

CLEVELAND NATURALISTS'
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Edited by
Ernest W. Jackson F.I.C., F.G.S.

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INTRODUCTION

The present number of Proceedings completes the Third Volume issued by the Field Club.

Apart from the published Proceedings, Members have a splendid opportunity of acquiring knowledge of local natural history and its associated studies by attending the Field Meetings, arranged during the Summer months, and the Winter Lectures.

The district of Cleveland covered by the Field Club's operations affords abundant scope for research in natural history subjects: it possesses many objects of interest for students of archaeology: plentiful remains of Roman occupation only await investigation to reward the willing worker and add to our knowledge of habits and customs of earlier days: in the field of Geology there exists no finer exposure of the deposits of the Liassic period than is found in the cliff sections of the North East Coast of Yorkshire, whilst the Estuarine provides many rare fossil plant-forms for the paleobotanist. .

For various reasons recent years have shown a decline in the membership figures, many of the older supporters of the club having either joined "the great majority" or left the district, and it is imperative that our members use their best endeavours to add to our number those who are interested in any of the subjects which form the basis of the club's investigations.

E.W.J

WILLIAM HENRY THOMAS, M.B.E., J.P

BORN 23RD AUGUST 1858 DIED 18TH AUGUST 1923

In the sudden death of William Henry Thomas on the 18th August, 1923, Middlesbrough lost one of its most vigorous and public spirited citizens, and this Club one of its oldest, most valued and useful members.

Mr. Thomas was one of the founders and original members of the Club, having taken part in the first meeting held in 1881 when its formation was decided upon. He has served on the executive in almost every capacity for upwards of 35 years. He was Honorary Secretary from 1886 to 1898, and President for 1899 and 1900, and again for three years from 1915 to 1917, and for many years he was Editor of its Proceedings. He was a regular attender at the Club's field excursions, an acute observer of all that was of interest, and he will be long missed as one of the most helpful and stimulating of companions.

He was interested in every branch of the Society's activities but his special studies were botany, archaeology and philosophy. He was a member of the Hellenic Society, and of the Yorkshire Naturalists Union for upwards of 25 years, and frequently in years past, attended the excursions of the latter.

Mr. Thomas was an active worker in, and a generous supporter of a multitude of organisations covering every department of life. In each he counted for much, for he would be connected with no organisation in which he was not a vigorously active member. To indicate a few of these organisations' may show the wide area of his activities and sympathies.

As a Master Printer he was Managing Director of Messrs. ,Jordison & Co., Ltd., Middlesbrough. He held many and important offices in all the national and local trade organisations. Any scheme for the improvement of their craft or the benefit of the employee had his wholehearted support.

His patriotism was shown by his long service in the old Volunteer Forces and by his work during the War, on the Middlesbrough Recruiting Committee, Military Advisory Committee, and as Military Representative before the local Tribunals.

His interest in the welfare of his own Town, and especially in young people, was shown by his work on the Middlesbrough Juvenile Organisations Committee, Joe Walton Boys' Club, Middlesbrough Guild of Help, Soldiers and Sailors Families Association, Port Labour Committee. Officers Appointments Committee, "After Care" Committee, and Middlesbrough University Extension Society. He was the founder, Honorary Secretary of and a generous donor to the Middlesbrough and District Betterment and Open Spaces Association, whose objects are the provision of open spaces and playing fields and the beautification of Middlesbrough and district.

Mr. Thomas amongst his many gifts of mind and character, had a deep and abiding love of nature; and to many he was at his best when walking on the breezy uplands, the Lake District fells, or the Alps, and searching for botanical rarities many of which he cultivated with loving care in his Rock Garden at his home. He loved beyond all, days of vigorous exercise in the pure mountain atmosphere, in the wild solitudes of nature, and amidst wild and rocky scenery. To walk with him then, was to be with the pleasantest and most inspiring of companions. He would walk with vigour and the happiest of youthful spirits. He would discuss philosophy, science, economics, world politics and the latest discoveries in every department of human knowledge, with a fertility of ideas, a breadth of reading a whimsicality and suggestiveness which was an inspiration to his companions. He was the strongest of personalities, holding strong opinions and ready to uphold them vigorously but never with any betrayal of temper or so as to leave the slightest bitterness.

He was ever a lover of the good, the true and the beautiful. Though he grasped and used life with both hands, yet he was a firm believer in the Infinite and the life after death. He never spared himself in life and wherever his spirit may

now be it will not be asking rest. His, will be the stronger spirit seeking its happiness and content in wider opportunities of service, of progress in Divine blessedness, and in higher circles of righteousness, truth and beauty.

He passed on, a bachelor, at the age of barely 65 years, after less than half-an-hour's suffering. He had presided over the Middlesbrough Police Court as a Magistrate only the day before, and he had been at business as usual on the day of his death. His fellow citizens and friends had counted on many more years of his service and companionship. It was not however to be. Their's is the loss, for he passed on as he would have wished, in full harness, with undimmed strength – he was spared

“..... the valleys of regret
“ the vain long greeting of forbidden heights
“ the long white pass that whispers, farther yet
“mocking the failing strength with lost delight”

J.W.R.P

ROSEBERRY TOPPING IN FACT AND FICTION

BY J. J. BURTON J.P., F.G.S.

When mention is made of Roseberry Topping to a Cleveland man he visualises an isolated hill from the top of which magnificent views spread out before him North and West, but unless he is an archaeologist or a geologist his interest does not extend beyond that of sentiment.

Graves, in his History of Cleveland, states that from observation the height has been found to be 1,485 feet above sea level. These figures are copied from and by other old authorities, but according to the Ordnance Survey the height is 1,057 feet, and perhaps as a result of the recent landslip the present elevation may be not more than 1050 feet.

It does not appear to be the centre of any important events in the works of writers of avowed fiction although it secures a passing mention in Sir Walter Scot's "The Pirate" where one of the principal characters is the son of a farmer named Jasper Yellowley, who was born at the foot of Roseberry Topping, and had been persuaded by a certain noble Scottish Earl to accept a farm in Zetland.

It has been the theme of many writers of poetry or claims from them a passing reference. Thomas Peirson, who hailed from Stokesley, published in 1780, a poem in blank verse on Roseberry Topping.

" Of Atlas mount let poets antique sing,
Whose summit bare supports the bending sky:
Of Roseberry's rude rock I deign to write
The height of Topping and its oozing rill."

Further on he says:

" Let me descend to taste the limpid spring
In days of yore well-known, then oozing on
When famed Northumbria's monarch ruled the realm,
Whose son, Prince Oswy, perished in the rill."

Another Cleveland poet, John Walker Ord, in 1845, wrote a poem on Prince Oswy," a legend of Roseberry." In this

he describes how and why the princess left her home and her arrival on Roseberry.

