as Issac Newton, of Woolsthorpe; Matthew Flinders, of Donington; John Franklin, of Spilsby; Joseph Banks of Revesby Abbey; and more recently, Charles Anderson, of Lea. Of those now living, either within or without our boundaries, who are doing good work, it would be invidious to make direct personal mention; sufficient is it to say that we include amongst ourselves all that is both necessary and capable for making this Union a great and a lasting success.

Lincolnshire is the second largest county in England, its total length being 75 miles by 48 in breadth, and containing 1,777,879 acres, 85 per cent. under cultivation. The surface presents a very considerable diversity of character, sea-coast, marsh, wold, moor, heath and fen, and some very considerable woodlands with much pleasant and typical scenery without anywhere rising into the grand and strikingly picturesque.

The country is not readily divided into what are called faunal areas—that is, districts more or less compact, with well-defined boundaries, between which—one or the other—faunal distinc-

tions can be clearly established. In taking a general survey of the whole area it appears capable of being irregularly divided into at least six fairly marked districts, these are—

I.—The Marsh and Middle Marsh—which is the whole of the great alluvial flat which lies between the east coast and the foot of the chalk wolds, as far as Spilsby.

II.—The Fens—south of Spilsby and Wainfleet and east of Billingham, Heckington, Bourn, and Market Deeping, with a branch extending westward of the Witham to Lincoln.

III.—The Chalk Wolds.

IV.—The Heath—an irregular district, partly on the oolite and partly on the lias, and not easily defined. In its more southern portion it is split into two arms by the Witham valley. It runs from S.E. to N.W., and includes the heaths near Woodhall Spa, the moorland near Market Rasen and below Caistor, and the commons and rabbit-warrens between Gainsboro' and Frodingham, in the north-west of the county.

V.—A portion of Kesteven, south of Grantham and east of Belvoir, of which Corby is about the centre, well-wooded, picturesque, and highly cultivated and containing noble parks and country seats.

VI.—The Isle of Axholme, formerly moor, bog and widely extending heath and low firwood, but now 50,000 acres of rich warp, and bounded to the north-west by the great level of Thorne waste in Yorkshire.

It must be clearly understood, however, that these divisions are only approximate, and that with our present knowledge no absolutely hard and fast lines can be laid down defining faunal areas, and that there are yet portions of the county which it is difficult to range under any of these divisions. I have endeavoured to define roughly six fairly marked districts within the boundaries of Lincolnshire, and I shall now briefly enter more fully into the physical peculiarities of each, and endeavour to show that, notwithstanding the great changes which have

taken place, these still possess attractions for the naturalist. I would also mention those special matters which require more careful working out.

In the Marsh and Middle Marsh is included the whole of the low-lying plain between the foot of the chalk wolds and the sea, including the sea-coast itself and all its wide attractions. The chief interest of this district rests in its ornithology—more particularly in the spring and autumn—and in connection with the migration of birds. The total number of species which can fairly be admitted at the present time into the Lincolnshire avifauna is somewhat doubtful. In the Humber district up to this date I have been able to record 290. This compares favourably with the Norfolk list of 293, and Yorkshire with 310. With our present knowledge as to the frequency with which rare birds turn up during the period of migration, far out of their ordinary route, I think we should attach very little importance to the increase of any local or county list by the addition of mere wanderers. The record of such is interesting as showing how far some birds get driven out of their normal course. The chief additions to the Humber district in late years have come from Spurn, but there is no reason why equally good results should not be obtained from our own coast.

The flora of the marshes and the sea-coast is a very attractive and interesting one, and our knowledge of the same, as well as of Lincolnshire botany generally, has been greatly increased by the researches of the Rev. W. Fowler, of Liversedge; Dr. F. Arnold Lees, of Harrogate; the Rev. Adrian Woodruffe-Peacock; Mr. F. M. Burton; Mr. O. Thimbleby, of Spilsby, and others.

The collection of facts in connection with this district commenced as far back as 1590, and the great naturalists of former days—Gerarde, Ray, Dr. Martin Lister, and Sir Joseph Banks—have each in turn visited and investigated its floral treasures.

Before leaving this portion of the county I should like to call attention to the marine mammalia, the seals, and various forms of whale, grampus, porpoise, and dolphin. Although in recent years considerable additions have been made to our local list,

we still require much further knowledge and more scientific investigations. The capture of a seal or the stranding of a whale—and such occurrences are by no means unfrequent—should at once be noted, and an examination carried out on the spot, careful notes and measurements made, the skull, at least, preserved, and where possible a photograph taken before the carcass is removed. In this branch of zoology as well as ornithology, the official representative of our Vertebrate Section, Mr. G. H. Caton Haigh, has done some excellent work. There is, so far as I know, no list of marine fish; the collection of facts in connection with these and with Marine Zoology generally, might well be taken up by those members who live near or have most frequent access to the coast. The Entomology, more particularly in this district the Aquatic-entomology, Conchology, and Micro-zoology and Botany, also present wide fields for close and careful study. In the former we have in the Rev. Canon W. W. Fowler, a member whose reputation as an entomologist is not only local and national, but world-wide. We must not fail to recognise, also, the good services rendered by Mr. H. W. Kew, formerly of Louth, and Mr. James Eardley Mason of Alford.

There is no other faunal area in Lincolnshire where the old glories have so entirely vanished as in the fenland, formerly a vast level of peat-moor, morass and bog, with league beyond league of shallow mere, interspered with a vast growth of reed and bull rush and various water-loving plants, and on the drier portion deep sedge and doubtless some rich pasturage, with thickets of sallow, willow, birch, and sweet-gale, which before the dawn of history had usurped the place of oak, Scotch fir, and yew. The whole of this vast level was a paradise for wild creatures, beast, bird, and fish, and predominate over all, upon the peat-stained waters of the shallow lagoons floated primitive man in a canoe dug out from a single tree, and using weapons tipped with fractured flint or fish-bone.

Of the natural treasures of the old fenland we have but scant record. Unfortunately our forefathers, when they did write, cared little for depicting their natural every-day surroundings, yet we must be thankful for the few precious records which have come

down to us of those olden times, and enable us to form some idea of the extreme richness of the Fen fauna and flora, from the *Liber Eliensis*; the Chronicles of Crowland; and the writings of William of Malmsbury (1200); Thomas Fuller; Camden's Britannia (Gough's edition); and the naturalists Pennant, Ray, and Colonel Montagu; also the quaint verses left by Michael Drayton in the Polyolbion; and by "Antiquary Hall," of Llyn, in the doggerel rhymes depicting a fenman's daily life.

One aim of our Society should be the collection of any scrap, oral or written, in connection with physical-archæology, and any who have opportunities of inspecting old deeds, letters, and family account books, will do good service by extracting any small matter which directly or indirectly bears on this subject. Such entries were, no doubt, considered most trivial by the original writers, but in the light of the present day they are of much interest and importance. To cite one or two instances alone, how little historical record is left of the Great Bustard in Lincolnshire. The late Sir Charles Anderson, of Lea, in 1874, sent me extracts from an old account book kept by Charles Anderson, at Broughton, near Brigg, from 1669 to 1673:—

"1670, September 26—To John Hall, brought curlew - 1s.
 „ October 23—Item to Thos. Beckett for killing
 two bustards - - - - - 2s.

Then there is a letter from the great Dr. Johnson, dated January 9th, 1758, to his friend, Bennett Langton of Langton, acknowledging the receiving a parcel of game, amongst other things a bustard which he gave to Dr. Lawrence.

A letter written to myself by the Rev. Edward Elmhirst, November 29th, 1886, containing personal recollections of Lincolnshire ornithology, also his communication made to the *Field* newspaper, November 28th, 1886, concerning the former nesting of the Hen Harriers in the moors near Market Rasen, are amongst the most valuable contributions to the records of county natural history in recent years.

Of infinite interest also, as throwing light on the past, would be the account books and records of captures made in the duck.

decoys at one period so common in the marsh and fen. We have never met with more than one decoy book, namely, the well-kept register of the Ashby Decoy, near Brigg, worked successfully for so many years by Captain Healey.

So marvellously abundant were wildfowl before the fens were drained that we are told a flock of wild duck has been observed passing along from the north and north-east into the east fen, in a continuous stream for eight hours together.

Our next faunal area is very distinct and well-marked—the Chalk Wolds—in its greatest length from Barton-on-Humber to Burgh, fifty-two miles, and the greatest breadth near Market Rasen, fourteen miles; the highest point of the range, 549 ft., is near Normanby Clump, and this is the highest land in the county. Before the general enclosure at the commencement of the present century the wold was a wild and open region, a rolling upland, more or less intersected by deep valleys. These rounded hills were covered with heather and heaths, coarse rough grasses, like the barren brome, and *Aria cæspitosa* the tufted hair-grass, the most graceful if the most useless of all, with thousands of acres together of gorse, and ancient thorns in clumps and single. It was a district most admirably fitted to the habits of that noble bird the Great Bustard, and the Stone Curlew, the former probably becoming nearly extinct before the commencement of the century, and the latter still holding its own—a few pairs annually nesting, but not now on the wold.

During the last quarter of the century much good work has been done with Lincolnshire geology, the most important reports being in connection with the extension of the Rhætic beds, near Gainsborough, by Mr. F. M. Burton, also his examination of these and the Keuper Sandstones in the same district; Professor Judd's paper on the Neocomian strata; Professor Morris on some Oolite sections; Canon J. E. Cross on Lincolnshire Oolites and Lias; also Mr. Clement Reid's work in connection with the New Geological Survey amongst the boulder-clays, inter-glacial beds, marine gravels, post glacial beds and alluvium of Northern Lincolnshire.

In connection with our Geological section I would suggest the appointment of a boulder committee, whose object will be to take observations relative to the erratic or ice-borne blocks of Lincolnshire, their character, position, size, origin and height above the sea. This to be carried out on the same lines generally as those adopted by the boulder committee of the British Association.

The two distinct ranges of chalk and oolite which run from south to north of the county form elevated tracts which in their original condition were heath and moorland, and almost destitute of timber trees. Along the flanks of these hills and in the intervening low country stretched the deep forests of Kesteven and Lindsey—the Bruneswald—oak, ash, elm, beech, fir, holly, yew, and hazel, sufficient remains existing in some of our oldest woodlands to recall the ancient glories of the land. No better “happy hunting grounds” remain to reward the naturalist than these comparatively undisturbed areas. Here 1884, an example of the old British wild cat (*Felis catus*) was taken, and the pine marten (*Martes abietum*) can scarcely yet be extinct; bones of red deer, *Bos longifrons*, wolf, wild boar, and beavers, have been found in the becks. We have as yet no list of Lincolnshire mammals, and I shall be greatly indebted to any of our members who will enable me to complete a list, which is already partially prepared, with notes from their respective districts.

The heath is another most charming faunal area, from the fact that some few scattered portions are still in their primitive condition, as in the neighbourhood of Woodhall Spa and the warrens and commons of Scotton, Manton, Twigmoor, Crosby and Brumby, in the north-east. The Ermin Street, that great military highway of the Romans, which passed through the gates of their chief fortress, Lincoln, followed the ridge of the oolite from south to north—to east and west of this was a wide, open and continuous stretch of elevated tableland, the road running through leagues of purple heather where the pink and purple shading of the common and cross-leaved heaths, intermingled with the yellow blooms of the pretty whin and sheets of pale blue hairbell, and the darker blue gentian (*Gentiana pneumonanthe*.) A glorious

land it was to cross in those days, the long, lone, level line of a well-kept war path, stretching like a ribbon over the heath, and marked at short intervals with high stones or posts as a guiding line in fog or snow, in a solitude but rarely broken, except by the footfall of the legionaries and the dismal creakings of the baggage train and provision carts, while above, under the blue heaven, the lark carolled as it does now, and the plaint of the golden plover sounded sweet from off the moorlands.

The north-east corner of Lincolnshire, notwithstanding recent changes and trade encroachments, is still rich in animal and plant life, and presents a wide field for future research. Further westward, and beyond the Trent, lies the Isle of Axholme; some portion adjoining the great deer chase of Hatfield and Lindholme, in Yorkshire, was once the hunting-ground of English kings. We must turn to the pages of historians, such as Leland, De la Pryme, Dr. Stonehouse and others, if we wish to learn its ancient condition before the enterprise of the Dutchman, Vermuyden, transformed its wastes and swamps and demon-haunted solitudes into fertile lands, and at the same time banished its indigenous flora and fauna. In fact, the entire district, including Thorne waste, beyond our border, and portions also east of Trent, resembled the "tundras" of Lapland and northern Asia, and, like these, were the breeding-homes of innumerable wild-fowl and waders. Most suggestive of a not remote Arctic character are the lingering of such plants as *Selaginella selaginoides*, *Lycopodium alpinum*, recently discovered by the Rev. W. Fowler, also *Andromeda polifolia*, and *Empetrum nigrum*, on Thorne waste, *Myrica gale*, generally, and the impressions of leaves of some Arctic willow in the laminated silts and peaty alluviums.

Of our sixth district, that south of Grantham and east of Belvoir, I can tell you little, for excepting in passing through by rail, it is a *terra incognita* to me. The chief attraction is Grimsthorpe Park, which contains many fine oaks, hornbeams and hawthorns, and a small herd of red deer—interesting as the only one left in the county, and decendants of those indigenous deer which at one period wandered wild, free and unrestricted through the length and breadth of the land.

It is customary on these occasions briefly to notice the work done by the Union during the President's year of office. Two meetings have been held, the first at Mablethorpe, on June 12th, about thirty attending, and Professor L. C. Miall, F.R.S., of the Yorkshire College, presiding. The vertebrate section (ornithology) was, perhaps, the most successful. The full report of this very interesting meeting will be found in "The Naturalist" for August and September, this year.

The Rev. C. W. Whistler found the Natterjack toad (*Bufo calamita*), on the sand-hills. This is an interesting reptile and very different from the common toad. It is a light yellow colour, and never leaps nor does it crawl, its progression being more like a run. This toad was first discovered near Revesby Abbey, by Sir Joseph Banks, who made it known to the naturalist Pennant. Its distribution is somewhat remarkable, for it is found not only in England, but also in localities in Ireland, where the common species is unknown. All the Irish snakes and Toads, as you know, were turned into stone by St. Patrick, but this seems to have escaped the wrath of the Saint. The inference is that the Natterjack succeeded in reaching Ireland before that distressful isle had become severed from Great Britain, which the common toad did not do, so we must consider the former is the older immigrant of the two, perhaps its particular mode of progress afforded better and more favourable facilities for getting over the ground.

In our investigation into the natural history of this county, we must remember that at no very distant period Lincolnshire was part of the mainland of Europe, and there was no North Sea as we know it now, and we must therefore expect to find close affinity between the fauna and flora on both sides of the water. Once, no doubt, a great central river, whose debouchure was over the Dogger Bank received the waters of the rivers from each side. The North Sea, if you will take the trouble to look at Mr. Olsen's map, is little more than a great plain covered by shallow water; off the north-east coast of England it is 20 fathoms, and as we go south even this depth is exceptional. The North Sea contains

some remarkable depressions, one of which, the Silver Pit, is a narrow submarine valley 50 fathoms in depth, forty miles off the north-east coast of Lincolnshire. The intrusion of this great water, the North Sea, between ourselves and the continent may have been very rapid, for when the chalk barrier, which presumably at one time extended eastward from Flamboro' Head (cropping out again round Heligoland) was once breached and the central river taken in flank, there is no reason why the great level plain of intermediate Lincolnshire should not have been submerged in a period even of a few days.

The second meeting was at Woodhall Spa, on August 7th, with a very fair attendance of members, who were taken over the ground by the Rev. J. Conway Walter; the day was very hot, scarcely any birds were seen and very few insects taken; the botanical section, was, however most successful, and several rare plants were found, the most interesting, perhaps, being the lovely dark blue gentian, in damp places on the moor. I must take this opportunity of publicly expressing the thanks of the Union to the Secretary Mr. Walter F. Baker, whose untiring and intelligent exertions, and great aptitude for organisation, have done so much in setting us in motion and making the Union a success.

Before closing these remarks—as we are now engaged in rocking the cradle of the Union—I should like to say a few words as to the possibilities of a future, and the taking up of a useful position. There is no other county in England in which the fauna and flora have so greatly altered; large numbers of birds, insects and plants have been altogether destroyed, or in the former case, driven away by enclosure and drainage. It becomes therefore an imperative duty that we should use our best endeavours to preserve what is left and to take care that our scarcer mammals, nesting birds and surviving plants are not ruthlessly destroyed and unnecessarily banished. There is no sadder chapter to read than that on "Extermination," in Professor Newton's recently published Part I. of "A Dictionary of Birds;" it is a record of a destruction and waste of life in this fair world, brought about directly or indirectly by the ignorance,

avarice, and greed of civilised man, assisted in late years by that rage for wearing feathers that now and again seizes civilised women.

Much might be accomplished if we could give our people an intelligent knowledge of their natural surroundings and an interest in their preservation. It would be a step in the right direction if object lessons were occasionally given in our village schools in connection with Natural History, illustrated from those easily accessible raw materials of observation in the neighbourhood, which would best illustrate the every-day life of plants and animals.

I fear there is no class of men, who, considering the very favourable opportunities they have, are so proverbially ignorant of the economy of outdoor life as the gamekeepers, and so systematically destroy what it is often their best interest to preserve. Agriculturists, too, as a class, with but few exceptions, are deplorably indifferent to, and ignorant of, the most elementary principles of Natural Science. They care for none of these things. In looking back, however, I am proud to admit many genuine services rendered by agricultural labourers, who have walked miles to bring some curious object, or to tell of some strange beast or bird seen during their daily toil.

Unfortunately, in England, the inculcation of scientific knowledge is left almost entirely to private enterprise and in the hands of such societies as ours. This is not the case in foreign states, and notably so in America, where neither pains nor expense are spared in instructing the people. I have now before me a volume, most beautifully illustrated, recently published and issued by the American Government Department of Agriculture, on "The Hawks and Owls of the United States." This book has been scattered wholesale, as a free gift, over the land, and is intended to teach the American farmer the great usefulness of birds of prey, and the good which, as a rule, they confer upon him. Surely we have had object lessons sufficient to bring this matter forcibly home to us in that plague of field voles which has laid waste some of the great sheep farms beyond the border, and the plague of rats in Lincolnshire.

It is hoped that in time we shall get a museum in Lincoln.* The want of this has been the cause of our losing many art treasures, antiquities, and natural history specimens. We have lost the inimitable pictures of De Wint, the Franklin relics and many other things which ought not to have left the county.

A word on our own individual and special duties as naturalists, and here I cannot do better than quote the words of a late Bishop of Oxford—the great Bishop Wilberforce. He says:—

“A good practical naturalist must be a good observer; and how many qualities are required to make up a good observer? Attention, patience, quickness to seize separate facts, discrimination to keep them unconfused, readiness to combine them, and rapidity and yet slowness of induction; above all, perfect fidelity which can be seduced neither by the enticements of a favourite theory nor by the temptation to see a little more than actually happens in some passing drama.”

In conclusion, it is gratifying to find that there is at least an awakening and uprising on these matters in Lincolnshire, and that the dry bones are moving. Let us trust that this union—a real Union of hearts—will inaugurate a new era. The most wonderful fact in connection with the last half century has been the progress of science. Everywhere amongst the educated and thoughtful there is a striving to search and probe downwards into the very sources and origin of all life—not alone that we may get a deeper insight into the workings of nature, but to find the key to our own position in connection with the life which is everywhere about us. Men of science are diligently engaged in painfully searching backwards into the infinity of the past, and considering the results already attained, I think we can look forward with hope to the infinity of the future. Yet, I think, when science has spoken her last word, we shall still have to confess, in the words of Lincolnshire's noblest son, we are but

“An infant crying in the night:
An infant crying for the light:
And with no language but a cry.”

*This want has now been supplied. The City and County Museum was opened to the public on May 22nd, 1907.

LINCOLNSHIRE GALLED-PLANTS.

By Miss S. C. Stow,
23, Avenue Road, Grantham.

This list contains all the galls found in the County, the names of the makers of which have been determined, many of these galls are frequent in the South (V.C. 53), Divisions 13—18, they probably are in the North (V.C. 54), 1—12, but owing to lack of information it remains to be proved, (shall be only too pleased to receive specimens for identification). A large number of records are to hand of galls, which have not at present been identified, though Mr. Connold, author of "Vegetable Galls," has been most kind in trying to unravel the mystery. In some cases insects have hatched out, which no one to whom he has applied could name, they would seem to be new to Science. "Galls are a morbid enlargement of the affected part of the plant due to parasitic agency."

BY GALL-GNATS OR MIDGES (Diptera.)

AGROPYRON REPENS, B.

Stems by *Chlorops tæniopus*

S. 13, 15, frequent on the borders of cornfields in these districts.
S C S.

AMMOPHILA ARUNDINACEA, H.

Stems by *Eurytoma hyalipennis*

D. 4, 9, 11. "Abundant all along the coast." E. A. W-Peacock.

BARBAREA VULGARIS, R. Br.

Flower-buds by *Cecidomyia sisymbrii*, Schr. K.

D. 13, 15. Court Leys, 6-1903; Grantham, 16-6-1905. S C S.

CARDAMINE PRATENSIS, L.

Seed vessels by *Cecidomyia cardaminis*, Mtg.

D. 15. Harrowby, 1906. S C S. Grantham, 1907. John Hawkins.

CAREX VULPINA L.

Flower-buds by *Cecidomyia muricata*

D. 13. Caythorpe, 5-8-1903. D. 15. Brandon, 8-8-1903; Claypole, 29-7-1903. S C S.

CENTAUREA NIGRA, L.Seeds by *Urophora solstitialis, L.*

D. 2. Hibaldstow, 8-1901. E. A. W-Peacock. D. 13. Caythorpe, 25-10-1902. S C S.

CNICUS ARVENSIS, Hoffm.Stems by *Urophora cardui, L.*

D. 3. Cadney, 8-1900. E. A. W-Peacock.

CRATÆGUS MONOGYNA, Jacq.Shoots by *Cecidomyia cratægi, Mtg.*

D. 13, 15. Frequent in the South. S C S.

DAUCUS CAROTA, L.Seeds by *Asphondylia pimpinellæ, F.*

D. 15. Kirton-Lindsey, 8-1902. E. A. W-Peacock.

FAGUS SYLVATICA, L.Leaves by *Hormomyia piligera*

D. 15. Belton Park, 15-8-1905. S C S.

Leaves by *Hormomyia Fagi*

D. 2. Bottesford, 1899-1902. E. A. W-Peacock. D. 15. Belton Park, 15-8-1905. S C S.

FRAXINUS EXCELSIOR, L.Leaves by *Diplosis botularia, Mtg.*

D. 13, 14, 15, 16. Very frequent.

GALIUM APARINE, L.Stem and flower-head by *Cecidomyia aparinæ*

D. Hundleby, 28-7-1904. S C S. D. 15. Stubton, 29-7-1903. Ropsley, 7-1904. S C S.

GALIUM MOLLUGO.Stems and flowers by *Cecidomyia gallii*D. 15. Harrowby, 7-1904. Little Ponton, 8-1904. S C S. This Gall-gnat also attacks *Galium verum, L.* D. 10, 13, 14, 15. S C S.**GENISTA TINCTORIA, L.**Buds by *Asphondylia genistæ*

D. 14. Raucby, 20-7-1903. S C S.

HORDEUM, Barley.Halum by *Chlorops tæniopus, Meigen.*

"Ribbon-footed Corn Fly," "Gout Fly," this fly is often very destructive to Wheat and Barley. D. 13. Caythorpe, 7-8-1903. S C S.

LATHYRUS PRATENSIS, L.Leaves by *Cecidomyia lathyri*

D. 13. Court Leys, 9-1903. D. 15. Sapperton, 9-1903. S C S.

LOTUS CORNICULATUS, L.Flower-heads by *Diplosis loti*

D. 13. Gelston, 8-1904. S C S.

NEPETA GLECHOMA, L.Leaves by *Cecidomyia bursaria, Bremi.*

D. 13. Court Leys, 26-9-1903. D. 14. Cranwell, 15-10-1902. D. 15. Grantham, 1904. S C S.

POLYGONIUM AMPHIBIUM, L.Leaves by *Cecidomyia persicariæ, L.*D. 15. Brandon, 9-1902. S C S. This Gall-gnat also attacks the var. *hirtulum, Van Bise.* D. 13. Court Leys, 22-9-1903; and the var. *terrestre, Leers.* D. 13. Court Leys, 13-8-1902. D. 15. Belton, 6-1904. S C S.

PYRUS COMMUNIS, L.Fruit by *Diplosis pyrivora*

D. 3. Cadney Vicarage garden, 12-6-1902. E. A. W-Peacock.

RANUNCULUS REPENS, L.Leaves by *Cecidomyia ranunculi*D. 15. Sapperton, 9-1603. Grantham, 9-1904. Denton, 8-1906.
S C S.**ROSA CANINA, L.**Leaves by *Cecidomyia rosarum*

D. 15. Brandon, 13-9-1902. S C S.

SALIX ALBA, L.Shoots by *Cecidomyia rosaria, Liv.*D. 15. Brandon, 13-9-1902. Allington, 4-8-1904. Belton, 1906,
S C S. This Gall-gnat also attacks *S. triandra, L.* D. 15.
Allington, 4-8-1904. Westborough, 9-1904. Little Ponton.
4-9-1905. S C S. Grantham, 9-1906. J. Hawkins.**SALIX CAPREA, L.**Leaves by *Hormomyia capreae*

D. 15. Great Ponton, 25-8-1905. S C S.

SALIX VIMALIS, L.Leaves by *Cecidomyia margineum-torqueus*D. 2, 3. Bottesford and Cadney, 1902. E. A. W-Peacock. D. 15.
Common in this Division in Grantham neighbourhood.**SISYMBRIUM OFFICINALE, Scop.**Flower-heads by *Cecidomyia sisymbrii, Sch.*D. 3. Cadney Beck bank, 15-7-1902. E. A. W-Peacock. D. 15.
Brandon, 7-1903. D. 16. Stamford, 6-1905. S C S.**SPIRÆA ULMARIA, L.**Leaves by *Cecidomyia ulmariae, Bremi.*

D. 7, 11, 8, 13, 15, 16. Very abundant in the County. S C S.

STACHYS SYLVATICA, L.Leaves by *Cecidomyia stachydis*

D. 13, 15, 16. S C S.

TAXUS BACCATA, L.Shoots by *Cecidomyia taxi, Inch.*

D. 15. Belton Park, 6-1906. S C S.

THALICTRUM FLAVUM, L.By *Cecidomyia thalictri*

D. 13. Court Leys, 7-1901. S C S.

TILIA EUROPÆA, L.Flower peduncles, by *Cecidomyia tilicola*

D. 14. Cranwell, 7-1903. D. 15. Denton, 1906. S C S.

TILIA GRANDIFOLIA.Leaf peduncles, by *Cecidomyia tiliae*D. 13. Brant Broughton, 7-1903. T. Stow. D. 15. Grantham,
1907. Denton, 1906, S C S.**URTICA DIOICA, L.**Leaves by *Cecidomyia urticae*

D. 3, 2, 11, 13, 14, 15, 16. Very common. S C S.

VERONICA CHAMÆDRYS, L.Leaves by *Cecidomyia veronicae, Bremi.*

D. 1, 2, 3, 6, 10, 13, 14, 15, 16. Common everywhere. S C S.

VICIA CRACCA, L.Flower-heads by *Diplosis loti*

- D. 14, 15. Rauceby, 20-7-1903. Brandon, 6-1903. Grantham, 9-1904. S C S. This Gall-gnat also attacks *V. sativa*, L. D. 13, Court Leys, 4-6-1903. D. 15. Gelston, 6-1903. D. 16. Carey, 1903. S C S.

VIOLA SILVESTRIS, R.Leaves by *Cecidomyia violæ*

- D. 15. Sapperton, 9-1903. S C S.

BY GALL-WASPS (Hymenoptera.)**HYPOCHÆRIS RADICATA, L.**Stems by *Aulax hypochæridis*

- D. 3. Howsham, 9-1901. E. A. W-P. D. 11. Sutton-on-Sea, 2-7-1903. Rev. A. Thornley. Skegness, 25-8-1904. S C S.

NEPETA GLECHOMA, B.Leaves by *Aulax glechomæ*, *Htg.*

- D. 2. Bottesford Moors fish-pond side, 27-6-1902. E. A. W-Peacock. D. 13, 14, 15. Fairly common in South.

PAPAVER RHÆAS, L.Seed vessels by *Aulax papaveris*, *Cam.*

- D. 2. Broughton Wood, 13-8-1902. E. A. W-Peacock. D. 13. Court Leys, 12-1902. S C S. This Gall-wasp also attacks *P. dubium*, L. Court Leys, 6-1902. S C S.

POTENTILLA REPTANS, L.Rhizome by *Xestophanes potentillæ*, *Cam.*

- D. 2. Broughton Wood, 16-8-1902. E. A. W-Peacock. D. 13. Court Leys, 25-10-1902, and D. 15. Grantham, 1904, on leaf-stalks and runners. S C S. D. 16. Carey, 6-1903. E. A. W-Peacock.

QUERCUS PEDUNCULATA, Ehrh.Leaves and Twigs by *Andricus curvator*, *Htg.*

- "Curved leaf-gall." D. 8, 13, 15, 16. Frequent in South. Leaf-buds by *A. inflator*, *Htg.* "Twig-gall." D. 13. Court Leys, 3-1903. S C S. Axillary bud by *Aphilotrix fecundatrix*. "Artichoke-gall." D. Redbourn, 3-1903. Revs. Peacock and Mason. D. N. Scarle, 10-1905. John Hawkins. D. 13. Court Leys, 1902. S C S. D. 15. Little Ponton, 10-1905. S C S. Feeding roots by *Biorhiza aptera*, *Fbr.* D. 2. Broughton Lane Plantation, 8-1902. E. A. W-Peacock. Twigs by *Cynips kollari*, *Htg.* "Marble-gall." D. 5, 11, 13, 15. Frequent in South. Underside of leaf by *Dryophanta agama*, *Maye.* D. North Scarle, 10-1905. John Hawkins. Underside of leaf by *D. divisa*, *Alder.* "Scarlet Pea." D. 13. Court Leys, 30-10-1902. D. 15. Belton Park, 8-1904. S C S. Underside of leaf by *D. scutellaris*, *Htg.* "Cherry-gall." D. North Scarle, 10-1905. John Hawkins. D. 13. Court Leys, 24-10-1903. S C S. Underside of leaf by *Neuroterus lenticularis*, *Oliv.* "Spangle-gall." D. 13. North Scarle, 10-1905. John Hawkins. D. 13, 15. Frequent. Underside of leaf by *N. numismatis*, *Oliv.* "Silk Button." D. 13, 15. Frequent. Underside of leaf by *N. ostreus*, *Htg.* D. 13. North Scarle, 10-1905. John Hawkins. D. 13. Court Leys, 24-10-1903. S C S. D. 15. Belton Park, 15-8-1905. S C S. Leaf and calkin by *Spathogaster baccarum*, L. "Currant

gall." D. 8. Aethorpe Wood, Louth, 6-1905. D. 15. Woodnook, 22-6-1905. Belvior, 8-6-1905, these galls were so numerous that they lay under the trees like currants. S C S. Underside of leaf by *S. tricolor*, *Htg.* "Hairy Pea." D. 13. North Scarle, 10-1905. John Hawkins. Terminal bud by *Teras terminalis*, *Fbr.* "Oak Apple." D. 5. Redbourn, 3-1903. E. A. W-Peacock. D. 13. Court Leys, 4-11-1902. D. 15. Sapperton, 8-1903. Barkstone, 1906. S C S.

ROSA CANINA, L.

Leafbud by *Rhodites rosæ*, *Htg.*

"Bedeguar-gall." D. 1, 2, 3, 5, 11, 13, 14, 15, 16. Very frequent in the County. Underside of leaf by *R. nervosus*, *Cam.* D. 3, 5, 13, 15. Frequent, leaf and petioles by *R. eglanteriæ*, *Htg.* D. 2, 3, 5, 11, 13, 15. This Gall-wasp also attacks *R. tomentosa*. D. 13. Court Leys, 19-9-1900. S C S.

ROSA RUBIGINOSA, L.

Leaves by *Rhodites rubiginosæ*

D. 2. Frodingham, 1899. E A W-P.

RUBUS PLICATUS.

Stem by *Diastrophus rubi*

D. 3. Cadney, 1898. D. 1. Amcotts, 1878. D. 2. Bottesford, 1876. E. A. W-Peacock. This gall-wasp also attacks *R. cæsius*. D. 15. Stubton, 19-2-1903, many of the pupæ had been picked out of these galls by birds. D. 16. Careby Wood, 6-1904. S C S.

SALIX ALBA, L.

Leaves by *Nematus gallicola*

"Bean-gall." D. 11. Skegness, 16-8-1903. T. Stow. D. 13, 15, 16. Common in South. This Saw-fly also attacks *S. fragilis*, *L.* D. 3, 10, 13, 15. *S. cinerea*, *L.* D. 2, 3. Cadney and Broughton, 1902. E. A. W-Peacock. D. 13. Haddington, 29-9-1902. S C S. *S. triandra*, *L.* D. 15. Manthorpe, 9-1904. S C S.

SALIX PURPUREA, var. WOOLGARIANA

Leaves by *Nematus salicis-cinereæ*

D. 15. Near Paper Mill, Grantham, 25-8-1904. S C S. This Saw-fly also attacks *S. repens*. D. 5. Scotton Common, 1905. S C S.

BY APHIDES OR GREEN-FLY (Hemiptera-Homoptera.)**ABIES EXCELSA.**

Shoots by *Adelges abietis*

D. 2. Broughton, 1896. E. A. W-Peacock.

ATRIPLEX ANGUSTIFOLIA, Sm.

Leaves by *Aphis atriplicis*, *L.*

N. Spilsby, 28-7-1904. S C S. D. 13, 15. Frequent in these Divisions. S C S. This Aphis attacks *Chenopodium album*. D. 13. Court Leys, 8-1903, and D. 15. Londonthorpe, 1904. S C S.

CRATÆGUS MONYGNA, Jacq.

Leaves by *Aphis cratægi*

D. 15. Skellington, 1-8-1905. D. 15. Manthorpe, 1905, Londonthorpe, 1906. S C S.

JUNCUS LAMPROCARPUS, Ehrh.Leaves by *Livia juncorum*

D. 3. Cadney, 1893. E. A. W-Peacock. D. 10. Woodhall Spa, 10-1901. S C S. D. 15, 16. Frequent in South.

RIBES NIGRUM, L.Leaves by *Rhopalosiphum ribis*D. 3. 13, 14, 15. Frequent. S C S. This Aphis also attacks *R. rubrum*, L. "Red Currant" but not so often as the Black Currant. D. 3. Cadney, 1902. E. A. W-Peacock. D. 15. S C S.**STELLARIA HOLOSTEA**, L.Leaves by *Brachycolus stellaris*D. 2. Bottesford, 1893. E. A. W-Peacock. D. 15. Sapperton, 8-1903. Brandon, 7-1907. S C S. This Aphis attacks *S. graminea*, L. D. 13. Court Leys, 23-9-1902. Haddington, 29-9-1902. S C S.**ULMUS MONTANA**, Stokes.Leaves by *Schizoneura ulmi*, L.

D. 3, 2 13, 14, 15, 16. Very common.

ULMUS MONTANA, Stokes.Leaves by *Tetraneura ulmi*

D. 13. Court Leys, 27-5-1903. D. 16. Carlby, 6-1904. S C S.

LONICERA PERICLYMENUM, L.Flower-head by *Siphocoryne xylostei*, Schr.

D. 15. Denton, 1905. Honington, 8-1907. S C S

POPULUS NIGRA, L.Petiole of leaves by *Pemphigus bursarius*

D. 6. Lincoln, 7-1901. D. 11. Skegness, 6-1907. S C S. D. 15. Harrowby, 8-1904. John Hawkins.

PYRUS MALUS.Trunk, branches, and twigs by *Schizoneura lanigera*, Haus.

"American blight." D. 13. Court Leys, 18-10-1902, also on orchard apple trees. D. 15. Grantham (Avenue Road,) 1904. S C S.

PYRUS DOMESTICA, Ehrh.Leaves by *Aphis pyri*

D. 15. Grantham (Avenue Road), 6-1904. S C S.

RHAMNUS CATHARTICUS, L.Leaves by *Trichopsylla Walkeri*

D. 13, 14, 15. Very frequent in these Divisions. S C S.

BY MITES (Acarina).**ACER CAMPESTRE**, L.Leaves by *Eriophyes macrorhynus*D. 3. Cadney, 1-6-1902. E. A. W-Peacock. D. 13, 14, 15, 16. Very frequent in South, probably the same in North. S C S. This plant is also galled by *E. macrochelus* *Nal.* D. 13. Court Leys, 1902. D. 14. Cranwell, 7-1903. D. 15. Brandon, 13-9-1902. D. 15. Careby Wood, 6-1903. S C S.**ACER PSEUDO-PLANTANUS**, L.Leaves by *Phyllocoptes acericola*

D. 2. Bottesford, 1895-99. E. A. W-Peacock. D. 11. Skegness, 6-1907. D. 15. Sapperton, 3-9-1902. Brandon, 12-7-1907. D. 14. Cranwell, 15-10-1902. D. 16. Stamford, 6-1905. S C S.

ALNUS GLUTINOSA, *Medic.*Leaves by *Eriophyes lævis*D. 15. Belton Park, 15-8-1905. S C S. This tree is also galled by *E. axillarjæ*. D. 15. Belton Park, 8-1904. John Hawkins.**BETULA ALBA**.Branch by *Eriophyes rudis*

"Witches brooms." D. 3, 2, 6, 15. Frequent. Buds, by same mite. D. 15. Denton and Belton Park, 8-1904. S C S.

CORYLUS AVELLANA, *L.*Buds by *Eriophyes avellanæ*

D. 8. Athorpe Wood, Louth. D. 13, 15, 16. Common in South, probably the same in North.

CRATÆGUS MONYGNA, *Jacq.*Leaves by *Eriophyes gonithorax*, *Nal.*D. 2, 3, 10, 13, 14, 15, 16. Very common. S C S. Leaves by *E. crataegi*, *Canest.* D. 13. Court Leys, 29-5-1903. D. 15. Little Ponton, 8-1904. S C S.**FRAXINUS EXCELSIOR**, *L.*Leaves by *Phyllocoptes fraxini*D. 2, 11, 13, 14, 15, 16. Frequent. Fruiting peduncles by *Eriophyes fraxini*, *Nalepa.* D. 15. Brandon, 20-9-1902. Little Ponton, 8-1904. Grantham, 12-1904. S C S.**GALUIM APARINE**, *L.*Leaves by *Eriophyes galii*D. 8, 11, 13, 15, 16. Frequent in South. This mite also attacks *G. moliugo*. D. 15. Harrowby, 7-1904. Little Ponton, 8-1904. Great Ponton, 25-8-1905. And *G. verum*, *L.* D. 13. Court Leys, 23-9-1902. D. 14. Cranwell, 7-1903. D. 16. Careby, 6-1903. S C S. This *Galium* is also attacked by *E. galliobius*. Terminal leaves. D. 13. Byard's Leap, 12-8-1903. D. 11. Skegness, 25-8-1904. S C S.**JUGLANS REGIA**.Leaves by *Eriophyes tristratus* var. *erinea*

D. 2, 11, 13, 15, 16. Frequent.

PRUNUS SPINOSA.Leaves by *Eriophyes similis*

D. 3. Cadney, 30-8-1902. E. A. W-Peacock. D. 13, 15, 16. S C S.

PYRUS COMMUNIS.Leaves by *Eriophyes piri*

D. 2. Bottesford, 1899-01. E. A. W-Peacock. D. 13. Caythorpe, 6-1903. D. 14. Cranwell, 7-1903. D. 18. Brandon, 7-1907. S C S.

PYRUS AUCUPARIA, *Ehrh.*Leaves by *Eriophyes aucupariæ*

D. 13. Fricston, 10-7-1903. D. 15. Stubton, 29-7-1903. Harrowby, 1-8-1907. S C S.

RIBES NIGRUM, *L.*Buds by *Eriophyes ribis*

D. 15. Brandon, 1903. Saltisford, 6-1904. Little Ponton, 9-1905. Grantham, 1906. S C S.

SALIX ALBA, *L.*Leaves by *Eriophyes marginatus*

D. 2. Bottesford, 1901. E. A. W-Peacock. D. 13. Caythorpe, 25-10-1902. S C S.

SALIX CAPREA, L.

Leaves by *Eriophyes tetranothrix-lævis*
D. 3. Poolthorn, 26-8-1903. E. A. W-Peacock.

TAXUS BUCCATA, L.

Leaf buds by *Eriophyes psilaspis, Nal.*
D. 13. Court Leys, 1-5-1903. S C S.

THYMUS SERPYLLUM, Fr.

Leaves by *Phyllocoptes thymi, Malepa.*
D. 13, 14, 15, 16. Frequent. S C S.

TILIA EUROPÆA.

Leaves by *Eriophyes tiliæ*
D. 2. Bottesford, 1896. Scawby, 1899. E. A. W-Peacock. D. 15,
Grantham, 1904. Little Ponton, 4-9-1905. S C S.

BY BEETLES (Coleoptera).**BASSICA NAPUS, L.**

Roots by *Centhorhynchus sulcicollis*
D. 2, 3. Bottesford, 1893. Cadney, 1896. Kirton-Lindsey, 1900.
E. A. W-Peacock. D. 13. Court Leys, 3-11-1902. D. 15.
Grantham, 1904. S C S. This beetle also attacks *B. rutabaga*.
D. 3, 2. Bottesford, 1876. Cadney, 1891-1902. Hibaldstow.
1899-1902. E. A. W-Peacock. D. 13. Court Leys, 2-1903. S C S.
and *B. sinapistrum, B.* D. 2. Hibaldstow, 7-1902, "but only
found on ground when looked for which had lately been roots."
E. A. W-Peacock.

PLANTAGO LANCEOLATA, L.

Flower-stalk by *Mecinus pyraeter*
D. 14. Rauceby, 13-8-1902. D. 11. Skegness, 6-1905. S C S.

VERONICA ANAGALLIS, L.

Seed vessels by *Gymnetron villosulus, Gyll.*
D. 11. Skegness, 16-8-1903. Thomas Stow. D. 15. Great Ponton,
25-8-1905. John Hawkins.

BY FUNGI.**ALNUS GLUTINOSA, Medic.**

Roots by *Schinzia alni*
D. 15. Saltisford, 28-2-1905. S C S.

AMYGDALUS PERSICA var. NECTARINA.

Leaves by *Exoascus deformans*
D. 13. Court Leys, 24-5-1903. S C S.

ELEOCHARIS PALUSTRIS, Br.

Seeds by *Claviceps purpurea, Tul.*
D. 15. West Allington, 7-1904. S C S. This fungus attacks
Glyceria fluitans. D. 15. Brandon, 13-9-1904. Little Ponton,
4-9-1905. Cherry Holt, Grantham. 20-9-1905. S C S., and
Lolium perenne, L. D. 15. Brandon, 13-9-1904. Grantham
(Paper-mill lane), 9-1904. S C S., this is Ergot.

POPULUS NIGRA, L.Leaves by *Exoascus aureus*

D. 11. Skegness, 16-8-1903. Thomas Stow. D. 15. Stubton, 29-7-1903. Brandon, 8-1907. S C S. Harrowby, 8-1904. John Hawkins.

RANUNCULUS REPENS, L.Leaves and stems by *Polycystis pompholygodes, Lev.*

D. 11. Spilsby, 28-7-1904. D. 15. Frequent in this division. S C S.

ROSA CANINA, L.Shoots by *Phragmidium subcortleatum*

D. Redbourne, 1903. E. A. W-Peacock. D. 19. Court Leys, 5-1903. D. 15. Grantham, 5-1904. S C S.

VIOLA ODORATA, L.Stems and leaves by *Polycystis violæ, Brem.*D. 15. Grantham, 8-1906. Brandon, 8-1907. *V. sylvatica*, and *V. hirta*. D. 14. Cranwell, 1903. S C S.**BURSA BURSA-PASTORIS.**Stems and leaves by *Cystopus candidus.*D. 13. Court Leys, 10-1903. D. 15. Sapperton, 1903. Saltisford, 1904. Grantham, 1907. *Brassica sinapistrum*. D. 15. Sapperton, 1904. S C S.**BY MOTHS.****PINUS SYLVESTRIS.**Shoots by *Retiina resinella*

D. 2. Bottesford Moors, 1874. Broughton, 1893-1900. E. A. W-Peacock.

Cobites Tænia in Lincolnshire.

At Bardney, on September 6th last, whilst using a small gauze net for taking *Pisidium fontinale*, I was fortunate in taking two specimens of the above-named fish, as far as I know, the spiny *Loach* has not been recorded in Lincolnshire before, and is only taken in a few of the British rivers, it is evidently new to the County fauna.—J. F. MUSHAM.

[This species has also been recorded for the Trent.—DAY. And the late Mr. Brogden says:—Occasionally taken in the "Butt" nets, in South Lincolnshire.—Editor.]

THE PYGMY FLINT AGE IN LINCOLNSHIRE.

A CONTRIBUTION TO THE ETHNOLOGY OF LINCOLNSHIRE.

BY REV. ALFRED HUNT, M.A.

The subject of my address as President of the Naturalists' Union for the year 1907, is practically a New Subject, but concerns a very old period of Natural History.

Natural History points back to the Creation of Man as the crowning development of Creative Power. No higher form of beings that we are aware of, have been created since Mankind.

The study of Ethnology, or the study of Races and Tribes of men, has in regard to our own County been largely neglected in the past. To-day it is my privilege to call your attention to an interesting race of beings who have existed in our County, and left traces behind them of an unmistakeable character, and I venture to give them a title that will be clearly understood:—The Pygmy Race of Mankind in Lincolnshire.

A generation ago scarcely any man in England or abroad seems to have noticed the small diminutive flints which are now known to specialists as Pygmy Flints. Dr. Colley March, of Rochdale, Lancashire, seems to have been the first person in England to have noticed them and recorded his observations.

Contemporaneously, the late Mr. A. C. Carlleyle of the Archæological Survey of India, discovered many Pygmy Flints at Sohâgi Ghât, on the Northern Scarp of the Vindhya Mountains and left notes of them. More specimens were found in the same district by the same person in 1880—1881.

They were followed by my friends, W. H. Sutcliffe, Esq., of Littleborough, Lancashire, and The Rev. Reginald A. Gatty of

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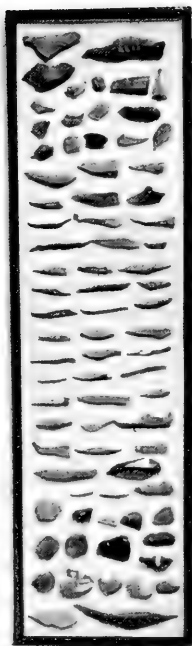


Photo by

H. Prescott.

The upper figure is a fine **POLISHED CELT** found at Cold Hanworth.

One of the trays of **PIGMY FLINTS** from the Museum Collection.

Size of tray 12 ins. by 3 $\frac{1}{2}$ ins.

Hooton Roberts Yorkshire,—the latter gentleman some eight years ago spoke to me about Pygmy Flints, and asked if I had ever come across any in Lincolnshire—at once my thoughts turned to Scunthorpe Common, and I asked Mr. Edgar Brown, then Manager, of the Scunthorpe Branch of Smith's Bank, to look out for them in August 1900, and in a short time, he found several specimens and was introduced to Dr. Gatty. Dr. Gatty has since discovered, as the result of much close personal search, many thousands of Pygmy Flints at Scunthorpe.

PLACES WHERE FOUND.

Pygmy Flints are scattered in various places all over the world, and records of their discovery have now been made in Belgium, Palestine, Syria, Egypt, India, Southern Spain, France North and Central Africa and in Great Britain.

In Great Britain they have been found at Glenluce in Wigtonshire, Scotland, various places in Ireland in East Lancashire near Rochdale, at Hooton Roberts in South Yorkshire, in the Isle of Man, at Bradfield West Riding of Yorkshire, at Hastings, Sevenoaks, Sittingbourne, Mildenhall, Cambridgeshire, Lakenheath, Suffolk, Marton Common, Lincolnshire, but by far the largest number found in any one place in England is that of Scunthorpe Common, North Lincolnshire, and that discovery is not yet ten years old.

Since their discovery at Scunthorpe, Lincolnshire, specimens of these Pygmy Flints from our County have been exhibited in London, Dublin, Edinburgh, Manchester, and other places, and owing to the kindness of Mr. Edgar Brown many excellent specimens are now to be seen in the County Museum at Lincoln. Specimens representing various places abroad are to be seen in the British Museum—in cases Nos. 43 and 152.

Having stated where they have been found I now venture to try and describe what are Pygmy Flints. Practically they are a class by themselves. From my private collection I am able to exhibit a few specimens, and also slide views showing Lincolnshire specimens compared with specimens from India.

From these specimens it will be seen they are small pieces of

flint, often only half an inch long, made into various shapes, and for convenience sake they have been classified as:—

Crescent Shaped
 Triangular or Scalene
 Arrow Head
 Rounded and Pointed
 Chisel Shaped
 Trapezoid or Rhomboidal
 Flint Flakes like knives with serrated chipped
 edges at the back.

They are beautifully made and show extraordinary keen sight in those who made them—frequently one side only shows secondary working, and the chipping is so finely done that often twenty and thirty different chips have been made on a fine thin edge of flint in the length of half an inch.

The question has been asked, how may we know Pygmy Flints are the work of mankind? Practically by the same method that we know other Flint or Stone Implements are the handiwork of man—Examine these Pygmy Flints closely and you will be able to trace

- 1 The Bulb of percussion showing where the blow was struck to separate the flake from the Flint Nodule.
- 2 The Conchoidal Fracture running down the length of the flint.
- 3 The Dorsal ridges on the back of the Flint.
- 4 The secondary working along one edge.
- 5 The Patina or skin, the result of weathering or exposure.