" And, what a gorgeous vision
Lay stretched beneath her feet,

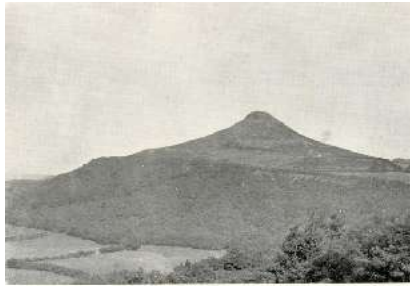
The groves of sweet Upleatham
 The shores of Cargo Fleet.
 Old Guisbrough's graceful Priory
 Beneath the .sunbeam's glow'd
 And many a swan like vessel
 By Marske and Redcar rode.

Many writers have been much exercised in seeking to find the origin, and in following the variations in spelling and in sound of the name which is now accepted as Roseberry Topping.

The subject was exhaustively dealt with in an article by Major R. B. Turton, in Part 85 of the Yorkshire Archaeological Journal, from which I give the following abbreviated facts and opinions.

	Date	Name	Reference
	1119	Outhenesbergh	Guill. Cart. I.114
(recital in a fine dated)			
	1119	Othenesberg	"" 1.4
	1119	Ohensberg	"" 1.2
	1119	Hensberg	Atkinson's.Clev.II.4
	1231	Utheneberg)	
	1231	Otheneberge)	Guis. Cart 1.167
	1231	Onesberg)	1.168
	1284	Othenbruche	Kirkby's Inquest S.S. xlix 128
	1284	Theuerbrught	do. S.S. xlix 131
	1288	Hoyphensberg	Y.A.S. Rec. xxiii 76
	1310	Onenesbergh	White Cart. ii 361.309
	1316	Onesbergh	Surtees Society xlix 329
	1374	Ounesbergh	Inq. p.m. 48 Edw. III No. 68
	1424	Osenbergh	Pat. Rolls 3 Hen VI. m. 13d.
	1591 ?	Osburye Toppyne	N.R. Records ii 305.
	1610 ?	Roseberye Topping	Cott Julius F VI 453
	1657	Roseberye	N.R. Records V 260

The original form appears to be Danish and to have developed through a series of slight differences in pronunciation



ROSEBERRY TOPPING.

and in spelling from Othenesbergh to Norman Osenbergh and Oseberry, with finally, as Major Turton suggests, the carrying forward of the letter R from Newton-under-Osebury to Newton-under-Roseberry.

As with spelling and pronunciation so with the derivation there are differences amongst investigators. Graves, by some fanciful deductions, traces it to a British origin signifying a fortified hill. Canon Atkinson identifies it with Anglo-saxon hereose "rushing on" and beorgh "hill" and signifying "the hill of the rager or rusher." Major Turton inclines to the opinion that the hill was originally known as "the hill of Odin."

From an account in a M.S. in the Cottonian Library (Julius F.C. fo. 455) the date of which is variously given as 1550 and 1610, it seems that there had been formerly a hermitage on the top, but at that time there remained only a "small smith's forge cut out of the rock and called Willifryd's needle" (later called the cobbler's shop) There was a Wilfrid's needle in Ripon Minster where trial was made of a woman's chastity, the identity of names may or may not imply identity of use. According to Ord the grotto had been destroyed by quarrymen before his time and no trace of it existed on my earliest visit now well on to 60 years ago.

Camden, in Bishop Gibson's edition, about 1585 or 1586, says
"Ounesberry Topping, a steep mountain, riseth so
" high as to appear at a great distance. . . .
" Near the top of it there issues from a huge rock a
"fountain very good for sore eyes; and from hence
" the vallies round it, the grassy hills, green meadows,
"rich pastures, fruitful corn fields, rivers full of fish,

" the creeky mouth of the Tees, shores low and open,
"yet free from inundation, and the sea with ships
"under sail, rendered the prospect very agreeable
"and entertaining."

This description was either borrowed from the Cottonian M.S. already mentioned or was by the writer of the latter borrowed from Camden, but in the M.S. there is a reference to " the newe porte of Tease lately found to be safe" and the added moral reflection that the things mentioned " make that countrye happy if the people had the grace to make use of theire owne happinesse, which may be amended if it please God to send them traffique and good example of thrifte."

This spring, known as Roseberry well, is the scene of the tragedy related in the legend of Prince Oswy of Northumberland, a legend which has come down to us from very ancient sources. It is related that the mother of the young prince having had a very vivid dream that her son would be drowned on a certain day, took the matter so seriously, that she consulted the astrologers about it, and these ancient seers pronounced that the dream was true. When the fateful day approached she became very anxious and sought to avert the threatened catastrophe by taking the child to the top of Roseberry, where, if anywhere, he would be safe from death by drowning. The sequel is told by many writers, but as I have already quoted Ord, I may use his poetic description

" No cloud obscured the azure,
" The distant groves were still,
When slumber, soft as snowflakes;
Oppress'd the lady's will."
" So like a marble statue
In holy sleep she lies,
The moss her couch of slumber,
Her canopy the skies."

The royal orphan then wanders away and comes to the well wherein he gazes, and on seeing his own reflection in the water

" O, fear-O dread-he clasps it
One cry and all is o'er-

The treacherous spring enfolds him.
Prince Oswy is no more."

" And on the rocky precipice,
Beneath the wooded knoll
A hermitage the lady reared
With masses for his soul."

I am too great a lover of folk lore to dissolve the spell of this pretty legend. Plate No. 1 shews a picture of the well without my being able to say that in the days of Prince Oswy it was not more imposing in appearance than now.



ROSEBERRY WELL.

It is situated somewhere near the 1000 ft. level, and there is no considerable high ground near it.

The nearest point of 1000 feet is about 1000 yards away and there is no elevation of 1100 ft. within some miles. There is much lower ground all round about and except for a narrow strip at a lower elevation there is a deep valley between it and the main escarpment. The water, now diverted from its old course, will in time probably return to it as the new outlets get choked up.

PIT DWELLINGS OR JET WORKINGS?

About 150 to 200 ft. below the Roseberry well there is a series of circular or oval basins on a terrace, generally at about the level of the junction of the Alum shale and Jet shale but not uniformly so. These extend all round the N. and N.W. face of the hill, then turn eastward between Roseberry and Little Roseberry. On the old Ordnance maps these were marked "supposed British settlements" but in the maps of the last survey they become "jet workings." Ord, in his history of Cleveland, with a good deal of exaggeration as to their size and number, identifies them as the site of a large and very populous British settlement.

From his description one might suppose he was the first to discover their existence; as a matter of fact, however, they were well known, and more than 20 years before Ord published his account the Rev. George Young thus wrote of them.

"Towards the lower part of the hill are the remains
"of an ancient British village; and it is observable
"that the lines of hollows, marking the foundations
"of antique huts, run round the front, not only of
"Roseberry but of each of the other large hills that
" skirt the plain of Cleveland."-Pictures of Whitby
1824, p. 289.

Ord adopted (unacknowledged) Young's conclusions and they were for a time generally accepted.