These distinct characteristics prove these flints are no haphazard flakings from a flint core.

When you can pick up these Pygmy Flints and show all these peculiarities you are able to convince reasonable men that they are the work of a race of people, who, with keen vision and clever handiwork, were able to make tools which have outlived their own age and race by many thousands of years.

SIMILARITY IN DESIGN.

One point of great interest in these widely scattered Pygmy Flints is the great similarity in design. So much is this similarity carried out that if you place a Scunthorpe specimen beside one found on the Vindhya Hills in India, it is almost impossible to say which is from the one place and which is from the other.

This similarity in design has led many specialists to think that the Pygmy Flints of Scunthorpe are the work of a migrating people, who passed over from India through Asia and Europe to Britain. Amongst those who accept this theory are Dr. Gatty and Vincent A. Smith, M.A., of the Indian Civil Service, one of the greatest specialists we have on this subject.

WHAT WAS THE USE OF THESE PYGMY FLINTS ?

Various conjectures have been made as to the use of these small flint implements. They must have been made for human daily use and need.

Arrow Points are easily accounted for as used in hunting—being it is supposed fastened to wood shafts ; which is still the practice of Australian savages.

Fishing Hooks is another very natural suggestion, for some of the forms, when fixed with sinew or gut, the triangular form makes a specially suitable hook to catch in the throat of fish.

Knives is undoubtedly another use to which some specimens are adapted ; the clear cut edge would, even after the lapse of thousands of years, cut flesh of animals at the present time.

Boring Tools for making holes to sew skins together for clothing purposes is also a natural theory for other specimens of these Pygmy Flints.

Chisels for scraping and shaping wood handles or hafts of their tools is also another suggestion, which is highly probable from the shape of the flints with a square cutting edge.

Skin Scrapers is still another use for which some specimens of the implements may have been made, by these people who lived by the chase—while it is also possible that other shapes were mounted in wood frames and used as saws, sickles and harpoons, as shewn in British Museum Handbook, fig 118.

Some of them may have been used for tattooing—as has been suggested, but certainly not a great proportion of the many thousands that have been found.

BY WHAT CLASS OF PEOPLE WERE THESE IMPLEMENTS MADE.

To begin with, these small implements were made by people with *keen vision*, the minute character of their work being more easily seen and appreciated under a magnifying glass than with the naked eye of an ordinary observer.

They were also *clever designers* as the persistent shapes of these implements show. It is not to an ordinary person an easy matter to chip out a piece of flint in the shape of these samples, the same figures or shapes are repeated in hundreds of instances.

Again they were *careful workers* as is seen by the way in which these flint implements are made—to-day men would have to exercise almost the care of a jeweller if they wished to make implements equal in shape and accuracy to those found on the Scunthorpe Floor, made by these Pygmy Workers.

They knew how to *make a fire*, as many fragments of Charcoal have been found on the floors of their dwelling places.

As regards *their clothing* I am inclined to the idea that they clothed themselves but slightly, and what clothing they had was made of the skins of animals taken in the chase.

PYGYM SITES, STATIONS OR DWELLING PLACES.

One very interesting feature regarding Pygmy Stations, sites or dwelling places where these Flints are found is their close association with a *Peat Floor*. Monsieur de Pierpoint says, "He collected some thousands of Pygmy Flints on the high plateaux above the Meuse. Formerly a thick forest covered these mountains and in that district the small flints are mostly found near springs and away from the east winds." Both at Scunthorpe and on the Hills of the Pennine Range it is on, or in the Peat that these Diminutive Flints are discovered. Dr. Colley March found them in a bed of Peat six feet deep, in certain cases ten feet deep, and at an altitude of thirteen hundred and fifty feet above sea level. Dr. Gatty found them at Scunthorpe on the top of the Peat and below the wind-blown sand 200 feet above sea level.

It was on the Peat that I and my friends, the Rev. R. N. Matthews, of Tetney, in the year 1900, and the Rev. Samuel Wild, of Dunholme, found numerous examples as recently as this last Spring, 1907. Dr. Gatty found as many as 200 implements on the floor of one habitation. These facts lead me to the belief that the Natural conditions or surroundings of Scunthorpe have completely changed since the time of the deposit of these implements.

I believe that the Natural conditions at Scunthorpe were very much like the conditions at the Ituri Forest of North Africa at the present day, where we see a Peat Deposit in progress. That the Pygmies lived in a warmer atmosphere at Scunthorpe than now exists in England, and that these people lived in communities in small huts, such as may be seen now among these living survivals of Pygmy People. They were in fact *Forest Dwellers*.

No pottery has been found with the Pygmy Flints in Lincolnshire, but a class of rude hand-made pottery has been found with the Indian Pygmy Flints, and entire skeletons of the Pygmy people have been found both in India and Germany. In India they dwelt in caves and rock shelters, but at Scunthorpe we have no trace of caves or rock shelters, therefore hut circles seem to be the only alternative to fall back upon as their dwelling places in Lincolnshire.

TO WHAT PERIOD IN THE STONE AGE MUST WE ATTRIBUTE THE
PYGMY RACE OF MANKIND?

Here we have a problem that puzzles many at the present time. Mr. Read of the British Museum suggests a Neolithic Age or Bronze Period, while Mr. Vincent Smith does not agree with that, but inclines to the belief that they are to be placed at the end of the Paleolithic Age. Dr. Colley March, calls it The Early Neolithic Floor of East Lancashire.

One thing is certain, we do not find any smooth or polished stone implements on the Pygmy Floor. Another thing is equally true we do not find Pygmy Flints associated with Bronze or Copper implements, so that they were not metal workers.

The suggestion has been thrown out that the Pygmies were a

weak race who were overcome by Neolithic Man, this may be true but we have the authority of Herodotus 2,000 years ago, and modern travellers like Dr. Wollaston of 1907, pointing out that the Pygmies were, and are at the present time, rather a fighting race of people. After considering all the evidence obtainable, I am inclined to think that the Pygmy Race must be placed in the Mesolithic or Middle Stone Age.

It is true that at one period, "There were giants on the earth in those days," so also it is true that there were dwarfs on the earth in other days. Was this race the Iberic Race?

It is ably argued by Mr. W. J. Knowles vice-president of the Royal Society of Antiquaries of Ireland, that Neolithic Man is the descendant of Paleolithic Man.

The question before Ethnologists to-day is; How was this transition effected? Was it through a Mesolithic Age?

Because there are no references to the Pygmy Flint Age in the Standard Books of 30 years ago on Pre-Historic Man, such as Boyd Dawkins, Canon Greenwell, Sir John Evans, and Mr. Mortimer of Driffield, some few people are prepared to question the reality of what are called Pygmy Flints.

To begin with, each of these authors referred to, have within the last few years become thorough believers in Pygmy Flints as the product of mankind. This is shown by their speeches at the recent meetings of the British Association at York and elsewhere.

Then let the doubtful person concerning Pygmy Flints turn to recent works on Pre-Historic Man, such as Mr. Charles H. Read's Handbook or Guide to the Stone Age, in the British Museum, published 1902, to Prof. Windle's Book on Remains of Pre-Historic Age in England, published 1904, to the Articles by Vincent A. Smith, late of India Civil Service, to Dr. Gatty, and other works, he will then I think, if open to conviction, be ready to admit there is more evidence for a Pygmy Race than he anticipated.

HISTORICAL REFERENCE TO PYGMY RACES OF MANKIND.

If we go back to the Ancients, we have the authority of Herodotus, Book II., Chapter 33, Page 51. That "The

Nasamonians were captured and carried off by the Pygmy Tribe and led across extensive marshes, and finally came to a town where all the men were the height of their conductors and black complexioned under the middle height."

Homer's *Illiad*, Book III., Line 9, refers to Pygmy Nations.

Aristotle calls them Troglodytal—which would seem to indicate that they were Cave Dwellers in that age. Homer and Aristotle both place them near the sources of the Nile.

Pliny, Book VI., 19, and Philostratus *Vit Apoll Tz III.*, 47, and others, place them in India, where in modern days many thousands of Pygmy Flints have been found.

The representation of Pygmy People is frequently met with on Greek Vases.

After 2,000 years of literary silence about Pygmy People, modern travellers like Captain Harrison, have brought over from the Ituri Forest, Pygmy People, and exhibited them in all parts of England.

SMALL DARK COLOURED PEOPLE UNDER THE MIDDLE HEIGHT.

Major Powell Cotton, only this year 1907, gives his experience of life among the Pygmies of the Congo Forest, and describes them as "Small dark coloured people under the Middle Height."

Dr. A. F. R. Wollaston, also this year has returned to civilization through the Congo Forest, and the volcanic region of Mfumbiro, and says the tops of the extinct volcanoes are covered with dense bamboo, and inhabited by a Pygmy Race.

In Central Mexico we have relics of a Pygmy People. The dried head of one being offered in Mr. Steven's London auction room this year.

The last surviving Aztecs, a very diminutive people, I remember to have seen exhibited in Manchester 30 years ago.

All these instances point to Diminutive or Pygmy Races of Men scattered over the world—and in the flint implements left behind by these Pygmy People on the Scunthorpe Floor we have, I hope, a fitting subject for the Naturalists of the Lincolnshire Naturalists' Union to study for some years to come.

As the literature on this subject is so limited I venture to name the authorities quoted or referred to in this address.

AUTHORITIES CONSULTED.

Herodotus.	Pliny.
Homer.	Philostratus.
Aristotle.	

British Museum, Guide to Stone Age, by C. H. Read, Esq.

Dr. Colley March, of Rochdale.

W. H. Sutcliffe, Esq., of Littleborough.

The Rev. Reginald A. Gatty, LL.B., of Hooton Roberts, Doncaster.

Dr. Sturge, formerly of Nice, now of Mildenhall, Cambridge.

The late A. C. Carlleyle, Esq., of the Archæological Survey of India.

M. de Pierpoint, of Brussels.

M. Thieullen, of Paris.

Sir John Evans.

Professor Boyd Dawkins.

Professor Windle, of Birmingham.

Major Powell Cotton.

Dr. A. F. R. Wollaston.

Vincent A. Smith, Esq., M.A.

Occurrence of the Sliver Striped Hawk Moth at Lincoln.

A fresh specimen of *Phyrxus Livornica* was seen by myself and a friend in his garden, St. Catherines Lincoln, at Phlox blooms, about 7-15 p.m. on evening of August 21st last.

J. F. MUSHAM.

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P. A. Burton.

JUNCTION OF THE FOSS DYKE AND TRENT AT TORKSEY.

Photo by

The Lincolnshire Keuper Escarpment

And its Bearing on, and Relation to the County.

BY F. M. BURTON, F.L.S., F.G.S.

On the west side of the County of Lincoln, a long cliff, or escarpment, of the Keuper, the highest formation of the Triassic series, runs in a fairly straight line from north to south, for a distance of about eighteen miles, bordering the eastern bank of the river Trent; the formation of the cliff being the natural result of the carving out by that river of the valley through which it flows. These upper Keuper beds consist of red and variegated marls which are readily affected by erosion, but in places this soft, yielding, substance becomes indurated by slabs and veins of gypsum, and other materials, which enable it to resist denudation to a great extent. Hence we have, in some places, hardened masses of Keuper rock standing out in bluffs and headlands; while in others, where the soft marls prevail, and have been subjected to water erosion, the surface gets worn down almost to the ordinary level of the land around. What these unprotected areas meant in relation to the County when the Trent floods prevailed, we shall presently see.

Starting from the north of the County we meet with the first traces of the escarpment at Hardwick hill, about fifteen miles south of the spot where the Trent falls into the Humber; the intervening area being worn down to a low level by river and glacial erosion. From this hill the escarpment runs southwards through Loughton to Blyton, and, after passing another region of denudation coming from the east, it reaches Gainsborough; from whence it extends (with occasional coverings of sandy drift, deposited

when the river flowed at a higher level, before the existence of the Trent valley) to Marton, where we meet with the first serious break in its continuity; and the first bank made by the Romans to keep the flood-waters of the Trent away from their colony on the Lindis river. Here, a little way beyond the village of Marton, the cliff recedes eastwards towards Brampton, having been cut back and worn away by floods which have left traces of their tracks on its side. Passing on to Torksey we find another break through the line of the escarpment, on the north side of the church, which also admitted the flood-waters of the river; after which, a little further on, we come to the Foss Dyke—shown in the accompanying photograph—which was constructed by the Romans to put Lincoln into communication with the Trent.

About two hundred yards from the entrance to this Dyke the Trent waters are kept in check by a lock, and the stream flows on to Lincoln, joining the rivers Till and Witham on its way. After which the combined stream, under the name of the latter river, passes on to Boston and falls through another lock into the sea; and so level is the land the whole way—a distance of about forty-three miles—that only two intermediate locks are required—one at Lincoln and the other at Bardney—to hold up the water and render navigation practicable.

The part of the escarpment we are now entering on has been so well described by the late Mr. J. S. Padley, in his valuable book, on the "Fens and Floods of Mid-Lincolnshire" (a work that was published by subscription and so is not generally accessible), that I cannot do better than use, as far as possible, his own words in dealing with the district. Mr. Padley, whose kindly, courteous manner will be recalled by many of us with pleasure, had gathered much information about the flooding of this area by the waters of the Trent breaking through the escarpment; and, in his work alluded to above, he says: "Before the time of the Romans, every flood of the Trent flowed down to Lincoln. A range of low sandhills extends from the village of Girton in Nottinghamshire to Marton Cliff in Lincolnshire," and in this low region he describes five openings through which the water was accustomed to flow; the first, and the most southerly one, was in

the township of Spaldford; the second in the parish of Newton; the third near the south side of the Foss Dyke, at its entrance into the Trent; the fourth in the parish of Torksey, on the north of the church; and the fifth in the township of Brampton—the fourth and fifth being those near Torksey and Brampton which we have already alluded to. “Doubtless these openings (Mr. Padley goes on to say), were embanked by the Romans, but since their time, being neglected, the banks have broken at different periods, and allowed the flood-water to inundate the country down to Lincoln, and so into the Fens.” The Spaldford Bank was the most dangerous, and Mr. Padley gives an interesting description of some of the great floods that came from that quarter. One of them, in 1795, flooded great parts of Nottinghamshire and Lincolnshire, and covered nearly twenty thousand acres west of Lincoln, the water there being dammed up by the High Street; while the flood-mark at the time “was nearly eight feet above the ordinary water in the Foss Dyke, or ten feet above the present level of the land.” Other floods which did great damage are mentioned by Mr. Padley up to the years 1852 and 1877; but it is well known that the Trent has repeatedly broken through its banks, not those made by the Romans only, but others as well, almost down to the present day; and parts of Lincoln and Gainsborough, and many of the villages around have suffered from floods, which, however, in these days of precaution are happily getting less frequent; while skating in severe, wet winters from Lincoln, and even from Gainsborough, to Boston, over the flooded area, has occasionally been possible.

It will be noticed that Mr. Padley in his description of this area makes no mention of the Cliff at Newton, nor of the escarpment, beyond speaking of “a range of low sandhills” between Girton and Marton. The escarpment, however, after leaving Torksey, is plainly discernible, though at a low elevation, skirting the east side of the Trent, while at Newton it forms a conspicuous object known as the “Newton Cliff,” a photograph of which, through the kindness of Mr. H. Preston of Grantham, we are able to produce. Either Mr. Padley had no knowledge of the escarpment, or, what is more probable, took no notice of it beyond the

way in which it affected his "Fens and Floods." The Cliff at Newton is remarkably picturesque, and the Lincolnshire Naturalists' Union held one of its most interesting meetings there this year.

As before stated the portions of the escarpment which remain at the present time owe their durability, for the most part, to the gypsum they contain. This mineral, which is an aqueous deposit, found in many sedimentary beds, is formed, and is being formed in the present day, in a variety of ways. It is usually white, but in places it gets stained with impurities and becomes dirty-looking and dull, or red and yellow when discoloured by iron oxide. Sir Archibald Geikie, in his text book, mentions several modes in which it may be formed—such as "a chemical precipitate from solution in water, as when sea water is evaporated;" or from the decomposition of sulphide acting on limestone; or through the action of sulphurous vapours upon calcareous rocks, &c.; and it is to the first of these methods that the gypsum in the Keuper Marls owes its origin, for the Keuper once formed the fringe of a large inland sea, or salt lake, which has left traces of its former condition in the pseudomorphous crystals, filling up the cavities which the true salt crystals once occupied; many of which are found in those parts of the escarpment which have been dug into and disturbed.

Gypsum occurs in various forms on the line of the Lincolnshire escarpment. On the north of Gainsborough it appears as fibrous, satiny bands. At Gainsborough, and on the south of the town, we meet with it in granulated rubbly masses, interstratified with layers of hardened sandstone. Further south it lies in isolated, saccharoid nodules, which are highly soluble; (so much so that I once saw a good sized block, which was lying exposed on the Railway bank, pierced, in a short time, clean through by the continual drip, drip, from the cornice of a bridge above it), while in the Newton Cliff, as the photograph above referred to shows, it occurs in lenticular bands and veins running in all directions, some of which frequently cross and intercross one with another, producing a remarkable, but not uncommon, effect.

Had the escarpment all along the line, being fortified and

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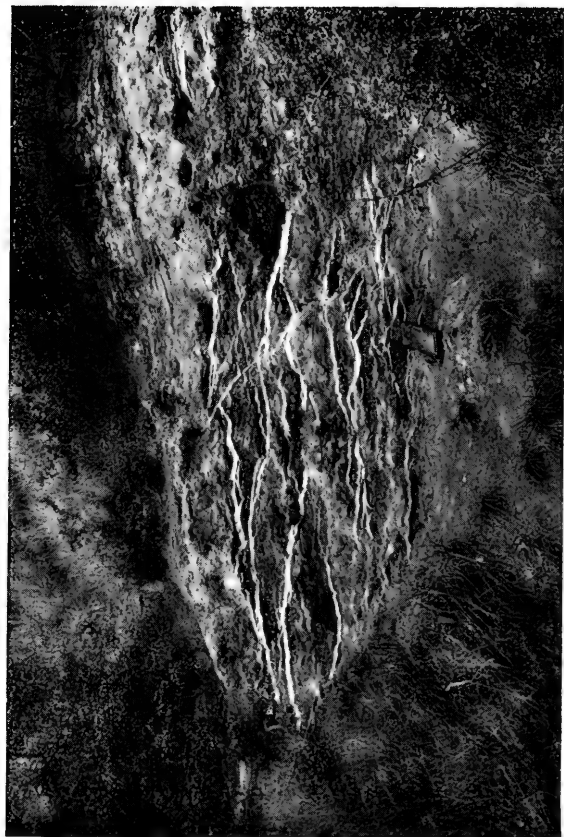


Photo by

NEWTON CLIFF.

H. Preston F.G.S.

hardened, by gypsum, as it is at Gainsborough, Gate Burton, and Newton, there would have been no need of the Roman banks; and the land on the west of Lincoln could not have been worn down by floods to its present low level; and even the fen land on the east of the city (though kept alive by the overflowing tides of the Wash, and fed by other rivers beside the Witham), might, for lack of supply from the Trent floods, and probably would, have borne a very different aspect.

Lincolnshire Rock Specimens.

A collection of the above is being made, and arranged in the City and County Museum at Lincoln. Among those already acquired is a series that show the geological position of the Keupers, so well described in the foregoing article by Mr. F. M. Burton, F.G.S.

A series of specimens from the Boring at Boultham (presented by the Lincoln Waterworks Committee), shows that the Keuper is met with at 669 feet below the surface, in the valley of the Witham, and at that point is 868 feet in thickness. At Newton Cliff, about eleven miles westward of Lincoln, the Keuper outcrops and gives the name to that area, standing above the Trent some fifty feet or more. Mr. T. S. Bavin has presented a series of specimens from a bore made to locate coal in which the Keuper is found to be at the West of the County 850 feet in thickness.

Another series of specimens consist of the red and grey marls, and selected pieces of gypsum taken from the cliff itself at the point illustrated in Mr. Preston's photograph. Visitors to the Museum are therefore able to see actual specimens of this formation, also their relative position as shown in two instances, by the very deep borings at Boultham and Collingham, Mr. Burton has also presented an interesting ripple-marked slab, or waterstone, from the Keuper, which is placed in the same case. It should be noted that the "dip" of this formation is shown by the two borings. The Keuper standing 50 feet above the surface at Newton, is at Lincoln 669 feet below the surface, in the valley. The distance between the two points being about eleven miles.

A. SMITH,

BROUGHTON WOODS.

REV. E. ADRIAN WOODRUFFE-PEACOCK, L.T.H., F.L.S.

The vivid memories and notes of forty years are recalled by this place name. Geology, botany, zoology and anthropology—what varying lines of former interests, crowded aside by the battle of life, rise up before the mind. Most of them are still green enough to fill one's day dreams of scientific conquest with vital realities. With all true workers—those who love knowledge for its own sake—there should always be a part of the higher self and its mental belongings, which forms an inclosed spot, a shrine, the sordid rush of life can never enter and defile.

The very name Broughton Woods suggests a district, not a parish to me. This is the woodland and sandy common country extending from Appleby railway station on the north to Manton Warren on the south, and from Santon Wood and Sweeting Thorns on the west, to Broughton Decoy in the Ancholme Fen and Scawby park and lake on the east. In our youthful days topography was not our strong point, and the mental confusions of childhood are only too apt to cling to the grown man like other peculiarities. One may know all the parish boundaries now, but they are disregarded as purely artificial, it is the district that is attractive as a whole. There are few such neighbourhoods in Lincolnshire. The fifteen square miles thus roughly indicated, contain even to-day for working naturalists varying interests of the most engaging type. Fresh ground in new lines of enquiry opens out all over, when we begin to reflect on past work.

The geology, because there are no surface minerals, has not been fully worked out on up-to-date lines. So for the earnest student there are problems innumerable. From the embedded

forests of oak, yew, pine, birch and hazel in the Ancholme Valley, to the distinction between the Hibaldslow and Kirton Beds of the Lincolnshire Limestone, or the transition beds between the Lias and Oolite on the cliff escarpment, or the isolated beds of plateau gravel of uncertain age which cap its summit, or the drift sands which bury and obscure its outline on the west—all require further elucidation. Man has been there from the time of the late forest growth after the age of glaciation. The sandy commons, which the wind still idly shifts in places and piles up in fresh forms as it will, have rewarded interested collectors with lovely leaf-shaped and barbed arrow-heads of early neolithic workmanship, and with the scrapers, saws and other rough tools peculiar to his time and knowledge of the arts. Here, too, as well as on Linwood to the east, have been discovered transition tools—wholly chipped and yet ground on the edge—with large wholly ground axes and bored hammers of the most finished workmanship. Large numbers of Pygmy flints are scattered all over the sand hills. Some as perfectly wrought as their larger congeners. Could they be found in such quantities unless they were “the practise tools” of skilful children or the remains of a pygmy race? I who have picked up these tiny flints, which are clearly of human origin, have no theory to advance, for I know nothing of a pygmy race, and must leave the matter to acknowledged masters to find out the truth. This district has yielded splendid bronzes too, in variety of shapes showing marked evolution. We trust some of them will find their last resting place in the County Museum, along with the early and late worked stones of this locality. The Frodingham Ironstone Bed was worked in prehistoric times at Manton and Twigmoor. The remains of these old smeltings may be discovered as far as the protecting sand extends towards the Great Central Railway on the south. They are only exposed by rabbit burrows, or by ditching, or by the plough share, for like everything else—old iron diggings and furnaces—to the west of the escarpment, the largest heaps of half-smelted refuse have been covered with drift sand. The road at the foot of Raventhorpe Hill to the Gull Ponds was regularly repaired with these old scoriæ within my note-taking memory, *i.e.*, within the last forty years.

If we turn to botany for a moment, what other district within the Union's sphere of observation can compare with this area when the number and variety of some of the species its woods, quarries, commons, ponds, bogs, flashes, damp spots and ditches, are considered? If it wanted a new name we should properly call it *Fowleria*, for age may limit a man's powers for field work, but no time the craving to know more of plants and their ways when it has once taken possession of the soul. The Canon of Liversedge with his sixty years of field work and graphic pen could alone do this department justice; a lesser knowledge can give but a barren and uninteresting summary. The touch of life the master hand imparts is like the volatile ether in the wine—it makes it drinkable nectar, not grape juice in the raw. The species in this neighbourhood I have room to name are confined to two soils. The Lincolnshire Limestone with its two beds, and the moorland soils of blown sand and peat, or their mixtures. Why the Hibaldstow Bed should be much richer than the Kirton Bed in rare species, is as yet an unsolved problem, but more of this anon. The glory of the early summer *Anemone Pulsatilla* still flourishes in a few isolated spots, while *Aquilegia* in three colours is a brilliant sight after fresh falls of woodland. *Viola stagnina* may now be gone, but was on the Peat at Manton within the last twenty years. *V. palustris* is still plentiful if its lover knows where to look for it. It has a striking form here where it grows in long herbage which has not been recorded for any other spot. *Saponaria officinalis* and *Silene noctiflora* are both doubtful natives, but none the less interesting. *Stellaria nemorum* is the rarest of the rare good things—I regret I have never found it. *Hypericum montanum* may still be taken in small quantities on both local beds of the Oolite. While *Geranium sanguineum*, *Oxalis acetosella*, *Rhamnus catharticus*, *Genista anglica*, *Astragalus danicus*, *A. glycyphyllos*, along with *Hippocrepis*, and a lot of less conspicuities give variety to the collectors note book or vasculum. The genus *Prunus* is more fully represented than elsewhere; *Rubus* has not yet been worked out on the new lines, which classes local forms and hybrids as good species, and still awaits some perhaps unborn rubiaster, of unapproached capacity in sub-division; but *R. saxatilis* is locally plentiful with other good

species. *Sedum Telephium* is confined to a very limited area, and can hardly be a native. All three species of *Drosera* were found on Manton Warren till it was drained, though two perhaps may now be extinct. *Lythrum* still brightens the ditch sides, with other tiny beauties too numerous to be recorded. *Myrrhis odorata* is an alien, I fear, and difficult to discover. Next comes the great rarity *Selinum Carvifolia*. Canon Fowler made this locality famous in 1882, by adding this species to the British Flora from an isolated spot in Broughton Wood proper, where I have seen it this season flourishing like the true native it is. *Asperula cynanchica*, both species of *Valeriana*, *Solidago virgaurea*, *Erigeron acre*, *Antennaria dioica*, *Carlina*, *Serratula* and *Lactuca muralis* make up an interesting group not found readily together excepting here. Hieraciarchs need not come seeking to add fresh leaves to their wreath of difficulties for others, for only three species are found. All the large *Campanulæ* flourish, and the hybrid *latifolia* and *trachelium* has been found and recognised by Canon Fowler. The hybrid, *Primula acaulis* and *veris*, is abundant locally at times, with *Lysimachia nemorum*, *Anagallis pallida* and *A. tenella*, though the latter I fear is now growing rarer. *Gentiana Pneumonanthe*, *G. Amarella*, and *G. campestris*, with *Polemonium Cynoglossum officinale*, *Myosotis collina*, *Lithospermum officinale*, *L. arvense*, *Hyoscyanus*, *Veronica montana*, *Melampyrum pratense*, and *Pinquicula vulgaris*, help to make up a goodly list. We are not even at the end of our best things yet, as *Origanum*, both purple and white flowered, and the rare casual *Galeopsis ochroleuca*, and the denizen *Teucrium Chamædrys*, *Myrica*, *Ophrys apifera*, *O. mucifera*, confined to the outcrop of the Limestone Beds, and therefore rare, easily demonstrate. Here too are *Habenaria conopsea*, and *H. chloroleuca*. There are said to be four hundred acres of close grown *Convallaria* in Broughton Woods proper, to say nothing of the scattered plants, which may even be found by the roadsides. *Allium oleraceum*, *Ornithogalum umbellatum*, originally a mere garden outcast, *Paris*, *Luzula* species, *Scirpus Caricis*, *Eriophorum angustifolium*, *Cladium jamaicense*, *Carex pulicaris*, *C. ligerica*, *C. echinata*, *C. acuta*, *C. pilulifera*, *C. palescens*, with *Botrychium* and *Selaginella*, and the now extinct *Lycopodium alpinum* just beyond the border of this area. Even

this short list shows clearly what a prodigality of floral life these ancient commons and woods must once have possessed.

The vertebrata have been cruelly thinned by time and man, and are not what they once were. The Fox, Badger, Otter, and Martencat, have been purposely destroyed by the persistent efforts of keepers for over a hundred years. Though stray wanderers still arrive at long intervals to meet with the same fate. The smaller mammals flourish; and despite the constant warfare against the mustelines, the Polecat, Stoat and Weasel still flock to these rich game-covered soils.

The bird life of these woods and commons is one of their greatest attractions still. To do it justice, more than one paper as long as this must be allowed to extend would be required for the purpose. There has been a heronry here beyond human memory, a gullery of "Blackheads" at Twigmoor, and a well-frequented duck pond at Manton. Broughton Decoy has long been nothing but a name, but wild fowl there are still in plenty. It would be folly to begin writing a full list of all the rare species that have appeared as passing visitors or that have bred here. The Wryneck is still found, and the Hoopoe has been recorded. Of the Marsh Harrier I have no recent record, but the Hen Harrier has bred. Montagu's Harrier or "Egg Hawk" has now ceased to visit us. The Common Buzzard, Rough Legged Buzzard, Golden Eagle, White-tailed Eagle, Goshawk, Kite, and Greenland Falcon have all been seen more or less frequently within the memory of people I have talked with. The Peregrine in pairs has been twice with us during the last fifteen years, though I was not luckily enough to see it. It attempted on both occasions to nest in the woods, I was told, with the usual result. I saw the ducks, pigeons, and lapwings they had feasted on. My son Dennis, was luckily enough to view the female bird as she stooped magnificently at a large leveret, which, just in time, reached the cover of a big hedge. The last Osprey I have heard of was shot in 1900. The Sheldduck, Mallard, Godwall, Shoveller, Pintail, Teal, Gargancy, Wigeon and Pochard, breed or rest on passage in the ponds still. The Fern Owl, Woodcock and Snipe nest annually; the Pied Flycatcher and Golden Oriole occasionally;

even the Nutcracker has been known. Not being a master in ornithology, I must leave to other hands the smaller species, merely saying the Nightingale has since 1893, become an annual visitor.

From the point of view of the conchologist, this district has never yet received the careful systematic study it deserves. Workers have come and gone that is all. The Rands collection made in 1849 to 1851, I have never been able to trace; the same may be said of the Ball collection. The pioneer list of Lincolnshire Land and Freshwater Shells for Lincolnshire was, however, roughly made from this latter gathering from this district. Mr. John Beaulah, of Raventhorpe, has a collection, too, which contains gatherings made between 1860 and 1865. I myself have seen good varieties of *Arion ater*, and *Limax maximus* in the woods and quarries. *L. cinereo-niger* eating a *Polyporus* on an ash. *Helix hortensis*, *lilacina*, is unique for Lincolnshire in one woodland quarry. Two *Clausilia*, if not more, *H. aculeata*, *H. lapicida*, *Hyalinia fulva*, and *Vertigo edentula*. I have been told *Clycostoma* too, but this and the "stone cutter" I have not personally taken. Information about all existing material from this district would be specially valuable to the Union just now.

The Entomology, thanks to its varied flora, was once as rich as any other department. Things, however, of late have changed for the worse. Mrs. Cross perhaps knows more of it now than anyone else. The late Charles S. Holgate, of Low Risby, told me that the drainage of lowland and bog had been most destructive, but this was not so serious a damage as the iron-works on the west to the Lepidoptera:—"Hundreds of thousands of moths perish annually by being drawn by the glare of the Scunthorpe lights to destruction above the molten metal. No fauna can stand such a constant drain." The little beetle collecting I have done was most successful, and the fungus gathering, and pond dredging equally rich in good finds. So far as I remember the mosses proved the most unremunerative work I ever attempted in the Broughton Woods.

THE LEPIDOPTERA OF LINCOLNSHIRE.

PART I.

BY G. W. MASON.

Barton-on-Humber.

In this Part, and in succeeding Parts in future numbers of the Transactions, I have been asked to set forth the Records of species occurring in the County, and which have accumulated under the care of the Lincolnshire Naturalists' Union. The Lists will show what a number of rare and local insects are to be found throughout the length and breadth of the Shire, and that in many instances localities in Lincolnshire are the most northerly points in Great Britain for certain species. On several occasions I have been astonished to find that such and such a moth is to be found in the County, but I have made careful enquiries as far as possible, and I have eliminated any record which is at all doubtful.

Part I. takes in the Sphinges and Bombyces. I have adopted Mr. Richard South's "Synonymic List of British Lepidoptera," 108 out of 150 species belonging to the Sphinges and Bombyces are recorded as occurring in the County, and one species, the Oleander Hawk Moth (*Chærocampa nerii*), belonging to the List of "Casual or Accidental Visitors," was captured at South Somercotes and is now in the possession of the Louth Naturalists' Society. One of the best insects ever taken in the County is undoubtedly *Laelia cænosa*, now probably extinct. More workers are wanted for the Southern Divisions of the County; I feel sure that if the extensive woods in the South were well worked, and systematic observations were made in recording species, it would be found that some moths which are now regarded as somewhat rare are really well distributed.

I have used many of the contractions that I employed in my paper on Lincolnshire Butterflies with a few slight alterations and additions.

I acknowledge thankfully the valuable help I have received from each and all of those Observers whose names appear in the List of contractions and in the Lists; I have also extracted much useful information from Miller and Skertchly's "Fenland," "The Naturalists' World," J. W. Tutt's "British Lepidoptera," Barrett's "Lepidoptera of the British Islands," "The Naturalist," "The Entomologist," "The Entomologists' Monthly Magazine," and the "Naturalists' Chronicle."

In the case of common species, I have inserted particulars of only one record for the North and South Divisions respectively, and that one as far back as I am able to ascertain.

The list of Contractions were given in the author's article "Lincolnshire Butterflies" in the Transactions for 1906. The following are additional or altered.

R T C	Signifies	Dr. R. T. Cassal.
E A C	"	Mr. E. A. Coekayne.
L M C	"	Mr. L. M. Curtis.
J D C	"	Mr. J. D. Coward.
E H F	"	Dr. E. H. Felton.
H M B S	"	Mr. H. M. Brice Smith.
S B S	"	Dr. S. B. Stedman.
Ent.	"	The "Entomologist."
†	"	C. G. Barrett's "Lepidoptera of the British Islands," 1896 edition.
§	"	The "Naturalists' World, 1886."
¶	"	J. W. Tutt's "British Lepidoptera."

Heterocera.

SPHINGES.

ACHERONTIA ATROPOS L

The larvæ are common some years, and at other times scarce.

The species is well distributed throughout the whole County.

N. Louth, 28-6-1853, John Brown. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.

S. Lincoln, F M B. Divs. 13, 14, 15, 18.

SPHINX CONVULVULI L

Of frequent occurrence.

N. Grimsby, C. K. Tero, (Ent. 1887, p. 303, and erratum at p. 325); 1901, A S.; ¶ Dawson. Alford, 22 and 29-9-1889. R. Garfit. Kirton-in-Lindsey, C. F. George. Panton, 20-8-1892, G H R. Market Rasen, 1889, 1897, and 18-9-1898, W L. Louth, occasionally taken, V. Crow; 1901, R W G.; 30-8-1887, J L.; Ludgate, 10-8-1904, one caught in Thorn's Livery Stable Yard and brought to me by E. Potts, C S C.; Northgate, 17-8-1904, one caught in a house (54, Northgate), and brought

to me by T. Harrison, C S C. Bennington (Boston), a specimen received from Mrs. Disbrowe, 24-8-1901, A T. West Keal (Spilsby), one example, H M B S. Fiskerton, 3-10-1901, J F M. Brocklesby District, E A C.

- S. Haverholme Priory, very common in 1902, J D C. Lincoln, 12-10-1897, J F M. ¶ Brandon, Raynor; Grantham, Treadgold. Holbeach District, L M C.

SPHINX LIGUSTRI L

Frequent.

- N. Linwood, 1857, R P A. Market Rasen, one or two most years, W L. East Barkwith, G H R. Bottesford, 1870, E A W-P. Louth, formerly common, not seen during 1880-1885, V. Crow. Alford District, E W. Ashby (Brigg) District, R T C. Gainsborough, F M B. Owston Ferry District, A R. West Ashby, 1903, F S A.
- S. Wyberton, J C L-C. Lincoln, 12-6-1891, J F M. ¶ Grantham, Walpole. Brant Broughton, 1901, Dr. P. Sharp. Haverholme Priory, larvæ common on young ash trees, J D C. Bourn, W. T. Mellows. Tydd District, E A C. Holbeach, fairly common, L M C.

DEILEPHILA GALII Och

Rare.

- N. Alford, 2-8-1888, at a clump of "Sweet William," Robert Garfit. Gainsborough, W. H. Tugwell; 1859, E. Tearle. Great Carlton, one at flowers in Rectory garden 1878. C. D. Ash.

DEILEPHILA LIVORNICA Esp

Rare.

- S. ¶ Lincoln, Arnold. Lincoln, 8-1906; two examples in a wash-house, 6-9-1890; J F M.

CHÆROCAMPA CELERIO L

Rare.

- N. Gainsborough, 1859, C. W. Dales' History of British Hawk moths; 1859, E. Tearle.
- S. Burton Road, Lincoln, 9-10-1883, J F M. ¶ Grantham, Walpole. An example taken in a Cottage near Lincoln some years ago, W. D. Carr.

CHÆROCAMPA PORCELLUS L

Frequent.

- N. Cleethorpes, 23-8-1879, H. A. Ould. Linwood, 1857, R P A. Wickenby, 1896, W L. Panton, a larva on *Galium verum* 28-8-1895, G H R. Saxby (Barton), 2 specimens at flowers of rocket, C. D. Ash. Ashby (Brigg) District, R T C. Owston Ferry District, A R. ¶ Newball, Legsby, Fowler; Great Grimsby, Dawson; Humber District, Ash; Louth, Castle Bellingham, Thornhill. Skegness, one example about 1890, J C L-C. Edlington, 1903, E. H. Bree.
- S. Rauceby (Sleaford), 6-1901, S C S. Haverholme Priory, generally common, J D C. Skellingthorpe, 6-6-1880, J F M. Allington, larvæ and imagines, P. Wynne. ¶ Hartsholme, Carr; Grantham, Walpole; Lincoln, Macknochie. Holbeach, occasionally, L M C.

CHÆROCAMPA ELPENOR L

Frequent.

- N. Skegness, 16-7-1879, G. T. Porritt. Linwood, 1857, R P A. Market Rasen, a few each year, W L. Withern, V. Crow. Panton, rare, G H R. Saxby (Barton), one only, C. D. Ash. Alford, one found in a house and given to E W. Ashby (Brigg) District, R T C. Elkington Hall Garden, 28-7-1906, one caught and brought to C S C., by one of the gardeners. Owston Ferry District, A R. ¶Great Grimsby, Dawson; Cleethorpes, Porritt; Newball, Legsby, Fowler. Goxhill, 1905, E H F.
- S. Wyberton, occurs, J C L-C. Haverholme Priory, always common, J D C. Lincoln Fen, 6-6-1889, J F M. ¶Lincoln, Carr; Lincoln (N.E.), Ash. Sapperton one example in 1907, S C S. Holbeach, fairly common, L M C.

CHÆROCAMPA NERII L

Very rare.

- N. South Somercotes, 10-1903, caught by Mrs. C. Houlden in the ivy on their house "The Ings," it is now in the possession of the Louth Naturalists' Society, C S C.

SMERINTHUS OCELLATUS L

Generally common.

- N. Owston Ferry, A R. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.
- S. Wyberton, one in 1892, J C L-C. Divs. 13, 14, 17, 18.

SMERINTHUS POPULI L

Generally common.

- N. Owston Ferry, A R. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 10, 11.
- S. Wyberton, common, J C L-C. Divs. 13, 14, 15, 17, 18.

SMERINTHUS TILIÆ L

Less common than the two preceding species.

- N. Gainsborough, F B M. Coningsby, 1901, bred, F S A. Grimsby, pupa 3-1902, under hedge Abbey Road, E. L. Wood.
- S. Wyberton, common, J C L-C. Brant Broughton, larva and pupa, 1901, Dr. P. Sharp. Haverholme Priory, larvæ in plenty on elm very seldom on lime, J D C. Lincoln, 17-6-1902, J F M. ¶Lincoln District, very rare, Carr. Holbeach, fairly common, L M C.

MACROGLOSSA STELLATARUM L

Common, sometimes abundant as in 1899.

- N. Bottesford, 1868, M. and A. Peacock. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.
- S. Lincoln, F M B. Divs. 13, 14, 15, 17, 18.

MACROGLOSSA FUCIFORMIS L

Local.

- N. Saxilby, 21-5-1893; Langworth, 22-5-1893; J. W. Carr. Market Rasen, a few most years, W L. Legsby; Newball; Panton, once; G H R. Alford District, E W. Linwood and Moortown, G W M. Woodhall Spa and East Keal, rare, H M B S. East Ferry District, A R.

- S. ¶ Skellingthorpe; Hartsholme; Musham, Carr: Lincoln, Pearson.

MACROGLOSSA BOMBYLIFORMIS *Och*

Local.

- N. Wragby; Hatton; Newball; G H R. Market Rasen, 1877 to 1879, F A L. Greenfield (Alford), two examples 22-6-1890, E W. ¶ Newball, Carr.

- S. Skellingthorpe, 3-6-1901, J F M. ¶ Lincoln, Pearson, South Park, Lincoln, J F M.

TROCHILIMUM APIFORMIS. *Clerck*

Rare.

- N. Mablethorpe, V. Crow. Mumby Chapel, one example on the sandhills. 19-7-1887, J E M. Gainsborough, bred, F M B.

- S. Holbeach District, common, L M C.

TROCHILIMUM GRABRONIFORMIS *Lewin*

This species would probably be found to be common if search were made for it.

- N. Alford District, common about 1891, in a very small osier holt in Saleby Parish, E W. Barton-on-Humber, 1907, J P Owston Ferry; East Ferry; A R.

- S. Holbeach District, fairly common, L M C. Lincoln District, W. D. Carr.

SESIA TIPULIFORMIS *Clerck*

Well distributed.

- N. Market Rasen, a few each year, W L. Middle Rasen, 1877-79, F A L. Louth, V. Crow. Alford, not uncommon in gardens, E W. Ashby (Brigg), R T C. Gainsborough, F M B. Barton-on-Humber, G W M. West Ashby, F S A. Grimsby, E H F.

- S. ¶ Cowbit, Chas. M. Hufton. Holbeach District, fairly common, L M C.

SESIA ASILIFORMIS *Rott.*

Local.

- N. Brocklesby District, larvæ and pupæ abundant in stumps of oak trees cut down the previous year, J P. and G W M. Aethorpe Wood, 2 larvæ in oak stump taken on the visit of the L N U. 1-6-1905; Wrawby Moor, bred from larvæ and pupæ taken from birch stumps in 1907; G W M.

- S. Skellingthorpe, J F M.

SESIA MYOPIFORMIS *Bork*

- N. Market Rasen district, 1876-80, F A L.

- S. Holbeach District, fairly common, L M C.

SESIA CULICIFORMIS *L*

Local.

- N. Gainsborough, F M B.

- S. Skellingthorpe, 7-8-1902 and 2-5-1903, J F M.

SEZIA FORMICIFORMIS *Esp*

Lincolnshire, 1832, James Rennie.

INO STATICES *L*

Generally common.

- N.** §Louth, H. W. Kew. Maltby Wood, V. Crow. Louth, C S C. Market Rasen, 1877-79, F A L.; common, W L. Hatton; Legsby; Linwood; Newball; Toft (Newton); ¶Langworth; G H R. Alford District, locally common, E W. Ashby (Brigg) District, R T C. Gainsborough District, F M B. Great Coates, in abundance, A T. Pelham's Pillar Wood and Moortown, G W M. Beelsby; Aylesby; 8-1906, A B. and R C. East Ferry District, A R.

ZYGÆNA TRIFOLII *Esp*

Local.

- N.** Owston Ferry District, A R. Little Coates, 7-1906, E H F.

ZYGÆNA LONICERÆ *Esp*

Locally common.

- N.** Owston Ferry District, A R. Pelham's Pillar Wood, scarce G W M. Great Coates, A T. Beelsby; Croxby; Aylesby; 8-1906, A B. and R C. Gainsborough District, F M B. Linwood, 1857, R P A. Wickenby, common, W L. Market Rasen, a sandy hill East of Rasen, 1877-79, F A L. Louth, Fisher's Hill, one example, 7-1900, C S C. Donington-on-Bain, pupæ numerous 28-6-1906, J F M. Mablethorpe 6-7-1889; North Somercotes Warren, several, 12-7-1900, C S C. Bully Hill, S B S. Sutton-on-Sea, 1902, F S A.

ZYGÆNA FILIPENDULÆ *L*

Common.

- N.** Gainsborough District, F M B. Divs. 1, 2, 3, 4, 5, 7, 8, 9, 10, 11.
S. Boultham, 5-6-1890, J F M. Divs. 13, 14, 15.

Bombyces.

SAROTHRIPUS UNDULANUS *Hb*

Rare.

- N.** Ashby (Brigg) District, R T C.
S. Haverholme Priory, generally common, J D C.

EARIAS CHLORANA *L*

Local.

- N.** Ashby (Brigg) District, R T C. East Ferry, a few pupæ each year, J P. Scotton Common, 12-6-1901, J F M.

HYLOPHILA PRASINANA *L*

Common.

- N.** Broughton Wood, 1895, A. E. Hall and C. D. Ash. Pelham's Pillar Wood, G W M. Bradley, E H F. Langworth, 22-5-1893, J. W. Carr. Market Rasen, 1877-79, F A L.; a few larvæ most years, W L. Legsby and Newball, G H R. Maltby Wood and Hubbard's Hills, V. Crow. Alford District, E W.

- S. Skellingthorpe, 20-5-1900 and 16-5-1903, J F M. Haverholme Priory, always common, J D C. ||Bourn. Holbeach District, scarce, L M C.

HYLOPHILA BICOLORANA *Fues*

Rare.

- S. Haverholme Priory, 4 pupæ taken in cocoon on oak, J D C.

NOLA CUCULLATELLA *L*

This Insect is probably common in the County, but it has only been recorded for a few localities.

- N. Owston Ferry District, A R. Ashby (Brigg) District, R T C. Market Rasen, one or two larvæ most years, W L.; one larvæ in 1901, G W M. Great Carlton, C. D. Ash. Market Rasen District, 1876-80, F A L.

- S. Wyberton, J C L-C.

NOLA CONFUSALIS *H-S*

Local.

- N. Pelham's Pillar Wood, one or two in 1903, J P. Market Rasen, 1877-79, F A L.; a few most years, W L. Linwood and Legsby, G W M. Legsby and Newball, G H R. Muckton, C. D. Ash.

- S. Boultham, 8-6-1900, J F M. Wyberton, J C L-C.

NOLA ALBULALIS *Hb*

Of this rarity one specimen has been recorded.

- N. Grimsby District, one example on the wing 19-8-1906. E H F.

NUDARIA SENEX *Hb*

Locally common.

- N. Skegness, 16-7-1879, G. T. Porritt. Theddlethorpe, A. E. Gibbs, (*Ent.* Vol. XXXVIII, p. 81).

NUDARIA MUNDANA *L*

Local.

- N. Risby Warren, a few examples flying about the stone walls bordering the warren at dusk 5-7-1906, G W M. Willingham, 1877-79, F A L. Gainsborough District, some years ago, F M B.

- S. Lincoln District, F M B. Skellingthorpe, 6-7-1902, J F M. Haverholme Priory, not scarce, J D C.

CALLIGENIA MINIATA *Forst*

Rare.

- N. Scotton Common, F M B. Linwood, 1857, R P A. Legsby Wood, one in 1896, W L. Newball, 5-7-1902, J F M. Horsington (near Horncastle), one example in 1889, J C L-C.

- S. Skellingthorpe Wood, 25-7-1902, Dr. Eland Shaw.

LITHOSIA MESOMELLA *L*

Local.

- N. Caistor, G H R. Linwood, 1857, R P A. Market Rasen, common, W L.

LITHOSIA SORORCULA *Hufn*

Rare.

S. Holbeach District, scarce, L M C.

LITHOSIA GRISEOLA *Hb*

Rare.

N. Scotton Common, F M B.

S. Haverholme Priory, J D C.

— var. *flava* *Haw*

N. Scotton Common, one example, F M B. Willingham Park (Market Rasen), two examples a male and female 12-7-1878, F A L. (Nat. Vol. IV., p. 10).

S. Wyberton, common, J C L-C. Haverholme Priory, J D C.

LITHOSIA DEPLANA *Esp*

Rare.

N. Market Rasen, one in July 1894, W L.

LITHOSIA LURIDEOLA *Zinck*

Common

N. Market Rasen, 1877-79, F A L. Divs. 1, 2, 3, 4, 5, 7, 9, 10, 11, 12.

S. Wyberton, J C L-C. Divs. 13, 14, 15, 17, 18.

LITHOSIA COMPLANA *L*

Rare.

N. Theddlethorpe, 1904, A. E. Gibbs (Ent. XXXVIII, p. 81.)
Bracebridge, 6-7-1901, J F M.

GNOPHRIA QUADRA *L*

Rare.

N. Willingham, one female 7-7-1878, F A L.

S. Grantham, Miss F. Woolward. Hartsholme, scarce, W. D. Carr

GNOPHRIA RUBRICOLLIS *L*

Rare.

N. Gainsborough District, F M B. Langworth, 22-5-1893; Newball, 22 and 23-5-1893, J. W. Carr. Legsby, once, G H R. Tothill, C. D. Ash. Alford District: Ailby Wood, many on oak, 7-1857, J E M.; Mother Wood (Aby), one example 3-6-1890, and Greenfield Wood, one example 20-6-1891, E W. Market Rasen District, two examples, 1876-80, F A L.

S. Skellingthorpe, 6-1896, G. Henderson.

DEIOPEIA PULCHELLA *L*

Rare.

N. Lincoln; 3 examples, one in a garden on the Burton Road, one near the Barracks, and another elsewhere in Lincoln, C. P. Arnold. Linwood, 27-9-1877, F A L. Boston, 1880, Annie Dows. West Rasen, one in the collection of the Rev. W. Cooper and supposed to be taken in this locality.

EUCHELIA JACOBÆE L

Abundant.

- N. Linwood, 1857, R P A. Divs. 2, 3, 4, 5, 7, 8, 9, 10, 11.
S. Wyberton, 1897, J C L-C. Divs. 13, 14, 15, 17.

CALLIMORPHA DOMINULA L

- N. Recorded for Market Rasen District, 1876-80, by F A L.

NEMEOPHILA RUSSULA L

Not common.

- N. East Ferry, A R. Scotton Common, F M B. Twigmoor, one male
5-7-1899, G W M. Linwood, 1857, R P A.; 1877-79, F A L.
Market Rasen, 1895-96, W L. Grimsby District, E H F.

NEMEOPHILA PLANTAGINIS L

Frequent.

- N. Appleby, Mrs. E. Cross, (Ent. XIX, p. 231). Div. 2, 1895, A. E. Hall. Ashby (Brigg) District, R T C. Scunthorpe, A T. Pelham's Pillar Wood, common, G W M. Croxby Pond, E H F., and A B. East Ferry District, A R. Gainsborough District, F M B. Linwood, 1857, R P A. Market Rasen, a few each year, W L. Haugham Pasture, taken in the chalk pit more than 40 years ago by H. H. Kew, C S C.
S. Hartsholme, 16-5-1903, J F M. Lincoln, very dark, V. Hewett. (Ent. 1892, p. 200).

ARCTIA CAJA L

Very common.

- N. Market Rasen, 1877-79, F A L. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.
S. Lincoln, F M B. Divs. 13, 14, 15, 18.

ARCTIA VILICA L

Recorded for only one locality.

- N. Scotter Common, 12-6-1901, J F M.

SPILOSOMA FULIGINOSA L

Frequent.

- N. Owston Ferry District, A R. Brocklesby District, E A C., Little Coates, 1900, A S. Market Rasen, a few most years. W L. Linwood, 1877-79, F A L.; 4-6-1906, A B. Newball, one, G H R. Gainsborough District, F M B. §Louth, H. W. Kew. Maltby Wood and Mablethorpe, V. Crow. Theddlethorpe, common on sandhills, 1880, C. D. Ash; also found by A T. ||Skegness.
S. Hartsholme, 10-4-1889, J F M. Haverholme Priory, not common J D C.

SPILOSOMA MENDICA Clerck

Frequent.

- N. Owston Ferry District, A R. Ashby (Brigg) District, R T C. Gainsborough, F M B. Market Rasen, W L. Panton, rare. G H R. Tumble, larvæ in 1898, F S A.; two larvæ, L N U.

- S. Lincoln, F M B. Skellingthorpe, 8-6-1901, J F M. Haverholme Priory, not common, J D C. Allington, P. Wynne. Wyberton, at light, J C L-C.

SPILOSOMA LUBRICEPEDA Esp

Abundant.

- N. Market Rasen, 1877-79, F A L. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.

- S. Wyberton, J C L-C. Divs. 13, 14, 15, 17, 18.

— var. *radiata* St.

- N. Saltfleet, "several specimens appear to have been bred by Mr. Mossop from larvæ obtained at Saltfleet feeding on elder, August 1836. These emerged in June 1837, and some of the specimens are still in the possession of his nephew Mr W. H. B. Fletcher, F E S., of Worthing; others were sent by Mr. Mossop to Mr. James C. Dale, father of the Rev. C W. Dale" (Nat. 1894, p. 355). On coast near Louth, G. H R. Lincolnshire, G. T. Porritt, (Nat. 1893, p. 58). Theddlethorpe, a pair taken by me on a house wall in 1895 which I gave to Professor Carr of the University College Nottingham, A T. Lincolnshire, J. Harrison. Grimsby, 1892 and July 1901, A S.; 1893, R. South. Theddlethorpe, I have bred forms approaching this variety and *eboraci* from a dark female taken June 1906, G W M.

— var. *fasciata* Tugwell

Lincolnshire, "two specimens of Mr. Mossop's which are clearly tending to become *fasciata*, all the spots forming the Y arc present, but shorter," W. H. B. Fletcher, (Nat. 1894, p. 356).

— var. *eboraci*

Mablethorpe, "In 1880, he took on the sandhills, a little north of Mablethorpe, a male *S. lubricepeda* almost identical in markings with variety *eboraci*. The ground colour was very pale, and the black streaks on the costa and inner margin were not so pronounced;" C. D. Ash, (Nat. 1894, p. 361).

SPILOSOMA MENTHASTRI Esp

Common.

- N. Market Rasen, 1877-79, F A L. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.

- S. Lincoln, F M B. Divs. 13, 14, 15, 17, 18.

SPILOSOMA URTICÆ Esp

Rare.

- N. East Ferry Common, one example about 1892, A R.

- S. Holbeach District, scarce, L M C. Haverholme Priory, J D C.

HEPIALUS HUMULI L

Abundant.

- N. Gainsborough, F M B. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.

- S. Lincoln, F M B. Divs. 13, 14, 15, 17, 18.

HEPIALUS SYLVANUS L

Frequent.

- N.** Ashby (Brigg) District, R T C. Market Rasen, 1877-79, F A L.; a few most years, W L. Newball, 10-7-1887, J F M. Moortown, 8-1907, male and female, E H F. Hameringham, one example, H M B S. Alford, very local, two examples, 26-8-1891, one example, 23-8-1891 and 11-8-1892, E W. West Ashby, 1903, F S A.
- S.** Lincoln, F M B. Haverholme Priory, very common, J D C. Allington, P. Wynne. Wyberton, J C L-C. ||Cowbit, Charles M. Hufton.

HEPIALUS VELLEDA *Hb*

Rare.

- N.** Market Rasen District, 1876-80, F A L.
- S.** Wyberton, J C L-C.

HEPIALUS LUPULINUS *L*

Abundant.

- N.** Gainsborough, F M B. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 10, 11.
- S.** Lincoln, F M B. Divs. 13, 14, 15, 17, 18.

HEPIALUS HECTUS *L*

Frequent.

- N.** Owston Ferry District, A R. Ashby (Brigg) District, R T C. Brocklesby, J P. Market Rasen, 1877-79, F A L.; common, W L. Maltby Wood, V. Crow. Gainsborough, F M B. West Ashby, F S A. Hameringham, one example, H M B S. Alford District, not uncommon but local, E W. Near Binbrook, one example in 1905, S B S. Cleethorpes, E H F.
- S.** Skellingthorpe, 23-6-1902, J F M.

COSSUS LIGNIPERDA *Fb*

Frequent.

- N.** Owston Ferry District, A R. Bottesford, common, 1872, M. and A. Peacock. Barton-on-Humber, one imago very many years ago, A. B. Hall. Gainsborough, F M B.; 1859, E. Tearle. West Rasen, 1878, F A L.; young larvæ in sallows 12-1897, W L. Hubbard's Valley and Mablethorpe, V. Crow. Great Carlton, C. D. Ash. Louth, one larva, G W M. Alford District, not uncommon, E W. Boston, common, J C L-C.
- S.** Lincoln, F M B.; 10 and 16-10-1902, J F M. Boultham, 8-8-1903, J F M. Haverholme Priory, very abundant in larval state in ash trees, J D C. Belton, 1872, F. H. Woolward. Grantham neighbourhood, 1894, H. Preston. Tydd District, E A C. Brant Broughton, one taken by a friend of S B S. Holbeach District, fairly common, L M C.

ZEUZERA PYRINA *L*

Scarce.

- N.** Gainsborough, F M B. Market Rasen, a few each year, W L.
- S.** Lincoln, 24-6-1885, J F M. Haverholme Priory, abundant in larval state in ash trees, J D C. Wyberton, two found some years ago, J C L-C. Tydd District, E A C. Brant Broughton, one taken by a friend of S B S. Holbeach District, scarce, L M C.

PORTHESIA CHRYSORRHŒA L

Scarce.

- N. Grimsby, E H F. Gainsborough, F M B. Newball, 25-6-1905,
J F M. West Ashby, 1902, F S A. ||Skegness. Market
Rasen district, 1876-80, F A L.
- S. Haverholme Priory, 1902, J D C. Holbeach District, common,
L M C.

PORTHESIA SIMILIS Fues

Abundant.

- N. Bottesford, 1868-1897, M. and A. Peacock. Divs. 1, 2, 3, 4, 5, 6,
7, 8, 9, 10, 11.
- S. Lincoln, F M B. Divs. 13, 14, 15, 17, 18.

LEUCOMA SALICIS L

Common.

- N. Market Rasen, 1877-79, F A L. Divs. 1, 3, 7, 8, 9, 10, 11.
- S. ||Cowbit, Chas. M. Hufton. Divs. 13, 14, 18.

LÆLIA CŒNOSA Hb

Dr. F. Arnold Lees records having taken one specimen of
this rarity near Market Rasen, between Linwood and
Lissington or another village in that direction on the 1st
August, 1878.

PSILURA MONACHA L

Frequent, but local.

- N. Gainsborough, bred; Burton, at rest on tree boles, F M B.
Market Rasen, a few each year, W L. Legsby and Newball,
G H R. Legsby, G W M. Woodhall Spa and Tumble, L N U.
Tothill, 1880, C. D. Ash. Alford district, E W.
- S. Lincoln, F M B.; 1881, Canon Fowler. Skellingthorpe
3-8-1901, J F M. Stapleford, A. L. Leivers.

DASYCHIRA FASCELINA L

Scarce.

- N. Gainsborough District, F M B. Mablethorpe, larvæ taken
feeding on sea-buckthorn, R. Garfit and E W. Skegness,
larvæ exhibited at a Meeting of the Leeds Naturalists' Club
and Scientific Association on the 24th August, 1880, by John
Grassham, (Nat., Vol. 6, p. 45.); bred from one larva about
1890, J C L-C. ||Skegness.
- S. Hartsholme, 22-6-1891, J F M.

DASYCHIRA PUDIBUNDA L

Frequent.

- N. Gainsborough, F M B. Divs. 2, 3, 4, 5, 7, 8, 10, 11.
- S. ||Cowbit, Chas. M. Hufton. Divs. 13, 14, 18.

ORGYIA GONOSTIGMA Fb

Rare.

- N. Market Rasen District. 1876-80, F A L.
- S. Boultham, 10-5-1886, J F M.

ORGYIA ANTIQUA L

Common.

- N. Gainsborough, F M B. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.
S. Lincoln, F M B. Divs. 13, 14, 15, 17, 18.

TRICHIURA CRATÆGI L

Frequent.

- N. Ashby (Brigg), R T C. Brocklesby District, larvæ fairly common some years on the hedges by the roadside, G W M. Gainsborough, F M B. Market Rasen, a few at light each year, W L.; Panton, G H R. ¶Newball, Carr. Louth, V. Crow.
S. Skellingthorpe, 3-6-1902, J F M. ¶Near Lincoln, Glenny. Wyberton, one 8-1897, J C L-C.

PÆCILOCAMPA POPULI L

Frequent.

- N. Appleby (Big Wood), larvæ 9-6-1881, Mrs. Cross. Pelham's Pillar Wood and Linwood, a few larvæ, G W M. Gainsborough, at light, F M B. East Barkwith Railway Station, 21-10-1892; Panton, not uncommon at light; Somersby, pupa dug at ash; G H R. Market Rasen, a few each year, W L. Louth, V. Crow. Alford, 15-11-1892, E W. Binbrook, one example in 1905, S B S. West Ashby, 12-1902, F S A.
S. Lincoln, at light F M B. Skellingthorpe, J F M. ¶Hartsholme, Carr. Haverholme Priory, fairly common, J D C. ¶Cowbit, Chas. M. Hufton. Holbeach Distret, common, L M C.

ERIOGASTER LANESTRIS L

Not common.

- N. Gainsborough, bred F M B. Market Rasen, a few nests of larvæ, W L. Legsby, Newball and Panton, larvæ common, G H R. ¶Baumber, not uncommon, G H R.
Hartsholme, larvæ 6-6-1886 and 10-6-1902, J F M. ¶Lincoln, Carr. Holbeach District, scarce, L M C. Skellingthorpe, A. R. Leivers.

BOMBYX NEUSTRIA L

Common in some parts of the County.

- N. Gainsborough, bred, F M B. Divs. 3, 5, 7, 11, 12.
S. Wyberton, common, J C L-C. Divs. 13, 14, 15, 17, 18.

BOMBYX RUBI L

Common on heaths in the County.

- N. Ashby (Brigg) District, R T C. Great Coates, one male 21-6-1898, A T. Little Coates, E H F. Gainsborough, F M B. East Ferry District, A R. ¶Scotter, J F M. Market Rasen, common, W L. Linwood, 1877-79, F A L.; of late years, G W M. Mablethorpe, G H R., E W. and A T. Skegness, 9-1879, C. W. Richardson; abundant about 1890, J C L-C. Moortown, one larva 8-1907, E H F., G W M. and W. Wallace.
S. Hartsholme, 12-6-1887, J F M. ¶Lincoln, abundant, Gascoigne, Hartsholme, rare, used to be common, W. D. Carr.

BOMBYX QUERCUS L

Common.

- N. Ashby, 1876, E A W P. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.
 S. Lincoln, F M B. Divs. 13, 14, 15, 18.
 — var. *callunæ* Palmer
 N. Market Rasen, W L. Ashby (Brigg), R T C. Market Rasen District, bred, 1876-80, F A L.
 S. Hartsholme, W. D. Carr.

ODONESTIS POTATORIA L

Common.

- N. Market Rasen, 1877-79, F A L. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9.
 S. Wyberton, formerly common, J C L-C. Divs. 13, 14, 15, 17, 18.

LASIOCAMPA QUERCIFOLIA L

Rare.

- N. Fenton, one larva 1896, G. Henderson.
 S. Lincoln, 1832, James Rennie. Haverholme Priory, fairly common in 1901, J D C. ¶Cowbit, Chas. M. Hufton. Holbeach District, fairly common, L M C. Sleaford, bred one example 1907, Mrs. Cross.

SATURNIA PAVONIA L

Not common.

- N. Ashby (Brigg), R T C. Gainsborough, F M B. Scotton Common, 28-7-1905, L N U. ¶Scotter, J F M. Linwood, 1857, R P A. Market Rasen, common, W L.; 1876-80, F A L. Woodhall Spa, one example in 1897, J C L-C.
 S. Lincoln, 1832, James Rennie. ¶Hartsholme, J F M., Carr; Lincoln, Mason. Lincoln, Hermaphrodite, Ph. Brooke Mason, (Ent. 1888, p. 164).

DREPANA LACERTINARIA L

Rare; †"Scarce in Lincolnshire."

- N. Gainsborough, F M B.
 S. Hartsholme, 1-6-1892, J F M.; one example in 1892, W. D. Carr.

DREPANA FALCATA L

Rather common.

- N. Ashby (Brigg), R T C. Wrawby Moor, F. P. H. Birtwhistle. Gainsborough, bred, F M B. Scotton Common, larvæ common in 1904, G W M. Linwood, 1857, R P A. Market Rasen District, W L., G H R. and G W M. Moortown, one larva 8-1907, G W M.
 S. Skellingthorpe, 20-5-1902, J F M. Haverholme Priory, fairly common, J D C. Skellingthorpe and Stapleford Woods, A. R. Leivers.

DREPANA BINARIA Hufn

†"Its most northerly known locality with us seems to be Lincolnshire."

- S. Hartsholme, one example in 1892, W. D. Carr.

DREPANA CULTRARIA *Fb*

Rare.

- N.** Pelham's Pillar Wood, one example 6-6-1902, J P. Limber, 1902, F S A.

CILIX GLANCATA *Scop*

Common.

- N.** Usselby, 1877-79, F A L. Divs. 2, 3, 4, 5, 6, 7, 8, 10, 11.
S. Lincoln, F M B. Divs. 13, 14, 15, 17.

DICRANURA FURCULA *L*

Frequent.

- N.** Owston Ferry District, A R. Ashby (Brigg), R T C. Elsham, one larva in 1900, G W M. Great Coates, 1896, A T. East Ferry, a few pupæ, J P. Market Rasen, a few larvæ each year, W L.; bred 1876-80, F A L. Legsby, one larva, G H R. Louth, V. Crow. Great Carlton, C. D. Ash. Hameringham, fairly common, reared from larvæ in 1904 and 1905, H M B S. Alford, one pupa on willow tree, 24-4-1889, E W. Near Binbrook, not common, S B S.
- S.** Hartsholme, 1-6-1892, J F M.; W. D. Carr. Haverholme Priory, fairly common, J D C. Holbeach District, scarce, L M C.

DICRANURA BIFIDA *Hb*

Local.

- N.** Owston Ferry District, A R. Ashby (Brigg) District, R T C. Elsham, bred but scarce, G W M. Gainsborough, bred, F M B. Market Rasen, a few larvæ each year, W L. and G W M.; bred 1876-80, F A L. Linwood, 1877-79, F A L.; larvæ, 5-8-1907, J P. and G W M. Near Binbrook, fairly common, S B S. Hameringham, one example bred from larva found in 1905, H M B S.
- S.** Lincoln Fen, 10-6-1902, J F M. Haverholme Priory, fairly common, J D C. Holbeach District, scarce, L M C. Lincoln District, rare, W. D. Carr.

DICRANURA VINULA *L*

Common.

- N.** Bottesford, 1870, E. and M. Peacock. Divs. 1, 2, 3, 4, 5, 7, 8, 9, 10, 11.
S. Lincoln, J F M. Divs. 13, 14, 15, 18.

PTEROSTOMA PALPINA *L*

Frequent.

- N.** Gainsborough, bred F M B. Market Rasen, a few larvæ most years, W L. and G W M. Panton, not uncommon, G H R. Alford, one pupa under sallow bark, 2-7-1892, E W. Swinhope, S B S.
- S.** Lincoln Fen, J F M. Haverholme Priory, fairly common, J D C. Denton 1880, C. D. Ash. Wyberton, one at light in 1896, J C L-C. ||Cowbit, Chas. M. Hufton. Holbeach District, common, L M C.

LOPHOPTERYX CAMELINA L

Frequent.

- N.** Ashby (Brigg) District, R T C. Pelham's Pillar Woods, J. W. Boulton. Brocklesby District, E A C. Gainsborough, caught and bred, F M B. Scotton Common, two larvæ in 1904; Linwood, G W M. Market Rasen, G W M., F A L. and W L. Panton, larvæ on whitethorn, G H R. Binbrook, S B S. Hameringham, fairly common, H M B S.
- S.** Hartsholme, J F M. Haverholme Priory, fairly common, J D C. Allington, P. Wynne. Wyberton, J C L-C.

NOTODONTA DICTÆA L

Local.

- N.** East Ferry District, A R. Linwood, 1857, R P A. Legsby, G H R. Market Rasen, a few larvæ each year, W L. and G W M. Lincoln, 22-6-1887; Newball Wood, 1881; Canon Fowler.
- S.** Lincoln, F M B. and J F M.

NOTODONTA DICTÆOIDES Esp

Scarce, more so than the last species.

- N.** Appleby, larvæ, 11-9-1888, Mrs. Cross. Market Rasen Cemetery, 1877-79, F A L. Market Rasen, 1896, and 1897, W L. Brocklesby District, E A C.
- S.** Near Lincoln, Edward Mead, (Ent. 1892, p. 71). Hartsholme, larvæ, L N U.; 16-9-1887, J F M.; larvæ, W. D. Carr. ||Cowbit, Chas. M. Hufton.

NOTODONTA DROMEDARUIS L

Apparently scarce.

- N.** Gainsborough, bred, F M B. Scotton Common, one larva, 28-7-1905, L N U. Legsby, 1896; Panton; G H R. Market Rasen, a few larvæ, W L. and G W M. Moortown, one larva, 8-1907; Wrawby Moor, two larvæ, 9-1907; G W M.
- S.** Hartsholme, 20-9-1887, J F M. Haverholme Priory, fairly common, J D C. Lincoln District, scarce, W. D. Carr.

NOTODONTA ZICZAC L

Frequent.

- N.** Gainsborough, caught and bred, F M B. Scotton Common, larvæ, 14-8-1901, A T. Market Rasen, larvæ common, G W M.; common, W L. Legsby, 1896, G H R. Linwood, 1877-79, F A L. Woodhall Spa, larvæ, S B S. Hameringham, common; H M B S. ||Skegness.
- S.** Hartsholme, 24-8-1900, J F M. Haverholme Priory, very common, J D C.

NOTODONTA TREPIDA Esp

Rare.

- N.** Market Rasen, a few most years, W L.
- S.** Lincoln, bred from larva, F M B. Skellingthorpe, a pair in cõp., D. H. Pearson.

NOTODONTA CHAONIA *Hb*

Rare.

- N. Market Rasen District, W L. Tothill, C. D. Ash.
S. Hartsholme, 8-5-1882, J F M.

NOTODONTA TRIMACULA *Esp* var. *dodonea*, *Hb*

Rare.

- N. Saxilby, F M B. Market Rasen District, W L.
S. Hartsholme, 10-5-1883, J F M.

PHALERA BUCEPHALA *L*

Abundant.

- N. West Rasen, 27-6-1856, W. W. Cooper. Divs. 1, 2, 3, 4, 5, 7, 8, 10, 11.
S. Wyberton, very abundant some years, J C L-C. Divs. 13, 14, 15, 17, 18.

PYGÆRA CURTULA *L*

Scarce.

- N. Wickenby, J. A. Hardy, (*Naturalists' Chronicle*, 1896, p. 1).
Market Rasen District, W L. Linwood, one larva and one pupa on aspen 5-8-1907, J P. and G W M.

PYGÆRA PIGRA *Hufn*

Very local, but common where it occurs.

- N. Scotton Common, bred frequently, by F M B.; also taken in the larval stage by members of the L N U. at their Meeting, 28-7-1905, A T. and G W M.
S. Haverholme Priory, fairly common, J D C.

THYATIRA DERASA *L*

Frequent.

- N. Owston Ferry District, A R. Ashby (Brigg) District, R T C. Barton-on Humber, occasionally at sugar; Pelham's Pillar Woods, one example at rest in 1900; G W M. Gainsborough, at sugar, F M B. Panton, G H R. Market Rasen, J P. Gainsborough, at sugar, F M B. Langworth, 22-5-1893, J. W. Carr. Market Rasen, a few each year, W L. Panton, G H R. Near Binbrook, S B S. Mother Wood (Aby), at sugar, 10-7-1891, E W.
S. Hartsholme, 9-6-1891; Skellingthorpe, 10-6-1895; J F M. Haverholme Priory, very common, in 1905, J D C. Allington, P. Wynne. Bourne Wood, W T Mellows.

THYATIRA BATIS *L*

Frequent.

- N. Owston Ferry District, A R. Ashby (Brigg), R T C. Saxby (Barton), one example in 1892, C. D. Ash. Goxhill, one example in 1901, G W M. Pelham's Pillar Wood, J P. Gainsborough, at sugar, F M B. Langworth, 22-5-1893, J. W. Carr. Market Rasen, a few each year, W L. Panton, G H R. Near Binbrook, S B S. Mother Wood (Aby), at sugar, 10-7-1891, E W. Newball Wood, J. W. Carr.

- S, Hartsholme, 9-6-1891; Skellingthorpe, 10-6-1898; J F M. Haverholme Priory, fairly common, J D C. Allington, P. Wynne. Bourne Wood, W. T. Mellows.

CYMATOPHORA OCTOGESIMA Hb

Rare.

- N. Theddlethorpe, 1904, A. E. Gibbs. Usselby, 1887, F A L.

CYMATOPHORA OR Fb

Locally common.

- N. Langworth, 22-5-1893, J. W. Carr. Market Rasen, a few each year, W L.; larvæ sometimes very common, G W M. Mother Wood (Aby), common at sugar, 24-6-1891 and 3-7-1891, E W.
- S. Skellingthorpe, 10-6-1899, J F M. Bourne Wood, W. T. Mellows.

CYMATOPHORA DUPLARIS L

Local.

- N. Ashby (Brigg), R T C. Market Rasen, a few each year, W L. Panton, once, G H R. Mother Wood (Aby), very common, at sugar, 1891, E W.
- S. Haverholme Priory, fairly common, J D C.

ASPHALIA DILUTA Fb

Scarce.

- N. Ashby (Brigg), R T C. Gainsborough, F M B. Alford District, E W. Market Rasen District, 1876-80, F A L.
- S. Skellingthorpe, 3-9-1898, J F M. Haverholme Priory, fairly common, J D C.
- †Barrett, speaking of it in connection with other Counties says "Locally it seems to be much more frequent in . . . Lincolnshire."

ASPHALIA FLAVICORNIS L

Frequent. †"Common in Lincolnshire."

- N. Ashby (Brigg), R T C. Wrawby Moor, one imago, 23-3-1907, and larvæ at Limber, Moortown and Market Rasen in 1907, G W M. Pelham's Pillar Wood, a few larvæ on small birches, J P. Market Rasen District, 1876-80, F A L.
- S. Lincoln, F M B. Hartsholme^e, W. D. Carr, J F M. and W L.

ASPHALIA RIDENS Fb

Rare.

- N. Appleby, Kell Wood Lane, larvæ, 18-6-1888, Mr J. Cross
- S. Hartsholme, 13-3-1900, J F M.

LINCOLNSHIRE COLEOPTERA.

BY THE

REV. A. THORNLEY, M.A., F.L.S., F.E.S., Nottingham, and

W. WALLACE, M.B., CH.B., Grimsby.

The County Records of Coleoptera have been accumulating for many years and have now reached such a stage that we think their publication will prove useful and interesting.

A glance through the following list will show what a large number of members have contributed towards our knowledge in this fascinating study. It is difficult to know whom to thank most, but we see the names of the Rev. E. A. Woodruffe-Peacock, Mr. A. Smith, and Miss Stow especially prominent in this, as in many other County lists. It is hoped that we shall now have records from some of the County divisions that have not hitherto been worked, and also more division-records of the so-called "common species" which curiously enough are often not recorded.

It will be seen that our list contains some of the rarest British beetles, but unfortunately, in some cases the records have not been confirmed in recent years.

We hope to be able to publish the other sections of the Coleoptera later.

ABBREVIATIONS:—

A S	Signifies	Mr. Arthur Smith.
A T	"	Rev. A. Thornley.
L N U	"	Lincolnshire Naturalists' Union Meeting Reports.
E A W-P	"	Rev. E. A. Woodruffe-Peacock.
M P	"	Mr. Max Peacock.
S C S	"	Miss S. C. Stow.
W W	"	Dr. Wallace.
DR C	"	Dr. Cassal.
F M B	"	Mr. F. M. Burton.
AB	"	Mr. A. Bullock.
W W F	"	Rev. Canon W. W. Fowler.
C S C	"	Mr. C. S. Carter.
W K B	"	Mr. W. K. Bissill.
J E M	"	Mr. J. E. Mason (the late)
R C	"	Mr. R. Charlton.
H W K	"	Mr. H. Wallis Kew.
W F B	"	Mr. W. F. Baker.
E A W	"	Mr. E. A. Waterhouse.

Geodephaga.

CICINDELA CAMPESTRIS *L*

Recorded only from the North Lines. V.C.

- N** 2, Scunthorpe, A T. 5, Laughton Common, A S. 9, Tetney, 1886, A S.

CICINDELA SYLVATICA *L*

There is no other record than the following: -

- N** 2, Manton Common near Brigg, DAWSON, GEOD. BRIT.
(There is no reference to this record in FOWLER, BRIT. COL.)

CICINDELA HYBRIDA *L* var. **MARITIMA** *Dej*

There are no recent records.

- N** 4, Cleethorpes, J. Kidson Taylor, see E M M, January 1869.
FOWLER, BRIT. COL.

CYCHRUS ROSTRATUS *L*

- S** 15, Grantham, 1900, Mr. Worsdale.

CARABUS CATENULATUS *Scop*

- N** 7, Moortown, 18-8-07, W W.
S 13, Hartsholme Woods, 24-5-1894, L N U.

CARABUS NEMORALIS *Müll*

- N** 3, Cadney, 21-3-1898, M P. 4, Grimsby, W W. 8, Holton-le-Clay, 27-4-1907, R C.
S 13, Court Leys, 9-1898, S C S.

CARABUS VIOLACEUS *L*

Moderately common.

- N** 3, Cadney, 3-1900, E A W-P. 4, Healing, 7-1899, A S. 9, Humberstone sandhills, 6-7-07, W W.

CARABUS NITENS *L*

There are no recent records.

- N** "North Lincolnshire," FOWLER, BRIT. COL.

CARABUS MONILIS *F*

- N** 2, Bottesford, 21-5-1900, M P. 3, Cadney, 1898, E A W-P. 4, Clee, 24-5-1900, A S.
S 15, Ancaster District, 16-6-96, L N U.

CARABUS GRANULATUS *L*

- N** 6, Marton drain, 23-5-1892, A T.

NOTIOPHILUS BIGUTTATUS *F*

Common.

- N** 2, Manton Common, 21-3-98, E A W-P. 3, Somerby and Housham, 9-10-97, E A W-P. 4, Grimsby, A S. 5, Gainsborough, F M B.
S 13, Court Leys, 6-1899, S C S.

NOTIOPHILUS SUBSTRIATUS *Wat*

"Lincoln," FOWLER, BRIT. COL.

NOTIOPHILUS AQUATICUS *L*

- N** 5, Cleatham, 9-9-1898, E A W-P. 4, Little Coates, 7-06, W W.
7, Moortown, 18-8-1907, W W.

NOTIOPHILUS PALUSTRIS *Duft*

- N** 2, Manton Common, 9-1897, A T. 3, Cadney, E A W-P. 4, Little Coates, 7-1906, W W.
S 13, Court Leys, 6-1899, S C S.

NOTIOPHILUS RUFIPES *Curt*

- N** 6, Newton Cliff, a pair on bank of Trent, 5-6-1895, A T, see E M M, October 1895.

LEISTUS SPINIBARBIS *F*

- N** 4, Clee, 1899, A S. 7, Linwood, 4-6-1906, W W.
S 13, Court Leys, 30-5-1899, S C S.

LEISTUS FULVIBARBIS *Dej*

- N** 2, Manton Common, 9-1897, A T. 3, Cadney, 12-3-1898, E A W-P. 4, Croxby, W W. 8, near Louth, H W K, (Nat. World, September 1886).
S 13, Hartsholme, 9-1905, A T. 15, Little Bytham, 9-6-03, (a rather large colony under the bark of a dead tree, A T.)

LEISTUS FERRUGINEUS *L*

- N** 2, Scunthorpe, 6-8-1900, L N U. 4, Freshney Bogs, 13-7-98, A T. 9, Saltfleetby, 8-6-1900, L N U.
S 13, Court Leys, 5-1899, S C S.

LEISTUS RUFESCENS *F*

- N** 4, Bradley Wood, 7-1906, several specimens, W W.
S "South Lincolnshire," 9-1858, (W K B, see Ent. W. Intell, October 1858).

NEBRIA COMPLANATA *L*

- "Recorded from Lincolnshire coast, but I have never heard of one being captured in this county," FOWLER, BRIT. COL.
 "Though I have worked the Lincolnshire coast for several years, I have never found this species, nor heard of any specimens being taken," A T.

NEBRIA BREVICOLLIS *F*

- Frequent.
N 2, Manton, 9-1897, A T. 3, Cadney, 9-1897, E A W-P. 4, Barnoldby-le-beck, 7-1906, W W. 8, near Louth, H W K.
S 13, Court Leys, 7-1898, S C S.

BLETHISA MULTIPUNCTATA *L*

- There are no recent records.
 "Lincoln district," FOWLER, BRIT. COL.

ELAPHRUS RIPARIUS *L*

- Not uncommon in marshy places.
N 4, Little Coates, 7-1906, W W. 5, Scotton Common, 10-6-07, J E M. 6, Torksey, 7-95, A T. 7, Linwood, 4-6-1906, W W.
S 13, Court Leys, 13-6-1899, S C S. 15, Syston Park, 16-6-96, A T.

ELAPHRUS CUPREUS *Duft*

- Frequently found with the preceding.

- N 4, Little Coates, 7-1906, W W. 6, Marton drain, 1-6-94, A T.
7, Linwood, 4-6-1906, W W. 10, Woodhall Spa, 7-8-1893,
L N U.

LORICERA PILICORNIS *F*

Frequent.

- N 3, Cadney, 12-3-1898, E A W-P. 4, Little Coates, 7-1906, W W.
9, Theddlethorpe, A T. 10, Woodhall Spa, 7-8-1893, L N U.
S 13, Hartsholme, 15-9-1898, L N U.

CLIVINA FOSSOR *L*

- N 3, Cadney, 3-1900, E A W-P. 4, Little Coates, 7-1906, W W.

CLIVINA COLLARIS *Herbst*

- N 6, Torksey, river bank, 20-5-1896, A T.
S 13, Hartsholme Woods, 24-5-1894, L N U.

DYSCHIRIUS THORACICUS *Rossi*

- N 9, Humberstone, 6-6-1901, A S. 11, Mablethorpe, 12-6-1893,
W W F.

DYSCHIRIUS IMPUNCTIPENNIS *Daws*

- N 9, Theddlethorpe shore, 8-1893, A T.

DYSCHIRIUS POLITUS *Dej*

"Dawson mentions Lincolnshire coast," FOWLER, BRIT. COL.
"I have never met with the species there," A T.

DYSCHIRIUS NITIDUS *Dej*

"Lincolnshire coast," FOWLER, BRIT. COL.
There are no recent records.

DYSCHIRIUS SALINUS *Schaum*

- N 9, Humberstone, 7-1906, W W.

I have taken a considerable number of specimens this year
also; they are found under clods of earth in the salt-
marshes, W W.

DYSCHIRIUS ÆNEUS *Dej*

- N 9, Theddlethorpe, 1894, A T, also Saltfleetby.

- S "South Lincolnshire," 9-1858, (W K B, see Ent. W. Intell.
October 16th, 1858).

DYSCHIRIUS GLOBOSUS *Herbst*

- N 9, Theddlethorpe, 6-96, A T. Saltfleetby, 8-6-1900, L N U.
Donna Nock, 31-5-1906, W W. Humberstone, 7-1906, W W.

- S 13, Hartsholme, 24-5-1894, A T.

BROSCUS CEPHALOTES *L*

- N 4, Grimsby, 1898, A S. 9, Theddlethorpe, 1893, A T, also
Mablethorpe, 30-8-1900, L N U. 2, near Twigmoor, DAWSON,
GEOD. BRIT.

PANAGÆUS CRUX-MAJOR *L*

"South Lincolnshire," 9-1858, (W K B, see Ent. W. Intell.
October 16th, 1858). "Lincolnshire Fens," FOWLER, BRIT.
COL.

PANAGÆUS QUADRIPUSTULATUS *Stm*

- N 9, Theddlethorpe, one under old piece of iron on shore, 1-8-1893,
A T.

BADISTER UNIPUSTULATUS *Bon*

"South Lincolnshire" 9-1858, (W K B, see Ent. W. Intell. October 16th, 1858).

Apparently near Boston, 9-4-1860, (E. C. Rye, see Ent. W. Intell., May 19th, 1860).

There are no recent records.

BADISTER BIPUSTULATUS *F*

Frequent.

N 2, Bottesford, 1900, M P. 3, Cadney, 21-3-1898, E A W-P. 4, Roxton Wood, 6-4-07, A B. 8, near Louth, (H W K, see Nat. World, June, 1886). 11, Trusthorpe, 6-1897, A T.

S 13, Court Leys, 6-1899 S C S.

BADISTER PELTATUS *Panz*

S 18, "Cowbit Marsh, near Spalding" by Mr. Rye and Archdeacon Hey. FOWLER, BRIT. COL.

"South Lincolnshire," September, 1858, (W. K. Bissill, Ent. W. Intell., October 16th, 1858).

(In Ent. W. Intell., May 19th, 1860, Mr. E. C. Rye describes the capture of 70 examples near Boston on April 9th, 1860).

CHLÆNIUS NIGRICORNIS *F*

N 6, Torksey, 7-95, not uncommon on the river bank, A T.

STENOLOPHUS VESPERTINUS *Panz*

"Near Boston," 9-4-1860, (E. C. Rye, see Ent. W. Intell., May 19th, 1860).

ACUPALPUS DORSALIS *F*

N 6, Marton drain, 1-6-1894, A T.

S 13, Stapleford Common, FOWLER, BRIT. COL. See Note on *Anchomenus sexpunctatus*.

ACUPALPUS EXIGUUS *Dej* var. *Luridus*

"Near Boston," (E. C. Rye, 9-4-1860, see Ent. W. Intell., May 19th, 1860).

ACUPALPUS CONSPUTUS *Duft*

"Near Boston," (E. C. Rye, 9-4-1860, see Ent. W. Intell., May 19th, 1860).

BRADYCELLUS PLACIDUS *Gyll*

"Lincoln," FOWLER, BRIT. COL.

BRADYCELLUS VERBASCI *Duft*

N 3, Cadney, 21-3-1898, E A W-P. 4, Grimsby, one specimen in garden, 10-9-1907, A B.

BRADYCELLUS HARPALINUS *Dej*

N 2, Manton Common, 9-1897, A T. 4, Peak's Fields, near Grimsby, 1898, A S. Irby, in colonies under bark of stumps in the woods, 20-6-1907, L N U. 7, Moortown, 18-8-07, W W.

BRADYCELLUS SIMILIS *Dej*

N 2, Manton Common, 9-97, A T.

HARPALUS PUNCTICOLLIS *Payk*

S 17, The Wash-foreshore, Kirton near Boston, in heads of *Daucus carota*, common, 26-8-1897, A T.

HARPALUS RUFIBARBIS *F*

- N** 2, Bottesford, 1900, M P. 3, Cadney, 7-1898, E A W-P. 4, Croxby, 20-6-1907, W W. 6, Torksey, 7-1895, A T.

HARPALUS RUFICORNIS *F*

- N** 2, Bottesford, 1900, M P. 3, Cadney, 1898, E A W-P. 4, Grimsby, 30-5-1901, A S. 6, Newton Cliff, 2-6-1901, L N U. 10, Toynton-all-Saints, Rev. W. W. Mason.

- S** 13, Court Leys, 8-1898, S C S. 15, Sapperton, 6-1901, S C S.

HARPALUS ÆNEUS *F*

- N** 2, Ashby, 1898, Dr. C. 4, Weelsby, 1898, A S. 8, Ludborough, 4-5-07, R C. 7, Linwood, 30-9-1897, E A W-P. 10, Woodhall Spa, 7-8-1893, L N U. 11, Trusthorpe, A T.

- S** 13, Court Leys, 11-10-1898, S C S.

HARPALUS RUBRIPES *Duft*

- N** 2, Scunthorpe, 2-7-1892, L N U.

HARPALUS TARDUS *Panz*

- N** 2, Bottesford, 21-5-1900, M P. 9, Theddlethorpe coast, A T, also Saltfleetby, 8-6-1899, L N U. 6 or 13, Lincoln, A T.

DICHIROTRICHUS OBSOLETUS *Dej*

- N** 9, Humberstone fitties, one specimen, 30-9-1906, (W W, see L N U, Transactions, 1906).

- S** 17, Wash-foreshore at Kirton near Boston, common, 26-8-1897, A T.

DICHIROTRICHUS PUBESCENS *Payk*

- N** 4, Great Coates-foreshore, 30-9-1906, W W. 9, Saltfleetby, 8-6-1899, L N U. Humberstone in great numbers, 30-9-1906, W W. Tetney, 28-4-1903, C S C.

- S** 17, Wash-foreshore at Kirton near Boston, with the above but commoner, A T.

STOMIS PUMICATUS *Panz*

- N** 4, Bradley, 16-5-07, W W.

PTEROSTICHUS CUPREUS *L*

- N** 2, Bottesford, 1898, M P. 3, Cadney, A T. 4, Grimsby, 6-1905, W W. 7, Linwood, 1898, E A W-P.

- S** 13, Court Leys, 4-1899, S C S.

PTEROSTICHUS VERSICOLOR *Sturm*

- N** 4, Great Coates, 8-9-1896, A T.; also Grimsby, 5-1906, W W.

PTEROSTICHUS MADIDUS *F*

- N** 2, Bottesford, 1900, M P. 3, Cadney, 4-1898, E A W-P. 4, Weelsby, 1898, A S. 8, Donnington-on-Bain, H W K. 10, Woodhall Spa, 7-8-1893, L N U.

PTEROSTICHUS OBLONGO-PUNCTATUS *F*

- N** 3, Cadney, 1900, E A W-P. 4, Grimsby, 5-1901, A S. 6, Langworth Wood, FOWLER, BRIT. COL.

- S** 13, Nocton, (E A W see E M M, January, 1868).

PTEROSTICHUS NIGER *Schall*

- N** 3, Cadney, 12-3-1898, E A W-P. 4, Clee, 6-1898, A S. 10, Woodhall Spa, 7-8-1893, L N U.

PTEROSTICHUS VULGARIS *L*

N 2, Ashby, 1899, Dr. C. 3, Cadney, 12-3-1898, E A W-P. 4, Grimsby, W W.

S 13, Court Leys, 9-1898, S C S. 15, Sapperton, 6-1901, S C S.

PTEROSTICHUS ANTHRACINUS *Ill*

N 6, Torksey, 21-7-1896, A T, I have taken two or three examples.

PTEROSTICHUS NIGRITA *F*

N 2, Ashby, 1899, Dr. C. 3, Cadney, 1898, E A W-P. 4, Little Coates, 15-6-1906, W W. 6, Torksey, 19-5-1899, S. Pegler.

PTEROSTICHUS STRENUUS *Panz*

N 3, Cadney, 12-3-1898, E A W-P. 4, Great Coates, 8-9-1896, L N U. 6, Torksey, 16-5-1899, Dr. C.

S 13, Hartsholme, 9-1905, A T.

PTEROSTICHUS DILIGENS *Sturm*

N 4, Little Coates, 10-8-06, one specimen, but several have been taken there, 1907, W W.

PTEROSTICHUS PICIMANUS *Duft*

N 4, Little Coates, 8-8-1907, W W. 6, Torksey, A T. 7, Linwood, 4-6-1906, W W. 9, Theddlethorpe, A T. 11, Trusthorpe, 6-1907, A T.

PTEROSTICHUS STRIOLA *F*

N 2, Scunthorpe, 2-7-1902, L N U. 4, Bradley, 7-1906, W W.

AMARA FULVA *Dej*

N 6, Torksey, 7-1895, Ed. Watt. Newton Cliff. 2-6-1901, Dr. Eland Shaw, 4, Cleethorpes, 5-7-1894, L N U, W F B.

AMARA APRICARIA *Sturm*

N 2, Scunthorpe, 2-7-1902, L N U. 3, Cadney, 9-1897, A T. 4, Cleethorpes, 5-7-1894, L N U, W F B. 9, Theddlethorpe, A T. 10, Toynton-all-Saints, 1900, Rev. W. W. Mason.

AMARA CONSULARIS *Duft*

N 7, Moortown, a single specimen in a sandy field, 18-8-07, W W.

AMARA AULICA *Panz*

N 4, Great Coates, 8-9-1896, L N U, A T. Roxton Wood, one specimen in flower head of *Centaurea nigra*, 1-8-07, W W.

AMARA CONVEXIUSCULA *Marsh*

N 4, Cleethorpes, 7-9-1907, several specimens by sweeping at night, W W.

AMARA BIFRONS *Gyll*

N 2, Bottesford, 21-5-1900, M P.

AMARA OVATA *F*

N 4, Roxton Wood, 6-4-1907, A B. 11, Trusthorpe, 6-1897, very common on the sandhills, A T.

AMARA SIMILATA *Gyll*

N 9, Mablethorpe district, A T. 11, Trusthorpe, A T. "Lincoln," A T.

AMARA TIBIALIS *Payk*

N 7, Linwood, 4-6-1900, Grimsby and Louth Nat. Society.

AMARA FAMILIARIS *Duft*

N 2, Bottesford, 21-5-1900, M P. 3, Cadney, 9-1897, A T. 4, Grimsby, 30-5-1900, A S. 6, Torksey, 16-5-1899, Dr. C. 9, Theddlethorpe, 1894, excessively abundant on sandhills, A T. 11, Trusthorpe, 6-1897, A T.

AMARA LUCIDA *Duft*

N 7, Moortown several specimens in a sandy field, 18-8-1907, W W.

AMARA TRIVIALIS *Gyll*

N 1, Haxey and Epworth one specimen, a melanic variety. 14-7-1898, A T. 4, Bradley, 27-4-1907, A B.
S 17, Wash-foreshore, 26-8-1897, L N U, A T.

AMARA COMMUNIS *Panz*

N 3, Cadney, 1898, E A W-P. 4, Grimsby, 30-5-1901, A S. 6, Torksey, 16-5-1899, Dr. C. 9, Theddlethorpe, A T. 11, Trusthorpe, A T.
S 13, Court Leys, 7-1898, S C S. 17, Wash-foreshore, 26-8-1897, L N U, A T.

AMARA PLEBEIA *Gyll*

N 2, Bottesford, 1900, M P. 3, Cadney, 4-1898, E A W-P. 4, Grimsby, 1906, W W.

CALATHUS CISTELOIDES *Panz*

N 2, Manton Common, 21-3-1898, E A W-P. 3, Cadney, 21-3-1898, E A W-P. 1, Haxey and Epworth, 14-7-1898, A T. 7, Linwood Warren, 30-9-1897, E A W-P. 9, Mablethorpe, 30-8-1900, L N U. 10, Toynton-all-Saints, 1900, Rev. W. W. Mason.
S 13, Court Leys, 8-1898, S C S. 17, Wash-foreshore, 26-8-1897, L N U, A T.

CALATHUS FUSCUS *F*

N 2, Manton Common, 9-1897, A T. 4, Cleethorpes, 26-8-07, W W. 7, Moortown, 18-8-1907, W W. 9, Humberstone, 26-8-07, W W.

CALATHUS FLAVIPES *Fourc*

N 2, Scunthorpe, 6-8-1900, L N U. 4, Cleethorpes, 1907, W W. 9, Theddlethorpe, common, 1894, A T. 11, Trusthorpe, 6-1897, A T.

CALATHUS MOLLIS *Marsh*

N 4, Cleethorpes, 8-1907, W W. 9, Theddlethorpe, abundant, 6-1896, A T. 11, Trusthorpe, 6-1897, A T.

CALATHUS MELANOCEPHALUS *L*

N 2, Manton district, 9-1897, A T. 3, Cadney, 13-3-1898, E A W-P. 4, Weelsby, 1898, A S. 8, Donnington-on-Bain, H W K. 9, Mablethorpe, 3-4-1886, (H W K, see Nat. World, June, 1886), 10, Woodhall Spa, 7-8-1893, L N U, W F B.
S 13, Fulbeck Grange, 12-1888, (W. D. Roebuck, see Nat. May, 1889). 17, Wash-foreshore, 26-8-1897, L N U, A T.

CALATHUS PICEUS *Marsh*

- N** 3, Cadney, 3-1900, E A W-P. 4, Grimsby district, 1906, W W.
S "South Lincolnshire," 9-1858, (W K B, see Ent. W. Intell., October 16th, 1858).

TAPHRIA NIVALIS *Panz*

- N** 4, Bradley, 11-8-1907, one specimen, W W. 9, Humberstone, five specimens under a stone near a drain on salt marshes, 6-7-1907, W W.

PRISTONYCHUS TERRICOLA *Herbst*

- N** 2, Scunthorpe, 6-8-1900, L N U. 3, Cadney, 12-3-1898, E A W-P. 4, Grimsby near shore, 1906, A B.

SPHODRUS LEUCOPHTHALMUS *L*

"Lincoln," FOWLER, BRIT. COL.

ANCHOMENUS ANGUSTICOLLIS *F*

- N** 3, Cadney, 12-3-1898, E A W-P. 4, Roxton Woods, 1906, A B. 6, Gate Burton, A T.

ANCHOMENUS DORSALIS *Müll*

- N** 2, Manton Common, 21-3-1898, E A W-P. 3, Cadney, 4-1898, E A W-P. 4, Clee, 6-1900, A S. 8, Donington-on-Bain, H W K.
S 13, Court Leys, 1898, S C S.

ANCHOMENUS ALBIPES *F*

- N** 2, Bottesford, 21-5-1900, M P. 3, Cadney, 21-3-1898, E A W-P. 4, Grimsby, 30-5-1901, A S. 6, Marton drain, 1892, A T. 9, Humberstone, 11-5-07, W W.

ANCHOMENUS LIVENS *Gyll*

- "South Lincolnshire." September, 1858, (W K B, see Ent. W. Intell., October 16th, 1858).
 "Near Boston," 9-4-1860, (E. C. Rye, see Ent. W. Intell., May 19th, 1860).

ANCHOMENUS MARGINATUS *L*

- N** 4, Grimsby, 30-5-1901, A S. I took six specimens on the dry river bank at Freshney Bogs, running about in the sunshine, 7-1905, and one was taken on the street in Grimsby, 8-1906, W W.

ANCHOMENUS SEXPUNCTATUS *L*

- S** 13, "Near Stapleford Common," FOWLER, BRIT. COL. It must be remembered that part of the Common is in Notts.

ANCHOMENUS PARUMPUNCTATUS *F*

- N** 3, Cadney, 4-1898, E A W-P. 4, Little Coates, 1906, W W. 6, Marton drain, 1892, A T. Theddlethorpe, A T.

ANCHOMENUS VIDUUS *Panz* var. **MÆSTUS** *Duft*

- N** 4, Freshney Bogs. 15-7-1907, W W. 6, Marton-drain, 1892, A T, "Near Boston, 9-4-1860, (E. C. Rye, see Ent. W. Intell., May 19th, 1860).

ANCHOMENUS FULIGINOSUS *Panz*

S 13, Hartsholme, 9-1905, A T.