Joseph Bewick in his "Geological Treatise on the District of Cleveland" writing in 1860, claimed that the Holy Intake and the Killing Pits were Roman ironstone workings.

Canon Atkinson, an old member of the Cleveland Naturalists' Field Club and a valued contributor, after first accepting the British

Settlement theory, afterwards described it as "preposterous rubbish" and seems to have been influenced by what Bewick wrote about other pits being ironstone workings. It must be remembered, however, that any statement by Ord, unless capable of absolute proof, seems to have roused in the worthy Canon, the greatest impatience and contempt, and he is therefore in matters of opinion not always a safe guide. Let me quote from p.p. 174-5 of his "Forty years in a Moorland Parish" on the subject of these pits, to shew his occasional lapse from the spirit of the true investigator.

" For my own part" he says, " if only the opportunity
" could be achieved, I should go in for an examination
"of any of these so-called British villages with very
" definitely pre-conceived opinions as to what I should
"look for, and the way in which the looking for it
"should be conducted; and ,for one thing, I should
"have no more doubt about finding 'horizontal
" operations' than about the fact that the pits were
" there. If I did not find the ironstone, it would be
"for precisely the same reason that my geological
"friend did not find it where it ought to have been
"that is because it had been worked out."

He goes on to say, p.p. 162-3,

" for my own part, I am exceedingly doubtful whether,
"in even one single instance of all the British villages
" or settlements alleged, the claim for such considera-
" tion can be shown to have any reasonable and, much
"more, any satisfactory ground to rest upon. There
" is no satisfactory proof adduced in any of the accounts
" or so-called records of such attempts, that the true
"and actual bottom of the excavation operated upon
"had really been reached, or indeed nearly approached."

On p. 164, he says scornfully of such enquirers and
historians as Ord,

" They would have looked for the charcoal of a fore- ,
"gone conclusion and found it. They would simply
"have looked for a preconceived bottom to a pre
"conceived habitation, they would have dubbed the
"search with the grand name of examination and
"investigation, but they would have ended as they
" began, with their own preconceived notion-nothing
"else."

The Canon's preconceived notion of ironstone follows
closely the methods he so justly condemns in his denunciation of
other pre-conceptions in other investigators' methods.

Tate and Blake in their memorable work "The Yorkshire Lias" (Ch. xvi p. 178) refer to the use of jet in pre-Roman times and also by the Romans themselves, as is shewn by the find of beautiful examples in stone coffins near York and state "we think we can point to one place at least inland, where these early supplies were obtained, namely, on the side of Roseberry Topping."

In the Geological Survey Memoir of "The Geology of North Cleveland," Mr. Geo. Barrow says: "The so-called Ancient British Settlements here are nothing but pits sunk for the jet. In former times pits were almost invariable, levels being very rarely, if ever, resorted to." (p.34).

C. Fox Strangways in " The Jurassic Rocks of Britain" (Vol. 1, p. 139) says "Further along the escarpment to the South West of Guisborough as far as Roseberry Topping, the jet was much worked in old times, the so-called ' Ancient British Settlements' being nothing but the remains of these pits." Our own member and distinguished geologist, the late Dr. W. Y. Veitch was very emphatic that the Roseberry pits were nothing but jet workings.

With all these later eminent authorities against the " habitation" theory, and so positively certain that they were pits sunk for obtaining jet, one might regard the question as settled for all time, but the only thing which is certain is that they are neither old ironstone workings, as asserted by Canon Atkinson, nor jet workings as alleged by the Geological Survey and other authorities.

Perhaps this will be made clearer if I give some extracts from a letter which I wrote to Mr. Geo. Barrow, of H.M. Geological Survey, on March 20th, 1916 "Three summers ago (1913), I put on two reliable men (old jet workers), to carefully open representative pits over a distance of, perhaps, three quarters of a mile on the N.W., N. and N.E of the hill, and I spent as much time with them as I could spare and made them leave open every excavated area until I saw it. I had perhaps 20 of these sites fully exposed with the following results:-

" "In only one case did the disturbed rock (shale) extend more than four feet down, and in most cases not more than two feet. In the excepted case there was near the centre, an irregular, slightly oval shaft of about four feet diameter sunk eight feet. In no case did the

old floor of the Pits extend horizontally into the jet rock or go down to the ironstone.

" There was not the slightest evidence of any ' Bell pit' character. The ironstone below the pits was undisturbed and intact, and was worked out by my firm's miners in the regular underground workings. So much for the negative results. "The positive results were disappointing. In most cases the cross section was something like the following diagram, which I gave to Mr. W. Edwards, M.A., to illustrate his book" The Early History of the North Riding," p. 9.



" In the centre large stones were in many instances carefully piled up as if they had supported a tent pole. In others they had apparently formed a hearth, as there were evidences of fire on the stones and abundance of charcoal was found. In one pit many fragments of pottery were found which Mr. T. Sheppard of the Hull Museum, pronounced to be of 12th and 13th century date." (this was subsequently confirmed by another expert).

" In another, some rudely carved ornamental stones were discovered, the purpose and period of which I cannot determine. In one there was what looked like an attempt at paving the floor with angular pieces of freestone, but I am doubtful about the paving being deliberate. A careful consideration of all the circumstances and the appearance of the floor and material used leads me to the conclusion that probably at some period, much later than the date

of first use, the site had been occupied by a stone mason, and that the appearance of paving was merely the indiscriminate scattering about of large and small angular chippings from freestone blocks which had, by the trampling effect, assumed some sort of regular formation.

" There is nothing in what I have so far found to justify the opinion that they are 'Ancient British Settlements' but on the other hand, there is nothing in any way to disprove it. I have not formed any definite opinion but hope to make further investigation. In the meantime these facts are worth bearing in mind :-

- (a) The pits are on the broadest level terrace running on the face of the hill.
- (b) There are many well-marked entrenchments round about and below them, although such are not on the Ordnance maps.
- (c) They face the plain from whence attacks of any enemies might be expected to come.
- (d) They occupy a good defensive position as do those at Glaisdale.
- (e) They are very unlike those on Easington High Moor.
- (f) Some of them have been occupied by stone dressers and carvers.
- (g) There are magnificent blocks of freestone easily rolled or lowered on sledges from the top to the level of the pits.
- (h) The numerous burnt stones indicate occupation.
- (i) The pottery suggests occupation at least as far back as 7 or 8 centuries ago.
- (j) They have not been used for extracting minerals." The following are extracts from Mr. Barrow's letter in reply dated 5th April, 1916 :-

" They seemed to me likely to be sunk to the jet rock and as the Romans must have worked it a good bit, for they used jet a good deal (vide remains from the old York Station) I thought they must be of that nature. I certainly did not believe in the ironstone theory. The chief objection I have to their being military dwellings is their intensely exposed position in winter: they may be of this nature, but I feel fairly sure they could not be Roman as there is nothing much

there to defend and the Romans knew what they were about. Further, the Roman soldier could hardly have faced the climate. Men from Canada, used to 20 below zero, complain bitterly of our east coast climate.