OLISTHOPUS ROTUNDATUS *Payk*N 3, Cadney, 12-3-1898, E A W-P. 4, Roxton, 6-4-1907, A B. 8,
Holton-le-Clay, 4-5-1907, A B.**GILLENUS LATERALIS** *Sam*

N 9, Saltfleet, on tidal mud of Withern, 6-1896, A T.

BEMBIDIUM RUFESCENS *Guér*N 4, Little Coates, 7-1906, W W. 6, Torksey, 10-9-1898, A T. 8,
Near Louth, (H W K, see Nat. World, September, 1886).**BEMBIDIUM QUINQUESTRIATUM** *Gyll*

"Lincolnshire," FOWLER, BRIT. COL.

BEMBIDIUM OBTUSUM *Sturm*N 3, Cadney, 21-3-1898, E A W-P. 4, near Grimsby, 1906, W W. 9,
Tetney, 16-5-1907, W W.

S 17, Wash-foreshore, 26-8-1897, L N U, A T.

BEMBIDIUM GUTTULA *F*N 3, Cadney, 21-3-1898, E A W-P. 4, Great Coates, 24-4-1907,
W W. 9, Theddlethorpe, 1896, A T.

S 13, Hartsholme, 24-5-1894, L N U.

BEMBIDIUM BIGUTTATUM *F*N 4, Croxby, 6-8-1906, W W. 6, Marton drain, 1892, A T. Torksey,
20-7-1895, A T.**BEMBIDIUM RIPARIUM** *Ol*

N 4, A single specimen Croxby, 6-8-1906, W W.

BEMBIDIUM ÆNEUM *Germ*N 4, Near Grimsby, one specimen, 1906, W W. 6, Torksey, 7-1895,
(T A, see E M M, October, 1895). 11, Trusthorpe, 6-1897,
A T.

S 13, Banks of Witham near Lincoln, FOWLER, BRIT. COL.

BEMBIDIUM FUMIGATUM *Duft*

"Lincolnshire Fens," FOWLER BRIT. COL.

"South Lincolnshire," 9-1858, (W K B, see Ent. W. Intell.,
October 16th, 1858).**BEMBIDIUM ASSIMILE** *Gyll*

"Lincolnshire Fens," FOWLER, BRIT. COL.

"South Lincolnshire," 9-1858, (W K B, see Ent. W. Intell.,
October 16th, 1858).**BEMBIDIUM CLARKI** *Davis*

N 4, Near Grimsby, two specimens, 1906, W W. .

BEMBIDIUM ARTICULATUM *Panz*N 4, Croxby very common, 8-1906, W W. Beelsby, 11-5-1907, A B.
Little Coates, 16-7-1907, A B.

BEMBIDIUM DORIS *Panz*

N 9, Humberstone two specimens, 1906, W W.

BEMBIDIUM MINIMUM *F*

N 4, Grimsby shore near yacht-pond, 9-9-1907, W W. 9, Theddlethorpe, 5-1895, A T. 11, Gibraltar Point, 15-8-1891, (L N U, see Nat. February, 1892).

S 17, Wash-foreshore, 26-8-1897, L N U, A T.

BEMBIDIUM NORMANNUM *Dej*

N 4, Grimsby shore near yacht-pond, 9-9-1907, W W. 9, Humberstone, 16-7-1907, W W.

S 17, Wash-foreshore, 26-8-1897, L N U, A T. "South Lincolnshire," 9-1858, (W K B, see Ent. W. Intell., Oct. 16th, 1858).

BEMBIDIUM GILVIPES *Sturm*

N 4, Great Coates, 8-9-1896, L N U, A T, 6, Torksey, 7-1895, (A T, see E M M, October, 1895).

BEMBIDIUM LAMPROS *Herbst*

N 3, Cadney, 3-1898, E A W-P. 4, Weelsby, 1898, A S.

BEMBIDIUM NITIDULUM *Marsh*

N 4, Croxby, one specimen, 27-10-1907, A B.

BEMBIDIUM STOMOIDES *Dej*

N 6, Torksey, "discovered by me in this locality, 13-7-1895, very common on Trent bank," A T, (see E M M, October, 1895.)

BEMBIDIUM QUADRIGUTTATUM *F*

N 4, Croxby, 8-1906, common, W W. Aylesby, 8-06, W W.

BEMBIDIUM QUADRIMACULATUM *Gyll*

N 2, Bottesford, 21-5-1900, M P. 3, Cadney, 1898, E A W-P. 4, Little Coates, 7-1906, one specimen, W W. Scartho, 4-5-1907, one, W W. 6, Torksey, 20-6-1896, A T.

BEMBIDIUM LUNATUM *Duft*

N 6, Torksey, 7-1895, not uncommon, A T, (see E M M, October, 1895). "South Lincolnshire," 9-1858, (W K B, see Ent. W. Intell., October 16th, 1858).

BEMBIDIUM CONCINNUM *Steph*

N 9, Saltfleet on tidal mud of Withern, common, 6-1896, A T; also Saltfleetby, 8-6-1899, L N U.

BEMBIDIUM FEMORATUM *Sturm*

N 3, Cadney, A T. Brigg, 6-1895, A T. 4, Grimsby, Humber bank, 7-7-07, A B. 6, Torksey, 7-1895, A T, (see E M M, October 1895). 9, Theddlethorpe, A T.

BEMBIDIUM SAXATILE *Gyll*

"South Lincolnshire, 9-1858," (W K B, Ent. W. Intell. October 16th, 1858).

BEMBIIDIUM LITTORALE *Ol*

- N 2, Ashby, 1899, Dr. C. 3, Cadney, 1898, A T. 4, Cleethorpes, 5-7-1894, L N U. W F B. 6, Newton-on-Trent, 6-1895, A T. 7, Linwood, 4-6-1900, Grimsby and Louth Nat. Societies.
S 13, Hartsholme, 24-5-1894, L N U, A T.

BEMBIIDIUM FLUVIATILE *Dej*

- N 6, Newton-on-Trent, 5-6-1895, A T, (see E M M, October, 1895.)

BEMBIIDIUM PUNCTULATUM *Drap*

- N 6, Newton-on-Trent, 5-6-1895, A T, (see E M M, October, 1895.)

BEMBIIDIUM FLAMMULATUM *Clairv*

- N 4, Croxby, 8-1906, W W. Immingham, 8-1906, W W. 6, Marton drain, 1-4-1894, A T. Torksey, 7-1895, A T, (see E M M, October, 1895). Burton Chateau, 22-6-1901, A T.
S 15, Syston Park, 16-6-1896, A T.

BEMBIIDIUM VARIUM *Ol*

- N 4, Immingham, 8-1906, W W. Croxby, 8-1906, W W. 9, Saltfleet on tidal mud, 6-1896, A T. Saltfleetby, 8-6-1899, L N U. 11, Ingoldmells, 21-9-1899, E A W-P.
S 17, Wash-foreshore, 26-8-1897, L N U, A T.

BEMBIIDIUM PALUDOSUM *Panz*

- N 7, Linwood, 4-6-1906, "Fifteen specimens on a mud flat at the side of a stream," W W, (see L N U Trans. 1906).

BEMBIIDIUM PALLIDIPENNE *Ill*

- N 4, Cleethorpes, 8-5-08, A B.

TACHYPUS FLAVIPES *L*

- N 4, Bradley Wood, a single specimen in the wet part of the main drive, 14-6-1907, A B.

TRECHUS MICROS *Herbst*

- N 4, Near Grimsby one specimen, 1906, W W. 11, Trusthorpe from clay underlying sandhills, sea front, 6-1897, A T

TRECHUS MINUTUS *F*

- N 3, Cadney, 1898, E A W-P. 4, Little Coates, 7-1906, W W. 7, Moortown, 18-8-1907, W W. 9, Mablethorpe, 30-8-1900, L N U. 11, Ingoldmells, 21-9-1900, E A W-P.
S 13, Hartsholme, 9-1905, A T. 17, Wash foreshore, 7-1897, L N U, A T.

var. *obtusus* *Er*

- N 9, Mablethorpe, 1882, (H. Bedford Pim, E M M, December, 1882.)

TRECHUS SECALIS *Payk*

- N 6, Torksey, 7-95, common, A T.

PATROBUS EXCAVATUS *Payk*

- N 6, Torksey, 16-5-1899, Dr. C.

POGONUS LURIDIPENNIS *Germ*

- N 9, Saltfleet three specimens in *Salicornia herbacea* (Sapphire) 4-9-1902, C S C; also one specimen at Humberstone, 18-9-1902, in Sapphire (Louth and Grimsby Nat. Socs.), see Nat. 1903, p. 30.

POGONUS CHALCEUS *Marsh*

- N** 4, Great Coates foreshore, 8-1906, W W. 9, Saltfleet, 6 1896, A T. Humberstone, 6-1901, A S. 11, Gibraltar Point, 15-8-1891, (L N U, see Nat. February, 1892). Ingoldmells, 21-9-1899, E A W-P.
S 17, Wash-foreshore, 26-8-1897, perhaps the most abundant beetle on the foreshore, A T.

LEBIA CHLOROCEPHALA *Hoff*

- N** 6, Torksey, 1895, S. Pegler.

DEMETRIAS UNIPUNCTATUS *Germ*

- N** 4, Cleethorpes, 5-7-1894, L N U, W F B. 9, Theddlethorpe. abundant on sandhills, 5-1895, A T.

DEMETRIAS ARTICAPILLUS *L*

- N** 3, Cadney, 13-3-1898, E A W-P. 4, Weelsby, 11-4-1907, A B. 6, Marton, A T. 8, Freiston, 8-8-1899, L N U. 9, Humberstone, 10-9-1906, W W. 11, Ingoldmells, 21-9-99, E A W-P.
S 13, Court Leys, 8-1898, S C S. 15, Little Ponton, 1898, E A W-P.

DROMIUS LINEARIS *Ol*

- N** 3, Cadney, 4-1898, E A W-P. 4, Freshney Bogs, 7-1900, A S. 5, Cleatham, 9-9-1898, E A W-P. 9, Theddlethorpe, A T. 11, Trusthorpe, A T.
S 13, Court Leys, 9-1900, S C S.

DROMIUS MERIDIONALIS *Dej*

- N** 2, Ashby, 1899, Dr. C. 3, Cadney, 2-3-1898, E A W-P, 4, Bradey-Woop, one specimen, 1906, W W.

DROMIUS QUADRIMACULATUS *L*

- N** 2, Ashby, 1899, Dr. C. 3, Cadney, 12-3-1898, E A W-P. 4, Weelsby, A S. 8, Near Louth, (H W K, see Nat. World; June, 1886.

DROMIUS QUADRINOTATUS *Panz*

- N** 4, Clee, 6-1900, A S. 8, North Thoresby, 27-4-07, W W.

DROMIUS MELANOCEPHALUS *Dej*

- N** 3, Cadney, 4-1898, E A W-P. 4, Little Coates, 28-5-1907, W W. 9, Mablethorpe, 1882, (H. Bedford Pim, see E M M, Dec. 1882). 11, Trusthorpe, A T.

DROMIUS NIGRIVENTRIS *Thoms*

- N** 2, Ashby, 1899, Dr. C. 3, Cadney, 21-3-1898, E A W-P. 9, Humberstone, 6-6-1901, A S.

BELCHRUS MAURUS *Sturm*

- N** 3, Cadney, 1898, E A W-P. 4, Old Clee, one specimen, 26-2-1907, A B.

METABLETUS FOVEOLA *Gyll*

- N** 6, Torksey, 16-5-1899, Dr. C.

FIELD MEETINGS, 1907.

The first meeting of the year, and the Fifty-fourth Field Meeting of the Union was held on Whit Monday, May 20th, at WELTON-BY-LINCOLN. Assembling at Lincoln, the party was conveyed to Welton by waggonette, where the President Rev. A. Hunt, M.A., met them and conducted the members to Hackthorn, and by foot road and field as well as through gorse and coppice, gradually brought them to Welton where Mr. and Mrs. Hunt kindly provided High Tea.

The day's work was successful in many ways. The Botany was well worked by Rev. E. A. Woodruffe-Peacock and others Mr. G. W. Mason led the Entomologists. Mr. W. Dennison Roebuck took charge of the Conchologists and with such leaders, and willing followers, the meetings are of such value as to obtain a great amount of information for the County lists for publication.

The Geology was perhaps the most interesting feature. The presence of Mr. H. Preston was indeed valuable, he always being ready to explain as far as possible what he knows on the subject. Mr. F. M. Burton prepared the following paper which was read at the close of the meeting.

WELTON.

We stand to-day on one of the most instructive geological portions of the County, a spot where several strata of great interest occur together on the surface uncovered; as so much of Lincolnshire is, by glacial and alluvial drifts. I need scarcely remind you that our County is confined to the entire secondary, or mesozoic, division of rocks—from the Triassic on the west to the cretaceous beds on the east. After passing the liassic clays on the west we come to limestone beds on the top of the Lincoln Cliff, and find in succession the *Inferior Oolite group*,—made up

of the Northampton Ironstone, and the *Lower Estuarine* beds, with the *Lincolnshire limestone* at the top; followed by the *Great Oolite group* consisting of the *Upper Estuarine beds*, the *Great Oolite limestone and clay*, with the independent band of the *Cornbrash* at the top, beyond which we come to the Kellaways Rock and the Oxford Clay. All of these beds—from the Lincolnshire limestone on the west to the Oxford Clay on the east—lie exposed in near proximity to the village of Welton, which is built on the Great Oolite limestone.

LINCOLNSHIRE LIMESTONE.

Now of all the beds we have to deal with to-day the Lincolnshire limestone is the most important. It is like a wedge between the Lower and Upper Estuarine series, and consists of a compact Oolite limestone, which was deposited in a sea of moderate depth, and is the most characteristic of the Lincolnshire Oolite strata, belonging peculiarly to the County, from which it takes its name. It is in great demand for building purposes, as the Ancaster quarries in the south of the County testify, and, being of a porous nature, and lying on the impervious clays of the lias beneath (which, with the other strata in this eastern portion of our land, dips at a low angle, in a south-easterly direction) it acts like a sponge, retaining all the rain water that falls upon it, and forms the great water-bearing rock of the County. It reaches from Winteringham in the north to Stamford in the south, and is from 2 to 3 miles wide, and about 60 feet deep in the *northern* portion; and from 4 to 6 miles wide, reaching to 130 feet deep in the *southern* area. In this latter district the supply of water is continuous, bursting out at the well-known "Well Head" spring at Bourne at the rate of 4 million gallons in 24 hours, but, in the northern part of the county the supply is intermittent, ranging (our President informs me), from 2 million gallons daily to a hundred thousand gallons, for 3 or 4 months in the year. This partial failure, in the supply in the north, is caused by intercalations of clayey beds, which impede, and partially bar the flow, and, probably form fissures in the limestone, through which the water escapes. A notable example of this irregular supply occurs in the village of Welton at the "Old Man's Head" spring, which we shall see to-day. The Lincolnshire Limestone was, as I have

said, laid down in a shallow sea. This is shown by the beds of coral which are frequent in it, and by the signs of current bedding in its upper layers. Fossils are not generally common in it. It contains however, according to Mr. Jukes Browne, many gastropods, *Rhynchonella* and other Lamellibranchs are abundant. Echinoderms are not uncommon but Ammonites are rare.

Passing now from the Lincolnshire limestone (on the eastern fringe of which the village of Welton is situated), we come to an outcrop of the Upper Estuarine beds of the Great Oolite. A series of variegated clays, with layers of sand, shale, and limestone, partly marine and partly fluviatile; the former, with ostreas, at the top, and the latter at the base with paludinas and other fresh-water shells. These are followed, in due course, by the Great Oolite limestone, and the Great Oolite clay, the former a shallow marine formation, consisting of soft marly limestones and layers of muddy clay, in which fossils are not common. (*Rhynchonella*, *Terebratulas* and *Trigonias* being characteristic), and the latter, the Great Oolite Clay, also of marine origin, in which fossils are scarce. In places a thin shelly seam, composed of a small oyster-like shell, *Placunopsis socialis*, is met with that, and an oyster *Ostrea Sowerbyi* seem to be almost the only fossils recorded from this bed. After these, we reach the uppermost bed of the Great Oolite group. The Cornbrash, a coarse rubbly limestone, with sandy layers, which was deposited in a shallow sea. This remarkable bed, though it occurs only in bands, varying from 3 to 4 feet in thickness in the north and mid Lincolnshire; and from 6 to 10 feet in the south of the County, is one of the most persistent members of the Oolite series. It abounds in fossils, of which Mr. Jukes Brown gives *Holcetypus Depressus*, *Nucleolites clunicularis* and *Ammonites macrocephalus* as characteristic and common. Leaving the Cornbrash we come now to the highest beds we have to deal with to-day—the Kellaways Rock and the Oxford clay—the former a shallow water deposit, difficult to separate from the latter, and apparently dying out altogether in places, and the latter, the Oxford Clay, formed in a Deep Sea, very fossiliferous, and full of Pyrites and Selenite, with *Gryphœa dilatata* as its most characteristic fossil, and containing many ammonites. At its junction with the Cornbrash

below and beds of a large oyster, *Ostrea flabelloides*, are very frequently met with.

Both of these beds, the Kellaways Rock and the Oxford Clay, are covered, in this neighbourhood, for the most part with a sheet of boulder clay, and in places with gravel and drift deposits. The former being the result of the Ice age, and the latter of rains, rivers, and water-flows. Exposures however occur at Welton on the east of the village beyond a narrow band of alluvial drift which here intersects the Cornbrash.

One more word as to the position of Welton. The village lies on the Great Oolite limestone which extends north and south, but, on the north it is covered in parts by an outlying mass of boulder clay. On the west it is bounded by a narrow exposure of the Upper Estuarine beds,—beyond which, further to the west, comes the great mass of the Lincolnshire limestone, which supplies the village with water,—while a narrow band of Cornbrash, which, near the village, is intersected by alluvial drift, skirts it on the east.

The Fifty-fifth Field Meeting was held at IRBY-ON-HUMBER, on June 20th. Waggonettes conveyed the members from Grimsby Station to Irby, and in an area of a mile the ground was sufficiently interesting to keep the party busy for the day, Mr. C. B. Parker a local worker gave his services as conductor, such services being indeed valuable, coming from one who knew the ground thoroughly. Descending the "Dales," good exposures of the chalk were seen from which Mr. C. S. Carter collected fossils which he recognised as *Rhynchonella cuvieri*, *R. rudensis*, *Cyphosoma* Sp. Spine, *Terebratula* and *Inoceramus*, Sp., *Terebratula gracilis* and *Holaster planus*. Lower down the dale was seen a fine gorge or Fiord of Glacial times and an interesting chalk hill known as Rush hill which is capped with gravel, containing pebbles of several igneous rocks.

The Botanical report is given by Rev. E. Adrian Woodruffe-Peacock as follows.

FLORA.

Irby-on-Humber, 20-6-'07.

Between 200 and 250 plants were noted on the following soils.

UPPER CHALK.—Pasture :—

Cnicus acaulis,	Plantago minor,
Koeleria cristata,	Poterium sanquisorba
Phleum pratense,	Thymus serpyllum..
var. minor,	

TILTH :—

Ranunculus sardous,

QUARRY :—

Caucalis nodosa,	Echium vulgare,
Reseda luteola,	Spiræa Filipendula.

WOOD AND WOOD RIDES :—

Alchemilla vulgaris,	Fragaria vesca,
Aquilegia vulgaris,	Hypericum pulchrum,
Avena pubescens,	H. quadratum,
Bellis perennis,	Listera ovata,
flore pleno et albo,	Lithospermum officinale,
Circæa lutetiana,	Senecio sylvaticus,
Daphne laureola,	Viburnum opulus.

This form of *Bellis* I have never seen before. The *Daphne* as usual was bird sown I have no doubt.

Old Fiord Gravel crowns Rush Hill, Irby, and is interesting to botanists as well as conchologists. It gave with many others :—

Cerastium glomeratum,	Potentilla fragariastrum,
Myostis collina,	P. silvestris,
Ononis spinosa,	Carlina vulgaris,

THE FRESH WATER ALLUVIUM OF THE WATER COURSES :—

Equisetum fluviatile,	Nasturtium palustre,
Glyceria plicata,	Solanum Dulcamara.
Hottonia palustris,	

A very good day from the botanists' point of view was the result.

Later in the day a party of Grimsby Naturalists joined number and worked up the Entomology, especially the Coleoptera of which Dr. W. Wallace sends the following list.

The following is a list of the "Coleoptera" taken on June 20th, at Irby.

<i>Leistus rufescens</i> , F.	<i>Telephorus alpinus</i> , PAYK.
<i>Pterostichus strenus</i> , PANZ.	„ <i>rusticus</i> , FALL.
„ <i>madidus</i> , F.	„ <i>pellucidus</i> , F.
„ <i>niger</i> , SCHALL.	„ <i>nigricans</i> , MULL.
<i>Amara apricaria</i> , PAYK.	„ <i>bicolor</i> , F.
„ <i>familiaris</i> , DUFT.	„ <i>testaceus</i> , OL.
<i>Calathus cisteloides</i> , ILL.	„ var. <i>limbatus</i> , THOMS.
<i>Anchomenus junceus</i> , SCOP.	„ <i>pallidus</i> , F.
<i>Harpalus ruficornis</i> , F.	<i>Dryophilus pusillus</i> , GYLL.
<i>Bradycellus harpalinus</i> , DEJ.	<i>Toxotus meridianus</i> , L.
<i>Haliphus lineatocollis</i> , MARSH.	<i>Grammoptera ruficornis</i> , F.
<i>Agabus paludosus</i> , F.	<i>Gastrophysa polygoni</i> , L.
<i>Hydrobius fuscipes</i> , L.	<i>Prasocuris beccabungæ</i> , ILL.
<i>Anacæna limbata</i> , F.	<i>Galeruca tenella</i> , L.
<i>Philhydrus ovalis</i> , THOMS.	<i>Haltica pusilla</i> , DUFT.
<i>Helophorus nubilus</i> , F.	<i>Batophila rubi</i> , PAYK.
<i>Hydroporus pictus</i> , F.	<i>Cryptophagus vini</i> , PANZ.
„ <i>palustris</i> , L.	<i>Byturus tomentosus</i> , F.
<i>Mycetoporus longulus</i> , MANN.	<i>Thyamis brunnea</i> , DUFT.
<i>Tachyporus obtusus</i> , L.	<i>Brachypterus pubescens</i> , ER.
„ <i>solutus</i> , ER.	<i>Cassida viridis</i> , L.
<i>Othius fulvipennis</i> , F.	<i>Cassida obsoleta</i> , ILL.
<i>Sunius angustatus</i> , PAYK.	<i>Pyrochroa serraticornis</i> , SCOP.
<i>Stenus flavipes</i> , STEPH.	<i>Phyllotreta undulata</i> , KUTS.
<i>Olibrus æneus</i> , F.	„ <i>nemorum</i> , L.
<i>Coccinella 7 punctata</i> , L.	„ <i>vittula</i> , REDT.
„ <i>14 punctata</i> , L.	<i>Anaspis frontalis</i> , L.
<i>Meligethes rufipes</i> , GYLL.	„ <i>melanopa</i> , FORST.
„ <i>æneus</i> , F.	<i>Apion ulicis</i> , FORST.
<i>Aphodius pusillus</i> , HERBST.	„ <i>pisi</i> , F.
„ <i>luridus</i> , F.	„ <i>æthiops</i> , HERBST.
<i>Phyllopertha horticola</i> , L.	„ <i>humile</i> , GERM.
<i>Athous hæmorrhoidalis</i> , F.	<i>Sciaphilus muricatus</i> , F.
<i>Corymbetes cupreus</i> , F.	<i>Polydrusus pterygomalis</i> , BOH.
<i>Agriotes sputator</i> , L.	„ <i>cervinus</i> , L.
„ <i>sobrinus</i> , KIES.	<i>Phyllobius argentatus</i> , L.
„ <i>obscurus</i> , L.	„ <i>maculicornis</i> , GERM.
<i>Campylus linearis</i> , L.	„ <i>pyri</i> , L.

Phyllobius uniformis, MARSH.

„ *alneti*, F.

Otiorrhynchus tenebricosus, HERBST.

Tychius picirostris, F.

Coeliodes quadrimaculatus, L.

Rhinoncus subfasciatus, GYLL.

The sectional reports were made after tea at Grimsby. Mr. H. Preston and Mr. C. S. Carter spoke on the Geology. Mr. Dennison Roebuck on the Conchology, and others on their several departments.

The Fifty-sixth Field Meeting was held at SPALDING, on July 18th, and at HOLBEACH, on the following day. On the first day the journey was made to Surfleet, a district interesting enough as regards the artificial schemes of engineering relative to the draining of the Wash area, and also on account of the making of land in this part of the County. Whilst some counties are bemoaning their fate by coast erosion, Lincolnshire seems to be benefited by their loss. As Naturalists however the area worked could not be said to have been particularly successful.

In the evening the President lectured at the Spalding Gentlemen's Society, Spalding, on Primitive Man in Lincolnshire, and the members were well repaid for their attendance at this distinguished Society's meeting, both by the lecture and the opportunity of seeing the many valuable books and specimens brought together by this Society.

The botanical recorder was Mr. H. W. Burchnall. As usual the silt or estuarine alluvium was singularly unproductive of rare species.

When the circumstances under which plants can be grown on this rich soil are analysed, nothing but very common or common species are likely to be met with.

Every plant not known at sight was taken and submitted to the Botanical Secretary of the Union. This only revealed more fully the usual barrenness of these lately formed soils.

The list includes, *Agropyron pungens* and *A. acutum*; *Atriplex serrata* (Moq); *Brassica nigra*; *Bromus commutatus*, *B. secalinus*; *Buda marina* and *Buda marina*, var. *neglecta*; *Buda media*; *Butomus*; *Carum carvi*; *Cheiranthus*, on old brick walls at Spalding; *Chelidonium*, an escape; *Chenopodium bonus henricus*; *Cnicus acaulis*; *Cochleraria officinalis*; *Galeopsis versicolor*, out of place on the silt; *Galium palustre*; *Glaux*; *Glyceria maritima*; *Humulus*, *Juncus Gerardi*; *Lamium hybridum*; *Lepidium camp-estre*; *Lepturus filiformis*; *Lyeopus*; *Malva rotundifolia*; *Matricaria chamomilla*; *M. inodora*; *Melilotus officinalis*; *Myosotis collina*; *Ophioglossum vulgatum*; *Orchis pyramidalis*; *Pastinaca sativa*; *Solanum dulcamara*; *Suaeda maritima*; *Triglochin maritimum*; all the *Plantagos* and many other common species.

At Holbeach it was agreed to visit the outlying districts bordering the Wash and the seaside botany was investigated, Mr. Curtis a local Naturalist accompanied the party and was of much service. He also showed some of the visitors his local collections and among other insects he showed living specimens of *Sesia apiformis* and The Musk Beetle, in his breeding cages he had several rare insects in larvæ form, and his records will be incorporated in another article in this part.

The Fifty-seventh Field Meeting was held at NEWTON CLIFF. A good number of members turned up at Lincoln and were conveyed by waggonette to the Trent Bank at Newton, later in the day by the kind invitation of Mr. and Mrs. Paddison of Low Ingleby, High Tea was taken at that place after which the various reports were made, that of Mr. Preston being especially enjoyed, dealing of course with the Geology of the area worked. Mr. Burton contributes an article in this part which deals with the same subject.

Regarding the botany the Rev. E. A. Woodruffe-Peacock writes as follows.

It is many years since the Union had such a grand day for botany as the visit to Newton Cliff and the drive from Lincoln to

Ingleby afforded. It was fully taken advantage of and enjoyed by many keen workers. The arrangements were perfect, and the weather equally good; Mr. and Mrs. Paddison's kindness and hospitality unbounded.

The following is an explanation of the signs used. V.C. equals very common;—C. equal common; F.C. equals fairly common; R.R. equals rather rare; R. equals rare; V.R. equal very rare; Lo. equals local.

On the Keuper Marl and Gypsum the following species were noted or taken:—

Astragalus glycyphyllos, V.C.; *Calamintha clinopodium*, V.C.; *Campanula rapunculoides*, V.R.; *Carduus nutans* x *crispus*, V.R.; *Carlina vulgaris*, F.C.; *Centaurea scabiosa*, C.; *Cornus sanguinea*, F.C.; *Cynoglossum officinale*, R.R.; *Ononis repens*, var. *inermis*, R.; *Picris hieracioides*, R.; *Poterium sanguisorba*, C.; *Rhamnus catharticus*, R.R.; *Stellaria holostea*, F.C.

In a pit in the Lower Lias Clay just south of Saxilby Railway Station *Lemna polyrhiza* was C., with *L. trisulca* and *L. minor*. It is a species seldom recorded for Lincolnshire.

The Old Blown Sand gave *Anthriscus vulgaris*, C.; *Artemisia vulgaris*, C.; *Caucalis nodosa*, F.C.; *Humulus lupulus*, Lo. and C.; as a remnant of cultivation; *Linaria vulgaris*, V.C.; *Volulus sepium*, Lo. and C. The Modern Estuarine Alluvium and Peaty Beds overlying *Allium oleracium*, V.R.; *Arctium majus*, V.R.; *Atriplex Babingtonii*, R.; *Ceratophyllum demersum*, F.C.; *Dipsacus sylvestris*, R.; *Galium palustre* var. *Witheringii*, C.; the type was not found; *Geranium pratense*, V.C.; *Lychnis floscuculi*, C.; *Lysimachia nummularia*, V.C.; *Lythrum salicaria*, C.; *Matricaria inodora*, C.; *Medicago arabica*, V.C.; *M. sativa*, an escape from cultivation; *Myosotis repens*, C.; *Nasturtium sylvestre*, Lo. and C.; *Polygonum hydropiper*, C.; *Scirpus lacustris*, C.; *S. maritima*, F.C.; and a very long way from the sea; *Stachys palustris*, F.C.; *Stellaria palustris*, F.C. Few places in a few hundred yards could supply such a list as this.

The Fifty-eight Field Meeting was held on October 3rd, at

ROPSLEY RISE, for a Fungus Foray, but the season was a bad one for this purpose. A dry September had not been conducive to the upspringing of the Fungi. Mr. H. C. Hawley reports:—

FUNGI AT ROPSLEY. Everywhere this year Fungi have been scarce and Ropsley was no exception. The wood, which there was an attempt made to explore, proved somewhat of a jungle, not very moist but with a considerable amount of rotting wood, etc., on the ground which in most years would have produced a good yield. As it was by the time that the party had forced their way across the wood, a fair number of the smaller fungi had been collected, but few or none of the larger fleshy kinds. This was the more disappointing, as at present records of all sorts for South Lincolnshire are very few. In all 58 species were identified of which the best were:—

Lycoperdon perlatum, PERS.

Merulius tremellosus, SCHRAD.

Agaricus hæmorrhoidarius, SCHULY.

Crepidotus haustellaris, FR.

Pluteolus aleuriatus, FR.

Pleurotus acerosus, FR.

Laccaria laccata var. *amethystina*, BOTT.

Mitrula serpentina, (O. F. MUELL).

Phragmidium sanguisorbæ, (D.C.)

And the Botanical Secretary reports.

From the botanical point of view the meeting at Grantham for Ropsley and Ropsley Rise on the 3rd, and Great Ponton and Stroxtan on the 4th, was a great success. Between 300 and 400 notes were taken. The soils being Lincolnshire Limestone and Chalky Boulder Clay, Upper Lias Clay, and Fresh Water Alluvium, *Alchemilla vulgaris* appeared to be unusually rare in Ropsley Rise, while *Angelica sylvestris* was magnificent rising to 9½ feet, where it was drawn up in close wood. *Aquilegia* was only detected as a garden escape at Stroxtan *Artemisia vulgaris* was noticed twice in the old quarry on Spitalgate Hill, and at the cross roads west of Great Ponton and South of Stroxtan. *Asperula*

odorata was difficult to detect so late in the season in the wood. *Brachypodium gracile* was rare in the wood sides on Chalky Boulder Clay, while *B. pinnatum* was common all over. *Calamintha clinopodium* was everywhere, widely but thinly distributed. *Campanula Trachelium* was only obtained in and around Ropsley Rise. *Carlina* very conspicuous in the quarries. *Caucalis nodosa* only by footpath side across tilth at Great Ponton. *Centaurea Cyanus* very uncommon at Ropsley. *Cichorium* only a casual in the same parish. No one detected *Circea lutitiana* in the Rise, but on examination its seeds were discovered on the nether garments of no less than five workers, with those of the two *Geum* and one seed of *Leontodon autumnalis*. The nuts of *Corylus* were still far from ripe. *Deschampsia cespitosa* was common on the Chalky Boulder Clay. In a damp spot on a side in the Rise, a peculiar variety was taken, awnless or with awns not half the usual length (*Breviaristata*)—the whole plant having lost the characteristic roughness of this species. *Dipsacus sylvestris* was only seen at Ropsley. *Erythraea centaurium* and *Gentiana amarella* were in the same parish. *Fragaria vesca* was still in flower in the wood. *Fraxinus* in the wood was represented by 30 year old growths from old stumps. The leaves up to ten feet high were eaten all over the Rise by young *Helix arbustorum* the only other species of snail detected on the ash leaves was *Helix hispidosa*, one specimen only, six feet from the ground. The *flore albo* variety of *Geranium dissectum* was conspicuous at one spot just outside the wood with the type close by. *Hedera* was only observed outside villages on the chalky Boulder Clay. *Hypericum perforatum* and its variety *angustifolium* were seen all over the area; but a lovely variety with variegated leaves only taken at Great Ponton. *Humulus* was on the Upper Lias Clay and Lower Estuarine in the same place; with *Senecio aquaticus* on Fresh Water Alluvium. The Hop is said—but on whose authority I cannot say—to have been introduced into this country as late as the year 1524. It is clearly an alien in this county from its distribution. *Lamium album*, *Ballota*, and *Sisymbrium officinale* were seen in all likely spots, and all demonstrated their peculiar characteristics of

limitation. *Linaria cymbalaria* covered the walls at Great Ponton along with *Parietaria*. The latter is a favourite screen for *Helix lapicida*; and the stones on the top of the walls for *H. rupestris*. *Ononis spinosa* was not uncommon on the Limestone and Chalky Boulder Clay, but the variety *mitis* was only detected on the former. The *Origanum vulgare* in the quarry near the Rise was typical; but the same plant in the wood was "very hairy." A size variety (*minutissima*) of *Papaver rhæas*, perfect little plants about three inches high, were very striking. *Picris hieracioides* was very conspicuous in Spitalgate hill quarry. *Prunus insititia* with very fine fruit, quite ripe, was in a hedge on the Chalky Boulder Clay at Great Ponton. The green berried form of *Sambucus nigra* is found in hedges away from houses, on River Gravel, at Grantham on the Harrowby Road. The *Valeviana* of Ropsley Rise was *mikanii* as might be expected. A colour form of *Veronica agrestis* was most striking at Great Ponton. The flower was very large and bright pink, but otherwise the plant was typical. *Vicia sylvatica* covered acres of ground in the Rise while *V. sepium* seemed quite rare. "Many of our bettermost plants live in Ropsley Rise" as a native said in the true Lincolnshire dialect. But the 3rd of October is too late for a full list; yet if I were to report the result of all the notes taken, I should almost have to write a florula for this district. For instance. *Primula acaulis* and *P. veris* were observed, but the hybrid between them which is found here could not at this time be detected; or the still rarer oxslip (*P. elatior*, *jacq.*), yet it is found here too—the great variety of this wood, the only spot for which it is recorded in Lincolnshire. It is always found on Chalky Boulder Clay wherever it is met in Britain; therefore it is only to be found in our eastern counties. A lovely example of *ecology* was seen on the 4th, on the Stroxtton boundary of Great Ponton. Water in ponds is very scarce in this district, but a small pond on the Chalky Boulder Clay about 15 by 12 feet was hurriedly visited, as we were making our way back to catch the train. *Planorbis nautilus* and *Velletia lacustris* were in evidence with less uncommon fresh water shells. The flora noted being *Potamogeton*

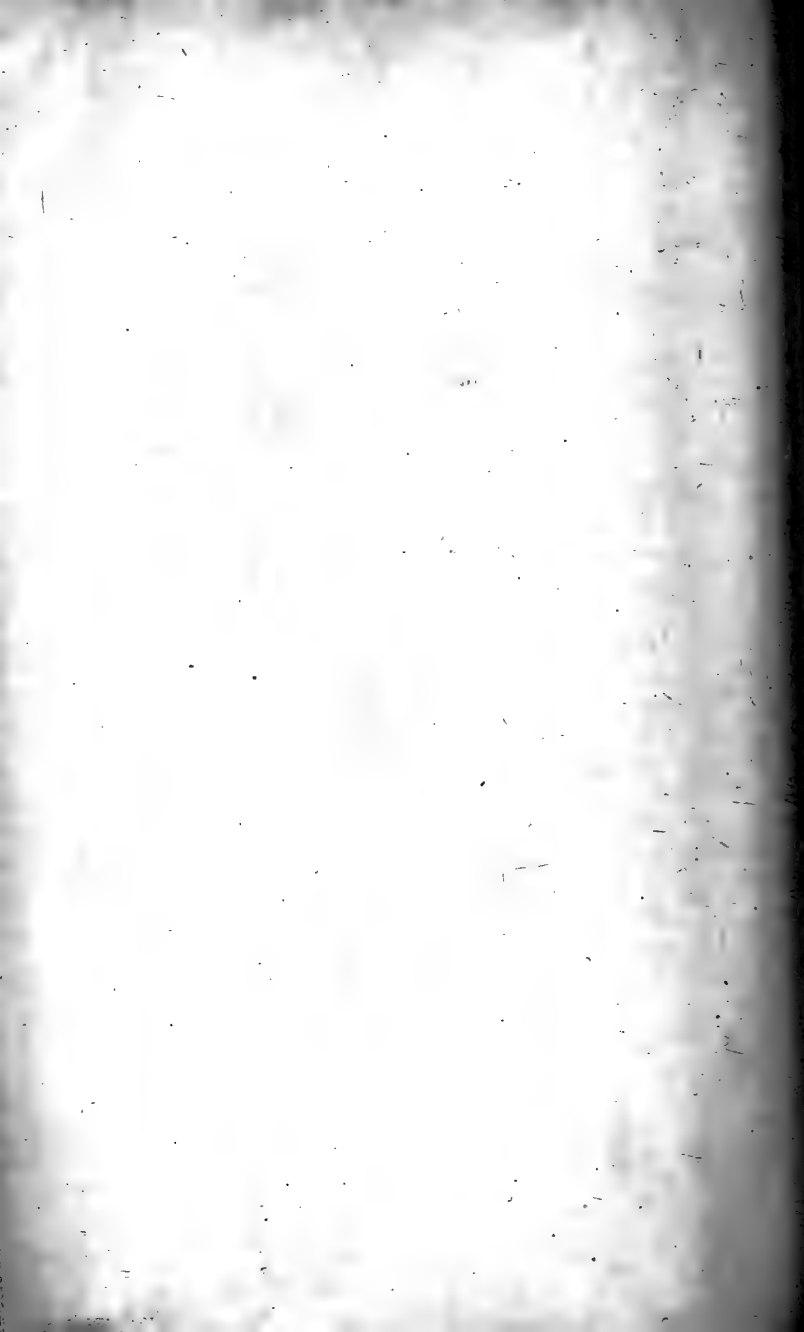
natans in plenty, *P. densus* rare, *Lemna minor* the same, *L. trisulca* plentiful, *Glyceria fluitans* and one plant of *Alisma plantago*.

The mammals noted were two weasels, rabbits, hare, squirrel, but not the fox. Though this is the Duke of Rutland's county, and a member of the Union was able to report to the huntsman on one occasion :—" You had three foxes in front of the pack, and one running behind to see what was up." To encourage the others, and get a little experience himself, no doubt, for where foxes abound all cannot get a run. Pheasants and partridge were seen but were in little evidence. The large form of *Helix virgata* was seen here and there on the Great Ponton—Stroxton road. The Wall Butterfly too was there. Well may we sing with Robert Louis Stevenson in his *Garland of Verse*

" The world is so full of a number of things,
I am sure we should all be as happy as kings."

We had a right royal welcome at Grantham.

The day however was much enjoyed. The Conchologists found many species, including some interesting varieties of *Arion ater*, in fact this branch was exceedingly strong. Messrs. Roebuck, Musham, Stow, Preston and the "Veteran Shell collector Mr. Hawkins" were so enthusiastic that Fungi being in a bad way, the attention of the party was drawn to this much better represented section. A fine list from this district was obtained by the President of the Section, Mr. W. Dennison Roebuck who will we hope in the near future contribute on the subject. Mr. H. M. Cade most kindly entertained the party to Tea at Ropsley.



LIST OF OFFICERS.

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Rev. Alfred Hunt, M.A., Welton Vicarage, Lincoln.

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F. M. Burton, F.L.S., F.G.S., Highfield, Gainsborough.
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H. Preston, F.G.S., Hawthornden Villa, Grantham.
Rev. E. A. Woodruffe-Peacock, L.Th., F.L.S., F.G.S., Cadney.

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Arthur Smith, F.L.S., F.E.S., The Museum, Greyfriars, Lincoln.

HON. ASSISTANT SECRETARY.

R. W. Goulding, 20, Mercer Row, Louth.

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Rev. E. A. Woodruffe-Peacock, L.Th., F.L.S., F.G.S.
Cryptogams :—Miss Stow, 23, Avenue Road, Grantham.
Fungi :—H. C. Hawley, Tumby Lawn, Boston.

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President :—G. H. Caton-Haigh, Grainsby Hall, Grimsby.
Secretary :—Rev. F. L. Blathwayt, M.A., M.B.O.U., 1, Stonefield Avenue, Lincoln.

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Bocock, H., Wellington Road, Mablethorpe.
Daubney, Miss A. H., Margaret's Gate, Bury St. Edmunds.
Dixon, Rev. T. G., Holton Park, Lincoln.
Felton, Dr. E. H., Park Street, Grimsby.
Hewetson, J., Grammar School, Gainsboro'.
Hewetson, Mrs. " " "
Stedman, Dr. S. B., Binbrook, Market Rasen.
Thornhill, W., 101, Morton Terrace, Gainsboro'.
Ward, G. H., Nettleham, Lincoln.

LINCOLNSHIRE NATURALISTS' UNION.

Statement of Accounts from 1st January to 31st December, 1907.

RECEIPTS.		PAYMENTS.	
	£ s. d.		£ s. d.
By Balance in Bank, &c., 31st December, 1906	45 14 10	To Subscriptions to "The Naturalist"	... 4 5 0
" Life Members' Donations (invested in Savings' Bank ... 34 4 10		" Printing and Stationery ... ..	... 4 14 0
" Interest thereon 0 15 10		" " "Transactions" and Blocks for illustrations ... ..	... 9 19 6
" Members' Subscriptions including "The Naturalist" 30 1 6	35 0 8	" Postage and Telegrams ... ..	... 4 3 2
" Transactions and Reprints sold 2 0 0		" Expenses of Meetings, &c. ... ..	... 1 7 10
" Bank Interest 0 16 4		" Life Members' Donations in Savings' Bank 34 4 10	
		" Interest 0 15 10	
		—	35 0 8
		" Balance in Bank and Secretary's hands	54 3 2
			<u>£113 13 4</u>
			<u>£113 13 4</u>

Examined and found correct,
E. E. BROWN, Auditor.

BRITISH
MUSEUM
5 DEC 21
NATURAL
HISTORY.



REV. CANON W. FOWLER, M.A.

Fourth President of the Lincolnshire Naturalists' Union.

The Presidents of the Lincolnshire Naturalists' Union.

The Rev. CANON W. FOWLER, M.A.

The parents of the younger members of the Union were in their nonage, when Canon Fowler was an enthusiastic botanist wandering about Lincolnshire to find what might yet be discovered. He once said that in his early days he thought he would never tire of walking after plants, but acknowledged with a sigh that though the mind might be as interested and keen as ever, after the seventh decade of existence the legs often refuse to do their share of the work. Youth never calculates on the extra weight there is to carry, and the growing stiffness of age. We shall only have to live long enough to experience this as well as many other things. In the early fifties Canon Fowler was essentially a field botanist, and he has remained the same till to-day as far as is now possible. He knew the flora of the Winterton-Broughton neighbourhood, and the Saltfleetby littoral better than anyone does to-day.

There are notes of his in existence going back as far as 1852. His first contribution to botanical literature that we have met with was in "*The Phytologist*," 1857, p. 302, on "*Salicornia herbacea, and common plants in Lincolnshire.*" This was followed in the

same work, 1858, p. 331, by "*The Rarer Plants of the Neighbourhood of Winterton, Lincolnshire*," enumerating some 80 species. A later series of articles appeared in "*The Naturalist*," between 1878—1890. "*Lincolnshire Coast Plants*," 1878; "*Lincolnshire Marine Plants*," 1879; "*Lincolnshire Bog and Moorland Plants*," 1887; "*Lincolnshire Marsh and Water Plants*," 1888; "*Lincolnshire Sand and Clay Plants*," 1889; "*Lincolnshire Limestone Plants*," 1890. He assisted the late H. C. Watson greatly, especially with the second edition of "*The Topographical Botany*," 1813; and Mr. F. A. Lees from 1874 to 1887, with his "*Botanical Record Club Reports*." For these purposes particularly he practically wandered over every soil and visited many an interesting nook and corner of north and south Lincolnshire. It was, however, as an encourager of natural history studies generally, and foregatherings of genial brother field workers that Mr. Fowier will be best remembered in the future, for what he did and said, rather than for what he wrote. When the Yorkshire Naturalists' Union was formed by a few enthusiasts in 1884, he was unanimously elected the first President. The Lincolnshire Union, which followed in due course, elected him, though not then resident in the county, its fourth President, for his long and full records amongst us. Few active parish priests have had the inclination, or found the time to do the field-work Canon Fowler has delighted in a quiet way to accomplish. The Phœnogams and Cryptogams of "*The London Catalogue*" would have been more than enough for the activities of most men with such time as he had at his disposal, without the keen interest he displayed in soil questions, and in the larger fungi and fresh water algæ. His diligence and example have not gone entirely unrewarded in the hearts and lives of his contemporaries and followers. The addition too, of *Selinum Carvifolia* to the indigenuous flora of Britain was such a triumph as can remain for few of this generation. When all has been written about the activities of any man, the personal equation still remains for those who are his personal friends and acquaintances the most vitally interesting fact about anyone. A man may be a keen churchman, and win his honorary canonry as a matter of course, he may be an enthusiastic nature

student and fair observer, and "a dull dog" withal. We have met many such, without a sparkle of wit in their composition; and trust to be preserved from them and their ways. No one however, could be alongside Canon Fowler, in his home or elsewhere, without appreciating the sweet ebullition of playful fun, and the truly kindly geniality of his nature. The eye and brain which can see the humour and fun of life—as quickly and as naturally as it responds to its weariness and sadness—when united to a good memory for dialect, form of expression, intonations of voice, and those personal tricks of manner which go to make up the individual character, when exerted in kindly mood can only produce side-shaking laughter. The Canon is one of those who think that to be merry, is as essential as to be earnest. He believes with Rabelais that to laugh is as proper for the true man as to talk—both are complementary signs of his humanity; that there is a time for everything under the sun. It goes without saying that as Mr. Fowler draws towards the end of his active field work he enters into his anecdotage. Long may he remain there in perfect health to delight his friends by his wide sympathies, and by the humorous side of man's variegated life in particular.

PISIDIUM SUPINUM SCHMIDT.
=**PISIDIUM CONICUM** BANDON.

While dredging for these little shells at the junction of the Brant river with the Witham on July 7th, last, I took the above, which makes a new County record, Mr. Buchnall and myself on the 15th of the same month at Skirbeck, (division 12), took several very characteristic specimens of *Planorbis spirorbis*, var. *leucostoma*.

These have since been kindly verified by Mr. J. W. Taylor.

JOHN F. MUSHAM,

January 6th, 1909.

South Park, Lincoln.

NOTES ON THE BIRDS OF A BALLAST PIT.

BY

THE REV. F. L. BLATHWAYT, M.A., M.B.O.U.

Within a mile of the Lincoln Stonebow, and separated from the Fosdyke by a broad Railway Embankment, lies a sheet of water, generally known as the Ballast Pit. In shape it is an obtuse angled triangle, with the base perhaps half a mile long, and the corners are choked up with reeds, bullrushes and other aquatic vegetation. There is a considerable depth of water in some parts, while in others it is so shallow that in a dry Summer extensive banks of muddy sand make their appearance, even in the centre of the lake. This sheet of water, well known in Winter to skaters, and also to a certain extent to fishermen and wild-fowlers, is the haunt of many interesting birds, which vary in numbers and species according to the season, and so is well worth the attention of local ornithologists. Though the lake itself is probably not older than the railway embankment, it lies in a locality where the fens at one time crept up to the city of Lincoln, and is also not far from the site of the Skellingthorpe Duck-decoy, which has not, I believe, been used for the past 60 years. Owing therefore to its position, it offers a modern view of the relics of the old fen fauna, as birds are well known to be very conservative in their habits and return to ancestral haunts as

opportunity or encouragement are offered them. I propose therefore to write a short sketch of the more interesting birds of this locality, entirely from my own observations, in order that the city members of the Lincolnshire Naturalists' Union may see that they need not go far afield in order to find material for the study of wild birds.

I have made notes on the birds which inhabit this sheet of water, during the past eight years, but my visits during the past three years have been very few and far between, so these notes must be taken to refer chiefly to the years 1901—1905.

Taking the Duck Tribe first, I have noticed the following species upon the water, none of which however, as far as I know, remain to nest there :—Mallard, Wigeon, Teal, Shoveler, Pochard Tufted Duck and Golden Eye. All these species use the open water chiefly as a place of refuge during the day, though probably the three last named, belonging as they do to the class of diving ducks, may spend more time on the water, diving for their food, than the other species which seem to disperse over the surrounding country during the night to feed.