" It is possible that they were used as a refuge from coast invaders; the low coast of Tees mouth to Saltburn is easily invaded under mediaeval conditions, and I can easily imagine people from the flat ground taking up a retreating position on Roseberry, and I doubt if coast raiders, ignorant of the country, would readily follow them."

From what I have told you it looks as if their date and original purpose still remains to be solved, but I may suggest that their number, extent and regularity indicate that they were made and used for a definite purpose; and as there is nothing in the finds to prove more than that they were used in later times for a purpose which would not require such number, and as the position they occupy was not necessary for that purpose it would seem that such later use was merely an accident of circumstances, taking advantage of the existence of the pits as they happened to be convenient.

As the pronouncement of Canon Atkinson and of the Survey Memoirs have been clearly proved inaccurate, Ord's conclusions remain as a working hypothesis, but no more. Young's suggestion that they were military posts is the most tenable theory, and one which I had adopted before I had read his book.

GEOLOGY.

The structure of the hill is of the simple type of successive zones in the Lias which can be so well studied in coast sections. The foundations may be said to be bedded on the Triassic plain, but the lowest exposure are in the middle of the lower lias series of soft beds, known as Ammonites Jamesoni beds. These are succeeded in the regular order up to the Alum shale beds. There would appear to have been some arrest of deposit at the end of the Liassic period, or that denudation succeeded or accompanied deposition before the coming on of the Oolitic series. The dogger is entirely absent and the line of demarcation between the Lias and the Estuarine series of the inferior Oolite is not well marked; indeed the two deposits seem to be somewhat mixed up; and much of the Estuarine deposits observed elsewhere are either absent in Roseberry or they are greatly attenuated and thinned out. The opinion that something of this nature has been going on is supported by the fact that the plant-bed is found where the Lias shales and Estuarine deposits meet and that the most remarkable of the plants are characteristic of the Lias period. The apex is the well known feature composed of massive, hard sandstone; and it is the character of this durable cap which has preserved to us the cone-like structure and prevented the rapid denudation of the soft

shales which otherwise would have taken place and left the hill more mound like in contour.

The main and subsidiary ironstone seams are present: the main seam being 5ft. 4in. to 5ft. 6in. thick and without that undesirable shale parting in the middle which so greatly reduces the value and increases the cost of working the mineral to the south and south eastward of Roseberry.

The whole of the beds so far as can be determined have a gentle dip to the S.E.

LANDSLIP.

The whole of the hill is shattered by a series of faults, mostly small, which are not generally indicated on the surface; and when it is remembered that except for the buttress of the dyke on the S. the hill is quite isolated on all sides, barring the attachment at a lower elevation to the main Cleveland Massif on the N.E. it will readily be understood that the description by an eminent geologist that it appeared to be in " a state of unstable equilibrium," is very apt and true, and makes it much easier to comprehend the reason of the extraordinary landslip which occurred there in 1912-13. That landslip caused much heart-burning to many people as being a disfigurement of a much-loved landscape; to others it appeared as adding picturesque interest thereto; and personally I think that as it becomes reclothed and coloured by nature, it will possess an attractive beauty of outline which was certainly lacking in the even contours of other days. The landslip commenced by the earthy covering on the S.W. moving forward on the slope and buckling itself on its own material as it reached portions of the hill less precipitous in character. This covering seems to have acted as a strut to support the upper portion of the mass, and its withdrawal left the fissured, faulted and weak alum shales unable to support



the heavy Oolitic cap, part of which had at some previous date been quarried (see Ord. p. 424). An enormous mass of soil, clay, shale and sandstone then moved forward down the slope, and huge blocks of the cap fell over and rolled on the top of the already moving material for several hundred yards, giving acceleration and force to the movement by added weight and impulse.

The slip has now probably reached the angle of rest and presents an extraordinary appearance of wild confusion. Enormous blocks which formed part of the top and were covered with initials are now perched at odd angles half way down the slope. Vast masses have been pushed into hummocks by pressure from behind upon material which had lost its power of motion on reaching a position of less acute inclination, and a low precipitous face to the W. has been converted into one of considerable height.

The topsy-turvydom produced has given one a key to much which would have otherwise remained a closed chapter of nature and has revealed facts of great interest.

GLACIATION.

First of all it shewed amongst the moving material many blocks of stone on which deeply cut grooves of glacial origin were clearly seen, and there was a fine soft impervious yellow clay which apparently acted the role of lubricant under the action of rain and on, and with, which the super-incumbent burden travelled as down a greased incline. There was also revealed a fine example of glaciated sandstone rock in situ, not as a result of the landslip but as the result of a small subsidence or pit fall which was filled in by baring the soil from outside the rim of the subsidence. This is at an elevation of about 800 feet and as I noticed numerous glaciated blocks in the moving mass brought down from a higher level, it is a safe deduction to say that the top of the glacier which filled the plain topped the 800 feet level as it travelled over the higher ground.

I hold the view that this ancient ice sheet is primarily responsible for the modern landslip. The glacier from the Pennines moving East was diverted from its course by meeting the bigger sheet from Scandinavia, travelling S. and W. in the North Sea, and some portion of each was diverted round the Eston escarpment,

filling up the Guisbro' valley; and travelling along the N.W and S. faces of Roseberry, smoothed away all angularities of surface, placed its master-mason's mark on the harder material and covered all up by a fine deposit of clay mud on its retreat. This smoothed surface and mud varnish remained to provide a slip way for the unstable upper rocks which were only kept in position by the consolidated debris and waste of ages of denudation, acting as a prop, and the prop having become weak there was nothing to resist the pressure of the more or less detached strata above the line of ice action.

The glacier filled up the whole of the short valley between Roseberry, Black Banks and Great Ayton Moor, and I think there can be little doubt that it overflowed through the notch in the escarpment at Gribdale Gate and so passed into Lonsdale. The present height of this notch is 745 feet but it may then have been

much higher as the strata is greatly broken and subject to continuous denudation. It is practically in the line of the Dyke, and probably that has something to do with the broken character of the strata and it also, on the other hand, may account for the fact that the overflow channel has not been more worn down as one might have expected it to have been.

There would appear to have been a long pent-up sheet of water, possibly dammed back by the retreating ice between Cliff-rigg and Easby moor, as there is a considerable deposit of sand and gravel over the area from there to Gribdale gate. Some of this accumulation of sand and gravel is spread as a surface deposit beneath clays and diluvial matter; in other cases it takes the form of a thick local deposit of Kaim-like appearance. In these deposits marine shells and fragments are numerous, and there are small erratics and fossils of distant origin, including Lake District and Cheviot granites, proving the dual origin of the ice by which they were brought. There is also near Bankhouse at some little depth below the surface a thick deposit of vegetable matter and clay having a very putrid and offensive smell. A well and bore-hole put down for the purpose of providing water for the use of the cottages built there was successful so far as quantity was concerned, but the quality was so bad that the sinking was abandoned and a supply obtained from a distance.