A few pairs of *Mallard*, may be seen on the water early in April, but all seem to disappear during the breeding season, though doubtless many of them have their nests and young at no great distance. In August and September numbers may often be seen on the water, the drakes at first being in the "eclipse" stage, but as time goes on they gradually don their full plumage, which most have acquired by the beginning of October. The number of the birds varies greatly according to the weather, and also the attentions of wild-fowlers, but I have frequently seen more than 100 birds of this species on the water, and on several occasions even greater numbers. For example on November 21st, 1900, I noticed 300; on August 21st, 1901, there were over 300, the drakes in "eclipse" plumage; on September 5th, 1901, there were over 400, and on October 27th, 1905, there were over 200, the drakes on this last occasion being in full plumage. It is however quite possible to visit the lake during the Autumn and Winter and to see scarcely a bird of this species on the water, the

reason probably being that gunners have scared them away temporarily to other haunts. I have not often seen *Wigeon* on the Ballast Pit. On March 21st, 1901, there were 20 pairs there, evidently resting on their journey to breeding haunts in the North. On other occasions I have noticed a pair or two of the species on the water between the months of October and March.

Teal also in my experience are infrequent visitors. I saw 28 there on November 7th, 1901, and 50 on October 27th, 1905, and about 50 again on December 6th, 1907, but have seldom noticed them on other occasions. My acquaintance with the *Shoveler* in that locality is limited to one drake, seen there on March 17th, 1905, and 3 ducks noticed on December 6th, 1907.

Of the three species of Diving Ducks, which visit the water, the *Pochard* is by far the commonest. A few appear about the middle of August, and these are probably birds bred somewhere in the neighbourhood. Several pairs, to my knowledge, breed on the gull-ponds at Twigmoor. During November 7 or 8 pairs may often be seen diving for food at the Ballast Pit, and I have seen as many as 90 birds in December, while during the first three months of the year I have seen this species in numbers up to 60 or 70 birds. The following remarks which have reference to this species on the Ballast Pit are copied from my note books:—
“February 20th, 1903. *Pochard*, none on the water when I arrived, but about 3-30 p.m., two parties arrived and circled about above the water. A party of 15 (9 old drakes), settled among the coots, but the other party (about 10 birds), circled about several times but could not decide on alighting, and finally flew right away. The flight is very swift, the wings moving very rapidly, and all move together with the precision of starlings. When alighting they dash down on to the water and cause considerable splashing. Soon after settling they rose once again and took a few turns round, and then they again settled and many prepared to sleep.”
By the end of March the *Pochards* have left the Ballast Pit not to return until the following August.

Tufted Ducks are frequently to be seen on the lake, but never in large numbers, I have never seen more than 10 together. I

have usually noticed them in December or during the first three months of the year, the old drakes in their striking black and white plumage, with bright yellow eye and long drooping crest, being very conspicuous objects. The ducks and young birds are dull of plumage and cannot readily be identified without the aid of a good field glass. On December 6th, 1907, I identified 3 *Golden Eyes* on the water, the only ones I have seen there. They seemed to be immature birds, and were very expert divers.

Leaving the Duck tribe, we find *Coots* exceedingly common at almost any time of the year, except when the lake is frozen over. Many pairs nest among the reeds and rushes, and during the Summer old and young may be seen together in various stages of growth. The greatest number of coots I have noticed upon the water at one time was 130, which I counted there on February 16th, 1904. This is the most characteristic bird to be seen on the Ballast Pit. Their squabbles during the courtship of early Spring, their plaintive cries and their nesting habits are always a source of interest. A few *Moorhens* inhabit the lake, but they are shy and retiring in their habits and are not nearly so frequently seen as the coots. Perhaps the most interesting bird I have seen on the Ballast Pit is the *Great-crested Grebe*. This species is an interesting link with the old fen fauna. It was a striking figure on the stagnant pools of bygone Lincolnshire, in company with such marsh-loving birds as the Black Tern, Avocet, Godwit, Ruff, and Bittern. These have been lost as breeding species, but the grebe, though at one time approaching extinction, has escaped that fate and is now extending its breeding range in the British Isles. That a pair should nest so close to the city boundary is certainly an interesting fact for local ornithologists, but I am able to state from personal observation, that this has been the case at least four times during the last eight years. I first noticed a pair with 3 young in the curious striped downy plumage on July 12th, 1900. In the following year, on August 21st, the three young brought off that season were nearly as large as the parent birds. In 1902 and 1904, I think only two young were brought off each year, and I am sorry to say that during the last four seasons I have no positive proof that the birds have bred on the

lake, but they may very easily have escaped my observation, as my visits have been very infrequent. About the end of February, or early in March, a single grebe or perhaps a pair, or even two pairs, will arrive on the water and they soon assume the singularly striking breeding plumage. Not more than one pair has in my experience ever remained to nest, the stronger pair very likely driving away the weaker.

On March 10th, 1902, I was lucky enough to be able to make some interesting notes on these birds which I will repeat here as I jotted them down in my note books at the time:—"Ballast Pit, 4-45 p.m. Damp, warm, hazy day, no wind. Great-crested grebe. Two pairs in full plumage. I watched the grebes for some time. When I first arrived one pair were in the centre of the piece of water, preening their feathers, sometimes lying on their side and scratching the head with the foot. The second pair were near the west end of the water. While watching the first pair they suddenly took alarm at something, and swimming very low in the water, only their heads being visible, they made off at a great pace towards the East end of the pit. They swam long distances under water, and when they came up they hardly showed above the water, and soon dived again. I could not at first make out what had alarmed them as I was well hidden and no one else seemed to be in sight. I soon noticed however that the other pair of grebes was bearing down upon the first pair, and evidently intending to drive them from the centre of the water. The female lagged behind but the male came on until the first pair had retreated to a distance and then he remained in the centre floating very high in the water, and began calling to his mate, sometimes also, but not while calling, opening his bill very wide as though yawning. The note somewhat resembled the harsh croak of a carrion crow but not nearly so loud. It was uttered about three times in succession with about a seconds interval between each croak. After he had called for some little time, a few minutes, the female began to swim towards him. When she got fairly near to him he crouched down on the water, raised his wings and ruffled up his feathers just as an angry swan will do, and also seemed to lay his head back as a swan does,

When the female was only a few yards distant she dived and came up almost underneath her mate. The two then faced each other and went through most curious antics, bowing to one another and snapping and sparring at each other with their bills. They were too far off for me to hear whether they uttered any note during these performances. They did not appear to be fighting but rather caressing or "dancing" with each other. During the performance the crests and ruffs seemed to be extended to their fullest. Suddenly both birds dived and came up almost immediately close together. Then followed a most curious ceremony. Both had fished up a rather large piece of ribbon-like weed, and holding these in their beaks they faced each other and stood upright in the water showing nearly all their silvery breasts and looking almost like two snakes. When facing each other holding the weed, their bills almost touched, and they began to move their heads and consequently the weed also, from side to side in a most curious manner. After a bit, they dived, and chased each other about for a little while, and then began to wash most vigorously ruffling their wings in the water and throwing it over their backs after the manner of a duck. This was accompanied with much splashing which I could hear distinctly though they were some way off."

I have never noticed this species on the Ballast Pit later than the middle of October, so it would appear that they leave the locality during the Winter.

A pair or two of *Little Grebes* or *Dabchicks* come to the lake about the middle of March and stay all the spring and summer. They undoubtedly nest somewhere among the reeds and water plants, though I have no absolute proof of this. They leave I think in October, not to return till the following Spring.

Gulls frequently visit the water on their migrations, but it is unusual to see them in large numbers. The commonest species to put in an appearance is the *Black-headed Gull* of which there were 40 on the water on November 23rd, 1903. When we bear in mind that there are at least three large nesting colonies of this species in the north of the County, it is not surprising to find

wandering parties in the neighbourhood of the city. The *Common Gull* (*Larus canus*) which I have from time to time seen on the ploughed fields of Lincolnshire in Spring (though never in such large numbers as the Black-headed gulls), are only loiterers on the way to nesting haunts in Scotland; I have not noticed them on the Ballast Pit, but on September 16th, 1901, an immature example of some large species of gull, probably a *Herring Gull* was flapping lazily over the water on the look out for a meal. On August 30th, 1902, I saw an immature *Black Tern* busily engaged in fishing, an interesting visitor to ancestral haunts. It is not unusual to see one or two *Hérons*, usually in Autumn or Winter, standing like statues in the shallow water, and *Peewits* crowd in hundreds on the exposed banks of mud and sand, particularly at the end of Summer. Numbers of this species, together with several pairs of *Snipe* and a pair or two of *Redshanks*, nest in the rushy fields and marsh places in the vicinity of the Ballast Pit, and so the "scape-scape" of the flushed snipe or the clear whistle of the Redshank may often be heard over the water, as the birds are startled from their feeding grounds. I have noticed that in Winter the large flocks of *Peewits* are often attended by a few *Golden Plovers*, which owing to their quicker flight usually lead the flock when on the wing. On October 27th, 1905, a party of 15 *Dunlins* joined the Autumn visitors to the lake, and I watched them through my glasses, running nimbly about at the water's edge, as they do on the sea-shore. Doubtless many other species of wading birds make short stays at such a tempting spot during the periods of the Spring and Autumn migrations. I have recognised the cries of *Curlews*, *Sandpipers* and other waders which were flying over Lincoln on dark foggy nights, and it is most probable that many of these make short stays in the neighbourhood during their wanderings.

On several occasions I have seen little parties of *Goldfinches* feeding with other birds such as *Linnets* and *Greenfinches*, on the seeds of the various flowers and plants on the banks of the water. In Summer *Reed Warblers* may be noticed among the tall rushes near the water's edge, and so probably a search would reveal the

deep cup-shaped nest neatly supported by three reed stems a foot or so above the water.

From the end of October to the beginning of April, a characteristic bird is the *Hooded* or *Grey Crow*. He is only a Winter visitor to Lincoln, but is much in evidence during his stay along the banks of the River Witham, on the look out for floating or stranded "dainties," and he appears to find in the neighbourhood of the Ballast Pit a happy hunting ground.

It is to be hoped that these few notes may prove of interest to our members. They are the result of casual visits on my part to the lake, so many of its visitors must have escaped my notice. I have however identified all the birds mentioned, through strong field glasses, and so am sure of my facts. I may here mention that the plumage of wild fowl varies so much according to age, sex, or season of the year, that the novice at bird observation must be very careful before he records the occurrence of a rare bird seen at long range across the water. The adult males in full plumage are easily recognised, but a knowledge of the various marks of recognition and a strong pair of glasses are quite indispensable to one who wishes to record the birds when seen in the puzzling immature or transition stages. If there is any doubt the record is worse than useless.

However incomplete these notes may be, I claim for them accuracy, and they do seem to present just a glimpse of our fen-haunting birds, though the true fens themselves have vanished for ever.

ALBINO HEDGEHOG NEAR LINCOLN.

A fine specimen of the above form was killed at Skellingthorpe, on August 12th, last, it is wholly white with the exception of the cross marking on the spines which are dark gray, the irides pink.

It is now in the Lincs. County Museum.

JOHN F. MUSHAM,
Lincoln.

January 8th, 1909.

THE LEPIDOPTERA OF LINCOLNSHIRE.

PART II.

BY G. W. MASON.

Barton-on-Humber.

This Part contains a List of Noctuæ brought up to date, and includes several rare and local species.

It should be mentioned that the localities of Market Rasen, Gainsborough and Lincoln often include a wide tract of country. For instance, Dr. Lees includes in his list for Market Rasen all insects seen and taken as far as Bishop Bridge, Glentham, Tealby, Claxby and Wickenby; Mr. F. M. Burton's area for Gainsborough often takes in Scotton Common and Laughton Woods, and for the Lincoln District he includes Skellingthorpe Lanes and Woods, Burton Woods and others, the Greetwell fields (now a stoneheap) and lanes, with gardens, etc.; but the greater part of his insects were taken in Division 6.

Some of the Noctuæ are excessively variable, and so far I have only been able to record a few named varieties. Variation is a subject which almost requires to be dealt with separately.

I acknowledge with many thanks the help given to me by Mr. G. T. Porritt and Mr. E. A. Atmore (King's Lynn), in naming and confirming a few of the more difficult species. The List includes 218 species.

The following further contractions are used :

C P A	Signifies	Mr. C. P. Arnold.
G T P	"	Mr. G. T. Porritt.
F W S	"	Mr. F. W. Sowerby.
E M M	"	Entomologists' Monthly Magazine.

Noctuae.

BRYOPHILA MURALIS Forst

- N. Gainsborough; "Mr. Burton showed me an example, which he says he distinctly remembers taking in Gainsborough,"
A T.

BRYOPHILA PERLA Fb

Widely distributed. Mr. F. W. Sowerby reports having taken an example at sugar in his father's garden.

- N. Lincoln, 1852, F M B. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12.
S. Wyberton, one in 1897, J C L-C. Divs. 13, 14, 17, 18.

MOMA ORION Esp

- S. Near Sleaford, one example at sugar in June, J D C. Mr. Coward assures me that there is no doubt of the identity of this insect. He was sugaring with a friend, and allowed him to take it, as he had at the time a series of the species.

DEMAS CORYLI L

Rare; I have no recent records.

- N. Gainsborough, F M B. Newball, one or two larvæ about September, 1894, taken by the late Rev. C. Wilkinson and identified by G H R.; 6-6-1886, J F M.

ACRONYCTA TRIDENS Schiff

This species is probably often overlooked by reason of its similarity to the following species, but it appears to be well distributed.

- N. Ashby (Brigg) District, larvæ, R T C. Barton-on-Humber, bred, G W M. Brocklesby District, E A C. Gainsborough, F M B. Great Carlton, C. D. Ash. Louth, larvæ, V. Crow. Market Rasen, larvæ taken 8-1896, W L. Panton, rare, G H R. Waltham, one larva, 26-9-1904, W W. West Ashby, bred 1908, F S A.
S. Allington, larvæ, P. Wynne. Haverholme Priory, not common, J D C.

ACRONYCTA PSI L

Common.

- N. Linwood, 1857, R P A. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.
S. Wyberton, J C L-C. Divs. 13, 14, 15, 17, 18.

ACRONYCTA LEPORINA L

Rather scarce.

- N.** Ashby (Brigg) District, R T C. Market Rasen, larvæ twice on tree trunks, 1877-79, F A L.; 9-6-1897, W L. Newball Wood, 1881, Canon Fowler. Pelham's Pillar Woods, four larvæ in 1896, J P. Scotton Common, larvæ, F M B (see Nat. 1900, p. 368); one larva, H M B S.; one larva in September, 1905, G W M. || Skegness. West Ashby, 1902, F S A. Woodhall Spa, larva on birch, G H R.; one example bred from larvæ found in 1905, H M B S.
- S.** Hartsholme, W D C.; 12-6-1886, J F M.; C P A. Haverholme Priory, not common, J D C. Holbeach District. L M C. Skellingthorpe, A. R. Leivers.

ACRONYCTA ACERIS L

Scarce.

- S.** Haverholme Priory, not common, J D C. Holbeach District, common, L M C.

ACRONYCTA MEGACEPHALA Fb

Frequent.

- N.** Barton-on-Humber, one at sugar, 8-7-1899, G W M. Gainsborough, bred from pupa, 1860, F M B. Lincoln, 6-1896, G. Henderson; C P A. Market Rasen District, larvæ, 1876-80, F A L.; one larva, 22-8-1903, G W M.; one larva, 3-8-1908, J P. and others. Owston Ferry District, A R. Skegness, 1902, F S A.
- S.** || Cowbit, Chas. M. Hufton. Denton, C. D. Ash. Hartsholme, L N U., (Nat. 1899, p. 286). Haverholme Priory, fairly common, J D C. Holbeach District, common, L M C. Lincoln, C P A. Skellingthorpe, 6-6-1900 and 10-6-1901, J F M.

ACRONYCTA ALNI L

Scarce, but well distributed, the records relating chiefly to the finding of the beautiful larva.

- N.** Alford District, 1 larva, 23-8-1890, E W. Appleby, one larva, 11-9-1888, Mrs. Cross. Bradley Wood, one larva on Spanish chestnut, 22-8-1907, E H F. and W W. Near Grimsby, C. K. Tero, (Ent. 1885, p. 194). Hameringham, one example bred from larva found in oak wood in September, 1905, H M B S. Lincoln, 22-6-1887, Canon Fowler, (Nat. 1888, p. 144). Louth, Hubbard's Hills, one larva, 1901, R W G. Market Rasen, 1896, W L. Morton, 1859, E. Tearle. Panton, one imago, 1892, G H R. Saxby (Barton), C. D. Ash. Near Wragby, one larva, 1877-79, F A L.
- S.** Grantham, a larva sent from Grantham, A. Marshall, (Ent. vol. 17, p. 209). Hartsholme, 1896, W L.; 14-6-1886, J F M.; W D C.; C P A. Haverholme Priory, imago and larva in 1907, J D C. Skellingthorpe, one larva, 1877-79, F A L.

ACRONYCTA LIGUSTRI *Fb*

Scarce.

- N. Gainsborough, F M B. Market Rasen, larvæ, 8-1895-96, W L.; two larvæ, 6-8-1900, G W M. ||Skegness. Woodhall Spa, larva on privet, G H R.
S. Haverholme Priory, fairly common, J D C. Skellingthorpe, C P A.

ACRONYCTA RUMICIS *L*

Common.

- N. Lincoln, 1852, F M B. Divs. 1, 2, 3, 5, 6, 7, 8, 9, 10, 11,
S. Lincoln, F M B. Divs. 13, 14, 15, 18.

— var. *salicis* *Curt*

- N. Panton, "one female taken from which I reared a few imagines chiefly of the *salicis* form," G H R.

ACRONYCTA MENYANTHIDIS *View*

Scarce and local.

- N. Broughton Woods, 1895, A. E. Hall. Scotton Common, F M B. West Ashby, bred 1906, F S A.

DILOBA CÆRULEOCEPHALA *L*

Common, especially in the larval stage.

- N. Gainsborough, F M B. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.
S. Wyberton, two at light, J C L-C. Divs. 13, 14, 15, 17, 18.

LEUCANIA CONIGERA *Fb*

Local.

- N. Ashby (Brigg) District, R T C. Barton-on-Humber, at sugar, 25-7-1905 and 5-8-1905, G W M. Cleethorpes, two at sugar in garden, 24-7-1908, F W S. Hameringham, fairly common, H M B S. Hatton, one in 1896, G H R. Owston Ferry District, A R. Wrawby Moor, one at heather bloom, 24-8-1908, G W M.
S. Allington, larva, P. Wynne. ||Cowbit, Chas. M. Hufton. Haverholme Priory, very common, J D C. Holbeach District, common, L M C.

LEUCANIA LITHARGYRIA *Esp*

Common.

- N. Gainsborough, 1860, F M B. Divs. 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.
S. Wyberton, common, J C L-C. Divs. 13, 14, 15, 17.

— var. *ferago*

Waddiston Brick-pits, 8-7-1905, J F M.

LEUCANIA OBSOLETA *Hb*

Lincoln, one example at light, C P A. (Identification confirmed by Mr. E. A. Atmore).

LEUCANIA LITTORALIS *Curt*

Very local.

- N. || Skegness in 1853, by Mr. Gascoyne of Newark. Skegness, "one specimen caught flying over the sandhills several years ago, several larvæ also taken but not reared; I saw a collection belonging to a man there (I cannot remember his name) which contained a good many specimens of this moth and he told me that the moth was common on the sandhills there," J C L-C.

LEUCANIA IMPUDENS *Hb*

- S. Boultham, one example, C P A. (Identified by Mr. E. A. Atmore).

LEUCANIA COMMA *L*

Common.

- N. Lincoln, 1852, F M B. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.
S. || Cowbit, Chas. M. Hufton. Divs. 13, 14, 15, 17, 18.

LEUCANIA STRAMINEA *Tr*

Rare.

- † "In suitable spots, very locally. . . . in Lincolnshire."
S. Lincoln Fen, 24-9-1899, J F M. Lincoln, two examples from flowers of bulrush, W D C.

LEUCANIA IMPURA *Hb*

Very common.

- N. Gainsborough, 1860, F M B. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.
S. Wyberton, J C L-C. Divs. 13, 14, 17, 18.

LEUCANIA PALLENS *L*

Very common.

- N. Gainsborough, 1860, F M B. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11,
S. Wyberton, J C L-C. Divs. 13, 14, 15, 17, 18.

CALAMIA PHRAGMITIDIS *Hb*

Rather local.

- N. Ashby (Brigg) District, R T C. Barton-on-Humber, fairly common locally over reed beds at the end of July and beginning of August, 1905, taken on the wing at dusk or at rest on reeds and grasses after dark, G W M. Market Rasen, W L.; 1877-79, F A L. Owston Ferry District, A R. Sutton-on-Sea, at sugar in 1907, B. W. Adkin (Ent. 1907, p. 238). Theddlethorpe. 1904, A. E. Gibbs (Ent. 1905, p. 81).
S. Haverholme Priory, very common, J D C. Holbeach District, L M C. Lincoln Fen, 8-1902 and 1898, J F M. Lincoln, C P A. Tydd District, E A C. Wyberton, fairly common at light, J C L-C

TAPINOSTOLA FULVA Hb

Rather local.

- N. Alford District, one example at sugar, 7-8-1891, E W. Burwell Wood, V. Crow. Gainsborough District, F M B. Little Coates, 1907, E H F.; common 8-1908, F W S. Market Rasen, a few each year, W L.
- S. ||Cowbit, Chas. M. Hufton. Haverholme Priory, very common, J D C. Skellingthorpe, 5-9-1897, J F M.; C P A. Wyberton, very common, J C L-C.

TAPINOSTOLA HELLMANNI Evers

Rare.

- N. Market Rasen, 1877-79, F A L.; a few each year, W L. Panton, 29-7-1893, eight specimens in five seasons, G H R.
- S. ||Cowbit, Chas. M. Hufton. Lincoln Fen, 24-8-1898, J F M.; C P A. Skellingthorpe, 6-9-1902 and 14-8-1903, J F M.

TAPINOSTOLA ELYMI Tr

Common on the coast.

- N. Cleethorpes, 1868, J. Chappel; 7-1869, J. Thorpe; 7-1870, C. Campbell; 5-1871, J. Batty; 16-5-1871, (Explanation of pl. 60, fig. 5), William Buckler's Larvæ of British Butterflies and Moths; 23-8-1879, H. A. Auld. Mablethorpe, common, G H R. Saltfleet, J F M. and C P A. Skegness, 16-7-1879, G T P. Theddlethorpe, common, 7-1904, A. E. Gibbs (Ent. 1905, p. 81); 6-1906, G W M. Lines. Sandhills, 21-6-1902, J F M.

NONAGRIA ARUNDINIS Fb

This species has only been recorded for a few localities, but doubtless it is fairly common where the bulrush grows freely.

- N. Ashby (Brigg) District, R T C. Barnetby, larvæ, 25-5-1883, Mrs. Cross. Barton-on-Humber, 1 pupa, 31-8-1906, and a few pupæ, 8-1908, G W M. Gainsborough, F M B. Lincoln, C P A. Market Rasen, 1876-1880. F A L.
- S. Haverholme Priory, very common, J D C. Lincoln Fen, 24-8-1898, J F M. Lincoln, C P A.

NONAGRIA NEURICA Hb

Scarce and local.

- N. Ashby (Brigg) District, R T C. Gainsborough and Lincoln, F M B.
- S. Lincoln, 6 examples 24-8-1898, 2 examples 24-8-1900, five examples 22-8-1901; Saltfleet, J F M. Lincoln, C P A.

CALAMIA LUTOSA Hb

Locally common.

- N. Barton-on-Humber, common, G W M. Cleethorpes, several at street lamps, 9 and 10-1908, F W S. Grimsby District, E H F. Market Rasen, one at light, 1892-94, W L.
- S. Haverholme Priory, very common, J D C. Lincoln, C P A. Lincoln Fen, J F M. Wyberton, not common, J C L-C. Lincolnshire, a small form taken at light by E. Dembski, C G Barrett (E M M, 1895, p. 95).

GORTYNA OCHRACEA *Hb*

Local.

- N.** Ashby (Brigg) District, R T C. Gainsborough, 1860, F M B. Lincoln, C P A. Market Rasen, 1877-79, F A L.; common, W L. Owston Ferry District, A R. Panton, G H R.
- S.** Haverholme Priory, fairly common, J D C. Lincoln Fen, 6-9-1895 and 18-9-1901, J F M. Lincoln, C P A. Wyberton, common at light, J C L-C.

HYDRÆCIA NICTITANS *Bork*

Frequent.

- N.** Lincoln, 1852, F M B. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 10, 11.
- S.** Wyberton, 1896, J C L-C. Divs. 13, 14, 15, 17.

HYDRÆCIA PETASITIS *Dbl*

Rare.

- N.** Gainsborough, 1860, bred from Butterbur, F M B.

HYDRÆCIA MICACEA *Esp*

Frequent.

- N.** Ashby (Brigg) District, R T C. Barton-on-Humber, one example, 28-9-1908, F P H B. Cleethorpes, E H F. Gainsborough, F M B. Lincoln, C P A. Market Rasen, 1877-79, F A L.; a few each year at light, W L. Panton, common, G H R. Saxby (Barton), C. D. Ash.
- S.** ||Cowbit, Chas. M. Hufton. Haverholme Priory, very common J D C. Lincoln, C P A. Lincoln Fen, 26-8-1900, J F M Wyberton, occasionally, J C L-C.

AXYLIA PUTRIS *L*

Not common.

- N.** Cleethorpes, at sugar in garden 13-6-1908 and 5-7-1908, F W S. Hameringham, fairly common, H M B S. Market Rasen, one in 1895, W L. Skegness, 16-7-1879, G T P. Theddlethorpe, 1904, A. E. Gibbs (Ent. 1905, p. 81); one example at sugar, 25-6-1906, G W M.
- S.** Hartsholme, 4-6-1896, J F M. Haverholme Priory, fairly common, J D C. Wyberton, one at light, 6-1895, J C L-C.

XYLOPHASIA RUREA *Fb*

Common.

- N.** Lincoln, 1852, F M B. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 11.
- S.** ||Cowbit, Chas. M. Hufton. Divs. 13, 14, 17, 18.

— var. *alopeurus* *Esp*

- N.** Ashby (Brigg) District, R T C. Barton, one example, 24-6-1894; Brocklesby, 23-6-1908; G W M. Binbrook, occurs, S B S.

- S.** Lincoln, C P A.

— var. *combusta* *Dup*

- N.** Panton, G H R. Saxby (Barton), 1892, chiefly this variety, C. D. Ash. Lincoln, J F M.
- S.** Haverholme Priory, fairly common, J D C.

XYLOPHASIA LITHOXYLEA *Fb*

Very common.

- N. Gainsborough, 1860, F M B. Divs. 1, 2, 3, 4, 5, 7, 8, 9, 10, 11
S. Wyberton, J C L-C. Divs. 13, 14, 15, 17.

XYLOPHASIA SUBLUSTRIS *Esp*

Not common.

- N. Ashby (Brigg) District, R T C. Barton-on-Humber, one example, 6-7-1905, G W M. Gainsborough, F M B. Lincoln, J F M. Mablethorpe, G H R. Market Rasen, one or two most years, W L. Panton, G H R. Skegness, 16-7-1879, G T P. Theddlethorpe, 1904, A. E. Gibbs (Ent. 1905, p. 81). West Ashby, 1903, F S A
S. Boultham, 20-6-1905, J F M. Haverholme Priory, fairly common, J D C. Lincoln, C P A. Skellingthorpe, 9-7-1900 J F M. Wyberton, one in 1896, J C L-C

XYLOPHASIA MONOGLYPHA *Hufn*

Abundant. Forms occasionally tending to black are recorded from Legsby and Panton (G H R).; and melanic forms are described as frequent at Saxby (C. D. Ash.) A melanic form has been taken in the Grimsby District (R C)

- N. Gainsborough, 1860, F M B. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
S. Wyberton, J C L-C. Divs. 13, 14, 15, 17

XYLOPHASIA HEPATICA *L*

Apparently scarce, or else overlooked

- N. Alford District, common at sugar, 24-6-1891, E W. Binbrook, two or three examples, S B S. Gainsborough, 1860, F M B
S. Boultham, 4-7-1892, J F M. Haverholme Priory, fairly common, J D C

XYLOPHASIA SCOLOPACINA *Esp*

Scarce

- N. Gainsborough, 1860, F M B. Legsby, G H R. Limber, 1902 F S A. Market Rasen, a few each year, W L. West Ashby, 1902, F S A
S. Skellingthorpe, 10-7-1898 and 14-8-1903, J F M.; C P A

NEURIA RETICULATA *Vill*

Frequent

- N. Ashby (Brigg) District, R T C. Barton-on-Humber, fairly common on one or two nights at sugar in 1905, G W M Binbrook, common in 1906, S B S. Cleethorpes, E H F. Near Croxby, 8-1906, A B. Gainsborough, F M B. Hamer-ingham, fairly common, H M B S. Lincoln, J F M. Mablethorpe and Panton, G H R. Market Rasen District, W L. (Nat. 1898, p. 50). Theddlethorpe, 1904, A. E. Gibbs, (Ent. 1905, p. 81)
S. Allington, P. Wynne. Boultham, 6-6-1905, J F M. Haverholme Priory, very common, J D C. Lincoln, C P A. Skellingthorpe, 17-7-1899, J F M

NEURONIA POPULARIS *Fb*

Frequent

- N.** Alford, an example 28-8-1891, E W. Near Binbrook, one in 1907, S B S. Cleethorpes, E H F. Gainsborough, F M B. Hameringham, common, H M B S. Humberstone foreshore, four at light in tent, 25-8-1908, F W S. Lincoln, F M B. and C P A. Louth, V. Crow. Market Rasen, 1877-79, F A L.; common, W L. Owston Ferry District, A R. Panton, G H R. West Ashby, 1902, F S A
- S.** Allington, P. Wynne. Haverholme Priory, very common, J D C. Lincoln, C P A. and J. F. M. Wyberton, very abundant at light, J C L-C

CHARÆAS GRAMINIS *L*

Fairly common

- N.** Lincoln, 1852, F M B. Divs. 1, 3, 4, 5, 6, 7, 8, 9, 10, 11
- S.** Wyberton, 1895, one at light, J C L-C. Divs. 13, 14, 17

CERIGO MATURA *Hufn*

Fairly common

- N.** Gainsborough, F M B. Divs. 2, 3, 4, 5, 7, 9, 11
- S.** ||Cowbit, Chas. M. Hufton. Divs. 13, 14, 15, 17, 18

LUPERINA TESTACEA *Hb*

Frequent

- N.** Ashby (Brigg) District, R T C. Barton-on-Humber, G W M. Binbrook, common most years, S B S. Brocklesby District, E A C. Cleethorpes, abundant at light in tent, 8-1908, F W S. Gainsborough District; Lincoln, 1852; F M B. Market Rasen, common at light, W L. Panton, common, G H R. Skegness, A. H. Waters. (Naturalists' Chronicle, 1895, p. 128). Sutton-on-Sea, G H R, 1907, B. W. Adkin (Ent. 1907, p. 238.) West Ashby, 1902, F S A.
- S.** Haverholme Priory, very common, J D C. Wyberton, J C L-C

LUPERINA CESPITIS *Fb*

Scarce

- N.** Market Rasen, a few at light, 1895-96, W L.; R T C. Panton, one at light, 8-1895, G H R
- S.** Haverholme Priory, not common, J D C

MAMESTRA ABJECTA *Hb*

- N.** Skegness, one example, 16-7-1879, G T P

MAMESTRA SORDIDA *Bork*

Frequent

- N.** Ashby (Brigg) District, R T C. Barton-on-Humber, one example, 30-6-1897, G W M. Binbrook, a few each year, S B S. Cleethorpes, one at sugar in garden, 30-7-1908, F W S. Hameringham, common, H M B S. Hatton, Mablethorpe and Panton, G H R. Legsby Wood, at sugar, 22-7-1908, G W M. Lincoln, J F M. Skegness, 16-7-1879, G T P. Theddlethorpe, 1904, A. E. Gibbs (Ent. 1905, p. 81)
- S.** Allington, P. Wynne. Boultham, 20-6-1905, J F M. Haverholme Priory, very common, J D C. Lincoln, C P A. Skellingthorpe, 25-6-1900, J F M

MAMESTRA ALBICOLON *Hb*

Scarce, but less so on the coast

- N. Ashby (Brigg) District, R T C. Mablethorpe, G H R. Skegness, 16-7-1879, G T P. Theddlethorpe, 1904, A. E. Gibbs (Ent. 1905, p. 81)

MAMESTRA FURVA *Hb*

Mr. Burton informs me he has five separate notes of the occurrence of this insect at Gainsborough in 1860. I understand that *furva* is chiefly a coast species, and is pretty well confined to the North and West of England, so its occurrence inland in Lincolnshire, though a long time ago, is most interesting

- N. Gainsborough District, 1860; Lincoln District, 1852; F M B

MAMESTRA BRASSICÆ *L*

Abundant

- N. Linwood, 1857, R P A. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
S. Wyberton, J C L-C. Divs. 13, 14, 15, 17, 18

MAMESTRA PERSICARIÆ *L*

Not common

- N. Alford, one example, 19-7-1890, E W. Ashby (Brigg) District, R T C. Gainsborough, F M B. Hameringham, common, H M B S. Lincoln, one in 1896, W L. West Ashby, 1903, F S A
S. Allington, fairly numerous, P. Wynne, Haverholme Priory, very common, J D C. Holbeach District, fairly common, L M C. Lincoln, 4-6-1905 and 5-7-1901, J F M.; C P A. Wyberton, one example, J C L-C

APAMEA BASILINEA *Fb*

Very common

- N. Gainsborough, 1860, F M B. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.
S. ||Cowbit, Chas. M. Hufton. Divs. 13, 14, 15, 17, 18

APAMEA CONNEXA *Bork*

Scarce

- N. Legsby, two from tree trunks, 27-7-1901, G W M. Market Rasen, 7-1894, W L.; 1895, J. A. Hardy (Naturalists' Chronicle, 1895, p 102).
S. Skellingthorpe, C P A

APAMEA GEMINA *Hb*

Common

- N. Lincoln, 1852, F M B. Divs. 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
S. ||Cowbit, Chas. M. Hufton. Divs. 13, 14, 17, 18

APAMEA UNANIMIS *Tr*

Local

- N.** Althorpe, a few larvæ under willow bark, 18-4-1908, J P. and G W M. Ashby (Brigg) District, R T C. Barton-on-Humber, larvæ abundant on ribbon grass in the autumn, imagines at sugar 19 and 27-6-1905, G W M. Binbrook, one 6-1906, S B S. Gainsborough District, 1860, F M B. Lincoln, J F M. and C P A. Panton, generally among *Iris pseudacorus*, G H R. Theddlethorpe, one 26-6-1906 and one 27-6-1906, at sugar, G W M
- S.** Haverholme Priory, fairly common, J D C. Lincoln, 1892, common, W D C

APAMEA OPHIOGRAMMA *Esp*

Rare

- S.** ||Cowbit, Chas. M. Hufton. Haverholme Priory, two specimens in 1906, on flowers of sedges, J D C

APAMEA LEUCOSTIGMA *Hb*

Rare

- N.** Market Rasen, one taken in 1893, W L
- S.** ||Cowbit, Chas. M. Hufton. Haverholme Priory, very common J D C

— var. *fibrosa* *Hb*

- S.** Haverholme Priory, fairly common, J D C.

APAMEA DIDYMA *Esp*

Abundant

- N.** Gainsborough, 1860, F M B. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
- S.** Wyberton, J C L-C. Divs. 13, 14, 15, 17, 18

MIANA STRIGILIS *Clerck*

Abundant

- N** Lincoln, 1852, F M B. Divs. 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
- S** Wyberton, not common, J C L-C. Divs. 13, 14, 15, 17

— var. *æthiops* *Haw*

- N** Saxby (Barton), mostly this variety, C. D. Ash. Alford District, common, E W

MIANA FASCIUNCULA *Haw*

Abundant

- N** Lincoln, 1852, F M B. Divs. 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
- S** Wyberton, J C L-C. Divs. 13, 14, 15, 17, 18

MIANA LITEROSA *Haw*

Frequent

- N** Ashby (Brigg) District, R T C. Barton-on-Humber, one 24-7-1905, and one 13-8-1908, G W M. Binbrook, two in 1905, S B S. Gainsborough, F M B. Louth, V. Crow. Market Rasen District, a few most years, W L.; 1876-80, F A L. Panton, one 8-1893, G H R. Skegness, 16-7-1879, G T P. Sutton-on-Sea, plentiful at sugar in 1907, B. W. Adkin (Ent. 1907, p. 238). Theddlethorpe, 1904, A. E. Gibbs (Ent. 1905, p. 81). West Ashby, 1905, F S A

- S** Hartsholme, 20-6-1899, J F M

MIANA BICOLORIA Vill

Frequent

- N** Barton-on-Humber, frequent 7-1904, G W M. Cleethorpes, plentiful at sugar in garden, 1908, F W S. Gainsborough, F M B. Hameringham, fairly common, H M B S. Market Rasen, 1877-79, F A L.; common, W L. Panton, scarce, G H R. Skegness, 1902, F S A. Sutton-on-Sea, G H R.; at sugar in 1907, B W Adkin (Ent. 1907, p. 238). Theddlethorpe, 1904, A E Gibbs (Ent. 1905, p. 81). West Ashby, 1903, F S A. Wrawby Moor, one at sugar, 21-7-1908, G W M
- S** Haverholme Priory, fairly common, J D C. Skellingthorpe, J F M. Wyberton, rare, J C L-C

MIANA ARCUOSA Haw

Frequent

- N** Ashby (Brigg) District, R T C. Barton-on-Humber, frequent, G W M. Binbrook, a few, S B S. Gainsborough, 1860, F M B. Goxhill, one male 2-8-1906, G W M. Linwood, common, S B S. Market Rasen, a few each year, W L. Moortown, 18-8-1907, G W M. Panton, common, G H R. Skegness, 16-7-1879, G T P. Theddlethorpe, 1904, A. E. Gibbs (Ent. 1905, p. 81)
- S** Haverholme Priory, fairly common, J D C. Lincoln, F M B. and C P A. Waddington Brick-Pits, 8-7-1905, J F M. Wyberton, rare, J C L-C.

GELÆNA HAWORTHII Curt

Very rare. I have only two records of this insect's occurrence in Lincolnshire; both may be regarded as authentic.

I have seen Mr. Reynolds' specimens.

†"Less common. in Lincolnshire"

- N** Barton-on-Humber, taken in the garden of the late Mr. William Gray, Cliff House, at sugar in August 1878, Prof. R. Meldola, F R S. East Ferry District, A R

GRAMMESIA TRIGRAMMICA Hufn

Common

- N** Lincoln, 1852, F M B. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
- S** ||Cowbit, Chas. M. Hufton. Divs. 13, 14, 15, 17, 18

STILBIA ANOMALA Haw

- N** Osgodby Common, 3-9-1877, F A L

GARADRINA MORPHEUS Hufn

Frequent

- N** Market Rasen, 1877-79, F A L. Divs. 2, 3, 4, 6, 7, 9, 10, 11
- S** Boultham, 18-6-1900, J F M. Divs. 13, 14

CARADRINA ALSINES *Brahm*

Frequent, but less common than the last species.

- N** Ashby (Brigg) District, R T C. Barton on-Humber, 6-7-1905, G W M. Binbrook, common, S B S. Gainsborough, 1860, F M B. Goxhill, one at sugar, 15-7-1908; Legsby Wood, at sugar, 22-7-1908; G W M. Market Rasen, common, W L. Panton, G H R. Sutton-on-Sea, at sugar, 1907, B. W. Adkin (Ent. 1907, p. 238). Theddlethorpe, 1904, A. E. Gibbs (Ent. 1905, p. 81). West Ashby, 1902, F S A

- S** Haverholme Priory, fairly common, J D C. Lincoln, C P A

CARADRINA TARAXACI *Hb*

Frequent

- N** Ashby (Brigg) District, R T C. Binbrook, a few, S B S. Gainsborough, 1860, F M B. Market Rasen, W L. Panton, G H R. Skegness, 16-7-1879, G T P. Theddlethorpe, 1904, A. E. Gibbs (Ent. 1905, p. 81)

- S** Allington, P. Wynne. Haverholme Priory, very common, J D C. Lincoln Fen, 9-7-1900, J F M. Lincoln, C P A. Wyberton common, J C L-C

CARADRINA QUADRIPUNCTATA *Fb*

Common

- N** Lincoln, 1852, F M B. Divs. 2, 3, 4, 5, 6, 7, 8, 9, 11

- S** Wyberton, J C L-C. Divs. 13, 14, 15, 17

HYDRILLA PALUSTRIS *Hb*

One example of this rarity has been recorded

- N** Lincolnshire coast sand-hills, a male at light, 21-6-1902, J F M and C P A

RUSINA TENEBROSA *Hb*

Common

- N** Gainsborough, 1860, F M B. Divs. 2, 3, 5, 6, 7, 8, 9, 10, 11

- S** Wyberton, rare, J C L-C. Divs. 13, 14, 17, 18

AGROTIS VESTIGIALIS *Hufn*

Fairly common on the coast, but occasionally met with inland

- N** Ashby (Brigg) District, R T C. Chapel, a good series taken at sugar, 8-1893, J W C. Cleethorpes, 28-8-1879, H. A. Auld; August, E H F.; several at sugar in garden, abundant on golf links and at lights at camp, 1908, F W S. Lincs. coast; Gainsborough, 1860; F M B. Market Rasen, a few each year, W L. Mablethorpe and Skegness, G H R. ||Skegness. Sutton-on-Sea, at sugar, 1907, B. W. Adkin (Ent. 1907, p. 238) Theddlethorpe, 1904, A. E. Gibbs (Ent. 1905, p. 81)

- S** Lincoln Fen, 30-7-1899, J F M

AGROTIS PUTA *Hb*

Rare

- N** Market Rasen, two at sugar, 6-1893, W L

- S** ||Cowbit, common, Chas. M. Hufton. Wyberton, rare, J C L-C

AGROTIS SUFFUSA *Hb*

Frequent

- N** Alford District, common some years at sugar, E W. Ashby (Brigg) District, R T C. Barton-on-Humber, a few most years at sugar, G W M. Binbrook, one 9-1905, S B S. Grimsby District, R C. Great Carlton, C. D. Ash. Lincoln, 1852, F M B. Louth, V. Crow. Market Rasen, 1876-80, F A L; W L. Panton, common, G H R. Saxby (Barton), C. D. Ash. Swinhope, 1856, R P A. Theddlethorpe, 1904, A. E. Gibbs (Ent. 1905, p. 81). Wrawby Moor, 10-9-1905, G W M
- S** Haverholme Priory, very common, J D C. Holbeach District, scarce, L M C. Lincoln, C P A. Skellingthorpe, 3-9-1898, J F M. Wyberton, one in 1897, J C L-C

AGROTIS SAUCIA *Hb*

Not common

- N** Alford, one example, 23-9-1892, E W. Ashby (Brigg) District, R T C. Barton-on-Humber, one example, 19-10-1897, G W M Gainsborough, F M B. Market Rasen, 11-9-1894, W L Middle Rasen, 1877-79, F A L. Panton, scarce, G H R. Saxby (Barton), C. D. Ash
- S** Haverholme Priory, fairly common, J D C. Holbeach District, common, L M C. Lincoln, C P A

AGROTIS SEGETUM *Schiff*

Abundant

- N** Gainsborough, F M B. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
- S** Wyberton, common, J C L-C. Divs. 13, 14, 15, 17

AGROTIS EXCLAMATIONIS *L*

Abundant

- N** Lincoln, 1852, F M B. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
- S** Boultham, J F M. Divs. 13, 14, 15, 18

AGROTIS CORTICEA *Hb*

Rather scarce

- N** Binbrook, two in 1906, S B S. Linwood, one at sugar, 22-7-1908, G W M Market Rasen, 7-1895-96-97, W L. Panton, one in 1894, G H R. ||Skegness. Theddlethorpe, 1904, A. E. Gibbs, (Ent. 1905, p. 81)
- S** ||Cowbit, Chas. M. Hufton. Haverholme Priory, fairly common, J D C

AGROTIS RIPÆ *Hb*

The only knowledge I have of the occurrence of this species in the County is gleaned from entomological works.

†"Lincolnshire"

"Lincolnshire coast, var. *grisea*" (See Tutts' British Noctuae and their varieties, Vol. 2, pp. 67 and 71, 1892 edition, in which the Author refers to specimens in his own collection which came from the Lincolnshire coast).

AGROTIS NIGRICANS *L*

Fairly common

N Lincoln, 1852, F M B. Divs. 2, 3, 4, 5, 6, 7, 8, 10, 11**S** Wyberton, common 1896 only, J C L-C. Divs. 13, 14, 17, 18**AGROTIS TRITICI** *L*

Frequent

N Ashby (Brigg) District, R T C. Barton-on-Humber, F P H B. Binbrook, a few, S B S. Cleethorpes, E H F. Gainsborough, 1860, F M B. Grimsby District, R C. Humberstone foreshore, one at light in tent, 21-8-1908, F W S. Lincoln, F M B. Linwood, 1877-79, F A L. Market Rasen, common, W L. Skegness. Sutton-on-Sea, in some numbers, at sugar in 1907, B. W. Adkin (Ent. 1907, p. 238). Theddlethorpe, 1904, A. E. Gibbs (Ent. 1905, p. 81). West Ashby, 1902, F S A. Wrawby Moor, common in 1908, at ragwort bloom, G W M**S** Bracebridge, 13-7-1900 and 4-9-1902, J F M**AGROTIS AQUILINA** *Hb*

Scarce; often confused with the preceding species

N Cleethorpes, E H F. Linwood, 1877-79, F A L. Market Rasen, a few most years, W L. Panton, scarce, G H R. Skegness. Theddlethorpe, 1904, A. E. Gibbs, (Ent. 1905, p. 81)**AGROTIS OBELISCA** *Hb*

Lincoln, sugar, rare, W D C

AGROTIS AGATHINA *Dup*

Rare and local

N Market Rasen District, 1876-80, imagines and larvæ, F A L., three larvæ 8-6-1908, F P H B and G W M**AGROTIS STRIGULA** *Thnb*

Apparently scarce or unnoticed

N Ashby (Brigg) District, R T C. Cleethorpes, one at sugar in garden, 5-7-1908, F W S. East Ferry District, A R. Linwood, 1877-79, F A L.; two in 1908, S B S. Market Rasen, common, 1895-96, W L. Twigmoor, one example 25-6-1898, G W M**S** Hartsholme, C P A**AGROTIS PRÆCOX** *L*

Scarce, but occasional on the coast

N Ashby (Brigg) District, R T C. Clee, F M B. Cleethorpes, 23-8-1879, H. A. Auld; August, E H F. Between Frodingham and Appleby, 28-7-1901, H. H. Corbett (Nat. Sept. 1901). Humberstone foreshore, one at light in tent, 18-8-1908, F W S**S** Wyberton, one at light, 6-10-1894, J C L-C

AGROTIS OBSCURA *Brahm*

Frequent in some parts of the County.

- N** Brocklesby District, E A C. Gainsborough, 1860, F M B
Grimsby District, R C. Market Rasen, 7-1895, 1896, 1897,
W L; R T C. Panton, not rare, G H R. Skegness.
Wickenby, C P A. Wragby, G H R
- S** Allington, P. Wynne. Cowbit, Chas. M. Hufton. Haver-
holme Priory, very common in 1905, J D C

NOCTUA GLAREOSA *Esp*

Rare

- N** Ashby (Brigg) District, R T C. Market Rasen, 1877-79,
F A L; one in 1907, S B S

NOCTUA AUGUR *Fb*

Common

- N** Lincoln, 1852, F M B. Divs. 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
- S** Cowbit, Chas M. Hufton. Divs. 13, 14, 15, 17, 18

NOCTUA PLECTA *L*

Very common

- N** Gainsborough, 1860, F M B. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
- S** Cowbit, Chas. M. Hufton. Divs. 13, 14, 15, 17, 18

NOCTUA C-NIGRUM *L*

Common

- N** Swinhope, 1856, R P A. Divs. 2, 3, 4, 5, 6, 7, 8, 9, 11
- S** Wyberton, J C L-C. Divs. 13, 14, 15, 17

NOCTUA TRIANGULUM *Hufn*

Scarce

- N** Ashby (Brigg) District, R T C. Gainsborough, 1860, F M B.
Hatton, once, G H R. Louth, V. Crow. Saxby (Barton),
1892, one only, C. D. Ash.
- S** Allington, P. Wynne. Haverholme Priory, very common,
J D C. Wyberton, a few at light, J C L-C.

NOCTUA BRUNNEA *Fb*

Frequent

- N** Ashby (Brigg) District, R T C. Binbrook, fairly common in
1908, S B S. Croxby, one 16-7-1908, F W S. Gainsborough,
1860, F M B. Goxhill, one 27-7-1907; Legsby Wood, at
sugar, 22-7-1908, G W M. Louth, H. W. Kew (Naturalists'
World 1886, p. 221). Market Rasen, a few each year, W L.
Newball, G H R. Wrawby Moor, at sugar, 21-7-1908, G W M
- S** Haverholme Priory, fairly common, J D C. Skellingthorpe,
7-7-1900, J F M.; C P A. Wyberton, rare, J C L-C

NOCTUA FESTIVA *Hb*

Common

- N** Gainsborough, 1860, F M B. Divs. 2, 3, 4, 5, 7, 8, 9, 11

S Skellingthorpe, J F M. Divs. 13, 14, 15

— var. **conflua** Tr

N Gainsborough, F M B. Saxby (Barton), 1892, "a very small form somewhat resembling **N. conflua**," C. D. Ash. Wrawby Moor, one at sugar, 21-7-1908, G W M

NOCTUA DAHLII Hb

Scarce

N Ashby (Brigg) District, R T C. Wrawby Moor, three at heather bloom, 24-8-1908, G W M

S Holbeach District, common, L M C. Skellingthorpe, C P A

NOCTUA RUBI View

Frequent

N Ashby (Brigg) District, R T C. Barton-on-Humber, 15 and 17-8-1905, G W M. Binbrook, one or two each year, S B S. Gainsborough, 1860, F M B. Mablethorpe, G H R. Market Rasen, 1893 and 1895, W L. Skegness, 16-7-1879, G T P. Theddlethorpe, 1904, A. E. Gibbs, (Ent. 1905, p. 81). Wrawby Moor, at heather bloom, 24-8-1908, G W M

S Haverholme Priory, very common, J D C. Skellingthorpe, 20-7-1900, J F M. Wyberton, one at light, 8-1896, J C L-C

NOCTUA UMBROSA Hb

Common

N Gainsborough, 1860, F M B. Divs. 2, 3, 5, 6, 7, 8, 11

S Wyberton, one at light, 1896, J C L-C. Divs. 13, 14, 15, 17

NOCTUA BAJA Fb

Frequent

N Ashby (Brigg) District, R T C. Gainsborough, F M B. Louth, V. Crow. Market Rasen, common, W L. Newball and Panton, G H R. Saxby (Barton), C. D. Ash. Skegness, 9-1895, A. H. Waters, (Naturalist's Chronicle, 1895, p. 128). Wrawby Moor, common, G W M

S Haverholme Priory, fairly common, J D C. Lincoln Fen, 20-7-1903; Skellingthorpe, 10-7-1900; J F M. Lincoln, C P A. Wyberton, a few at light, J C L-C

NOCTUA XANTHOGRAPHA Fb

Abundant.

N Gainsborough, F M B. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12

S Lincoln Fen, J F M. Divs. 13, 14, 15, 17

TRIPHÆNA IANTHINA Esp

Fairly common

N Lincoln, 1852, F M B. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 10, 11

S ||Cowbit, Chas. M. Hufton, Divs. 13, 14, 15, 17, 18

TRIPHÆNA FIMBRIA L

Well distributed

- N** Ashby (Brigg) District, R T C. Barton-on-Humber, one example, F P H B. Binbrook, one in 1907, S B S. Grimsby, Dr. Westlake. Legbourne Wood, V. Crow. Lincoln, 8 examples, 28-7-1852, F M B. Market Rasen, a few most years, W L. Newball; Panton; Sothy; G H R Owston Ferry District, A R. ||Skegness. Wrawby Moor, one 7-8-1905 and one 8-8-1908, G W M
- S** ||Cowbit, Chas. M. Hufton. Hartsholme, 14-8-1903, J F M. Haverholme Priory, very common, J D C. Holbeach, District, common, L M C. Lincoln Fen, 14-8-1901; Skellingthorpe, 24-7-1901; J F M; C P A

TRIPHÆNA INTERJECTA Hb

Scarce.

- N** Barton-on-Humber, one bred in 1901, G W M. Binbrook, three in 1905, S B S. Gainsborough, 1861; Lincoln, 1852; F M B. Market Rasen, four in 1892 and 1894, W L. Theddlethorpe, 1904, A. E. Gibbs, (Ent. 1905, p. 81)
- S** Hartsholme, rare, W D C. Haverholme Priory, not common J D C. Wyberton, one example some time ago, J C L-C

TRIPHÆNA COMES Hb

Common

- N** Lincoln, 1852, F M B. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
- S** Wyberton, J C L-C. Divs. 13, 14, 15, 17

TRIPHÆNA PRONUBA L

Abundant

- N** Lincoln, 1852, F M B. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
- S** Wyberton, J C L-C. Divs. 13, 14, 15, 17, 18

AMPHIPYRA PYRAMIDEA L

Uncommon

- N** Binbrook, one in 1906, S B S. Linwood, one larva, 8-6-1908, F P H B; two imagines in 1908, S B S. Newball, one bred, 7-1896, from a larva beaten a month previously from blackthorn, G H R. Pelham's Pillar Wood, larvæ frequent, J P. and G W M
- S** Allington, imago, P. Wynne. ||Cowbit, Chas. M. Hufton. Hartsholme and Skellingthorpe, W D C. Haverholme Priory, fairly common, J D C. Skellingthorpe, 15-8-1899, J F M.; R T C.; C P A

AMPHIPYRA TRAGOPOGONIS L

Common

- N** Gainsborough, 1860, F M B. Divs. 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
- S** Wyberton, common at sugar, J C L-C. Divs. 13, 14, 15, 17

MANIA TYPICA L

Common

- N** Lincoln, 1852, F M B. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
- S** Lincoln, F M B. Divs. 13, 14, 15, 17, 18

MANIA MAURA *L*

Frequent

- N** Ashby (Brigg) District, R T C. Barton-on-Humber, two at sugar, 2-8-1905, G W M. Cleethorpes, one at sugar in garden, 25-7-1908, F W S. Gainsborough, 1860, F M B. Grimsby District, E H F. and R C. Hubbard's Valley, fairly plentiful in 1905, C S C. and V. Crow. Lincoln, 1852, F M B.; J F M. Louth, H W K. (Nat. World, 1886, p. 41). Market Rasen, one or two most years, W L.; 1876-80. F A L. Panton, scarce, G H R. West Ashby, 1903, F S A
- S** Allington, P. Wynne. Brant Broughton, caught by a friend, S B S. ||Cowbit, Chas. M. Hufon. Haverholme Priory, very common, J D C. Holbeach District, common, L M C. Lincoln Fen, 13-8-1901 and 6-8-1903, J F M. Lincoln, C P A,

PANOLIS PINIPERDA *Panz*

Frequent

- N** Ashby (Brigg) District, R T C. Binbrook, one in 1906, S B S. Gainsborough, 1860; Lincoln, 14-4-1852; F M B. Market Rasen, 1877-79, F A L.; a few each year, W L.; bred and taken at shallows, 1-4-1907, G W M. Scunthorpe, 7-1902, one larva, A T
- S** Boultham and Skellingthorpe, 1907, A S. and C P A. Hartsholme, 15-4-1898 and 15-4-1902, J F M.; C P A. Haverholme Priory, four examples, J D C

PACHNOBIA RUBRICOSA *Fb*

Frequent

- N** Alford District, Mother Wood (Aby), at shallows, 15-4-1891, E W. Ashby (Brigg) District, R T C. Binbrook, three in 1907, S B S. Elsham, one 20-4-1900 and one 18-4-1904, G W M. Market Rasen, common, W L. Panton, G H R. West Ashby, 1902, F S A
- S** Hartsholme, 24-4-1899, J F M.; C P A. Haverholme Priory, fairly common, J D C. Holbeach District, scarce, L M C. Skellingthorpe, 17-4-1901, J F M. Div. 17, two in April 1896, J C L-C

TÆNIOCAMPA GOTHICA *L*

Common

- N** Gainsborough, F M B. Divs. 2, 3, 5, 7, 8, 10, 11
- S** Wyberton, J C L-C. Divs. 13, 14, 15, 17, 18

TÆNIOCAMPA INCERTA *Hufn*

Common

- N** Lincoln, 1852, F M B. Divs. 2, 3, 5, 6, 7, 8, 10
- S** Wyberton, J C L-C. Divs. 13, 14, 15, 17

TÆNIOCAMPA POPULETI *Fb*

Scarce

- N** Appleby (Big Wood), larvæ, 4-6-1881, Mrs. Cross. Ashby (Brigg) District, R T C. Lincoln, C P A. Market Rasen, 1877-79, F A L.; a few most years, W L. Panton, rare, G H R

- S** Haverholme Priory, fairly common, J D C. Skellingthorpe, 21-3-1903, J F M.; C P A

TÆNIOCAMPA STABILIS *View*

Common

- N** Gainsborough, caught, F M B. Divs. 2, 3, 5, 6, 7, 8, 10, 11
S Wyberton, J C L-C. Divs. 13, 14, 17, 18

TÆNIOCAMPA GRACILIS *Fb*

Frequent

- N** Alford District, not common, Mother Wood at sallows, 2-5-1892, E W. Ashby (Brigg) District, R T C. Elsham, one example, 20-4-1900, G W M. Gainsborough District, F M B. Great Carlton, 1880, C. D. Ash. Lincoln, C P A. Linwood, one in 1907, S B S. Market Rasen, 1877-79, F A L.; a few each year, W L. Panton, G H R
S ||Cowbit, Chas. M. Hufton. Hartsholme, 16-4-1901, J F M. Haverholme Priory, not common, J D C. Div. 17, one in 1893, J C L-C. Lincoln, C P A

TÆNIOCAMPA MINIOSA *Fb*

Scarce

- N** Alford District, not common, 15-4-1891 and 2-5-1892, E W
S Hartsholme Wood, a few in April 1896, W L. Skellingthorpe, 8-4-1900, J F M.; bred, 3-1901, Rev. W. Beecher; C P A

TÆNIOCAMPA MUNDA *Esp*

Not common

- N** Appleby (Big Wood), larvæ, 4-6-1881, Mrs. Cross. Ashby (Brigg) District, R T C. Barton-on-Humber, one 24-3-1908, F P H B. Gainsborough, 1861, F M B. Linwood, one in 1907, S B S. Louth, V. Crow. Panton, rare, G H R
S Boultham, at sallows, 4-4-1907, A S. and C P A. Skellingthorpe, 8-4-1900, J F M.; C P A

TÆNIOCAMPA PULVERULENTA *Esp*

Common

- N** Lincoln, 1852, F M B. Divs. 2, 3, 5, 6, 7, 8, 11
S ||Cowbit, Chas. M. Hufton. Divs. 13, 14, 18

ORTHOSIA SUSPECTA *Hb*

Very local

- N** Ashby (Brigg) District, R T C. Market Rasen, common some years, W L. Wrawby Moor, one worn specimen at heather bloom, 24-8-1908, G W M
S Skellingthorpe, 14-8-1903, J F M

ORTHOSIA UPSILON *Bork*

Local

- N** Alford, one 5-8-1890, and one 6-8-1891, E W. Ashby (Brigg) District, R T C. Gainsborough District, 1860, F M B. Great Carlton, 1880, C. D. Ash. Market Rasen, a few each year, W L. Panton, G H R

- S** Boultham, 8-7-1901, J F M. Haverholme Priory, fairly common, J D C. Lincoln, C P A. Stamford, one larva, 29-6-1905, L N U

ORTHOSIA LOTA *Clerck*

Frequent

- N** Ashby (Brigg) District, R T C. Barton-on-Humber, G W M. Gainsborough, F M B. Market Rasen, 1876-80, F A L.; a few each year, W L. Mablethorpe, larvæ on willow and willow; Newball, larvæ on willow; Panton; G H R
- S** Hartsholme, 1891 and 1892, W D C.; 20-9-1897, J F M.; C P A. Haverholme Priory, very common, J D C. Skellingthorpe, 29-9-1897 and 16-10-1905, J F M

ORTHOSIA MACILENTA *Hb*

Barrett says it is abundant in Lincolnshire, but I have records from few localities

- N** Ashby (Brigg) District, R T C. Market Rasen, a few each year, W L. Panton, scarce, G H R
- S** Hartsholme, W D C. Haverholme Priory, fairly common, J D C

ANCHOCELIS RUFINA *L*

Not common, except in one or two localities

- N** Ashby (Brigg) District, R T C. Gainsborough, F M B
- S** Hartsholme, 6-9-1898, J F M. Hartsholme and Skellingthorpe, W D C.; Skellingthorpe Wood, swarmed at sugar, 9-1893, J W C. Lincoln, C P A

ANCHOCELIS PISTACINA *Fb*

Common

- N** Swinhope, 1856, R P A. Divs. 2, 3, 4, 5, 6, 7, 8, 10
- S** Wyberton, J C L-C. Divs. 13, 14, 15, 17

ANCHOCELIS LUNOSA *Haw*

Frequent

- N** Ashby (Brigg) District, R T C. Barton-on-Humber, at sugar, 13-9-1904 and 12-9-1905, G W M. Gainsborough District, F M B. Grimsby District, R C. Wrawby Moor, one at sugar, 10-9-1905, G W M
- S** Bracebridge, 6-9-1902, J F M. Haverholme Priory, very common, J D C. Lincoln, 1901, J F M.; C P A. Wyberton, swarms at light, J C L-C

ANCHOCELIS LITURA *L*

Common

- N** Gainsborough, F M B. Divs. 2, 3, 5, 6, 7, 8
- S** Wyberton, J C L-C. Divs. 13, 14, 15, 17

CERASTIS VACCINII *L*

Common

- N** Gainsborough, F M B. Divs. 2, 3, 5, 6, 7, 11
- S** Hartsholme, 1891 and 1892, W D C. Divs. 13, 14, 15

CERASTIS SPADICEA *Hb*

Common

- N** Gainsborough, F M B. Divs. 2, 3, 5, 6, 7, 8, 10
S Hartsholme, W D C. Divs. 13, 14, 18

SCOPELOSOMA SATELLITIA *L*

Frequent

- N** Swinhope, 1856, R P A. Divs. 2, 3, 5, 6, 7, 8, 10
S Hartsholme, 1891 and 1892, W D C. Divs. 13, 14

XANTHIA CITRAGO *L*

Local

- N** Market Rasen District, 1876-80, F A L. Pelham's Pillar Woods, a few larvæ each year, J P. and G W M
S Haverholme Priory, not common, J D C. Lincoln, two in 1896, W L. Skellingthorpe, 10-9-1900, J F M.; W D C.; C P A

XANTHIA FULVAGO *Fb*

Common

- N** Market Rasen, 1877-79, F A L. Divs. 1, 2, 3, 6, 7
S Wyberton, one in 1893, J C L-C. Divs. 13, 14, 17

— var. *flavescens* *Esp*

- N** Panton, two examples, G H R. Lincoln, C P A
S Haverholme Priory, fairly common, J D C

XANTHIA FLAVAGO *Fb*

Common

- N** Market Rasen, 1877-79, F A L. Divs. 1, 3, 4, 6, 7, 10, 11
S Hartsholme, G H R. Divs. 13, 14

XANTHIA GILVAGO *Esp*

Frequent

- N** Appleby, larvæ from elms, 20-5-1882, Mrs. Cross. Ashby (Brigg) District R T C. Barton-on-Humber, one at light, 14-9-1898, and three at honey dew on plum trees, 9-1901, G W M. Binbrook, in fair numbers in 1906, one in 1908, S B S. Market Rasen, 1877-79, F A L.; a few most years, W L. Panton, G H R.
S Allington, P. Wynne. "Bourne in Lincolnshire," Stainton's Manual Vol. I., p. 253. Bracebridge, 6-9-1902, J F M. Haverholme Priory, very common, J D C. Lincoln, C P A. Wyberton, at sugar, J C L-C

XANTHIA CIRCELLARIS *Hufn.*

Common

- N** Gainsborough District, F M B. Divs. 2, 3, 5, 6, 7, 8, 10
S Wyberton, abundant, J C L-C. Divs. 13, 14, 15, 17

CIRRHEDIA XERAMPHELINA *Hb*

Frequent; probably common, now that the habits of the larvæ are more widely known

N Alford, one larva on ash trunk 18-5-1891; Ailby, one specimen at rest on ash trunk 29-8-1891; E W. Ashby (Brigg) District, R T C. Barton-on-Humber, larvæ scarce, G W M. Beelsby, one specimen at rest 1908, E H F. Binbrook, the larvæ seem fairly plentiful all over the Wolds for some miles in all directions, S B S. Brocklesby District, E A C. Elsham, a few larvæ 9-5-1908, G W M. Hainton; Panton; Sotby; G H R. Lincoln, C P A. Market Rasen, a few each year, W L.

S Allington, P. Wynne. Bracebridge, J F M. Grantham, four have occurred in 15 years, two of them 30-8-1875, I. Robinson. Haverholme Priory, not common, J D C. Lincoln, C P A. Wyberton, one at light, 9-1897, J C L-C

— var. **unicolor** Gn

N Barton-on-Humber, one bred, 24-8-1908, G W M. Market Rasen, one taken in a wood about 3 miles East of the town by W L., now in the collection of R T C. Sotby, two bred from dug pupæ, G H R

S Bracebridge, one 1901, J F M

TETHEA SUBTUSA Fb

Apparently scarce

N Aethorpe Wood, two larvæ on poplar, 1-6-1905, G W M. Binbrook, one in 1906, S B S. Gainsborough, F M B. Market Rasen District, an example, 1876-80, F A L.

S Skellingthorpe, 2-8-1900, J F M

TETHEA RETUSA L

Recorded from only one locality

S Skellingthorpe, 4-8-1901, J F M

COSMIA PALEACEA Esp

Local

N Ashby (Brigg) District, R T C. Near Brigg, one at sugar, 24-8-1908, F P H B. and G W M. Market Rasen District, W L. (Nat. 1898, p. 50)

S Lincoln District, 13-9-1900, J F M.; Henderson; W D C.; C P A.

CALYMNIA TRAPEZINA L

Common

N Lincoln, 1852, F M B. Divs. 2, 3, 4, 5, 6, 7, 8, 10, 11

S Wyberton, J C L-C. Divs. 13, 14, 15, 17

CALYMNIA DIFFINIS L

Scarce

N Lincoln, F M B. Market Rasen, two at light, 1895, W L

S Haverholme Priory, not common, J D C. Skellingthorpe, 10-9-1900, J F M.; C P A

CALYMNIA AFFINIS *L*

Scarce

- N** Lincoln, F M B. Market Rasen, W L. Panton, common and variable, G H R. ||Skegness
S Haverholme Priory, not common, J D C. Skellingthorpe, C P A. Wyberton, common at sugar, J C L-C

EREMOBIA OCHROLEUCA *Esp*

Rare ; I have no recent records

- N** Gainsborough, F M B. Middle Rasen, 15-9-1877 and 8-1878, F A L
S Lincoln, 1858, F M B

DIANTHÆCIA CAPSINCOLA *Hb*

Common in the larval state

- N** Gainsborough, F M B. Divs. 2, 3, 5, 6, 7, 11
S ||Cowbit, Chas. M. Hufton. Divs. 13, 14, 18

DIANTHÆCIA CUCUBALI *Fues*

Not common

- N** Binbrook, one in 1906, S B S. Gainsborough, 1861, F M B. Lincoln, C P A. Linwood, a few most years, W L. Mablethorpe, one at light ; Panton ; G H R
S Boultham, 13-6-1900 ; Skellingthorpe, 8-6-1901 ; J F M

DIANTHÆCIA CARPOPHAGA *Bork*

Rare

- N** Binbrook, one, 7-1906, S B S. Gainsborough, F M B

DIANTHÆCIA CAPSOPHILA *Dup*

Rare

- N** Greetwell, C P A
S Lincoln, rare, W D C

DIANTHÆCIA IRREGULARIS *Hufn*

- N** East Ferry, one specimen bred from larva taken on Viper's Bugloss about 1896, by A R., who kindly presented it to the County Museum at Lincoln.

HECATERA SERENA *Fb*

Occasional

- N** Ashby (Brigg) District, R T C. Binbrook, fairly common, S B S. Market Rasen, one, 2-7-1877, F A L. ; one in 1890, W L. ; one, 21-6-1903, G W M. Panton, larvæ in 1892, on flowers of *Sonchus*, G H R. West Ashby, 1903, F S A. Wrawby Moor, one 17-6-1905, G W M
S Hartsholme, 11-6-1901, J F M. ; C P A. Haverholme Priory, not common, J D C. Skellingthorpe, 6-1896, G. Henderson. Wyberton, rare, J C L-C

POLIA CHI *L*

Scarce

- N** East Ferry District, A R. Gainsborough, F M B. Risby Warren, one, 21-9-1907, G W M

S Sleaford, not common, J D C

POLIA FLAVICINCTA *Fb*

Common

N Gainsborough, 1860, F M B. Divs. 2, 3, 4, 5, 6, 7, 8, 10, 11

S Wyberton, J C L-C. Divs. 13, 14, 15, 17

EPUNDA LICHENEA *Hb*

Local

N Gainsborough, F M B. Greetwell, C P A. Mablethorpe and Theddlethorpe, larvæ on *Cynoglossum officinale*, G H R. and C. D. Ash.

APOROPHYLA LUTULENTA *Bork*

Local and scarce

N Ashby (Brigg) District, R T C. Market Rasen, 1877-79, F A L

S Lincoln Fen, 13-8-1901, J F M

APOROPHYLA NIGRA *Haw*

Local and scarce

S ||Cowbit, Chas. M. Hufton. Hartsholme, scarce, W D C

CLEOCERIS VIMINALIS *Fb*

Locally common

N Alford District, Greenfield Wood, one, 6-8-1891, E W. Barnetby, C P A. Broughton, larvæ abundant in 1895, A. E. Hall. Holton-le-Moor, larvæ common, 12-6-1908; Linwood, larvæ, 8-6-1908; F P H B. and G W M. Langworth, C P A. Louth, V. Crow. Legsby; Newball; Panton; G H R. Market Rasen, common, W L.; bred 1905, G W M

S Lincoln, C P A. Skellingthorpe, 9-7-1901 and 14-7-1902, J F M

MISELIA OXYACANTHÆ *L*

Common

N Swinhope, 1856, R P A. Divs. 2, 3, 4, 6, 7, 8, 10

S Wyberton, J C L-C. Divs. 13, 14, 15, 17

— var. *capucina* *Mill*

N Ashby (Brigg) District, R T C. Binbrook, occurs, S B S, Lincoln, C P A. Panton, almost as common as the type. G H R

S Hartsholme, 1904, J F M. Lincoln, C P A

AGRIOPIS APRILINA *L*

Frequent

N Alford District, one larva 7-6-1890, and another 8-6-1890, E W. Appleby (Big Wood), larvæ 4-6-1881, Mrs. Cross. Ashby (Brigg) District, R T C. Div. 2, 1895, A. E. Hall, Gainsborough, bred, F M B. Legsby and Linwood, larvæ, 12-6-1905, J P. and G W M. Legsby, common; Newball, abundant; Panton; G H R. Market Rasen, common, W L. Pelham's Pillar Wood, larvæ, J P. and J W B. Wrawby Moor, one larva, 2-6-1906, G W M

- S** Haverholme Priory, very common, J D C. Skellingthorpe; 14-9-1893, J F M.; C P A

EUPLEXIA LUCIPARA L

Common

- N** Gainsborough, 1860, F M B. Divs. 2, 3, 5, 6, 7, 8, 9, 10, 11
S ||Cowbit, Chas. M. Hufton. Divs. 13, 14, 15, 17, 18

PHLOGOPHORA METICULOSA L

Common

- N** Swinhope, 1856, R P A. Divs. 2, 3, 4, 5, 6, 7, 8, 9, 10
S Wyberton, rare, J C L-C. Divs. 13, 14, 15, 17, 18

APLECTA PRASINA Fb

Scarce

- N** Alford District, four examples, 24-6-1891, E W. Near Binbrook, one in 1907, S B S. Gainsborough, F M B. Market Rasen, W L
S Haverholme Priory, fairly common, J D C. Lincoln District, 1881, Canon Fowler. Skellingthorpe, 9-7-1895, J F M.; C P A

APLECTA OCCULTA L

Rare

- N** Barton-on-Humber, one on a dry sugar patch, 23-8-1898, G W M. Lincoln, 1857, F M B. Market Rasen, 1896 and 15-8-1897, W L.; R T C. Skegness, 16-7-1879, G T P.
S ||Cowbit, Chas. M. Hufton

APLECTA NEBULOSA Hufn

Frequent

- N** Alford District, Mother Wood (Aby), one 24-6-1891 and 10-7-1891; Haugh Holt, two 24-6-1891; Greenfield Wood, one 24-6-1891; E W. Ashby (Brigg) District, R T C. Gainsborough, 1860, F M B. Limber, one 20-7-1907, G W M. Lincoln, C P A. Legsby; Panton; G H R. Market Rasen, common, W L. Pelham's Pillar Wood, three on tree trunks 11-7-1900; Wrawby Moor, two at sugar, 21-7-1908, G W M
S Lincoln, C P A. Skellingthorpe, 9-7-1898, J F M

APLECTA TINCTA Brahm

- N** Lincoln, 1840-50, F M B
S Skellingthorpe, one, C P A

APLECTA ADVENA Fb

Frequent

- N** Gainsborough, 1860; Lincoln; F M B. Linwood, 1857, R P A. Mablethorpe, G H R. Market Rasen, 1877-79, F A L.; 8-1896 and 8-1898, W L. Panton, fairly common, G H R. Theddlethorpe, 1904, A. E. Gibbs (Ent. 1905, p. 81)
S Allington, P. Wynne. Haverholme Priory, fairly common, J D C. Lincoln, C P A. Skellingthorpe, 13-7-1900, J F M

HADENA PORPHYREA *Esp*

Mr. Richard South in "The Moths of the British Isles" says, "It is very similar to some of the darker forms of *adusta*, specimens of which have often been mistaken for examples of the present species and recorded as such." I have no means now of testing the validity of this record, but I understand that Mr. Tearle was an ardent collector

N Gainsborough, 1859, E. Tearle.

HADENA ADUSTA *Esp*

Not common

N Alford District, Mother Wood (Aby), a few 22-6-1891, E W. Ashby (Brigg) District, R T C. Near Binbrook, S B S. Market Rasen, a few most years, W L. Panton, not uncommon, G H R

S Allington, P. Wynne. Boultham, 8-6-1900, J F M. Haverholme Priory, not common, J D C. Lincoln, C P A

HADENA PROTEA *Bork*

Frequent

N Alford District, Ailby, one larva on oak, 1-6-1891, E W. Binbrook, a few most years, S B S. Brocklesby District, E A C. Gainsborough, F M B. Lincoln, C P A. Market Rasen, common, W L. Panton, very common, G H R. Saxby (Barton), rare, C. D. Ash. Wrawby Moor, one on tree trunk, 21-9-1908 and another 6-10-1908, F P H B

S Haverholme Priory, very common, J D C. Lincoln, C P A. Skellingthorpe, 10-9-1898 and 24-9-1901, J F M

HADENA GLAUCA *Hb*

N || Taken near Skegness in 1858 by Mr. G. Gascoyne of Newark

HADENA DENTINA *Esp*

Frequent

N Alford District: Alford, one 27-6-1890; Mother Wood, one 24-6-1891; E W. Ashby (Brigg) District, R T C. Binbrook, a few, S B S. Burton Chateau (Gate Burton), 7-6-1901, A T. Cleethorpes, one at sugar in garden, 14-7-1908, F W S. Gainsborough, 1860, F M B. Lincoln, C P A. Linwood, one 8-6-1908, F P H B. Market Rasen, 1877-79, F A L.; common, W L. Panton, G H R. Pelham's Pillar Wood, one 8-6-1901, G W M

S Allington, P. Wynne. Hartsholme, 11-6-1901, J F M. Haverholme Priory, very common, J D C. Lincoln, C P A

HADENA TRIFOLII *Rott*

Rare

N Cleethorpes, several at sugar in garden 1908, F W S. Gainsborough, 1860, F M B

S Skellingthorpe, 15-6-1901, J F M

HADENA DISSIMILIS *Knoch*

Local

- N** Ashby (Brigg) District, R T C. Barton-on-Humber, at sugar, 20-6-1905, 21-6-1905, 27-6-1905, 10-7-1905, G W M. Binbrook, one in 1906, S B S. Theddlethorpe, bred, 6-1907 from ova found in abundance in June 1906, G W M
S Boultham, 10-6-1899, J F M. ||Cowbit, Chas. M. Hufton. Hykeham, 16-6-1905, J F M. Lincoln, C P A

HADENA OLERACEA *L*

Abundant

- N** Lincoln, 1852, F M B. Divs. 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
S Lincoln, F M B. Divs. 13, 14, 15, 17

HADENA PISI *L*

Common

- N** Lincoln 1852, F M B. Divs. 1, 2, 3, 5, 6, 7, 9, 10
S Wyberton J C L-C. Divs. 13, 14, 17

HADENA THALASSINA *Rott*

Common

- N** Lincoln, 1852, F M B. Divs. 2, 3, 4, 5, 6, 7, 8, 11
S ||Cowbit, Chas. M. Hufton. Divs. 13, 14, 15, 17, 18

HADENA GENISTÆ *Bork*

Rare

- S** Allington, one on a piece of wood in the day time, 13-6-1906, P. Wynne. Haverholme Priory, on palings, not common, J D C

XYLOCAMPA AREOLA *Esp*

Not common

- N** Ashby (Brigg) District, R T C. Gainsborough, 1860, F M B. Horkstow 1892, C. D. Ash. Legsby, G H R. Lincoln, 1852, F M B. Market Rasen, a few each year, W L.; at rest and at tallows, 1-4-1907, F P H B. and G W M
S Hartsholme, 27-4-1900, J F M.; C P A. Haverholme Priory, not common, J D C. Wyberton, rare, J C L-C

CALOCAMPA VETUSTA *Hb*

Rare

- N** Market Rasen, one in 1892, W L
S Hartsholme Wood, W D C. (E M M., 1892 p. 133); 9-10-1891, J F M.; C P A. Haverholme Priory, not common, J D C

CALOCAMPA EXOLETA *L*

Common

- N** Swinhope, 1856, R P A. Divs. 2, 3, 4, 5, 7, 8, 10, 11
S Hartsholme Wood, 8-10-1891, J F M. Divs. 13, 14, 18

XYLINA ORNITHOPUS *Rott*

Rare

- N** Horkstow, 1892, C. D. Ash. Tealby, 1877-79. F A L

ASTEROSCOPIUS SPHINX *Hufn*

Local

- N** Binbrook, one 11-1908, S B S. Gainsborough District, F M B. Market Rasen, at light, W L. Newball, one larva. G H R. Pelham's Pillar Wood, a few larvæ most years, J P and G W M
- S** Haverholme Priory, "in 1902, I took 15 males at light in five minutes," J D C. Holbeach District, common, L M C. Skellingthorpe, 6-11-1902, J F M.; C P A.

CUCULLIA VERBASCI *L*

Larvæ often common, but local

- N** Alford, four larvæ on Mullein, 30-7-1891, E W. Barton-on-Humber, larvæ fairly common on Water Figwort, G W M. Gainsborough, "the larvæ in great numbers during the last three seasons in the garden feeding on various Mulleins," 1901, F M B. Grimsby, bred 23-5-1903, W W. Lincoln, F M B. Market Rasen, 1877-79, F A L.; R T C. Panton, G H R. Scampton (Lincoln), larvæ in numbers on Mullein in 1905, J F M.; C P A. Theddlethorpe, larvæ, 29-6-1906, G W M
- S** Haverholme Priory, very common, J D C. Lincoln, a few larvæ in 1896, W L

CUCULLIA ASTERIS *Schiff*

- N** Gainsborough; Mr. F. M. Burton records having bred a single specimen from a larva found at the same time with larvæ of *verbasci*. This is the larva referred to in the Naturalist for 1901, p. 336
- S** Wyberton, two several years ago, J C L-C., (Nat. 1897, p. 365).

CUCULLIA CHAMOMILLÆ *Schiff*

Very rare

- S** Holbeach District, scarce, L M C. Skellingthorpe, C P A. Wyberton, one on palings, 4-1897, J C L-C

CUCULLIA UMBRATICA *L*

Common

- N** Gainsborough, F M B. Divs. 1, 2, 3, 5, 6, 7, 8, 10
- S** Wyberton, fairly common, J C L-C. Divs. 13, 14, 15, 17, 18

GONOPTERA LIBATRIX *L*

Common. The Rev. A. Thornley contributes the following interesting note on this common moth. "A larva was taken by Dr. Eland Shaw at Burton Chateau, which was not like typical *libatrix*, having a very large black blotch on the second segment. It was taken 22-6-1901; it pupated 24-6-1901, and emerged in the imago state (though crippled), 8-7-1901, having been in a box in my study this time. It is the most rapid emergence that I have met with"

- N** Gainsborough, 1860, F M B. Divs. 2, 3, 4, 5, 6, 7, 8, 10, 12
- S** Wyberton, common at sugar, J C L-C. Divs. 13, 14, 15, 17, 18

HABROSTOLA TRIPARTITA *Hufn*

Rather uncommon

N Ashby (Brigg) District. R T C. Lincoln, 1852, F M B. Market Rasen, 1877-79, F A L. Saxby (Barton), abundant at flowers of rocket, C. D. Ash

S Allington, P. Wynne. Haverholme Priory, fairly common, J D C

HABROSTOLA TRIPLASIA *L*

Fairly common

N Gainsborough, F M B. Divs. 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

S Wyberton, occurs, J C L-C. Divs. 13, 14, 15, 17

PLUSIA CHRYSITIS *L*

Common; Mr. H. M. Brice Smith reports that he has a very dark variety somewhat larger than the ordinary type with deep gold colouring taken at Hameringham in 1905

N Gainsborough, F M B. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

S Wyberton, J C L-C. Divs. 13, 14, 15, 17, 18

PLUSIA BRACTEA *Fb*

I have only one record; I have seen Mr. Reynold's specimen

N Owston Ferry, one specimen taken in garden, A R

PLUSIA FESTUCÆ *L*

Scarce

N Croxby, one, 10-7-1908, F W S. Lincoln, C P A. Linwood, 1877-79, F A L. Market Rasen, a few in 1893 and 1895, W L. Marton, 1901, Philip Burton. Skegness, W D C.; 9-1895, A. H. Waters, (Naturalist's Chronicle 1895, p. 128). Theddlethorpe, 1904, A. E. Gibbs (Ent. Vol. 38, p. 81)

S ||Cowbit, Chas. M. Hufton. Lincoln Fen, 12-8-1893, J F M

PLUSIA IOTA *L*

Common

N Lincoln, 1852, F M B. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

S ||Cowbit, Chas. M. Hufton. Divs. 13, 14, 15, 17, 18

PLUSIA PULCHRINA *Haw*

Common

N Market Rasen District, 1876-80, F A L. Divs. 1, 2, 3, 4, 7, 8, 10, 11

S Wyberton, abundant, J C L-C. Divs. 13, 14, 17, 18

PLUSIA GAMMA *L*

Abundant

N Gainsborough, F M B. Divs. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

S Wyberton, J C L-C. Divs. 13, 14, 15, 16, 17, 18

PLUSIA INTERROGATIONIS *L*

†"It is found occasionally on hills in Lincolnshire."

N Near Louth, one example, V. Crow

S Grantham, 23-7-1873, Isaac Robinson

ANARTA MYRTILLI *L*

Frequent on heaths

- N** Appleby, 18-6-1878, Miss E. Cross. Ashby (Brigg) District, R T C. Epworth and Haxey, 14-7-1898, A T. Legsby, 1896, G H R. Linwood, 1877-79, F A L.; several 1908, S B S. Market Rasen, common, W L.; one larva, 15-8-1908, G W M. Scotton Common, F M B, F S A. and G W M. Woodhall Spa, 1903, F S A
- S** Hartsholme, 5-6-1897, J F M. Holbeach District, common, L M C. Lincoln, C P A

HELIACA TENEBRATA *Scop*

Frequent

- N** Alford District (Ailby), one 5-6-1889, E W. Ashby (Brigg), R T C. Binbrook, 1906 and 1907, S B S. Gainsborough, 1860, F M B. Langworth, 22-5-1893, J W C. Lincoln, C P A. Linwood, 1877-79, F A L.; 1907, S B S. Little Coates, E H F. Legsby; Linwood; Newball; Panton; G H R. Newball, common, Carr. Market Rasen, common, W L. Owston Ferry District, A R. Pelham's Pillar, roadside near wood, J W B. Saxilby, 21-5-1893, J W C. Scotton Common, F M B. Blow Wells, Barton-on-Humber, 1897, T. Sheppard
- S** Allington, P. Wynne. Hartsholme, several, G. Henderson. Haverholme Priory, fairly common, J D C. Lincoln, South Park, 5-1892, J F M. Skellingthorpe Woods, common, Carr

HELIOTHIS DIPSACEA *L*

Rare

- N** Manton Common, Dr. George. Woodhall Spa, "saw a pair taken by J C L-C., 8-1901," A T., (Nat. 1901 p. 365)
- S** Nocton, in a clover field, 1893, E. Porter

CHARICLEA UMBRA *Hufn*

Rare

- N** Barton-on-Humber, one at sugar with a crippled hind wing, 21-6-1905, G W M. Market Rasen, 1877-79, F A L. Panton, one at sugar, G H R

ERASTRIA FASCIANA *L*

Local

- N** Gainsborough, 1860, F M B. Legsby and Linwood, a few each year, G W M. Legsby, not rare; Newball, one; G H R. Newball, two 11-6-1908, Rev. F. L. Blathwayt and J D C. Market Rasen District, W L. Tothill, common, C. D. Ash
- S** Skellingthorpe, 10-6-1900, J F M.; R T C.; 27-5-1900, J W C.; C P A

HYDRELIA UNCULA *Clerck*

Very local

- N** Market Rasen, 1876-80, F A L. Scunthorpe, 11-7-1902, L N U

PHYTOMETRA VIRIDARIA *Clerck*

Local

N Gainsborough, 1860, F M B. Linwood, 1-6-1903, G W M. Market Rasen District, W L. Pelham's Pillar Wood, J W B. and J P

S Skellingthorpe Wood, R T C.; C P A

EUCLIDIA MI *Clerck*

Common

N Gainsborough, F M B. Divs. 2, 3, 4, 5, 6, 7, 8, 9, 11

S Hartsholme, 6-6-1895, J F M. Divs. 13, 14, 15, 18

EUCLIDIA GLYPHICA *L*

Not common

N Alford District: Ailby, 3 examples, 23-5-1890, 4 examples, 25-5-1890; Mother Wood (Aby), two examples, 2-6-1890; E W. Gainsborough, F M B. Lincoln, C P A. Louth, H W K. (The Naturalist's World 1885, pp. 24, 25). Market Rasen, a few in 1896, W L. Maltby and Burwell Woods, V. Crow, Newball, rare, G H R.; 6-6-1900, J F M. Pelham's Pillar Woods, J W B. and J. P. Saxilby, 21-5-1893, J W C

S Lincoln, C P A. Skellingthorpe Wood, R T C

CATOCALA FRAXINI *L*

N Hogsthorpe, 9-1875, R. Garfit (Nat. 1887, p. 69, and Nat. 1890, p. 150).

S || Bourn, one specimen. †Bourn, 1872, (possibly the same record)

CATOCALA NUPTA *L*

Local

N Tattershall, one in 1904, J C L-C

S Haverholme Priory, common in 1901, and very common most seasons at sugar, J D C. Holbeach District, common, L M C.

AVENTIA FLEXULA *Schiff*

S Haverholme Priory, a few specimens are taken in a mixed plantation on the wing, the first taken in 1901, J D C

TOXOCAMPA PASTINUM *Tr*

Local

N Alford District: Well Vale, one 14-6-1889, E W. Pelham's Pillar Wood, a few each year, G W M

RIVULA SERICEALIS *Scop*

Rare

S Haverholme Priory, four on the wing in garden, J D C. Lincoln, 1901, Rev. W. Beecher

ZANCLOGNATHA GRISEALIS *Hb*

Frequent and generally common

N Gainsborough, F M B. Divs. 2, 3, 4, 5, 7, 8, 11

S Lincoln, J F M. Divs. 13, 14, 15

ZANCLOGNATHA TARSIPENNALIS *Tr*

Frequent

- N** Ashby (Brigg) District, R T C. Barton-on-Humber, 28-6-1900
G W M. Gainsborough, F M B. Louth, V Crow. Panton,
G H R
- S** Haverholme Priory, very common, J D C. Skegness, 1902,
F S A. Skellingthorpe, 17-5-1901, J F M

HERMINIA CRIBRALIS *Hb*

- N** Skegness, 16-7-1879, G T P

PECHYPOGON BARBALIS *Clerck*

Local

- N** Linwood, fairly common each season, G W M. Louth, V.
Crow. Legsby and Newball, G H R
- S** Allington, P. Wynne. Haverholme Priory, not common, J D C.
Lincoln District, J F M. Skellingthorpe Wood, R T C

HYPENA ROSTRALIS *L*

Local

- N** West Ashby, 1901, F S A
- S** Allington, one 31-3-1904, disturbed when pruning a plum tree,
P. Wynne. Haverholme Priory, very common, J D C

HYPENA PROBOSCIDALIS *L*

Abundant

- N** Gainsborough, F M B. Divs. 2, 3, 4, 5, 6, 7, 8, 10, 11
- S** Haverholme Priory, J D C. Divs. 14, 15

BREPHOS PARTHENIAS *L*

Locally common

- N** Ashby (Brigg) District, R T C. Broughton, C. D. Ash.
Laughton Wood, 1861, Thomas Fyles. Linwood, one in
1907, S B S. Market Rasen District, 1876-80, F A L.;
common 1895-96, W L.; common 1-4-1907, F P H B. and
G W M. Newball, G H R. West Ashby, 1907, F S A
- S** Hartsholme, 16-3-1897, J F M. Skellingthorpe, C P A

BREPHOS NOTHA *Hb*

- N** Market Rasen, a few larvæ, 1895, W L

ADDENDUM.**ARSILONCHE ALBOVENOSA**, *Göze*

- N** Lincoln, 1840-50, F M B

ADDRESS TO THE LINCOLNSHIRE NATURALISTS' UNION.

GRIMSBY, 1894.

By F. M. BURTON, F.L.S., F.G.S.,

PRESIDENT, (1895-6).*

How the Land between Gainsborough and Lincoln was formed.

In addressing you on a geological subject, as I am about to do, I do not forget that this is a Society of Naturalists; and as Geology, to those who have not studied it, may perhaps have an uninviting aspect, I intend to avoid technical details as far as possible, endeavouring at the same time to show that, in point of interest, Geology comes quite up to that of any other branch of natural science, and perhaps I may say, exceeds most of them.

Geologists divide the Earth's strata, for convenience, into 3 great divisions,—Primary, Secondary, and Tertiary,—and as, in Lincolnshire, we have representatives of the entire Secondary series, from the strata above the Trias on the west to the chalk on the east, this fact alone must give to the Geology of the County a special interest and value. I am not, however, going to speak

*This address was originally issued to members in "Transactions" 1895. That issue being made up of reprints, etc., led to erratic numbering. The section on which this address was printed, was not numbered at all. To secure the above paper it was decided by the members at the Annual Meeting, 1907, to publish it in our present "Transactions," being of special interest to the County.

of so wide an area now, but intend to confine my address to the low flat land between Gainsborough and Lincoln—a distance of some 15 miles,—alluding to the adjoining strata, only as they are necessary to explain the structure and present configuration of the district.

Now, as we stand on the high ground above Gainsborough and look over the Trent, we are on the oldest strata in the County,—the Upper Keuper beds as they are called,—at the top of the Trias or New Red Sandstone, the highest beds in the great Primary Division; and if we could be carried back to the time when these beds were laid down, we should see, instead of the present country, a vast lake, or inland sea, surrounded on all sides by land, which extended far out into the Atlantic on the west, and was connected with Europe on the south, and with Scandinavia, over what is now the North Sea or German Ocean, on the east.

This region had, for a very long period, been in a quiet, tranquil state; a great contrast to the stormy Permian age which preceded it, when the Alleghany mountains of America and the Pennine Chain of Derbyshire, the back bone of England, were thrown up.

This vast inland sea was a fresh water lake, which gradually became salt by the concentration of its waters,—like the salt lakes of North America,—and in which sand stones, grey and red marls, salt and gypsum were deposited.

It is to this inland sea, barren as it was, that we owe the rock salt and brine springs of Worcestershire, Cheshire, and Middlesborough. While, from its deposits of gypsum, or hydrated sulphate of lime, we get ornamental alabaster, and plaster of Paris from which Parian and other cements are made.

In the Railway cutting, leading to Lincoln, bands of blue, red, and grey Keuper marls are seen, each resting on the other. They are the slow and quiet products of this great inland lake, and have no traces of life left in them. Suddenly, however, a wonderful change takes place; for, resting on the uppermost

Keuper deposit, and at the same angle with it, appears a broad black band of rock, utterly different from the bed on which it lies.

The Keuper marls are, as I have said, devoid of fossil remains, but this new deposit abounds, nay literally swarms, with them; while, instead of marly deposits, the new strata consist of fissile slaty shales, full of iron pyrites the token of exuberant life, and narrow bands of sand stone glittering with mica; and, what adds to the wonder is, that, towards the base of this deposit, there lies a thin band of rock, not more than an inch in thickness, composed entirely of fish remains, bones, scales, teeth, and coprolites, pressed down into a hard solid mass; while a similar bed, scarcely as thick, occurs a little higher up. And how can all this have come about?

To understand it we must know something of the world we live on.

Originally a vast nebulous mass, which gradually condensed, it is now (as generally accepted), a thin crust, some 25 miles thick at the most, resting on a molten fluid substratum, under which (as some think), lies a solid rigid core. Now a thin crust over a fluid cannot be stable, and the surface therefore of our globe is for ever changing, rising here and sinking there; rising in parts where denudation makes it thinner, and sinking in regions where, through volcanic action, or the pouring on of the débris of large rivers, and other similar causes, matter is being piled up and the strata thickened.

And, in the region we are considering, action of this latter kind had taken place. The older strata had begun to sink, and, by degrees, the waters of a great ocean, coming up from the south over France, were let in upon them. The inland lake became an arm of the Liassic sea, and the Rhœtic beds were formed.

It must not be supposed, however, that all this took place suddenly. It was the result of no convulsion of nature, no rending of the rocks and inrush of the sea, but it came about quietly and imperceptibly, occupying as much time, probably, as would be necessary for so great a change in our own days. First, as the

land continued to sink, would come the want of drainage, then the morass, then the tidal wash, and, last of all, the full open sea. It was the work of ages.

The Rhœtic beds,—which owe their name to the Alps of Lombardy (the ancient Rhœtia), the Grisons, and the Tyrol, where they attain a considerable thickness,—had not been found further to the north in England, in 1866, than at Coptheath near Birmingham, and at Abbots Bromley in Staffordshire; when, in that year, as the gradients of the line between Gainsborough and Lincoln were lowered, I had the satisfaction of meeting with them. Since that time they have been discovered, in a nearly continuous line, across England from north to south, wherever the junction of the Trias and Lias is exposed.

Some geologists place these beds at the top of the Trias, others at the base of the Lias, or Jurassic system. This, however, is a matter of small importance. They are the passage beds from one great system to another, from the deposits of the upper Keuper lake to those of the great Liassic sea; beds which go far to unlock the hidden story of the land we are considering.

About the origin of the bone beds referred to much speculation has taken place.

Mr. Jukes Browne, in his work on “the Building of the British Isles,”—to which I am indebted for several of the facts stated in my paper,—speaks of the irruption of the sea water being prejudicial to the inhabitants of the Triassic lake, “so that most of them died, and their bones, scales and teeth were drifted into layers on the sea floor;” but this I think could hardly have been the case, as, apparently, the concentrated saltness of the lake had, to a great extent, prevented the possibility of life,—no trace of it, except in a few localities, being met with throughout the system,—and this view Mr. Jukes Browne himself bears out, when, in another part of his work, speaking of the Triassic lake, he says, “the sheet of water being apparently as salt, as clear, and heavy and as nearly lifeless as the modern waters of the Dead Sea, or of the great salt lake of Utah.” May not these beds be rather due to the fishes, which the Liassic sea brought in, being

killed by the salinity of the waters of the inland lake? or, perhaps, after life had developed through the change of water, the land temporarily rose again, or became stationary for a time, and, the salinity returning, the fishes, no longer able to sustain life, perished, and their remains sank, in a layer, on the sea floor.

There is another fact of interest connected with the Rhœtics, which must not be omitted before we leave them, and that is, that the earliest known British mammal, the *Microlestes*, a small insect eating animal, is found within its strata. The Rhœtic beds contain also remains of the huge Saurians which are so characteristic of the Lias and higher formations; and we are indebted to Mr. Montagu Browne, of the Leicester Museum, for an account of several new species, which he recorded at the recent meeting of the British Association at Oxford, as well as on two former occasions. Remains of Saurian life occur also in the Rhœtic strata at Lea, near Gainsborough.

AND now we pass on to the Lias, the lower beds of the Jurassic system, in which the ironstone bands of Frodingham and Appleby are found, and change to a deep sea; the remains of which, beginning a little way to the east of Gainsborough, extend right across to Lincoln, and form the material of the Cliff there, to within 20 feet of its summit.

This sea is one of great interest, it covered a great part of England with a portion of Ireland, and ran up far north into Scotland, having rivers to feed it from the adjoining lands around; while, to the south, it extended down towards the tropics. Its depth was considerable, and, as its strata show, its waters teemed with life. Fish, reptiles, molluscs of many kinds, echinoderms, insects, wood and corals, are met with in its layers. The insects,—which, according to Westwood, belong to no less than 24 families, and comprise both wood-eating and herb-devouring beetles, grass-hoppers, dragon-flies, and may-flies,—together with the wood, were, doubtless, brought down by the rivers which flowed into the sea; while the corals owe their presence to the extension of its waters southwards, enabling the products of warmer climes to push up towards the north.

Amongst the mollusca the Ammonites hold the first place : Chambered shells of great beauty, which have their counterpart in the Nautilus of the present day, they vary very much in shape, and are so distinct, that they have been used to designate zones of life in describing the Liassic strata, each zone having its distinct Ammonite as a characteristic feature ; and, although this cannot altogether be relied on,—some Ammonites being found in more zones than one, and not always in the zones to which they give their name,—yet the fact of different species being found in succession one above the other as the higher beds appear, bears strong testimony to the vast period of time that must have elapsed during the formation of these strata. We have only to call to mind how slowly forms of molluscan life (and we may say the same of life generally), die out now, and are replaced by others, to appreciate this.

Taking an illustration near our own time, we find that, out of the shells in the Norwich Crag at the top of the Pliocene period in the Tertiary age, 85 per cent exist at the present day ; and yet, between that period and our own, lies the whole of the Pleistocene and Glacial age, during which the Mammoth, the Cave Bear and the Hyæna, the Woolly Rhinoceros, the great Irish Elk, and other animals, appeared on the scene and passed away ; hunted to death for the most part by man.