FOSSIL FLORA.

A result of the landslip was the exposure of a remarkable fossil plant bed. I had known there was a bed of fossil plants near the summit, having found specimens of *Williamsonia pecten* (now called *Ptilophyllum pecten*), sparsely distributed, but was never able to locate the main band containing them, and I always sought it chiefly on the S. side.

When the rock at the top split in two it cut right through a bed containing plants in the greatest profusion and in a very perfect state of preservation, but on the N. side only, and apparently not extending through to the S. side of the apex. The fallen strata

carried away and buried much of the bed, but left behind sufficient to yield a wonderful variety of actual remains, not merely impressions, as the actual tissue can be handled.

Mr. Hamshaw Thomas, Fellow of Downing College, Cambridge, has made a very careful examination of the beds, which he describes as undoubtedly one of the most remarkable fossil-plant deposits in Europe, and he believes that the layer of *Thinnfeldia* leaves is unique. In "The Naturalist" of 1913, pp 198-200, and in the same publication for 1915, p.p. 7-13, he fully describes these beds, and I refer you to his articles for further information.

He gives the following provisional list of species discovered :-

Equisetites Beani (Bunb.).
Sagenopteris Phillippsi var. **major** Seward.
Laccopteris polypodioides (Br.).
Dictyophyllum rugosum (L. and H.).
Hausmannia sp.
Cladophlebis denticulata (Br.).
Cladophlebis sp.
?Todites Williamsoni (Br.) [sterile].
Marattiopsis **anglica** Thomas.
Ptilophyllum (Williamsonia) pecten (Phill.).
Zamites (Williamsonia) gigas. (L. and H.).
Anomozamites (Wielandiella) Nilssoni (Phill.).
Taeniopteris vittata (Br.)
Taeniopteris sp. [new]
Nilssonia *mediana* (Leck. ex Bean MS.)
Nilssonia orientalis Heer.

Ctenis sp. (cf. *falcata* L. and H.).
Pseudoctenis Lanei Thomas.
Ctenozamites Leckenbyi (Leck. ex Bean MS.)
Thinnfeldia sp. (cf. *rhomboidalis* Ett).
Thinnfeldia sp. (cf. *incisa* Sap)
Baiera longifolia (Heer)
Ginkgo sp. (cf. *lepida* Heer)
Ginkgo digitata (Br.).
?Czekanowskia Murrayana (L and H)
Coniferous twigs (Elatides) with Male and Female cones

It is not likely that this exhausts the list of species to be found there, neither is it likely that the deposit of forms of ancient plant life was confined to Roseberry Topping. Indeed, I have found on the opposite escarpment forms of *Nilssonia* in abundance, and I have no doubt a systematic search at about the same horizon would bring to light much information about the climate and vegetation existing in this locality when the long Liassic period came to a close and the land area encroached upon the seas, or the seas receded from the land, forming shallow estuaries and mud flats upon which plant life is found to have flourished in such abundance. The evidence may, however, possibly remain sealed up until another fortuitous landslip elsewhere exposes the mummified remains or the impressions of a long passed phase of Natural History.

LIFE HISTORY.

The geological life history of Roseberry Topping is that of the whole of the Cleveland high ground and is fairly easy to decipher.

At the end of the period when the Trias was deposited, during which continental conditions appear to have existed, there would seem to have occurred a depression of the land areas, and the inland salt water lakes became subject to marine invasion. The climate also appears to have undergone some change, as, from more or less arid conditions previously, rainfall became copious and river-borne detritus was enormous. Sandstone inshore and clay shales beyond, were deposited to a great thickness at the bottom of the ocean over a wide area. During the whole of the Liassic period there appears to have been a sinking of the ocean

floor, with intermittent periods of comparative stability; and varying advances and retrocessions of the littoral took place. Probably also

There was going on simultaneously a considerable movement of the old land areas, as the character of the river-bourne products of denudation very greatly, due, it is reasonable to assume, to new surfaces becoming exposed to weathering effects. River capture, altered watersheds and diverted streams would contribute to and account for much of the changes in the beds of which Roseberry and the Cleveland Hills are composed. Changes were also occurring in the sea bottom as some of the deposits indicate shallows and others deep water. There are also in many cases well defined divisions in the beds and not a gradual transition: this suggests to us that there were periods when deposition was arrested for a time and when recommenced was of a different character. A long period of time for the formation of the Lias is indicated by the fact that the fossil remains shew that whole species have repeatedly died out and their places have been taken by others.

After the laying down of the alum shale (the topmost bed of the Lias) another change took place, and in-shore deposits, largely composed of broken up Liassic beds, were laid down over most of the district (but not on Roseberry, unless they were subsequently denuded) to be succeeded by shallow estuarine and delta conditions, giving us the most interesting of our fossil flora. After the Oolites were formed an elevation of the sea floor followed, bringing the deposits of Lias and Oolites above sea level and the processes of denudation of the newly exposed surfaces commenced, and are still continuing. How much has been denuded we can never know, but streams have cut out valleys from the hills and diversified the plains, making beauty spots out of monotonous stretches of dry land. Unequal solidification, the cutting away of lateral support, shrinkage of the mass, wastage by springs, varying pressures and differential uplift caused faults in the strata. Weak places suffered more rapid denudation than the better protected.

Changes in climate again came on, followed by heavy snows on the mountains to the N and W, and ice sheets covered all but the highest hills in Cleveland: these moving glaciers added much to the other agencies which have been at work carving out our hills and dales into the shapes and features they now present to us. The chief of those agencies, however, has been running waters

acting upon soft, permeable or broken rocks and its effect is seen today in the outlier of Roseberry Topping.

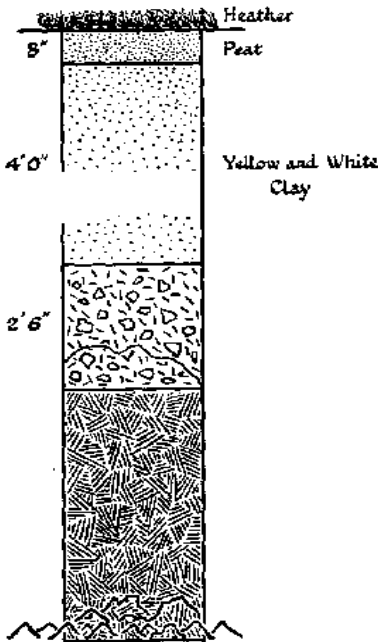
ON THE OCCURRENCE OF "WHITE FLINT" NEAR
LEALHOLM, N. YORKS.

BY

ERNEST W. JACKSON, F.I.C., F.G.S., Assoc. M.I.M.E

It is well-known that the Sandstones of the Upper Estuarine series of the Lower Oolite outcrop over a very wide area in the North Eastern portion of Yorkshire.

GANISTER QUARRY AT
STONEGATE



The stone varies considerably both in composition and physical properties, the more refractory type of mineral occurring at the base of the series being worked wherever economically possible. The very hard grey quartzite of the Moor Grit known locally as "white Flint" outcrops in various localities between Stanghow ridge and Ravenscar, notable on the North side of the Esk valley in the neighbourhood of Danby, Lealholm and Glaisdale.

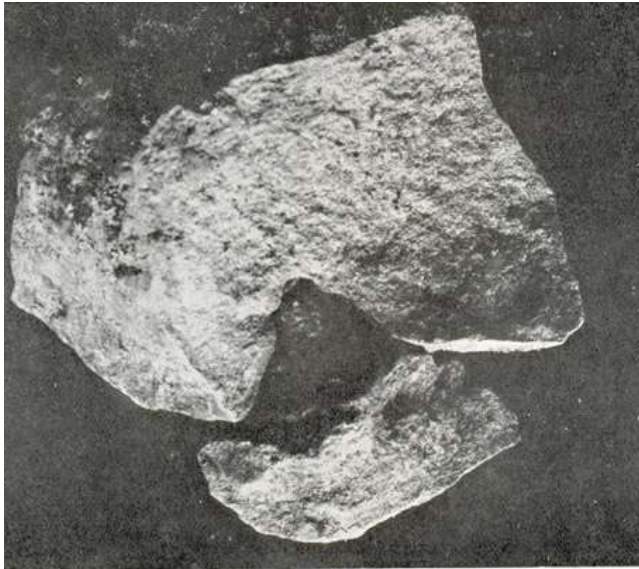
The stone appears in "pockets" of wedge-shaped masses, sometimes attaining a considerable thickness and is found either at the top, bottom, or in the middle of the Moor Grit section.

The purpose of this note is to record a peculiar phenomenon, first observed in 1916, occurring at the base of a deposit of white flint worked near Stonegate Mill

(Leaholm Sheet 31 S.W.) and to record the finding of a few specimens of fossil cycads, obtained from the decomposed siliceous stone immediately overlying the main block.

The vertical section shows the position of the plant bed and the thickness of the different strata, including the ganister bed, at, in this case, the base of the series.

When working the bottom part of the main block of ganister, it was noticed that very frequently, mainly in the centre, masses of the rock came away under the bars with a perfect "cup and cone" structure as shown in the accompanying illustration, the cones varying in size from a fraction of an inch to a couple of feet or more in height and a width of base of about 2 feet, and weighing up to four or five hundredweights, the apex of each cone being always uppermost.



ACTUAL PHOTOGRAPH SHOWING SINGLE CONE IN CUP, AS FOUND.

So far as I have been able to ascertain this peculiar formation has not been noticed at any other quarry in the district.

The block is free from "backs" and there is no apparent cause for the fracture assuming the conical form, no cleavage being

noticeable at the face until the block is raised. Whether the "cones" have been formed by wind or water currents during deposition, or have assumed their conical form by reason of the exertion of vertical force subsequent to deposition, or whether there may be some other more satisfactory explanation may perhaps be determined by discussion.

A very good specimen was sent to the Geological Museum, Jermyn Street, London, in 1917, and can be examined there by anyone interested.

The White Flint is described, in the Geological Survey Memoir as "a fine grained iron-stained surface sandstone composed entirely of sub-angular to angular quartz grains. The cementing material is silica, but as the grains are closely packed, there is no great amount of secondary material. Detrital minerals are relatively abundant, more especially rutile and zircon."

Contrary to the general statement in this Survey Memoir that the white flint caps the ganister, it has been proved at various places in the district to exist in all positions, sometimes on top, but very often the best white flint is found at the bottom of the bed with ganister on top and sometimes in the middle between two blocks of ganister. In this particular quarry at Lealholm it will be noticed from the section given, that there is 2ft. 6in. of decomposed ganister (containing the plant bed) on top, but in the same quarry it is found in all positions, top, middle and bottom. At other places in North East Yorkshire between the Coast and the Valley of the Esk, the white flint is also found beneath ganister.

Amongst the fossil plants found were noted *Otozamites* - *Beani* and *O. Acuminatus*: their identity has been confirmed by Mr. J. J. Burton, F.G.S., a well-known authority on the palaeobotany of the district, and Mr. W. M. Edwards of The Department of Natural History-British Museum.



SINGLE CONE REMOVED FROM ITS BED



ACTUAL PHOTOGRAPH SHOWING CONES IN SITU.

THE MOUND BREAKERS OF CLEVELAND

BY WILLIAM HORNSBY, B.A., SALT BURN

Members of the Club, in their rambles, will have noticed on the moors and in the high places of Cleveland, a very great number of early burial-mounds. All of these, unfortunately, without any known exception, bear marks of previous disturbance. Every year there is the possibility of some disappearing and of others becoming less distinct. In such circumstances, it will be well for the Club, without further delay, to catalogue every bona fide example, small and great, as well as early habitation sites, etc. In work of this kind, members will need to exercise extreme care. The Ordnance sheets are most incomplete and unreliable, e.g.; the barrows along Roxby beck and at Stang Howe are all natural formations. A full list, however, especially if embodied in a map or model, will be not only helpful to the men who come after us, but interesting to the present generation, as shewing the area of the earlier occupations. If, coupled with the map, we had a list of all known records and an indication of the present whereabouts of all finds, we should provide material for our next historian - that superman, whom Mrs. Green depicts emerging from some country parsonage. The ordinary records of Cleveland are woefully out of date, and it is for Societies like the Cleveland Naturalists' Field Club to justify their existence by the ascertainment and the publication of well-established fact.

The writer, in the present paper, has in mind to say some thing about the men, who have digged into the grave mounds of Cleveland. Unfortunately, most of them are entirely unknown. They digged and died and left no record. Of these misguided mortals, tradition has little good to say. One of them, having been asked what was done with the "pankins," so frequently found in the later barrows, unblushingly replied " We 'bunched' 'em to bits" !

Canon Atkinson, in his "History" and in the "Forty Years," cites cases of barrow-breaking in the prehistoric period. For these, one quotation may suffice. "History" note p.p. 35-36: "I have met with one inserted deposit,

placed in a hole about a foot deep, with a bed of fragments of two large urns, its predecessors, and their contents of burnt human bone, beneath it, all round it, and above it. The disturbance in this case was studious and must have given much trouble. In another case the inserted urn was a mere toy of an 'incense cup, barely 1m. high by 11m. in diameter, with only a small deposit of burnt bone accompanying it, scarcely more than might have been contained in the double hands. Yet to admit this, a large urn of 18in. high by as much in greatest diameter (which had evidently been whole when the mound was opened to admit the second burial) had been broken up and crushed together, and its fragments, together with the copious deposit of calcined bones they had originally in their entirety served to contain and protect, scattered in the wildest confusion and intermixture over an area of nearly 2ft. square, on a small spot in the centre of which the tiny intrusive urn and its deposit had been set. Mere insertion for simple burial purposes might have been made at the cost of one sixth of the labour actually entailed, and without any damage, and much more without demolition and utter dispersion of the previous burial. But the circumstances were, as the facts I have stated shew, widely otherwise."