It is however in the Saurians that the great interest of this period centres. Huge fish-like lizards from 20 to 30 feet long,—Ichthyosaurs, with eyes 14 inches in diameter, and Plesiosaurs, with long swan-like necks,—infested the shallower gulfs and bays ; some swimming out in the open water and feeding on the fishes and Ammonites, others hiding themselves amongst the tangle and in the crevices of the rocks, and darting out at their passing prey,

“ Dragons of the prime

That tare each other in their slime.”

while Pterodactyls,—large, flying, bat-like lizards, which are principally found in the higher Jurassic strata,—pursued their victims in the air, and clung to the cliffs and rocks on shore. A

strange weird life indeed was that which once filled the plain between Gainsborough and Lincoln, and, with other deposits of the same period elsewhere, it has well been called "the great dragon land."

This wonderful development of Saurian life began in the Triassic age, attained its greatest energy in the Lias, and finally died out, as a dominating power, in the Chalk. The greater portion of it then passed, by the process of evolution, into birds; nearly every successive chain in the link having been now discovered, as Professor Huxley remarked at the late meeting of the British Association at Oxford.

And here, after ascending the Lincoln Cliff, and passing over the higher beds of the Lias on our way,—so well described by Mr. W. D. Carr, whose removal from Lincoln we all deplore as a real loss to our Society,—we reach the Oolite capping at the top, and stand on ground made famous by many a stirring event in history. Here Cæsar's Roman legions came and colonized. Here Norman William reared his fortress against the vain force of Hereward who lies, with his true forsaken wife, somewhere in Crowland's precincts amid the fens he kept so well. We, from the same site, look down, immeasurably further back, over "the great dragon land," and picture again, in thought, the teeming life of the old Liassic sea.

AND now, having completed the building of the land between Gainsborough and Lincoln, I will, as briefly as possible, try to show how it attained its present shape.

To understand this, we must first glance a little further to the east; where, after passing over the limestones and clays of the higher Jurassic seas, we reach the chalk wolds.

In these cretaceous strata, we have the remains of beds which *must* have been laid down in great ocean depths; for there only are similar deposits being formed in our own day.

The Atlantic ooze, the modern equivalent of the chalk, is not deposited at a less depth than about 1,000 feet, and usually, much deeper; and, as this ooze is laid down, according to the

“Challenger” calculations, at the rate of a foot in a century at the most, the chalk, which is now some 1,300 feet thick,—and had, at one time, another 1,000 feet at the top of it, which has since been swept away,—the time occupied in the formation of these chalk beds must have been enormous. At the above rate of a foot of sediment in a century, the lost 1,000 feet alone would have taken 100,000 years to form.

Now, that the neighbourhood of such an ocean as this, which reached from Ireland, over Europe, to the Crimea, should have greatly affected the area we are considering, is not to be wondered at.

For a long period, during the existence of the Oolite and higher Jurassic seas,—when the land to the east of Lincoln, between it and the chalk wolds, was being formed,—the Triassic, Rhœtic and Lias beds on the west had become dry land; but, as the chalk sea grew, the weight of its deposits caused the land all round to sink, and, as this sea, at last, covered nearly the whole of England and Wales, the district between Gainsborough and Lincoln, with all the western land, was buried far beneath its waves.

Now the action of a sea is always that of a leveller, and as in course of ages, the cretaceous ocean itself passed away, the land beneath it, as it rose again to the surface, presented a smooth plane of erosion, gradually sloping up to the higher lands around, which had, during this epoch, remained dry ground.

At this time,—a period when the Pyrenees were thrown up,—England, Scotland, and Ireland were, probably, as Mr. Jukes Browne tells us, bound together in one mass. Land lay far out into the Atlantic on the west, and land connected Scotland with Greenland, through the Faroes and Iceland, on the north, and with Scandinavia on the east.

How far, and to what extent, the area between Gainsborough and Lincoln was denuded, during this great erosion, we shall never know; but, as it rose higher and higher above the waves, the carving tools of nature were brought into play, and rain, frost, and other forces of the atmosphere began their ceaseless work.

Now rain may seem but a weak agent for forming hills, and scooping out valleys, but, with the help of frost and the corroding forces of the atmosphere, without doubt it effects the task.

Both hill and valley have one common origin, they are the remains of surfaces, once planed and levelled by the sea (I am not here speaking of volcanic force), which, when raised above the waves, were carved and cut into shape by the rain; the harder parts, the most capable of resisting erosion, forming the hills; and the softer portions; the most easily denuded, forming the valleys.

Rising as vapour, mist, and cloud, and falling again on the earth, rain is the source of all our lakes, springs, and rivers; and, through rivers, the source of continents also, by the deposition of sediment on the floors of oceans and seas, and by the silting up of shallow bays and estuaries.

Its work never ceases, and, aided by frost, and the chemical components of the air, it penetrates and dissolves the hardest rocks, and nothing is free from its action. Rivers can cut only narrow channels, and it is left to rain to widen them into valleys. No drop of rain runs an inch on the surface without setting some soil in motion toward a lower level.

The amount of erosion depends, of course, greatly on the soil on which the rain falls. On clays, like those of the Lias, it works far greater havoc than on sandy or gravelly soils; though, without due thought, the reverse might appear to be the case. Mr. W. Whitaker, of the Geological survey, in discussing the age of man at the recent British Association Meeting, well observed this, when he said, "When rain falls on gravel and sand, which are open and porous, they say 'Oh! come in, there's plenty of room,' and in it goes, and comes out again as a clear spring of water at the base; whereas, when it falls on clays and stiff soils, they say, 'We don't want you and we won't have you,' and the rain, in response, washes hundreds of tons away from the surface;" showing that resistance is not always the best policy.

A good illustration of this may be seen in the district I am speaking of, for Hardwick Hill, which stands out as a land mark, at the far end of Scotton Common, is mainly composed of gravel and sand, while the unyielding clays of the Lias are worn away to their present depth below the Lincoln Cliff.

For actions, such as I have described, unlimited time is, I need not say, required; but, that given, from the planed down surface of land emerging from the sea, we get the earth in its present form, with its infinite variety of mountain and valley, hill and dale.

Of course there are volcanic, and other forces, that aid in the construction of the earth's surface, but they lack the universality and ceaseless operation of rain, and there is no time to speak of them now.

It is to the eroding action of rain, that we owe, in the main, the present features of the "the great dragon land."

ONE more phase, in the life history of the area we are considering, I have still to record.

After the chalk sea had disappeared, and the Tertiary age,—which may be called the latter days of geology,—had set in, the land underwent, for a great length of time, varying periods of elevation, subsidence, and rest; during which the North Sea appeared, and the principal physical features of our islands were developed; but, in the later Pleistocene epoch,—a period approaching our own days in a geological sense,—a great change took place. The Glacial conditions, which now prevail in the arctic regions, gradually invaded our land. The whole country sank to a considerable depth below its present level, and a great portion of Lincolnshire was covered with floating ice, which scored the rocks, and poured on its surface volumes of mud and clay, mixed with stones and boulders, which now pave the streets and market places of Gainsborough and Lincoln. And when, at last, all this had passed away, and the land had risen

again to the surface, a period of subsidence once more set in. The North Sea,—which had come into existence prior to the invasion of the ice, but had, during this period, been filled up with its débris,—again resumed its sway. Our land, in course of time, became separated from the Continent, and Great Britain, as it now is, appeared.

I should like to have spoken of a great river system, which cut through the Oolite and Lias on the south and west, and poured its waters into the Wash,—a system, the only remains of which are seen in the Lincoln Gap, through which the Trent once flowed, and where the Witham still finds its way,—but time will not permit of it.

I have drawn attention to the vast period of time that must have been consumed during the events I have attempted to describe; and this is a point that I cannot too strongly impress on your memory.

I have dwelt on the structure and configuration of the land as it appeared during the several ages my paper deals with; for this is the goal that all geological investigation should aim at. The special study of strata, and their imbedded relics, valuable as it is, is nothing, if, out of it, we do not try to build up the framework of the world, as it appeared at the time these strata were deposited. I do not mean in any sense to under-estimate the value of such special studies. Those who labour at them are the patient seekers after facts, without whose labours it would be impossible to read the story the rocks are meant to teach. And here I must bring my paper to a close.

Elevations and subsidences are still going on, though we cannot see them. Attrition and denudation of the strata are still proceeding, though, in our short existence, we cannot trace them. Rains, frost, and rivers are still at work. The dragon land is slowly altering year by year; and the carving and modelling of the surface will last, as long as raindrops fall, and a vestige of land remains above the waves.

LINCOLNSHIRE COLEOPTERA.

BY THE

REV. A. THORNLEY, M.A., F.L.S., F.E.S., Nottingham, and
W. WALLACE, M.B., Ch.B., Grimsby.

(*Second Paper*).

The following seven new species are additions to the Geodephaga.

LÆMOSTENUS COMPLANATUS *Dj*

N 4, Grimsby, 1908, two specimens, one in a garden, the other under stones on the shore, A B. Until a few years since, this species was confounded in British collections with *PRISTONYCHUS TERRICOLA*

ANCHOMENUS VIDUUS *Panz*

(The type form)

N 4, Freshney Bogs, three specimens in company with the variety, 15-7-1907, W W

ANCHOMENUS GRACILIS *Gyll*

N 4, Croxby, several specimens, 13-9-1907, W W

ANCHOMENUS THOREYI *Dj*

N 4, Irby Dale, one specimen, 24-5-1908, W W

ANCHOMENUS PUELLUS *Dj*

N 1, Althorpe, one specimen found 18-4-1908, (under willow bark with *A. fuliginosus*) by G W M., agrees well with an authentic type of this species

BEMBIDIUM AFFINE *Steph*

N 3, Barton-on-Humber, Humber bank, one specimen, 20-4-1907, Mr. T. Stainforth, Hull

TRECHUS RUBENS *F*

N 9, Humberstone, one specimen on the shore, 6-7-1908, A B

During the year special attention has been given to collecting the water beetles and our County list has been thereby considerably increased, some of the additions being of great interest. We still lack collectors in the south V C. We are much indebted for the valuable help given to us by Mr. F. Bulford Brown, M.A., who has made a most thorough study of the British Waterbeetles and their distribution.

Hydradephaga.

BRYCHIUS ELEVATUS Panz

Not uncommon

- N 4, Freshney River at Little Coates, 21-6-1898, A T. 8, Holton-le-Clay, 5-7-1908, W W., Hubbard's Valley, Louth, 13-8-1908, C. Gifford

HALIPLUS OBLIQUUS F

Not uncommon, generally occurs singly

- N 3, Cadney, 9-1897, A T. 4, Little Coates, 1898, A S. 8, Holton-le-Clay, 5-7-1908, W W. 9, Humberstone in brackish ditch, 9-5-1907, A B

HALIPLUS FLAVICOLLIS Sturm

Not uncommon, but somewhat local

- N 9, Tetney, 7-1906, A B.: Humberstone, 7-1908, W W
S 13, Court Leys, 6-6-1900, S C S

HALIPLUS FULVUS F

Fairly common

- N 1, Haxey and Epworth, 14-7-1898, A T. 4, Cleethorpes, 5-7-1894, L N U., (W F B.): Great Coates, 24-4-07, W W. 9, Tetney, 16-5-1907, A B.: Humberstone, brackish water, 26-8-08, W W

HALIPLUS RUFICOLLIS DeG

Abundant

- N 1, Haxey and Epworth, 14-7-1898, A T. 3, Cadney, 9-1897, A T. 4, Cleethorpes, 5-7-1894. L N U., (W F B). 7, Holton-le-Moor, 12-6-08, L N U., (A B). 8, Holton-le-Clay, 5-7-1908, W W. 9, Theddlethorpe, 1896, A T.: Humberstone in brackish ditch, 21-5-1907, A B

HALIPLUS FLUVIATILIS Aubé

Common

- N 3, Cadney, A T. 4, Clee, 2-5-1907, A B. 8, Holton-le-Clay, 5-7-1908, W W. 9, Tetney, 16-5-1907, A B. 11, Gibraltar Point, 15-7-1891, A T

HALIPLUS LINEATOCOLLIS Marsh

The commonest species of the genus, occurring in abundance in running and stagnant water

- N 3, Cadney, 9-1897, A T. 4, Little Coates, 28-3-1906, W W. 8, Holton-le-Clay, 5-7-08, W W. 9, Theddlethorpe, A T. Humberstone, in brackish ditch, 14-4-1907, A B

- S 13, Court Leys, 1899, S C S. 18, Spalding, 31-8-1901, S C S

CNEMIDOTUS IMPRESSUS F

Rare. We have never found it in the northern V C

- S 18, Near Spalding, 6-1904, W. E. Sharp, F E S

PELOBIUS TARDUS *Herbst*

The "Screech-beetle"

- N 4, Aylesby, 3-6-1908, four specimens, W W. 9, Humberstone, 10-6-1908, one specimen, A B

This fine addition to our list occurred in each case in a stagnant pond. The insect has probably evaded earlier collectors by its peculiar habit of immediately leaving the surface and descending to the mud at the bottom of the pond and burying itself there. To capture it, the collector must watch it enter the mud.

NOTERUS SPARSUS *Marsh*

Local

- N 4, Croxby Pond, 20-6-1907, one specimen, A B. 7, Holton-le-Moor, 12-6-1908, L N U., A B. 11, Alford, common in one pond near Well Vale, 20-8-08, L N U., W W

LACCOPHILUS INTERRUPTUS *Panz*

Common

- N 3, Cadney, 9-1897, A T. 4, Cleethorpes, 5-7-1894, L N U., (W F B). 9, Theddlethorpe, 6-1896, A T. Humberstone in brackish water, 15-4-1907, W W
- S 13, Hartsholme, 24-5-1894, L N U., W F B

LACCOPHILUS OBSCURUS *Panz*

Common

- N 4, Cleethorpes, 13-7-1894, W F B. 7, Linwood, 8-6-1908, W W. 8, Holton-le-Clay, 8-7-1908, W W. 9, Tetney in brackish drain at Sand Hail Flats, 13-8-08, W W
- S 13, Court Leys, 6-1900, S C S

HYPHYDRUS OVATUS *L*

Frequent

- N 1, Haxey and Epworth, 14-7-1898, A T. 2, Bottesford, 21-5-1900, M P. 3, Cadney, 9-1897, A T. 4, Irby Dale, 14-8-1908, W W, 6, Marton drain, A T. 7, Linwood, 8-6-1908, W W. 9, Tetney, 16-5-07, A B. 11, Alford, 20-8-1908, L N U. W W
- S 13, Court Leys, 5-1900, S C S

CÆLAMBUS VERSICOLOR *Schall*

Local

- N 3, Cadney, 9-1897, A T. 6, Marton drain, A T. 9, Theddlethorpe, 6-1896, A T. Tetney, 16-5-1907, A B
- S 13, Hartsholme, 24-5-1894, L N U., W F B.

CÆLAMBUS INÆQUALIS *F*

Abundant

- N 3, Cadney, 9-1897, A T. 4, Clec, 20-4-1899, A S. 7, Linwood, 8-6-1908, W W. 8, Holton-le-Clay, 5-7-1908, W W. 9, Theddlethorpe, 1893, A T. Tetney brackish ditch, 13-8-1908, W W
- S 13, Court Leys, 1-6-1900, S C S

CÆLAMBUS DECORATUS *Gyll*

Local

- N 4, Irby Dale in considerable numbers, 24-5-1908, W W. 9, Tetney, 13-8-1901, C S C

CÆLAMBUS CONFLUENS *F*

Local

- N 4, Cleethorpes, 5-7-1894, W F B. Aylesby in two ponds, quite the commonest beetle I found in the ponds, 3-6-1908, W W. 9, Humberstone, 10-6-1908, A B

CÆLAMBUS PARALLELOGRAMMUS *Ahr*

Local and confined to the coast

- N 9, Humberstone in large numbers in a brackish drain, 26-8-1908, C. Gifford

DERONECTES ASSIMILIS *Payk*

Local

- N 3, Cadney, A T. 4, Cleethorpes, 5-7-1894, W F B. 9, Mablethorpe, 12-6-1893, L N U., (W W F.) Tetney, 16-5-1907, W W

- S 13, Hartsholme, 24-5-1894, A T

DERONECTES DEPRESSUS *F*

Common

- N 3, Cadney, 9-1897, A T. 4, Freshney River, 13-7-1898, A T. 8, Holton-le-Clay, 27-1-1907, R C. 9, Mablethorpe, 12-6-1893, L N U., (W W F)

DERONECTES 12-PUSTULATUS *F*

Evidently very local. Diligent search has hitherto failed to establish this as a Lincolnshire species.

- N 9, Humberstone, a single specimen from a stream near the church, 22-8-1908, C. Gifford

HYDROPORUS PICTUS *F*

Common

- N 1, Haxey and Epworth, 14-7-1898, A T. 3, Cadney, A T. 4, Great Coates, 24-4-1906, W W. 6, Manton drain, A T. 9, Humberstone in brackish ditch, 21-5-07, W W

HYDROPORUS GRANULARIS *L*

Not common, and in small numbers when found

- N 4, Bradley, stagnant pond, 7-1-1908, A B. and W W. Cleethorpes. 18-6-1903, W W. 9, Humberstone in brackish ditch, 26-8-08, C. Gifford

- S 18, Near Spalding, 6-1904, W. E. Sharp, F E S

HYDROPORUS LEPIDUS *OI*

Local

- N 1, Haxey and Epworth, 14-7-1898, A T. 3, Cadney, 9-1897, A T. 4, Great Coates, I took it in August 1906, but never again there, W W. 9, Tetney in numbers in a brackish ditch near Sand Hail Flats, 13-8-1908, W W. 7, Pond in Langworth Wood, (FOWLER, BRIT. COL.)

HYDROPORUS RIVALIS *Gyll*

Somewhat local

- N 3, Ulceby, 12-8-1906, W W. 4, Croxby Pond, 8-1906, W W, Laceby, 11-5-1908, A B. 8, Hubbard's Valley, Louth, 13-8-1908, C. Gifford.

HYDROPORUS HALENSIS *F*

This is a fen species but appears to be rare in the County

- N 3, Ulceby in running water, a single specimen, 12-8-1906, W W

HYDROPORUS DORSALIS *F*

Local

- N 4, Irby Dale, 7-9-1907, A B. Waltham, 8-8-1908, C. Gifford. 7, Holton-le-Moor, 12-6-08, L N U., A B. 11, Alford, 20-8-1908, L N U., W W

HYDROPORUS LINEATUS *F*

Frequent

- N 3, Ulceby, 12-8-1906, W W. 4, Irby Dale, 7-9-1907, W W. Clee-27-8-1908, C Gifford. 6, Marton drain, A T. 7, Holton-le-Moor, 12-6-1908, L N U., A B. 9, Tetney, 16-4-08, A B

HYDROPORUS UMBROSUS *Gyll*

Very local

- N 4, Irby Dale, in one pond in large numbers, 14-5-1908, W W

HYDROPORUS ANGUSTATUS *Sturm*

Local and in small numbers when found

- N 4, Bradley, 11-4-1908, A B. Irby Dale, 14-5-1908, W W

HYDROPORUS GYLLENHALI *Schiöd*

Not common

- N 1, Haxey and Epworth, three specimens, 14-7-1898, A T. 9, Tetney, one specimen, 16-5-1907, A B., the only instance of its occurrence in the Grimsby District

HYDROPORUS VITTULA *Er*

Rare

- N 4, Irby Dale, a single specimen, 14-5-1908, W W

HYDROPORUS PALUSTRIS *L*

By far the commonest species of the genus

- N 1, Haxey and Epworth, 14-7-1898, A T. 3, Cadney, A T. 4, Clee, 20-4-1899, A S. 6, Marton, A T. 7, Linwood, 8-6-1908, W W. 8, Holton-le-Clay, 5-7-1908, W W. 9, Humberstone in brackish water, 26-8-1908, C. Gifford. 10, Woodhall, 7-8-1893, L N U. 11, Alford, 20-8-1908, L N U., W W

- S 13 Court Leys, 5-1900, S C S

HYDROPORUS ERYTHROCEPHALUS *L*

Common

- N 1, Haxey and Epworth, 14-7-1898, A T. 3, Cadney, 8-1897 A T. 4, Cleethorpes, 5-7-1894, L N U., W F B. 6, Marton drain, A T. 7, Holton-le-Moor, 12-6-1908, L N U. A B. 9, Humberstone in brackish ditch, 26-8-1908, C. Gifford. 11, Alford, 20-8-1908, L N U., W W

HYDROPORUS MEMNONIUS *Nic*

Local. It has never occurred in the Grimsby District.

- N** 3, Cadney, 7-1898, E A W-P
S 13, Court Leys, 7-1901, S C S

HYDROPORUS NIGRITA *F*

Probably not uncommon but we have few records of this and the next species

- N** 4, Freshney Bogs, 11-6-07, W W. Irby, 29-5-1908, W W

HYDROPORUS DISCRETUS *Fairm*

This species is more frequent than the preceding in the Grimsby District

- N** 4, Bradley, 11-4-1907, W W. Clee, 2-8-1907, A B. Beelsby, 24-5-1908, A B. Laceby, 11-5-1908, A B. Waltham, 8-5-1908, C. Gifford

HYDROPORUS PUBESCENS *Gyll*

Common

- N** 1, Haxey and Epworth, 14-7-1898, A T. 2, Scunthorpe, 2-7-1902, L N U. 3, Cadney, 9-1897, A T. 4, Clee, 20-4-1899, A S. 7, Holton-le-Moor, 12-6-1908, L N U., (A B). 8, Holton-le-Clay, 5-7-1908, W W. 9, Mablethorpe, 8-1907, (J. W. Carter, Bradford). 11, Alford, 20-8-1908, L N U., W W

HYDROPORUS PLANUS *F*

Very common

- N** 1, Haxey and Epworth, 14-7-1898, A T. 3, Cadney, 12-3-1898, E A W-P. 4, Cleethorpes, 5-6-1894, L N U., W F B. 7, Linwood, 8-6-1908, W W. 8, Holton-le-Clay, 5-7-1908, W W. 9, Theddlethorpe, A T. 11, Alford, 20-8-1908, L N U., W W
S 13, Court Leys, 5-1900, S C S

HYDROPORUS LITURATUS *F*

Common

- N** 2, Bottesford, 21-5-1900, M P. 3, Cadney, 1898, M P. 4, Bradley, 28-2-1908, W W. 7, Holton-le-Moor, 12-6-1908, L N U., A B. 8, Holton-le-Clay, 5-7-1908, W W. 9, Humberstone in brackish water, 27-8-1908, W W
S 13, Court Leys, 5-1900, S C S

AGABUS GUTTATUS *Payk*

Not common

- N** 2, Scunthorpe, 11-7-1902, L N U. 3, Cadney, 1898, M P. 4, Irby, 28-5-1908, W W., the only specimen that has occurred in the Grimsby District. 10, Woodhall Spa, 7-8-1893, L N U., W F B

AGABUS PALUDOSUS *F*

Common in Grimsby District

- N** 2, Scunthorpe, 7-1902, L N U. 3, Uleeby, 12-8-1906, W W. 4, Freshney Bogs, 13-7-1898, A T. Clee, 2-5-1908, A B. Irby, 20-6-1907, W W

AGABUS DIDYMUS 01

Common

- N** 3, Brigg, Kettleby Beck, 4-6-1895, A T. Ulceby, 12-8-1906, W W. 4, Clee, 2-5-1907, A B. Irby, 3-8-1908, C. Gifford. 8, Holton le-Clay, 5-7-1908, W W. 9, Tetney, 16-5-1907, A B

AGABUS NEBULOSUS Forst

Common

- N** 3, Cadney, 8-1898, E A W-P. 4, Clee, 28-4-1898, A S. 8, Holton-le-Clay, 5-7-1908, W W. 9, Theddlethorpe, A T
- S** 13, Court Leys, 6-1900, S C S. 18, Near Spalding, 6-1904, W. E. Sharp, F E S

AGABUS STURMII Gyll

Common

- N** 3, Cadney, 9-1897, A T. 4, Little Coates, 1897, A S. 7, Linwood, 8-6-1908, W W. 9, Theddlethorpe, 4-1895, A T. Humberstone in brackish ditch, W W

AGABUS CHALCONOTUS Pz

Local

- N** 1, Haxey and Epworth, 14-7-1898, A T. 3, Cadney, 12-3-1898 E A W-P. 7, Linwood, 8-6-1908, occurring in the greatest profusion in all the ponds I worked, W W
- S** 13, Court Leys, S C S

The distribution of this species in the County is interesting; it will be noticed that all these localities are distant from the sea. It has never occurred in the Grimsby District.

AGABUS BIPUSTULATUS L

By far the commonest species of the genus

- N** 1, Haxey and Epworth, 14-7-1898, A T. 3, Cadney, 1898, M P., 4, Freshney Bogs, 13-7-1898, A T. 5, Kirton Lindsey, 1898, M P. 7, Linwood, 8-6-1908, W W. 8, Holton-le-Clay, 5-7-1908, W W. 9, Tetney, C S C. 11, Alford, 20-8-1908, L N U., (W W)

PLATAMBUS MACULATUS L

Common in the Grimsby District and probably throughout the County but we have few records

- N** 3, Cadney, A T. 4, Croxby, 2-7-1908, A B. 8, Grainsby, 8-1905, W W

ILYBIUS FULIGINOSUS F

Very common

- N** 2, Broughton Woods pond, 6-1895, L N U., (A T). 3, Cadney, 9-1897, A T. 4, Freshney Bogs, 21-6-1898, E A W-P. 8, Holton-le-Clay, 5-7-1908, W W. 9, Humberstone in brackish ditch, 26-8-1908, C. GIFFORD

ILYBIUS SUBÆNEUS Er

One of our best records

- N** 7, Holton-le-Moor, a single, somewhat immature male, 12-6-1908, L N U., (A B)

This specimen was forwarded for verification to Mr. F. Balfour-Browne who writes:—"The only other records are, Kent W., Suffolk, E., Norfolk E. & W., Cambridge & Surrey. I took about a dozen in E. Norfolk and three specimens in Cambridge." In the Coleoptera of the British Islands (1887). The Rev. W. W. Fowler says:—"Very doubtful as British; its claim to be admitted into our lists rests on a single specimen taken twenty years ago . . . : it has however never been found since and requires further confirmation."

ILYBIUS FENESTRATUS *F*

We have never found this species in the Grimsby District

- N** 2, Broughton Woods pond one specimen, 3-6-1895, L N U,
A T. 8, Haugham, A T

ILYBIUS ATER *De.G*

Probably not uncommon in the County but our records are rather confined

- N** 4, Grimsby, 6-1903, a broken specimen found near my green house had probably mistaken the glass for water, W W Irby, 27-6-1908, one specimen, A B., in same pond, 1-8-1908, two specimens, W W. Great Coates, 25-7-1908, five specimens, A B. & W W. Clee, 27-8-1908, C. GIFFORD. 9, Mablethorpe, 8-1907, Mr. F. Rhodes

ILYBIUS OBSCURUS *Marsh*

Not uncommon

- N** 2, Bottesford, 21-5-1900, M P. 3, Cadney, 9-1897, A T. 4, Great Coates, 25-7-08, six specimens, A B. & W W. Waltham, 8-8-1908, C. Gifford. 8, Haugham, A T. 9, Mablethorpe, 8-1907, Mr. F. Rhodes

COPELATUS AGILIS *F*

Rare. The only record is: "Lincoln" (FOWLER BRIT. COL.)
See also E M M. June, 1881, pp. 7-9

RHANTUS GRAPII *Gyll*

Rare

- N** 9, Theddlethorpe, a pair in cõp, 4-1895, A T

RHANTUS EXOLETUS *Forst*

Local

- N** 4, Irby Dale, 7-9-1907, A B. In the same pond, 1-8-1908, nine specimens, A B. & W W. It is not found in any other pond in the Grimsby District

- S** 13 Hartsholme, 24-5-1894, L N U

RHANTUS BISTRATUS *Berg*

Rare

- N** 1, Epworth one specimen, 14-7-1898, A T. We should scarcely have expected to find this species in the County it chiefly occurs in mountainous districts.

COLYMBETES FUSCUS *L*

Common

- N** 2, Scunthorpe, 6-8-1900, L N U. 4, Bradley, 1897, A S. 7, Linwood, 1908, sent by Miss Cameron. 8, Holton-le-Clay, 5-7-1908, W W. 9, Theddlethorpe, A T. Humberstone in a brackish pond far out near the sandhills, 9-4-1907, W W

DYTISCUS PUNCTULATUS *F*

We have very few records but no doubt this is a fairly common species

- N** 3, Cadney, 1898, E A W-P. 4, Great Coates, 21-4-1907, W W. Bradley, 11-4-1908, A B

DYTISCUS MARGINALIS *L*

Much commoner than the preceding but we have few records.

- N** 3, Cadney, 1898, E A W-P. 4, Grimsby, 1898, A S. Irby, 3-8-1908, C. GIFFORD. 8, Holton-le-Clay, 5-7-1908, W W. 9, Theddlethorpe, A T

- S** 13, Court Leys, 6-1899, S C S. Hartsholme, 24-5-1894, L N U., (W F B)

ACILIUS SULCATUS *L*

Very common

- N** 4, Great Coates, 1897, A S. 7, Linwood, 1908, sent by Miss Cameron. 8, Donington-on-Bain, J. Wallis Kew. 9, Humber stone, 10-6-1908, A B

- S** 13, Court Leys, 6-1899, S C S

GYRINUS SUFFRIANI *Scrib*

Rare

- S** 18, Leamlands, 18-8-1906, Mr. Claude Morley

GYRINUS NATATOR *Scop*

Very common

- N** 2, Bottesford, 21-5-1900, M P. 3, Cadney, 9-1897, A T. 4, Great Coates, 1898, A S. 8, Near Louth, H. Wallis Kew. 9, Mablethorpe, H. Wallis Kew

- S** 13, Court Leys, 1899, S C S. 18, Spalding, 31-8-1901, S C S

GYRINUS MARINUS *Gyll*

Common

- N** 3, Cadney, 21-3-1898, E A W-P. Goxhill, 27-5-1907, W W. 4, Cleethorpes in brackish water, L N U., 5-7-1894, W F B. 9, Tetney, 16-8-1907, A B

Hydrophilidae.

HYDROBIUS FUSCIPES *L*

Very common

- N** 2, Bottesford, 21-5-1900, M P. 3, Cadney, 9-1897, A T. 4, Cleethorpes, 5-7-1894, W F B. 6, Marton drain, A T. 7, Linwood, 1908, sent by Miss Cameron. 8, Near Louth, H W K. 10, Woodhall, 7-8-1893, L N U. 11, Alford, 20-8-1908, L N U., W W

- S** 13, Court Leys, 1897, S C S

— var. *æneus* *Sol*

Cleethorpes, 5-7-1894, W F B

HYDROBIUS OBLONGUS *Hbst*

Rare

- S** 18, Near Spalding, 6-1904, W. E. Sharp, F.E.S.

ANACÆNA GLOBULUS *Payk*

Very common

- N** 3, Cadney, A T. 4, Bradley, 28-2-1908, W W. 8, Hubbard's Valley, Louth, 13-8-1908, C. Gifford. 9, Humberstone, 15-4-1907, A B. 10, Woodhall, 7-8-1893, L N U. 11, Alford, 20-8-1908, L N U., W W

ANACÆNA LIMBATA *F*

Rather commoner than the preceding but we have few records

- N** 3, Ulceby, 12-8-1906, W W. 4, Bradley, 28-2-1908, W W. 9, Humberstone, 11-4-1907, A B. 11, Alford, 20-8-1908, L N U., W W

ANACÆNA BIPUSTULATA *Steph*

Rare

- N** 9, Humberstone, a single specimen, 10-6-1908, A B

PHILYDRUS TESTACEUS *F*

Fairly common

- N** 4, Irby, 20-6-07, W W. Bradley, 11-4-07, W W. 6, Marton drain, A T. 9, Mablethorpe, 8-1907, Mr. F. Rhodes. 11, Alford, 20-8-1908, L N U., W W

PHILYDRUS MARITIMUS *Th*

Confined to the coast

- N** 9, Humberstone in brackish ditch in numbers, 26-8-1908, W W. Theddlethorpe, 8-1893, A T

PHILYDRUS NIGRICANS *Zett*

- N** 4, Great Coates, 23-4-1907, W W. 6, Marton drain. A T. 11, Alford, 20-8-1908, L N U., W W

PHILYDRUS COARCTATUS *Gredl*

Local

- N** 4, Irby, 14-5-1908, common, W W

CYMBIODYTA OVALIS *Thoms*

Local

- N** 4, Irby, 20-6-1907, W W., much commoner in same pond, 24-5-1908, W W

ENOCHRUS BICOLOR *Gyll*

Apparently rare

- N** 6, Newton Cliff, one example out of the drain, 2-7-1901, L N U, A T

HELOCHARES LIVIDUS *Forst*

Not common

- N** 4, Clee Fields, several from ditches, 27-8-1908, C. GIFFORD,
9, Humberstone, one specimen, 10-6-1908, A B
- S** 13, Court Leys, 6-6-1900, S C S

LACCOBIUS NIGRICEPS *Th*Common but we have few records. (This is not the same insect as *L. Sinuatus*, *Mots*)

- N** 3, Cadney, 9-1897, A T. 4, Clee, 20-4-1899, A S. 9, Humberstone in brackish ditch, 26-8-08, W W

LACCOBIUS ALUTACEUS *Thoms*

The commonest species of the genus in the Grimsby District

- N** 4, Great Coates, 24-4-1907, W W. 9, Humberstone in brackish ditch, 15-4-1907, A B, also a variety in which the head, thorax and scutellum is green, W W

LACCOBIUS MINUTUS *L*

The least common species of the genus in the Grimsby District

- N** 2, Bottesford, 21-5-1900, M P. 3, Cadney, 12-3-1898, E A W-P. 4, Little Coates, 1906, W W. Cleethorpes, 18-6-1908, A B. 6, Marton Drain, A T. 9, Humberstone in brackish ditch, 26-8-08, W W
- S** 13, Court Leys, 1899, S C S

LACCOBIUS BIPUNCTATUS *F*

Very common

- N** 3, Cadney, A T. 4, Great Coates, 24-4-1907, W W. 6, Marton Drain, A T. 8, North Thoresby, 20-8-1908, C. GIFFORD. 9, Tetney in brackish water, 13-8-1908, W W

BEROSUS LURIDUS *L*

Rare

- N** 4, Cleethorpes, 5-7-1894, W F B., the only occasion of its occurrence

BEROSUS AFFINIS *Brull*

Local and not common

- N** 4 Clee, Phillipson's Farm, 20-4-1899, A S. Little Coates, 7-1906, I took a single specimen but have never met with it again since W W

LIMNEBIUS TRUNCATELLUS *Thoms*

Fairly common in the Grimsby District

- N** 4, Bradley, 28-2-1908, W W. & A B. Waltham, 8-5-1908, C. GIFFORD. Croxby, 2-7-1908, A B. Hatcliffe, 11-7-1908, A B
- S** Louth, 13-8-09, C. GIFFORD

LIMNEBIUS PAPPOSUS *Muls*

Local

- N 4, Laceby, 11-5-1908, A B. 9, Humberstone, 10-7-1908, W W

LIMNEBIUS NITIDUS *Marsh*

Local

- N 9, Tetney in numbers, 16-5-1907, A B

CHÆTARTHRIA SEMINULUM *Pk*

Appears to be rare but probably it is overlooked

- N 9, Tetney, 16-4-1908, W W
S 14, Cranwell, 9-1900, S C S

HELOPHORUS RUGOSUS *OI*

Local

- N 4, Cleethorpes one specimen, 30-8-1907, W W., again at Cleethorpes, 23-9-1908, in numbers with *Helophorus nubilus* in tidal rubbish on the shore, C. Gifford

HELOPHORUS NUBILUS *F*

Common, generally by sweeping

- N 3, Cadney, 1897, A T. 4, Cleethorpes, 5-7-1894, W F B. 7, Moortown, 18-8-1907, W W. 9, Theddlethorpe, 1893, A T.
S 13, Court Leys, 9-1900, S C S. 18, Gedney, 18-8-1906, Mr. Claude Morley

HELOPHORUS AQUATICUS *L*

Common

- N 2, Bottesford, 21-5-1900, A S. 3, Cadney, 12-3-1898, A T. 4, Cleethorpes, 5-7-1894, L N U., W F B. 6, Marton drain, A T. 8, near Louth, H W K. 9, Theddlethorpe, A T
— var. *æqualis* *Thoms*
N 4, Little London one specimen, 19-6-1908, A B. "Near Lincoln," (FOWLER BRIT. COL). See also E M M., December 1882.

HELOPHORUS DORSALIS *Marsh*

Rare

- N 4, Waltham, 8-8-08, one specimen in a pond near the village taken by C. Gifford

HELOPHORUS ÆNEIPENNIS *Thoms*

Common in the ponds of the Grimsby District and no doubt throughout the County

- N 3, Cadney, 3-1900, E A W-P. 4, Laceby, 2-12-1906, a specimen in rotten fungus! W W

HELOPHORUS AFFINIS *Marsh*

Rare

- N 4, Bradley one specimen, 7-4-1908, W W

HELOPHORUS BREVIPALPIS *Bedel*

Abundant

- N** 3, Cadney, 4-1898, E A W-P. 4, Clee, 28-4-1899, A S. 6, Marton drain, A T. 8, Hubbard's Valley, Louth, 13-8-1908, C. Gifford. 9, Theddlethorpe, A T. 11, Alford, 20-8-1908, L N U., (W W)
- S** 13, Court Leys, 1899, S C S

HELOPHORUS NANUS *Stm*

A very fine capture

- N** 4, Bradley, 3-5-1908, a single specimen, A B., was confirmed as this rare species by Mr. H. Donisthorpe

HYDROCHUS BREVIS *Herbst*

Rare, one of our best records

- N** 4, Irby Dale, one specimen, 14-5-1908, W W

HYDROCHUS ELONGATUS *Schall*

Local

- N** 4, Bradley a single specimen, 28-2-1908, W W. & A B., and several subsequently from the same and neighbouring ponds

OCHTHEBIUS MARINUS *Payk*

Rare

- N** 4, A single specimen in flood refuse of the River Freshney near the Bogs, 8-7-1908, W W. This was fresh water but the usual habitat is brackish water

OCHTHEBIUS PYGMÆUS *F*

Fairly common in the Grimsby District

- N** 4, Bradley, 7-4-1908, A B. Freshney Bogs, 2-5-1908, W W. Aylesby, 3-6-1908, W W. 9, Humberstone in brackish ditch, 25-4-1907, A B. Tetney, 16-4-1908, A B

OCHTHEBIUS BICOLON *Germ*

- N** 4, Cleethorpes, October 1896, Mr. Stephen Pegler

OCHTHEBIUS AURICULATUS *Rey*

- N** 4, Two specimens at Cleethorpes, October 1896, Mr. Stephen Pegler. One of our best records

OCHTHEBIUS NANUS *Steph*

- N** 4, Great Coates abundant in the ditches, 4-1907, W W. 9, Tetney, 16-4-08, in a somewhat brackish ditch, W W

HYDRÆNA RIPARIA *Kug*

Local and uncommon

- N** 4, Bradley two specimens, 7-4-1908, A B., and two or three subsequently there

SPHÆRIDIDIUM SCARABÆOIDES *F*

Very common

- N** 3, Goxhill, 6-9-1908, W W, 4, Clee, 5-1899, A S. 6, Marton, 1892, A T. 9, Mablethorpe, 30-8-1900, L N U. 10, Woodhall Spa, 7-8-1893, W F B
- S** 13, Court Leys, 1899, S C S

SPHÆRIDIDIUM BIPUSTULATUM *F*

Not nearly so common as the preceding. The dark forms are most frequent

- N** 4, Cleethorpes, 6-7-07, W. 10, Woodhall Spa, 7-8-1893, L N U., W F B
- S** 13, Hartsholme, 24-5-1894, L N U., W F B
- var. *marginatum* *F*
- N** 4, Grimsby street, 9-1906, W W., and several since
- var. *semistriatum* *Cast*
- N** 10, Woodhall Spa, with the type, 7-8-1893, L N U., W F B

CERCYON LITTORALIS *Gyll*

Frequent on the coast

- N** 4, Humber foreshore beyond Grimsby targets, 7-6-1907, W W. Cleethorpes, 9-5-1908, A B. 9, Mablethorpe, A T

CERCYON HÆMORRHOIDALIS *F*

Very common

- N** 4, Little Coates, 8-5-1907, W W. 9, Humberstone, W W. 10, Woodhall Spa, 7-8-1893, W F B
- S** 13, Hartsholme, 24-5-1894, L N U., W F B

CERCYON BIFENESTRATUS *Küst*

- N** 4, Bradley, 21-7-1908, one specimen in dung W W. (This specimen was sent to Dr. N. H. Joy and he referred it to this species. This species has not until a few years ago appeared in our British catalogues.)

CERCYON FLAVIPES *F*

Common

- N** 3, Somerby and Housham, 9-7-1897, E A W-P. 4, Weelsby, 1898, A S. In flood refuse of the River Freshney, 11-7-1908, W W
- S** 13, Court Leys, 9-1898, S C S

CERCYON LATERALIS *Marsh*

Not common

- N** 4, In flood refuse of River Freshney at the Bogs, several specimens, 11-7-1908, W W

CERCYON MELANOCEPHALUS *L*

Abundant

- N** 4, Weelsby, 1898, A S, 9, Humberstone, 9-4-1907, W W. 10, Woodhall Spa, 7-8-1893, W F B

CERCYON UNIPUNCTATUS *L*

Rather uncommon

- N** 4, In flood refuse of River Freshney at the Bogs, several specimens, 11-7-1908, W W. 6, Marton, A T
S 13, Hartsholme, 24-5-1894, L N U., W F B

CERCYON QUISQUILIUS *L*

Rather uncommon

- N** 9, Humberstone, 7-7-1907, W W
S 13, Court Leys, 9-1900, S C S

CERCYON PYGMÆUS *Ill*

Very common

- N** 4, Little Coates, 8-5-1907, W W. 9, Humberstone, 7-7-1907, W W. 10, Woodhall Spa, 7-8-1893, L N U., W F B

CERCYON TERMINATUS *Marsh*

Uncommon

- N** 4, In flood refuse of River Freshney at the Bogs several specimens, 8-7-1908, W W

CERCYON ANALIS *Payk*

Not common

- N** 3, Cadney, 1898, E A W-P. 4, Great Coates, 8-9-1896, L N U., A T

CERCYON MINUTUS *Muls*

Rare or perhaps overlooked

- S** 18, Near Spalding, 6-1904, W. E. Sharp, F.E.S.

CERCYON LUGUBRIS *Payk*

Not common

- N** 4, Bradley one specimen in dang, 11-4-1908, W W. 9, Humberstone, several specimens encrusted with iron salts clinging to weeds in a streamlet of fresh water coming from the supply pipe at "the encampment," 24-3-1907, W W

MEGASTERNUM BOLETOPHAGUM *Marsh*

Abundant

- N** 4, Little Coates, 9-12-1906, W W. 9, Humberstone, 21-5-1907 A B

CRYPTOPLEURUM ATOMARIUM *F*

Abundant

- N** 4, Cleethorpes, 8-7-1894, L N U., W F B. 9, Humberstone, 7-7-1907, W W
S 13, Court Leys, 7-1901, S C S

Pre-Historic Man in Lincolnshire.

By the **REV. ALFRED HUNT, M.A.**

Vicar of Welton, Lincoln.

PRESIDENT OF THE LINCOLNSHIRE NATURALISTS' UNION, 1907 & 1908.

AUTHOR OF

"LINCOLNSHIRE at the OPENING of 20th CENTURY." "Brunanbuch (Now Burnham) A.D., 937." "The Pygmy Flint Age in Lincolnshire." "The Viking Raft or Pontoon Bridge found in North Lincolnshire." "Roman Lincolnshire."

PRE-HISTORIC MAN IN LINCOLNSHIRE.

BEING THE PRESIDENTIAL ADDRESS FOR 1908.

THE SUBJECT of Pre-Historic man in Lincolnshire, takes us back to a period of time long before the Roman occupation of what we now know as Lincolnshire—when our local history began.

The County of Lincolnshire as we know it to-day is divided into parishes and districts. If we ask when these divisions took place, history answers us at once; that division into parishes has been going on for over a thousand years, and it is still going on. If we ask when Lincolnshire was divided from the adjoining counties of England, we are sent back to the Saxon Period of our National Life.

To-day I propose to address you concerning a period of time long before these divisions took place, but for the purpose of

clearness in understanding our subject I shall use these modern divisions as it gives definition to points and places where traces of mankind have been found.

Thousands of years ago, Lincolnshire and the whole of Northern England part of the South of England and North Britain were covered with vast sheets of Ice, known as Glaciers stretching across the North Sea or German Ocean as far as Norway, and these glaciers gradually moved southwards carrying on their surface and interior huge blocks of rock and stone, broken from the parent rocks in all directions by the action of frost and other disintegrating forces of nature. Specimens of these Glacial boulders are to be seen at Louth, Anwick, Welton by Lincoln and many other places.

The melting point of these glaciers was at a line roughly drawn across England from the Wash in the East to the River Severn in the West.

EOLITHIC.

It seems that at this period a Race of men existed in the South of England who from the implements they have left behind have been called Eolithic Men, and later on another race called Paleolithic Men—separated they may have been from one another by many thousands of years.

It is from the south of England that men seem to have travelled northwards and settled in the Caves at Cresswell Craggs, Derbyshire, and Kirkdale Caves in the North Riding of Yorkshire, but of these Early Races of Men we have no trace in Lincolnshire.

It is not until we come to the period of Neolithic Man or the New Stone Age, when men were using Smooth Stone implements, that we find traces of men in Lincolnshire.

Before passing to the consideration of the Neolithic People of Lincolnshire—I would like to make reference to the divisions of the Paleolithic Race.

PALEOLITHIC.

We do not in our County possess any relics of the Pre-Historic Man of that period—South and South-East of our County there were men living in various localities who have left behind them stone implements, of a rough nature, but yet shewing signs of man's handiwork and design. These are called Eolithic Stones, and are the earliest stones found in England shewing any design in their shape, but concerning these Eoliths I am not aware that any have been found in Lincolnshire—so we leave the Eolithic period and come to a still later period called the Paleolithic Period, and of this period none have been found in Lincolnshire. It is in the Neolithic Period or New Stone Age, in which we first find traces of mankind in our County of Lincolnshire.

“The transition between the Paleolithic and Neolithic Age is still very obscure. We suddenly find,” so says Mr. Read of the British Museum, “a different culture and different kind of implements which indicate a different way of life, but we cannot say exactly how or where the old order gave place to the new.”

CAVE MEN.

There are many who place Cave Men or the Cave Dwellers between these two periods of Paleolithic and Neolithic Periods and call it the Mesolithic or Middle Stone Age, but in Lincolnshire we have no traces of Cave Man.

NEOLITHIC MEN.

Neolithic Man has left behind him in our County, his burial places, his weapons of war, his tools for domestic use and his arms for the chase, his boats for river use, his pottery for domestic and ceremonial life.

In one instance the body and dress of one of these Neolithic people was found preserved in the bog or peat of the N.W. District of Lincolnshire known as the Isle of Axholme. The figure of a warrior carved in oak with an arrow in his hand was also found in the same part of the County.

From these remains we may learn something of the life he lived in this period in our County. These weapons or remains

consist of stone axes, spear heads, lance heads, arrow-heads, hammerstones, pot boilers, scrapers, gouges, chisels, flint knives, borers, graving tools, anvil stones, whetstones, polishers, sink stones.

So far as I have been able to trace them, taken alphabetically the places or parishes where these stone implements have been found are :—

*Alkborough	Irby (Flint knife)
Barlings	*Isle of Axholmé
*Billinghay	Kelstern
Branston	Kirton-in-Lindsey
Brigg	*Legbourne
Broughton	*Lincoln
*Burwell	*Lynwode
*Bully Hills	*Mablethorpe
Caythorpe	Maidenwell
Claxby near Alford	Manton
(Flint Flakes)	Messingham
Cold Harbour	Newport
*Cold Hanworth	Ponton (Great)
Crowle	Potterhanworth
Coningsby Warren	Reepham
Coxey Hills near Louth	*Ruckland
Doddington	*Salmonby
Donnington-on-Bain	*Saxilby
Elkington, South	Scawby
Fiskerton	*Scunthorpe
Fotherby	Sleaford
Friskney	Spalding (spearhead)
Ferriby, South	Stewton
Gonerby	*Stow
Little Goulceby	Tathwell
*Haxey	Welton by Lincoln
Healing (arrow-head)	Wragby
Horncastle	*Witham River
Hubbard's Hills	Woodhall

*Those marked with an asterisk are to be seen in the County Museum.

BRITISH
MUSEUM
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NATURAL
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Photo by

The **PRE-HISTORIC VESSEL** unearthed at Brigg in 1886.

A. Atkinson.

Most of these implements are excellent specimens of the art of Neolithic workers in Stone. For the purpose for which they were made they seem to have served splendidly. Some of these stone implements have been made to fit in wood handles or wood handles have been made to fit them, but in the course of ages the wood has perished although the stone implement remains a lasting witness to the worker's art.

BOAT CRAFT.

Speaking of wood leads us very naturally to the idea of the Boats used by these Neolithic People. Several of these boats have been found in the County, one of them with a very fine flint implement by its side. This was found at Castlethorpe near Brigg, and is the finest specimen of a Neolithic Boat yet found and preserved to us in England. It is still to be seen in our County in a special shed built to preserve it near Brigg Station. I am not able to bring the boat here for your inspection, but I am able to bring you a print of it from a photograph. The boat is made out of one large oak tree, about 45 feet long and $5\frac{1}{2}$ feet wide inside. It has apparently been charred and scraped and chopped out by a stone hatchet and was found on the banks of the River Ancholme between Castlethorpe and Glanford Brigg. Another boat not quite so large was found near by, but it was again covered up in situ.

Other boats of this character have been found at Lincoln, and at Scotter, North Lincolnshire, the latter was some 50 feet long and four feet wide inside, but what has become of these specimens I cannot tell as there is no record.

POTTERY.