In a cisted cairn near Highcliff, Messrs W. Hornsby and J. D. Laverick, in 1921, found slightly above the ground level and not far from a British food vase, a piece of Roman pottery, which is described as " part of a rim belonging to a type of bowl in common use from 150 or so to 300 A.D. or even later." They thought, that here they had evidence of disturbance in Roman times. There is a strong presumption that at Guisbro' (the there was in the Roman era a valley fort, probably larger and earlier than the coastguard stations. As links in the chain of evidence, we have the coins found near Rothergate by Sir Alfred Pease and the late Mr. Blakeborough, the pottery from Highcliff and the helmet from Barnaby Grange. Unfortunately, the site (possibly now built upon) has not yet been identified.

There is abundant evidence, visual and documentary, of the disturbance of early mounds by mediaeval treasure seekers. It is interesting to note that the idea, which impelled these men of the Middle Ages, still persists. Often and often, in our work, we are

asked " Are ye laiting for gould "? To this query, one of the company invariably replies: "Nay! Nay! we are looking for knowledge! Wisdom is better than rubies" !

About 1776, William Porritt and his brother Robert, of Moorsholm, opened a barrow near Freeborough, and found at the centre" a large earthen vessel full of burnt bones."¹ Dr. Young, writing in 1817, figures p. 765 "History of Whitby" -" a small 'incense cup' in possession of the author, discovered a few years ago at Upleatham within a large urn." In the Bateman collection, now preserved in the Sheffield Museum, there are " bronze celts, a chisel, gouges and other instruments" found in 1826 by a labourer on the south side of Roseberry Topping about half way up the hill south of the summer house." ² Ord, whose History was published in 1846, narrates that" one of the ancient tumuli called Claphowe, near Skelton, was opened some years ago and several urns found." ³ In 1843, Ord himself opened "two fine tumuli on Barnaby Moor near Eston Nab." The first contained a stone cist on the floor of which there was" a sooty greasy substance mixed with portions of human hair (?) and small fragments of bone." In the second, the workers secured "a noble urn-shaped vessel standing upright,-covered with a large shield-shaped stone, curiously marked." ⁴ Ord also digged at Court Green, as did the Rev. J. Holme of Kirkleatham, and labourers employed by Sir John Lowther. Dr. Thurnam, in his article (published 1871) " Ancient British Barrows," remarks "In 1849, at Wilton Castle, N.R. Yorks., I was shewn some urns of the flower-pot shape from Court Green, on one of which was a row or two of semilunar indentations made by the finger nail" and later "more than 20 years ago, I saw two or three urns of the flower-pot type at Lowther Castle. N.R. Yorks., which had been taken from a barrow at Court Green." ⁵

Bones and remains found in a tumulus at Danby in 1846, were

¹Ord's History, p 111

²Catalogue of Sheffield Museum, pp87,89 and Ord, p126

³Ord's History, p 111

⁴Ord, p.p 106,9

⁵Archaeologia xliii, p 333 and p 354

exhibited at the Annual Meeting of the Archaeological Institute held at York that year. (Proceedings, 1848).

From the note-book of Mr. T. Bateman, we learn, that the Rev. Joseph Bancroft Reade (Vicar of Stone, Bucks., 1839-1859, of the Reade family of Hutton Hall), "found in 1856, at a British Settlement at Guisborough, portions of three Celtic urns (two very large), three flints (one a very fine barbed javelin) and four other flints." These passed into the hands of Mr. Bateman and are now preserved (along with his note-books and correspondence) in the Sheffield Museum. In 1856, James Ruddock moved from Pickering, where he had digged extensively, to Whitby. Up to his death in 1858, he examined many mounds, chiefly round Whitby. He was a most successful "pot hunter." Out of nearly 100 examples in Mr. Bateman's collection almost half were from N.R. Yorks., from barrows opened by Ruddock. His notes, Mr. Bateman found scrappy and unsatisfactory. In his "History of Cleveland," (p. 260) Canon Atkinson speaks most disparagingly of Ruddock - a view one shares on perusing the Bateman correspondence. It is amusing to find, in his letters, Ruddock exalts himself by besmirching his rivals. Wilson, otherwise "Bones," a flint forger of Whitby, is represented as having said, "Sir, I could not earn one farthing in the day by gathering genuine antiquities, but I find plenty very fond of buying what I make." It is satisfactory to know that such wickedness received its just reward. "Wilson," Mr. Ruddock continues: "is at present (1858) at hard work in Northallerton prison for theft. It is the fourth time he has been there;" Of Tindall, the collector of Whitby, we learn, that " he is a pipe maker and has been agent for some Insurance Company but has lately become insolvent ... To make a total (delightful conclusion !) he is a dangerous and worthless man." Disparagement is also cast upon Pycroft and Sam Anderson. The last-named, with help from Ruddock, formed a collection, mainly from the Moors round Newton Mulgrave. The finds passed in 1854 into the hands of Mr. Joseph Mayer and are now in the Liverpool Museum.

In the early sixties, the uncle of the late Mr. J. W. Williamson, of Lingdale Head, found in a barrow on Lady Hewley's farm on Stanghowe Ridge, a "pankin," which passed into the possession of the Steward.