Of the Pottery found in this County, the finest collection now kept together is undoubtedly that in the possession of one of our ex-presidents of the Naturalists' Union—Mr. H. Preston, of Grantham. Owing to his kindness, I am able to show you a print of part of this collection from a photograph.

The pottery consisted of what are known as :—Incense Cups, (ranging in size from 1 to 4 inches in diameter and from 1 to $3\frac{1}{2}$

inches in height and invariably found with burnt bones. It was probably used to carry sacred fire), Drinking Cups, Food Vessels, Cinerary Urns (3 to 8 inches high) or Urns used to hold the ashes of the body after cremation which was one of the methods of disposing of the dead in Neolithic times specially in the Bronze Period.

This kind of pottery has been found at:—

*Billingham	Kirton-in-Lindsey
Caythorpe	Lincoln
Denton	Manton
Donington	Normanton
*Dunston	*Potterhanworth
Ferriby South	Scotter
Heighington	Willingham North
Horncastle	Woolsthorpe
*Ingoldmells	

The pottery found with their interments is chiefly what may be called :—

CEREMONIAL POTTERY.

It seems to have been made for the purpose of interment with the dead and is not what may be called Domestic Pottery.

This ceremonial Pottery has been burnt in each case, it is all hand made, not shewing any sign of the wheel. Its chief decoration is by a line drawn by means of a cord across the pottery in different directions; sometimes it is in the shape of herring-bone pattern and sometimes it is nearly straight lines. These decorations are called chevron, saltire, zigzag, reticulated. Its colour varies, ashen grey, yellowish, brown, dark brown and pale red brick. The Incense Cup was probably used to carry the sacred fire to kindle the funeral pile.

Fragments of Domestic Pottery are rarely found in the mounds, tumuli or barrows where the people of importance were buried.



Part of Mr. H. Preston's collection of **EARLY BRITISH POTTERY.**

MUSEUM
5 DEC 21
NATURAL
HISTORY.

BURIAL PLACES.

Our preceding remark leads us very naturally to the subject of the burial places of these Neolithic People. They were buried in what are called tumuli or barrows—great mounds of earth, in which are mixed up broken pieces of domestic Pottery. Fragments from 20 vessels were found in one barrow, flints, and pebbles together with broken bones, their presence is not accidental. In stony districts there are some instances where the barrows are made of stones thrown together in heaps. This custom of raising a mound over the dead is ancient, widespread and continuous to the present day, examples are to be seen in Egypt, India, America, and Britian. In its simple form it is seen in the Village Churchyard while in its greatest development it is seen in the magnificent Pyramids of Egypt.

These barrows in Lincolnshire may be divided into two classes :—

THE LONG BARROW AND THE ROUND BARROW, and they generally indicate two classes of people. The Long Barrow is the oldest form of interment we have, and points to the earliest known inhabitants of our County, a race of people who are known to specialists as the Dolicho-Cephalic or long-headed people. "The Long Barrows are like the Gang-graben of Scandinavia in which the dead are buried and not burnt," so says Sir. J. Lubbock.

One of these Long Barrows exists at Swinhope near Grimsby and there are others in different parts of the County, Wold Newton and elsewhere. With these interments no Bronze or metal implements have been found except when these Long Barrows have been used for what are called secondary interments in the Bronze age or later. The date of these Long Barrows is by Canon Greenwell put down to 1000 B.C., but he expresses the probability that they are much earlier, and that they are before the Bronze Age or the introduction of Bronze into this country. Other writers place the date of these Long Barrows much earlier fixing the introduction of Metal as early as 1800, or 2000 years, B.C., therefore the Long Barrows of Lincolnshire may be 5,000 years old.

The Round Barrows belong to the second race of people who existed in our County and are called the Brachy-cephalic or Round Headed people and with this class of people occasionally bronze implements have been found as well as the stone implements.

A plate picture of these different kinds of skulls appears on page 20 of the British Museum Handbook to the Antiquities of the Bronze Age—and it is considered very probable that the Brachy-cephalic were the Conquerors of the Dolichocephalic people in the early Bronze Age.

Incompleteness of the circle in the Barrow, points to design. Yet neither care nor trouble seem to have been spared in their funeral rites. The Barrow was considered to be the habitation of the Spirits of the dead.

An alphabetical list of the places where the Round Barrows have been located in Lincolnshire shows how widely these people spread over the County.

Barrow in the extreme North, several	Horncastle, on the road side to Caistor
Bardney	
Brigg	Ingoldsby
Burgh in the Marsh in the extreme East	Kelstern
Burgh-on-Bain	Langton by Spilsby, (3)
Bully Hills, (6)	Revesby
Burnham	Riseholme
Claxby by Alford	Spellow Hills or Hills of the Slain
Cockerington	Temple Bruer, (2)
Cleatham	Wainfleet, (2)
Donington-on Bain	Walcot
Falkingham in the South	Well near Alford, (3)
Gainsborough in the West	Welton in the Marsh
Halton-West	Wold Newton, (20 Urns)
Haugham	

It is also to this same class of Brachy-cephalic or Round-headed people that we must attribute the lines of entrenchments in various parts of the County—Honington, Ingoldby, Kingerby and other places are examples.

The Brachy-cephalic people seem in the Early Iron Age to have been absorbed in the Dolicho-cephalic People the earlier and more numerous race surviving after being conquered by the aggressive race of the Round Headed people. The modern Danish Head exhibits the same peculiarities as the Round Headed people.

In these Barrows were buried the Chief of the Clan or his family; by the side of those interred were placed in some cases drinking vessels, food vessels and the so-called Incense Cup, but Canon Greenwell thinks they were for carrying the sacred fire to burn the body.

There were several modes of burial:—

I. One was by *Inhumation*, that is simply placing the body on the ground and covering it up with soil; occasionally the "Trunk of a tree" was used; three instances of Tree Trunk burials five feet below the surface occurred in Grimsby Churchyard, which may be compared with Gristhorpe, East Yorkshire. At other times a hole was sunk in the ground below the ground level. Sometimes a *Cist* or stone box or coffin was placed round the body and on the top of the uprights a long stone to cover the body. Such an interment was found at Rothwell near Caistor.

II. By *Cremation*, or burning, sometimes the ashes were collected and placed in an Urn called a cinerary urn. Burning the body wholly or in part seems to have been one of the sacred rites of burial.

In nearly every case where inhumation has taken place the body is placed facing the Sun and is not laid full length but on its side in a contracted position, that is the head bent forward and the knees drawn up to the chest. Some specialists think this attitude indicates the sleeping attitude, while others think it points to the fact that as the child entered life in a contracted position so the dead body was similarly placed for departure from life and with a possibility of entering into a new life after death.

In nearly every case where the body has been burnt whether wholly or in part, holes seem to have been bored or drilled into the ground underneath the body.

Frequently by the side of the dead warrior are placed weapons that he used when living, axe heads, arrow heads, and other weapons, and in the case of the oak figure found in the Isle of Axholme, the warrior was represented with bow and arrow in his hand.

CLOTHING. In the one case where clothing has been found with these people buried in our County, the body was that of a woman dressed in skins with sandals on her feet. It was found at Haxey in the Isle of Axholme preserved in the peat and seems to corroborate Cæsar's statement in Book V. par. 147, where he describes the Britons or Celts as wearing skins on their bodies for clothing and the parts of the body not covered with skins being painted in order to render themselves more terrible in battle.

Other instances outside our County show fragments of cloth or linen and in certain instances woollen garments.

LIFE OF THE NEOLITHIC PEOPLE.

Naturally we may ask how did these people live, and the answer undoubtedly is by hunting, fishing and fowling, with every probability they had large flocks of sheep, goats, swine and cattle.

The Aryans or Neolithic People (according to Canon Taylor) were *nomad* herdsmen who had domesticated the dog and possessed Ox-wagons and dug-out canoes, but had no metals except possibly Copper. During the summer they lived in huts and during the winter in pits. Their dress consisted of skins sewn together and they knew how to kindle fire and to count up to 100.

It is doubtful whether they tilled the ground but they probably pounded wild cereals such as spelt and barley in stone mortars. Marriage was a recognised institution, but they were polygamists and practised human sacrifices. While believing in a future life as is shown by their care of the dead, they had no idols but probably revered the powers of nature. In the way of food they had hazel nuts, water chestnuts and acorns, but it is remarkable that they did not eat fish.

Their dwelling-places in this County seem to have been hut circles but little can be said of them as practically no remains are traceable in the present time but it is assumed that they would be like others in different parts of England. That Woman occupied a position of respect and equality is to be inferred from the fact of the great respect shown to her by the burial mounds. In some instances she is the sole occupant of the barrow, which is inconsistent with the idea of her position being that of a merely servile character.

The Child also seems to have been treated with love and care and respect, as in certain instances the sole occupant of a barrow is that of a child.

That the semi-savage state had been passed is a very natural inference from the decoration of their pottery and flakings of their flint weapons.

In Art they were far below men of the Cave Period. They came across Europe from Central Asia, the birthplace of such races, and spread out east and west in Europe.

What was their RELIGION? Was it the worship of Ancestors as in the case of the Chinese, was it the worship of Great Men or a fear of them, that led to these offerings to the dead? That they believed in a future state seems almost a certainty by their food being placed with the dead as well as their weapons.

Of one thing we may be quite sure, they were not *idolators*, not in a single instance in all the barrows opened (over 370 in England) has a single relic or trace of what may be called an image or idol been found.

Frequently broken bones from which the marrow has been taken are found in the Barrows which seem to be reminders of the Funeral Feast taking place when the body was interred.

A PYGMY RACE IN LINCOLNSHIRE.

So far we have not referred to what is one of the most recent discoveries in our County regarding Pre-Historic Man. Eight years ago I called the attention of Mr. E. E. Brown at that time

Manager of a branch of Smith-Ellisons Bank at Scunthorpe, to the subject of what are now known as Pygmy Flints and asked if he had ever found any on Scunthorpe Common. Promptly he said: No, never. I promised to send him an article on the subject by my friend the Rev. Reginald A. Gatty, of Hooton Roberts, Doncaster. As I said Scunthorpe Common looked to me a most likely spot for finding them and suggested that Mr. Brown should look carefully for them on his next visit, which he did, and found many. This was the first recorded discovery of Pygmy Flints in Lincolnshire and is due to Mr. Brown.

This placed Mr. Brown in correspondence with Mr. Gatty who has since made long periods of search on the Common where they have been found in hundreds. I bring a few specimens from my own collection, and one or two slide photographs of some in Mr. Gatty's collection and also a photograph of some from the Vindhya Mountains, India. Mr. Gatty's collection which numbers thousands has been exhibited in Edinburgh, Glasgow, Dublin, Manchester, London and I believe, in Berlin. Mr. Brown's collection has now been given to the Lincoln County Museum.

These Pygmy Flints are of various forms and sizes chiefly minute; similar forms and shapes of flint with the same minute working have been found in Yorkshire, Lancashire, Bedfordshire, on the Continent, in Belgium, France, Germany; in Africa, in Egypt and in Central Africa; in Asia, India has produced a great number.

The little people from the Ituri Forest seem to be the nearest living specimen of humanity to these pygmy races who formerly lived in our County. A settlement the Pygmies certainly had at Scunthorpe and probably at Manton Common also, only a few miles further away. These settlements are almost always found close to, or upon a peat district. For further details regarding the Pygmy Implements I must refer to the Presidential Address of 1907.

THE BRONZE AGE IN LINCOLNSHIRE.

From the references already made to metal implements being found in the Barrows with interments you will doubtless

have noticed that there was a time when metal was not in use by Pre-historic man in Lincolnshire and further that the period seems to go a long way back—as the introduction of metal into Pre-Historic Man's life goes back (so Mr. Read of the British Museum says) five or six thousand years. To what date must we place the Long Barrow, at least it must be anterior to that of metal which probably places us 3000, B.C., or 5000 years back in our History.

Many people have thought it probable that the manufacture of Bronze originated in Britain: Tin and Copper the component parts of Bronze abound in England and specially in Cornwall and Anglesea. The earliest name we have for the British Isles is the Tin Islands or Cassiterides and they are so described by Herodotus Book III, c. 115. Homer frequently mentions Cassiteros as used in the Trojan War probably B.C. 1100. All this tends to show that Tin, if not Bronze, was in use longer than we generally give to its introduction, but Sir J. Evans thinks that the introduction of Bronze was from the Continent.

Hesiod who flourished B.C. 900 lived in the period of transition from Bronze to Iron, for he mentions the Ancients as having used bronze and not iron. Lucretius states that "Iron was discovered later than Copper." Aeschylus alludes to Iron in his tragedy of "The Seven against Thebes."

In the Brachy-cephalic or Round-headed period we rarely find Bronze implements with their interments. Out of 301 unburnt bodies only 13 had implements of bronze, which seem to have been the property of these people when living—54 had implements of stone. "It is to this Bronze Age we must attribute the introduction of cremation as a custom at burials" (Boyd Dawkins), and therefore it is in their time that we must place the introduction of metal weapons, implements and vessels for domestic use, but the use of Bronze extended well into what may be called the late Celtic or Early Iron Age about 400 years B.C., but as regards Lincolnshire not quite so early a period may be necessary.

Various Bronze implements have been found all over Lincolnshire and so far as I have been able to trace them they consist of—arrow heads, celts, socketed, and unsocketed, spear-heads, swords, circular shields, palstaves, adzes, knives, daggers, hammers, brooches, chisels, armlets, bracelets, bridle bits, box, trumpet, horse trappings, (probably a Peytrel at Caenby). These implements show in their latest developments a very advanced art in casting and design—the former plain surfaces being enriched by designs in relief and engraving.

A cave at Heathery Burn in the Durham Limestone (Greenwell's Barrows, p. 107), had been the habitation of a family in the Bronze Age; the inhabitants seem to have been overwhelmed by a flood. With them were found weapons, implements, ornaments, pots, pans, for all kinds of domestic use.

The places where bronze articles have been found in our County alphabetically arranged are:—

Anwick	Fleet	Newport
Barton-on-Humber	Flixborough	Owersby North B.M.
Billinghay	Fiskerton	*Reepham
Boston, B.M.	Gainsborough	Roxby, B.M.
*Branston, B.M.	Halton West, B.M.	Scothorne
Brigg	*Haxey, B.M.	Scunthorpe, B.M.
Broughton (arrow head)	Horncastle, B.M.	Sleaford
Burringham	Kelsey, South	Toynton, B.M.
Caenby	Kyme, South	Washingboro'
Caythorpe	Langton	Winghale, B.M.
Crosby	Leasingham	Winterton
Crowle	*Lincoln	Winteringham
Crowland	Nettleham	Wrawby
Elsham	and the *River Witham.	

It is to the Bronze Age Professor Boyd Dawkins would attribute the erection of the great Stone Circles such as Stonehenge, Avebury and other places, but of these stone circles no remnants exist in Lincolnshire that I am aware of.

Doubtless there are many finds in Lincolnshire in private possession that are not described in any book or catalogue extant. It is only by personal knowledge and by contributing that knowledge to a common centre that anything like a correct record can be made for the benefit of students and futurity of the Pre-Historic Period in Lincolnshire.

Pardon me for a few minutes if I deal with a personal matter as regards my views. It may be said of me as a clergyman, What is my personal belief in scripture regarding Early Man on Earth? Is it possible to reconcile the teachings of Scientific results with the Scriptural narratives? I say (as far as I understand them) unhesitatingly, Yes!

There is a Stone Age in the Bible, there is a Bronze Age in the Bible, and the more closely you search, the more does the Bible and Science agree. The Bible states The Creation took place

In the Beginning—No date given.	There are,
Stone Memorials	Jacob.
Stone Seats	Eli
Stone Knives	Moses' Wife ; and Joshua.
Stone Weapons	David, and Stone Slingers.
Stone Vessels.	

Bronze translated Brass in the Pentateuch (Exodus 7, 19 and 45), is mentioned 45 times. Iron is only mentioned four times.

Take both together the Bible revelation, and science, and then established fact, only confirms the faith of those who look to the Divine Author of Creation and Revelation as One Being interested in the welfare of all mankind.

B.M. Refers to those objects in the British Museum.

*The asteristic refers to those objects in the County Museum at Lincoln.

Local Distribution of Colour and Band. Formulae in *Helix nemoralis*.

C. S. CARTER, LOUTH.

Having observed the great contrast in the colour of *Helix nemoralis* on the north and south sides of the Pullover at Mablethorpe, I collected all the shells I could find in May, 1900,—on the north side May 10th, and the south side May 24th. Why so great a contrast occurs I do not attempt to explain, but simply give the facts. Not only are the climatic conditions, but those of vegetation and soils also, practically the same on both sides; it is therefore the more remarkable that such differences occur. One hundred and forty seven specimens were collected, their colour variation and band formulæ is tabulated as follows:—

	North side of Pullover. Band Formulae.	Number of Specimens.	South side of Pullover. Band Formulae.	Number of Specimens.
var. castanea	00000,	11	00000,	3
	12345,	1		
		----- 12		----- 3
var. rubella	12345	1	12345	1
	(123)(45)	2	123(45)	1
	(12545)	1	0:3(45)	1
	00345	1	0:34:	3
	0 2 34:	1	0034:	6
	(:)3(45)	1	00300	3
	00300	1	00000	25
	00000	1		
		----- 9		----- 40

var. libellula	12345	7	12345	2
	12345	3	123(45)	1
	02345	16	(123)(45)	3
	(12)345	2	(12)3(45)	1
	023(45)	21	02345	1
	(123)(45)	9	12345	2
	123(45)		00:00	1
	: : : : :	8	0034:	1
			: : 3(45)	1
			(: :) 3(45)	1
			: : : : :	1
				<hr/>
		67	15	
var. albescens	00000,	1		
		<hr/>		
		1		
		<hr/>		
		89	58	

From the above figures it will be observed that of variety *castanea* there are more than 12 per cent. on the north side of the pullover, while on the south side there are less than half that number. Of variety *rubella* there are only about 10 per cent. on the north side, while on the south side there are nearly 70 per cent.; the band formulæ of this variety also presents a great contrast; on the north side, there are less than 2 per cent. of the bandless form, while on the south side there are nearly 44 per cent. Of variety *libellula* there are on the north side more than 75 per cent., while on the south side there are only about 25 per cent. The band formulæ of this last variety again presents a marked contrast; of formula 02345, there are nearly 18 per cent., and of formula 023(45), there are nearly 24 per cent., while on the south side they were entirely absent.

A New British Beetle.—**Longitarsus nigerrimus**, Gyll. Four specimens of this beetle were taken by Dr. Wallace by sweeping at night on September 7th, 1907, near Cleethorpes, (see the Entomologists' Monthly Magazine, May 1908).

CENSUS OF LINCOLNSHIRE LAND AND FRESHWATER MOLLUSCA

to end of 1908.

W. DENISON ROEBUCK, F.L.S.,

President L.N.U.

It is proposed—with the assistance of the Lincolnshire conchologists and all interested in the subject—to prepare for publication a new and detailed Catalogue of the Land and Freshwater Mollusca of the County, but before this can be done, there are numerous blanks to be filled up.

The districts into which the county is divided are 34 in number—as set forth by the Rev. E. Adrian Woodruffe-Peacock, with coloured map, in “The Naturalist” for October 1895, pp. 289—301.

I give them in the order in which they have been least worked for Mollusca, as follows:—

	No. of species recorded.		No. of species recorded.
18 Mid. Holbeach	none	14 E. Heckington	43
18 E. Long Sutton	7	13 E. Nocton	43
10 S. West Fen	10	8 N. Ludborough	44
12 Boston & East Fen	20	5 W. Gainsborough	48
17 N. Swineshead	23	7 N. Market Rasen	48
16 S.E. Crowland	23	4 Great Grimsby	48
6 W. Saxilby	25	11 S. Burgh	49
16 S.W. Stamford	26	7 S. Wragby	52
3 N.E. Barton-on-Humber	27	6 E. Lincoln (North)	59
18 W. Spalding	27	15 S. Corby	65
14 W. Sleaford	29	9 Saltfleet	69
2 N. Winterton	29	2 S. Broughton	74
5 E. Kirton Lindsey	30	15 N. Grantham	67
16 N. Bourn	30	3 S.W. Caistor & Brigg	78
17 S. Donington	31	13 W. Lincoln (South)	79
10 N. Horncastle	38	11 N. Alford	79
1 Isle of Axholme	41	8 S. Louth	84

The whole number of species recorded for the county is 116—of which 111 are known for North Lincolnshire, and 100 for South.

The mass of material available is the result of the labours of numerous conchologists for many years, and has been brought together by my friends Mr. C. S. Carter and Rev. E. Adrian Woodruffe-Peacock, as well as myself, from our numerous and

good friends who has investigated various parts of the county.

From the point of view of completing the record for certain representative common or generally distributed species—*Arion ater* has been noted in 32 out of the 34 districts, *Limnæa peregra* in 31, *Agriolimax agrestis* and *Hygromia hispida* in 30, *Helix aspersa* and *H. nemoralis* in 29, *Bythinia tentaculata* in 27, *Hyalinia cellaria* in 26, *Cochlicopa lubrica* in 25, *Pyramidula rotundata* in 20, *Sphærium corneum* in 19, and *Anodonta cygnea* or *A. anatina* in 17, and when the complete range is ascertained for the greater number of these, the list may be considered as ready for publication.

There are various species which yet remain to be discovered. It is within the bounds of possibility for *Malacolimax tenellus* to turn up on primitive land, *Hygromia fusca* ought to occur somewhere, various species of *Vertigo*, such as *V. antivertigo*, *V. moulinsiana*, and *V. pusilla*, await discovery, *Planorbis glaber* should turn up, the occurrence of *Limnæa glabra* should be confirmed by its discovery in a new locality, the only one on record being now destroyed, and *Acicula lineata* ought to reward search in the woods, and it is hoped that our conchologists may be successful in finding some if not all of them.

Of work which non-conchologists can do to assist us, there are two suggestions to make. First, that the big swan-mussels occurring in canals and rivers and large sheets of water should be sent for determination from as many districts as possible. Second, that collections of *living slugs* should be sent to me, in tightly closed air-tight tins, for my examination.

I may add that to secure greater value and interest we desire more detailed information than bare records. Notes not merely as to locality, but as to dates, habitats, environment, geological and physiographical associations, life-histories, etc., and for the introductory observations, biographical and other notes on the Lincolnshire conchologists and their work will be much valued; and from members who are photographers views of characteristic localities and habitats, and snap-shots of collectors, etc.

	I	2N	2S	3NE	3SW	4	5E	5W	6E	6W	7N	7S	8N	8S	9	10N
<i>Testacella haliotidea</i> <i>Drap.</i>								5W								
<i>Testacella scutulum</i> <i>Sby.</i>					3SW											
<i>Limax maximus</i> <i>L.</i>	I		2S	3NE	3SW	4	5E	5W	6E		7N	7S		8S		10N
<i>Limax cinereo-niger</i> <i>Wolf.</i>					3SW											
<i>Limax flavus</i> <i>L.</i>	I		2S		3SW	4								8S		
<i>Limax arborum</i> (<i>B.-Ch.</i>)	I		2S	3NE	3SW						7N	7S		8S		
<i>Agriolimax agrestis</i> (<i>L.</i>)	I	2N	2S	3NE	3SW	4	5E	5W	6E	6W	7N	7S	8N	8S	9	10N
<i>Agriolimax laevis</i> (<i>Mull.</i>)	I		2S						6E	6W	7N	7S	8N	8S	9	10N
<i>Milax gagates</i> (<i>Drap.</i>)																
<i>Milax sowerbyi</i> (<i>Fér.</i>)				3NE					6E		7N			8S		
<i>Arion ater</i> (<i>L.</i>)	I	2N	2S	3NE	3SW	4	5E	5W	6E	6W	7N	7S	8N	8S	9	10N
<i>Arion subfuscus</i> (<i>Drap.</i>)											7N	7S		8S		
<i>Arion hortensis</i> <i>Fér.</i>	I	2N	2S	3NE	3SW	4	5E		6E		7N	7S	8N	8S		
<i>Arion circumscriptus</i> <i>Johnst.</i>				2S	3NE	3SW	4		5W	6E	7N	7S	8N	8S		10N
<i>Arion intermedius</i> (<i>Norm.</i>)	I	2N	2S	3NE		4		5W			7N	7S	8N	8S	9	10N
<i>Vitrina pellucida</i> (<i>Mull.</i>)		2N	2S	3NE	3SW	4	5E		6E			7S	8N	8S	9	10N
<i>Hyalinia lucida</i> (<i>Drap.</i>)			2S											8S		
<i>Hyalinia cellaria</i> (<i>Mull.</i>)		2N	2S		3SW	4	5E	5W	6E		7N	7S	8N	8S	9	10N
<i>Hyalinia helvetica</i> (<i>Blum.</i>)						4			6E		7N	7S	8N	8S		10N
<i>Hyalinia alliaria</i> (<i>Miller.</i>)	I		2S	3NE	3SW			5W	6E		7N	7S	8N	8S	9	10N
<i>Hyalinia nitidula</i> (<i>Drap.</i>)	I	2N	2S	3NE	3SW	4	5E	5W	6E		7N	7S	8N	8S	9	10N
<i>Hyalinia pura</i> (<i>Alder.</i>)			2S		3SW						7N	7S	8N	8S	9	
<i>Hyalinia radiatula</i> (<i>Alder.</i>)			2S		3SW									8S		
<i>Hyalinia crystallina</i> (<i>Mull.</i>)		2N		3NE	3SW		5E	5W	6E		7N		8N	8S	9	
<i>Hyalinia fulva</i> (<i>Mull.</i>)		2N	2S	3NE	3SW			5W			7N	7S		8S	9	
<i>Zonitoides nitidus</i> (<i>Mull.</i>)	I				3SW							7S		8S		
<i>Zonitoides excavatus</i> (<i>Bean.</i>)																10N
<i>Punctum pygmaeum</i> (<i>Drap.</i>)			2S		3SW		5E				7N		8N	8S	9	
<i>Pyramidula rupestris</i> (<i>Drap.</i>)																
<i>Pyramidula rotundata</i> (<i>Mull.</i>)		2N	2S	3NE	3SW	4		5W	6E		7N	7S	8N	8S	9	10N
<i>Acanthinula aculeata</i> (<i>Mull.</i>)	I		2S		3SW			5W						8S		
<i>Helix aspersa</i> <i>Mull.</i>	I	2N	2S	3NE	3SW	4	5E	5W	6E		7N	7S	8N	8S	9	10N
<i>Helix pomatia</i> <i>L.</i>									6E							
<i>Helix nemoralis</i> <i>L.</i>	I	2N	2S	3NE	3SW	4	5E	5W	6E	6W	7N	7S	8N	8S	9	10N
<i>Helix hortensis</i> <i>Mull.</i>	I		2S		3SW				6E		7N		8N	8S		
<i>Helicigona arbustorum</i> (<i>L.</i>)	I	2N	2S	3NE	3SW	4	5E	5W	6E		7N	7S	8N	8S	9	10N
<i>Helicigona lapicida</i> (<i>L.</i>)				2S				5W	6E					8S		
<i>Helicella virgata</i> (<i>Da Costa.</i>)		2N	2S	3NE	3SW	4	5E		6E		7N	7S		8S	9	10N
<i>Helicella itala</i> (<i>L.</i>)				2S	3SW	4	5E		6E	6W			8N	8S	9	
<i>Helicella caperata</i> (<i>Mont.</i>)		2N	2S	3NE	3SW	4	5E	5W	6E		7N	7S	8N	8S	9	10N
<i>Helicella cantiana</i> (<i>Mont.</i>)	I	2N	2S	3NE	3SW		5E	5W	6E		7N	7S				10N
<i>Hygromia rufescens</i> (<i>Penn.</i>)			2S		3SW	4	5E	5W	6E		7N	7S	8N	8S	9	
<i>Hygromia hispida</i> (<i>L.</i>)	I	2N	2S	3NE	3SW	4	5E	5W	6E	6W	7N	7S	8N	8S	9	10N
<i>Hygromia granulata</i> (<i>Alder.</i>)														8S		
<i>Vallonia pulchella</i> (<i>Mull.</i>)		2N	2S		3SW	4		5W	6E	6W	7N		8N	8S	9	10N
<i>Vallonia costata</i> (<i>Mull.</i>)		2N	2S		3SW					6W	7N			8S	9	10N
<i>Vallonia excentrica</i> <i>Sterki.</i>																9
<i>Ena obscura</i> (<i>Mull.</i>)			2S		3SW		5E	5W	6E		7N	7S	8N	8S		10N
<i>Pupa secale</i> <i>Drap.</i>																
<i>Pupa cylindracea</i> (<i>Da Costa.</i>)			2S	3NE	3SW	4								8S	9	10N
<i>Pupa muscorum</i> (<i>L.</i>)		2N	2S		3SW	4	5E		6E		7N		8N	8S	9	
<i>Vertigo pygmaea</i> (<i>Drap.</i>)			2S											8S	9	
<i>Vertigo alpestris</i> <i>Alder.</i>																
<i>Vertigo angustior</i> <i>Jeff.</i>																9
<i>Vertigo minutissima</i> (<i>Hartm.</i>)						4										9
<i>Sphyradium edentulum</i> (<i>Drap.</i>)			2S											8S	9	
<i>Clausilia laminata</i> (<i>Mont.</i>)			2S					5W	6E		7N	7S	8N	8S		
<i>Clausilia bidentata</i> (<i>Strom.</i>)		2N	2S		3SW			5W		6W	7N		8N	8S		10N
<i>Clausilia rolphii</i> <i>Turton.</i>											7N			8S		

IOS	IIN	IIS	12	13E	13W	14E	14W	15N	15S	16N	16SW	16SE	17N	17S	18W	18MD	18E
	IIN							15N		16SW							
IOS	IIN	IIS	12	13E	13W	14E	14W	15N	15S	16N			17N		18W		
					13W			15N	15S								
	IIN	IIS	12	13E	13W	14E	14W	15N	15S	16N			17N	17S	18W		
	IIN	IIS		13E	13W		14W	15N	15S	16N				17S	18W		
	IIN				13W	14E		15N	15S								
	IIN	IIS			13W				15S								
	IIN			13E	13W			15N	15S	16N		16SE		17S			
	IIN	IIS		13E	13W	14E		15N	15S			16SE		17S	18W		
	IIN			13W	14E	14W		15N									
	IIN	IIS	12	13E	13W	14E	14W	15N	15S	16N	16SW	16SE	17N	17S	18W		
IOS	IIN	IIS			13W			15N	15S			16SE					
					13W												
IOS	IIN	IIS	12	13E	13W	14E		15N				16SE		17S	18W		
	IIN				13W	14E								17S	18W		
	IIN				13W	14E				16N		16SE		17S	18W		
IOS	IIN			13E	13W	14E		15N				16SE		17S	18W		
	IIN				13W	14E				16N		16SE	17N	17S	18W		
	IIN	IIS	12	13E	13W	14E		15N	15S	16N		16SE	17N	17S	18W		
	IIN	IIS		13E	13W	14E		15N	15S	16N		16SE	17N	17S	18W		
	IIN		12	13E	13W		14W	15N	15S			16SE	17N		18W		
	IIN			13E	13W	14E		15N	15S					17S	18W		
	IIN				13W	14E											
	IIN							15N	15S								
	IIN			13E	13W				15S								
	IIN	IIS	12		13W	14E		15N	15S			16SE					
IOS				13E	13W												
IOS	IIN	IIS	12	13E	13W	14E		15N	15S	16N		16SE	17N	17S	18W		
	IIN	IIS		13E	13W	14E		15N	15S			16SE	17N	17S	18W		
	IIN	IIS		13E	13W			15N	15S			16SE	17N	17S			
	IIN				13W	14E		15N							17S		
					13W												
				13E				15N	15S								
				13E				15N	15S								
	IIN			13E	13W			15N	15S								
IOS	IIN		12		13W			15N					17N				
					13W												
	IIN			13E	13W	14E		15N	15S	16N				17S			
	IIN				13W												
	IIN			13E	13W					16N							
					13W												
					13W		14W	15N									
	IIN		12		13W	14E								17S			
	IIN			13E	13W	14E			15S								
	IIN				13W	14E		15N	15S								
IOS				13E		14E											
				13E	13W			15N	15S								

FIELD MEETINGS, 1908.

The Union held its Fifty-ninth Field Meeting at HOLTON PARK, on the 12th of June. The early morning had been showery, but a fair company under the circumstances foregathered and had a most enjoyable day, finishing up with a plenteous feast, generously provided by Mr. and Mrs. Dixon, at the Station Hotel.

The soil of this district is pure blown sand. It is partly the residual detritus of the cut back escarpment of the Wolds, partly the more indestructible portion of the clay beds, and of the Plateau Sands and Gravels, which lie on the high portion of the valley between cliff and wolds. The greater proportion was transported by south-westerly winds long before the enclosures came in the early part of last century. What we can say of this soil for certain is that it is subsequent in date to the Chalky Boulder Clay on which theeolian sands lie. In other words, this means that it is younger in time than man's advent into the district we now call Britain, or that it is after the age of the large mammals such as hippotamus, woolly rhinocerus, and mammoth; though it must have been accumulating from approximately their time till the enclosures. The planting of woods, "wind breaks," and hedges stopped at once the drift of the sands in heavy gales from the south-west.

The flora of the district is interesting, but limited by soil conditions. The species noted were 170, from forest trees to garden weeds. The three best were *Apium inundatum*, *Botrychium Lunaria*, and *Pyrola minor*. The first of these was quite unexpected, and therefore the best. All three are confined to very limited areas and rare. The other species were what might be expected by the soil botanist, *Ægopodium* near houses only, *Chelidonium*, *flore pleno*, the same, with *Corydalis bulbosa* and *C. lutea*. *Geranium lucidum* is a garden weed and escape in many places. The sandy soil in woodland, pasture or tilth provided

Ajuga, *Athemis arvensis*, just coming into flower, *Arenaria serpyllifolia*, *A. trinervia*, *Bromus racemosus*, *Cerastium arvense*, *C. glomeratum*, *Conopodium*, *Erodium* was curiously rare, *Erophila vulgaris* of the very largest size, *Listera ovata*, *Lycopsis*, was unusually rare, *Myosotis collina* was in pasture or by roadside, *M. versicolor* in tilth. *M. sylvatica* was just within a wood by railway side and very rare; a ballast casual, I believe. *Papaver argemone*, and *P. Rhæas Priorii*. *Polygala vulgaris*, blue flowered, was only seen in short park turf. *Primula vulgaris*, very rare, and only by the side of a ditch with limestone water from the chalk. *Sagina procumbens* was in park grass. *Scleranthus annuus*, was very rare, or we were too early for it. *Stellaria graminea* scarce. *Urtica arens* confined to the neighbourhood of houses, or under trees in the park where cattle stand. *Veronicas* were in full force. Seven ferns were noted in the woods. The clay and brick pits in the underlying Kimeridge clay were a striking contrast to the overlying flora. *Alisma plantago*, *Apium inundatum*, *Carex flacca*, *C. Goodenowii*, *C. hirta*, *C. inflata*, *Cuicus palustris*, *Epilobium montanum*, *Equisetum limosum fluviatile*, and the hybrid *arvense x limosum*, *E. palustre*, *Galium palustre Witheringii*, *Hydrocotyle*. *Lemna trisulca* was the only species seen—with it was the rarely recorded *Ricciocarpus natans*. *Myosotis palustris*, *Potamogeton natans*, *P. polygonifolius*, *Ranunculus flammula*, *R. hederacens*, *Sagina apetala*, *Samolus*, *Stellaria uliginosa*, *Tussilago* and *Typha latifolia*.

Mammals were scarce. The rabbit was ubiquitous. The best fact noted was in regard to the water vole. By the side of the large Kimeridge Clay pit east of the Holton-Nettleton road the voles make large nests of dry grasses in the *Juncus* fringe by the waterside. I have never met with these before. The circumstances here are most unusual. On one side of the pit there is a wide stretch of marshy ground, on the other the retentive clay of the pit face.

As a neighbourhood for birds these sandy soils seemed defective. The Green Woodpecker was common; and the President carried away a Kestrel as a memorial of a pleasant meeting.

The Kimeridge Clay as exposed at present in the Holton-le-Moor brickyard pit is singularly unfossiliferous. I hunted over the ground fairly well on going over the walk on the 2nd, in preparation for the Union Meeting, but only took a fragment—though remarkably clean and well preserved—of *Ammonites biplex*, Low. Curiously enough this species is recorded in the Survey *Memoir* for the next parish in the Moortown hill pit, but not for Holton. Mr. H. Preston authoritatively named it.

Lepidoptera observed by Dr. Birtwhistle and Mr. G. W. Mason, at L.N.U. Meeting at Holton-le-Moor, 12th June, 1908.

One of the Pierids.	<i>M. montanata</i> .
<i>Pararge megæra</i> .	<i>M. fluctuata</i> .
<i>Cœnonympha pamphilus</i> .	<i>Cidaria corylata</i>
<i>Nisoniades tages</i> .	<i>Scoparia ambigualis</i> .
<i>Nemeophila plantaginis</i> .	<i>Bactra lanceolana</i> .
<i>Acronycta psi</i> .	<i>Coccyx tædella</i> .
<i>A. rumicis</i> .	<i>Gelechia ericetella</i> .
<i>Zonosoma pendularia</i> .	<i>Teleia proximella</i> .
<i>Cabera pusaria</i> .	<i>T. luculella</i> .
<i>Bupalus piniaria</i> .	<i>Sciaphila hybridana</i> .
<i>Eupithecia lariciata</i> .	<i>Phlœodes tetraquetra</i> . (?)
<i>Thera variata</i> .	<i>Elachista rufocinerea</i> .
<i>Melanippe sociata</i> .	

LARVÆ :

<i>Porthesia similis</i> .	<i>Cheimatobia brumata</i> .
<i>Diloba cæruleocephala</i> .	<i>Hypsipetes sordidata</i> .
<i>Cosmia trapezina</i> .	<i>Tortrix xylosteara</i> .
<i>Cleoceris viminalis</i> .	<i>Pædisca solandriana</i> .
<i>Phigalia pedaria</i> .	<i>Laverna phragmitella</i> .
<i>Hybernia defoliaria</i> .	

Several imagines of *Laverna phragmitella*, which is an addition to the Lincolnshire List, have been bred from bulrush heads.

Dr. Wallace reports :—

COLEOPTERA. Fifty-six species were taken by Mr. A. Bullock, including four which are new to the County :—*Mysia*

oblongo-guttata L., *Strophosomus lateralis* Payk., and a single specimen of the great rarity *Ilybius subcæneus*. This last named species has until recently been one of our rarest British water-beetles, and indeed was considered doubtfully indigenous. Further particulars of this very interesting capture will be found on another page, in the list of Lincolnshire Coleoptera.

The Sixtieth Field Meeting was held in the SLEAFORD area, on July 7th, 1908, on the kind invitation of Ald. A. L. Jessopp, J.P., of Leasingham. A small party was conveyed by waggonette from Sleaford Station to Haverholme, where Mr. J. D. Coward had arranged his collection of Entomological specimens, and also a fine series of Birds' eggs. These were much admired, and Mr. Coward was highly complimented on the splendid work he had done in so short a time, for he had only been collecting a few seasons. Mr. Coward then conducted the visitors through Haverholme Woods, pointing out many spots where his best things were taken. Then on to a still virgin soil with that rugged growth which rare insects delight to make their home. A detour was made along the River bank which, as it is not being used for traffic, remains in a natural condition. The heart of any man interested in Natural History research could not help but respond to such an inviting area.

Unfortunately at that time of our visit the lower lying ground was flooded, so that bird life had been injured, and some of the district could not be worked. Some fine specimens of *Succinea putris* were found in quantities on the rushes; and along the stream bank a fine batch of larvæ of the Peacock butterfly was taken. Later in the County Museum, it formed an interesting exhibit until they developed into the perfect insect. Many notes were obtained and added to the recorders lists. Later in the afternoon a short drive took the party to Leasingham where Mrs. and Ald. Jessopp gave splendid entertainment to High Tea, and conducted his visitors round the grounds, which are most interesting. The aviary proved a great attraction, and the garden was a picture. Some Early British and Roman Pottery, also some Bronze implements found in the County were exhibited. Subsequently the pottery was handed over to the Curator to be

presented to the County collection at Lincoln. This meeting was a most pleasant one both to Naturalist and Archæologist. It was on a fine estate, with some exceedingly good trees in the park, and a splendid herd of deer. Haverholme priory is represented by some remains still on the site of the old Ecclesiastical edifice.

BOTANY :—There were but few interesting plants observed at this meeting. No less than 230 notes of species and varieties were made, but of these only two are worthy of mention here. At Haverholme *Cenanthe fluviatilis* was conspicuous. It has never been recorded out of Divisions 14, 16, and 17. A very curious new variety turned up too, *Pulicaria dysenterica glabrata*. For such good ground the flora was a singularly poor selection, probably on account of the recent flooding of the area. The Rev. W. W. Mason, took the list of plants.

The Sixty-first Field Meeting was held at ALFORD, for working Well Vale, a most interesting district to the Naturalist.

A large quarry in the chalk was visited, and from being overgrown with the plants that love such an habitat, the botanists spent some little time in noting many interesting finds.

From the steep side of the quarry, on such a fine day the view of the distance was greatly appreciated. It gave an excellent opportunity for seeing the contour of the surrounding country, and its geological formation and history.

Just before entering the Vale, a specimen of the "Painted Lady" butterfly was seen, with more common species.

The most diligent workers perhaps were the Conchologists. Dr. W. Wallace, too, was anxious to obtain certain Coleoptera. Their records were not so abundant as those of the Rev. W. W. Mason who noted the Flora, but some interesting finds were made.

A fine colony of *Limax arborum*, var. *nemorosa* was found, and a variety of *Limax maximus* still to be described.

At the meeting after tea it was decided that the Union become affiliated with the British Association.

Dr. Wallace reports :—

COLEOPTERA. A large number of species occurred, of which the following are the most interesting :—*Amara aulica* Panz., *Calathus piceus* Marsh., *Hydroporus dorsalis* F., *Noterus sparsus* Marsh., *Dorcus parallelipedus*, L., *Scirtes hemisphaericus*, L., this last is new to the County.

BROUGHTON WOODS was the venue of the Sixty-second Meeting on September 18th, 1908. A large party turned out to accompany the Rev. E. A. Woodruffe-Peacock, over an area so well known to him. To give a description now of the district would be absurd, after the publication of his paper in the last part of our *Transactions*.

The dryness of the early part of the month had made the ground unprofitable working in some branches ; but those present were glad to see Broughton Woods, and to hear its praises sung by such a worker as Mr. Peacock. He delighted all by leading them to the spot where that exceedingly rare plant *Selinum Carvifolia* grows.

Collecting was not the order of this day. The season was too late, and the area was too large, and had to be traversed too quickly for that. Yet all were pleased by their visit to these Woods, and hope for better advantages for more detailed study another time.

COLEOPTERA. A number of species were taken, the most interesting being :—*Pterostichus oblongo-punctatus* F., *Silpha thoracica* L., on the "Stink-horn" fungus, **Triphyllus punctatus* F., in putrid fungi, and a specimen of *Litodactylus leucogaster* Marsh.

Mr. Woodruffe-Peacock writes :—As every plant seen at this meeting has been recorded over and over again for Broughton, and nothing new can be written about them, I propose to strike out a new line, and to give a Rock-Soil list of the *Selinum Carvifolia*

*New to the County.

Bog. The whole area in which this rare species grows is not more than sixty square yards in extent. The rock-soil is the Kirton Bed of the Lincolnshire Limestone, but this is mixed with or overlaid by Blown Sand, Fresh Water Alluvium, and Peat.

The plants of the bog edge and bog are recorded with their frequency under the following contractions:—V.C. for very common, C. for common, F.C. for fairly common, R.R. for rather rare, R. for rare, V.R. for very rare.

The following are confined to the bog edge:—

- Alnus glutinosa*, R.
- Anagallis tenella*, R.
- Carex flacca*, V.C.
- Holcus lanatus*, R.
- Potentilla anserina*, V.C.
- Rhamnus frangula*, V.R.
- Viola hirta* x *stagnina* (? as there were leaves only), V.R.

The species mixed with the *Selinum* were:—

- Angelica sylvestris*, C.
- Carex flava*, C.
- Cuicis palustris*, R.R.
- Epilobium parviflorum*, F.C.
- Galium uliginosum*, C.
- Hydrocotyle vulgaris*, F.C.
- Juncus acutiflorus*—V.R.
- Juncus obtusiflorus*—V.C.
- Lychnis Floscuculi*—R.
- Mentha aquatica*—V.C.
- Mentha rubra*—F.C.
- Molinia varia*—R.
- Orchis maculata*—V.R.
- Phragmites communis* (not flowering)—R.R.
- Potentilla sylvestris*—F.C.
- Scabiosa succisa*—R.R.
- Spiræa ulmaria*—C.
- Stachys Betonica*—R.

Leucosporæ, *Hygrophorus coccineus*.
 „ *puniceus*.
 „ *virginæus*.
Clitocybe nebularis.
 „ *maxima*.
 „ *metachroa*.
Laccaria laccata.
Lactarius vietus.
Mycena pura.
Marasmius androsaceus.
Tricholoma sulphureum.

(2) ASCOMYCETES.

- A. DISCOMYCETES—*Pezizæ*, *Chlorosplenium aeruginosum*.
Humariâ granulata.
 B. PYRENOMYCETES—*Xylaria hypoxylon*.

(3) MYXOMYCETES.

Arcyria incornata.
 „ *flava*.
Stemeonitis fusca.
Lycogala miniatum.
Trichia varia.

THE ANNUAL MEETING was held December 3rd, 1908, at the Municipal Technical School, Lincoln. The President Rev. Alfred Hunt, M.A., in the chair. The Officers reports were read, and the Union shown to be in a highly satisfactory condition.

W. D. Roebuck, F.G.S., was then elected President for 1909. In the Conchological Section Mr. C. S. Carter was appointed President, and Mr. J. F. Musham, Secretary. The rest of the officers were re-elected.

The retiring President then gave his address "Prehistoric Man in Lincolnshire." Many of the specimens referred to are now in the County Museum, Lincoln.

Votes of thanks to President and officers were accorded.

The Rev. E. A. Woodruffe-Peacock offered to compile a check-list of Lincolnshire plants, if the Union would publish it during the coming year. It was unanimously decided that this should be done, in addition to the Transactions for the year.

LIST OF OFFICERS.

PRESIDENT.

W. Denison Roebuck, F.L.S., Hyde Park Road, Leeds.

VICE-PRESIDENTS.

(Resident in the County.)

F. M. Burton, F.L.S., F.G.S., Highfield, Gainsborough.
Rev. J. Conway Walter, B.A., Langton Rectory, Horncastle.
H. Preston, F.G.S., Hawthornden Villa, Grantham.
Rev. E. A. Woodruffe-Peacock, L.Th., F.L.S., F.G.S., Cadney.
Rev. Alfred Hunt, M.A., Welton Vicarage, Lincoln.

HON. TREASURER.

J. S. Sneath, 32, Tentercroft Street, Lincoln.

HON. SECRETARY.

Arthur Smith, F.L.S., F.E.S., The Museum, Greyfriars, Lincoln.

HON. ASSISTANT SECRETARY.

R. W. Goulding, 20, Mercer Row, Louth.

SECTIONAL OFFICERS.

GEOLOGY.

President:—F. M. Burton, F.L.S., F.G.S., Highfield Gainsborough.
Secretary:—H. Preston, F.G.S., Hawthornden Villa, Grantham.
Boulders:—Rev. Canon Rowe, Lincoln.

BOTANY.

President:—Rev. W. Fowler, M.A., Liversedge, Normanton.
Phanogamic Secretary:—
Rev. E. A. Woodruffe-Peacock, L.Th., F.L.S., F.G.S.
Cryptogams:—Miss Stow, 23, Avenue Road, Grantham.
Fungi:—H. C. Hawley, Tumbly Lawn, Boston.

CONCHOLOGY.

President:—C. S. Carter, M.C.S., 46, Westgate, Louth.
Secretary:—J. F. Musham, 53, Brook Street, Selby.

ENTOMOLOGY.

President:—Rev. A. Thornley, M.A., F.L.S., F.E.S., 17, Mapperley Rd., Nottingham.
Secretary:—G. W. Mason, Barton-on-Humber.

VERTEBRATE ZOOLOGY.

President:—G. H. Caton-Haigh, Grainsby Hall, Grimsby.
Secretary:—Rev. F. L. Blathwayt, M.A., M.B.O.U., 1, Stonefield Avenue, Lincoln.

NEW MEMBERS.

Mrs. Hewetson, Grammar School, Gainsborough.
R. C. Minton, 15, Sewell's Walk, Lincoln.
Dr. F. P. N. Birtwhistle, Barton-on-Humber.
A. E. Hall, Cranfield House, Southwell, Notts.
Mrs. Hall, Cranfield House, Southwell, Notts.
Rev. A. N. Claye, The Vicarage, Brigg.
T. Sheppard, F.G.S., F.S.A., Scot., Museum, Hull.

LINCOLNSHIRE NATURALISTS' UNION.

Statement of Accounts from 1st January to 31st December, 1908.

	£	s.	d.
RECEIPTS.			
By Balance in Bank, &c., 31st December, 1907	54	3	2
" Life Members' Donations (invested in Savings Bank)	35	0	8
" Interest thereon	0	17	6
" Members Subscriptions including "The Naturalist"	35	18	2
" Transactions and Reprints sold	2	3	6
" Bank Interest	0	19	10
	£122	28	
PAYMENTS.			
To Subscriptions to "The Naturalist"	4	0	0
" Printing and Stationery	2	11	8
" " "Transactions" and Blocks for illustrations	13	11	5
" Postage and Telegrams	4	10	3
" Expenses of Meetings, &c.	2	11	6
" Subscription Repaid	0	5	0
" Life Members' Donations in Savings' Bank	35	0	8
" Interest	0	17	6
	35	18	2
" Balance in Bank and Secretary's hands	58	14	8
	£122	28	

Examined and found correct,

E. E. BROWN, Auditor.

Lincolnshire Naturalists' Union.

TRANSACTIONS, 1905-1908.

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