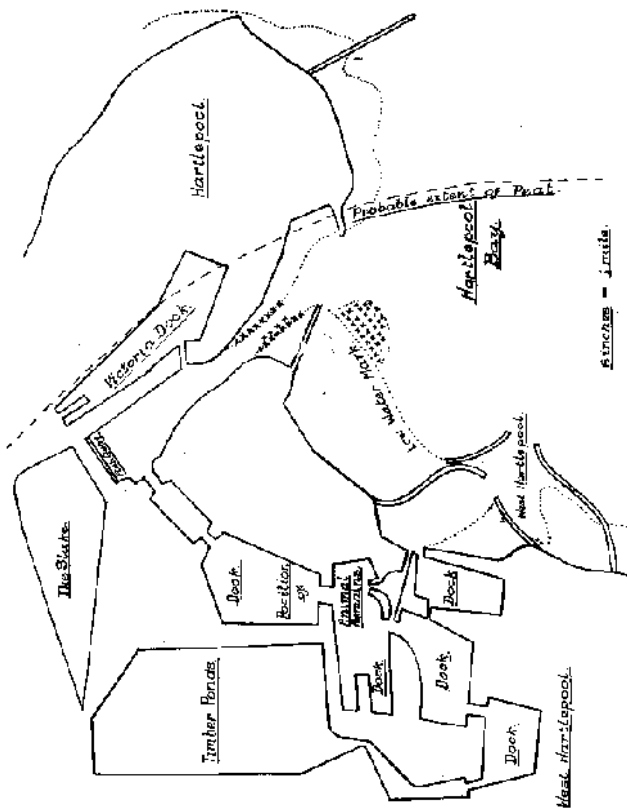
With Canon Atkinson, we have the beginning of altogether better methods - great care in digging and detail in record. In the Ordnance Survey, there is evidence that Dr. Atkinson digged without success at Brotton Warsett but, almost exclusively, he confined himself to the moorlands. He examined upwards of 80 mounds. His collection (35 cineraries and 10 incense cups) passed to the British Museum. His reports are published in his own "History" in "The Forty Years" in "The Gentleman's Magazine" (1861-5), in "The Proceedings of the Geol. and Polytechnic Society, W.R. Yorks., 1864." There is pressing need of a complete list of his writings. It was a scandal to his generation, that, with all his gifts and industry, the "Honorary Canon" remained for 53 years "in a Moorland Parish." Canons Atkinson and Greenwell were on friendly terms. Dr. Atkinson read the proofs of "British Barrows" and reviewed the book. Mr. J. J. Burton, of Nunthorpe remembers that, in or about 1864, the two digged on the west side of the Guisbro' moor, apparently without much success. Atkinson also assisted at Egton where, among other things, a food vase was found. He was present with Greenwell in 1876, at the opening of Whinny Howe on the High Farm, Goldsborough, which also yielded a food vessel. (Abercromby No. 188). Canon Greenwell's report of this barrow is to be found in *Archaeologia*, lii, 43-5. Another most interesting account, of the plain man type, was written by Mr. J. Stangoe, the tenant of the farm. In explaining the cup pittings found in some of the stones, Mr. Stangoe naively remarks: "Canon Greenwell supposed that the ancient Britons had such to put grease in for their chariot wheels." From Mr. Stangoe's note book we learn that he himself "many years before" digged in another field on his farm and found "an urn but broken to pieces." In or about 1870, the workmen employed by the Cleveland Water Company, in digging on the Stanghow Moor, cut through a mound, in which they found an urn. This passed to Canon Atkinson. The President (Mr. F. Elgee) to whom the writer is much indebted, informs us, that in or about the early seventies, Dr. Craster, of Middlesbrough, examined many mounds on the moors between Roseberry and Easby.

According to a paper read in 1866 by Mr. Henry Denny (p. 303 History of Yorks. Geol. Society, 1889) he also digged on the Hambletons. In Cleveland, Dr. Craster had the assistance of Messrs Josephus Spence, J. F. Elgee, and the late Geo. Dixon. From the son of the last named, Mr. G. Dixon, Chiltern Croft, Wendover, Bucks., we learn, that the finds fell to Dr. Craster. The various objects, some 50 in number, were purchased by the British Museum in 1882. An undated newspaper cutting, fortunately preserved by Mr. T. A. Lofthouse, gives particulars of a lecture on "The Ancient Grave-hills of Cleveland," delivered by Dr. Craster, before the Middlesbrough Church Institute. In it, we are told that the diggers found associated with cremations three urns, some implements and many flints. They also secured a Celtic Coin from a cairn at Rosebery and Roman pottery from a Roman cemetery at Ayton. It is most provoking that the evidence enabling one to check these statements is not available.

Beginning in 1906, the writer (who owes everything to his co-partners, the late Mr. Richard Stanton and the present Mr. John D. Laverick) has done much digging along the Cleveland coast line with occasional excursions inland. Our finds are recorded in the publications of the "Yorkshire Archaeol. Society" and in "The Journal of Roman Studies." and " 'tis an irksome thing to tell again a plain told tale." The writer begs, however, very briefly to point out, that, in at least three particulars, our experience differs from that of Canon Atkinson. In his valuable investigations, the Canon discovered not a single food vase, no un-cremated Interment and scarcely a cup marking. We have found several food vessels, at least one unburnt burial and an amazing number of marked stones. Lord Abercromby points out that the food vase was a derivative of the neolithic round bowl and probably ceased to be made after 1500 B.C. Our examples (from Brotton Warsett, Boulby, Hinderwell Beacon and Goldsborough) and those found by Canon Greenwell at Goldsborough and Egton, apparently indicate that the settlement of the Esk Valley and the Cleveland coast line was earlier, perhaps much earlier, than that of the moorlands. In the mound at Howe Hill, we found part of the unburnt remains of a short round headed man. In the Beacon Field at Rawcliff we secured a fine urn which contained the imperfect cremation of an individual of similar type.

At Barnaby Grange there was secured the jaw bone of a man of the brutal Borrowby type. In 1875, at Brow Quarry, near Boulby, the workmen unearthed two "stone coffins," each of which contained a complete skeleton. Unfortunately, only portions of these passed ultimately to the Osteological department of the Museum of Oxford University. That which admitted of measurement gave C.i.76.7 Interesting skeletons have been found by us, two in most excellent condition, in the late Roman Forts, at Huntcliff and Goldsborough. Among these, the women and old men would obviously belong to the district. They are all long-heads, some most pronouncedly. A veteran from Huntcliff had been left-handed, and an occupant of the Goldsborough fort, aged about 30 years, is described by Sir Arthur Keith, as having been a woman of a beautiful countenance. The Osteologists ask for further examples from our district. Nearly everywhere down the coast, we have found stones with "cup" and other markings - from Hinderwell Beacon alone we collected nearly 300 specimens. The "Cup" pittings are usually explained as symbols in Sun Worship. More probably, however, they refer to the whole host of heaven. .

In concluding, the writer begs to remind the earnest worker of the Cleveland Naturalists Field Club, that in our own district, there is "much land yet to be possessed." To the patient plodder, there are discoveries to be made in cataloguing the burial-mounds of Cleveland in the re-examination of some of the larger ones, in sifting the written records, and in a careful study of the pottery.



Stitches - limits

A NOTE ON THE PEAT DEPOSITS FOUND AT HARTLEPOOL
(1909).

By J INGRAM B.SC.

During 1919 and 1920, extensive dredging operations were in progress at Hartlepool in connection with the Dock Extension Scheme. With the kind permission of Mr. I. D. Howkins, Engineer to the Harbour Commissioners, and the valuable help of Captain Pilcher, of the "Hartness" Dredger, I have been able to investigate the peat deposits found there.

Hartlepool stands upon a headland of Magnesian Limestone, which projects as a breakwater towards the Yorkshire coast, forming the Bay of Hartlepool, in which the deposits are found. The headland dips rapidly towards the West, where for a considerable distance the land is flat and low lying. As late as 1830 the tract was occupied by a shallow stretch of water which at high tide communicated with the Bay. Much of this tract, known as the Slake, has now been reclaimed or deepened to form docks, and only a small portion behind the old Fish Quay remains. The extent of the Slake is referred to because during the former dock excavation various animal and vegetable remains were discovered which in all probability formed part of the deposits found in the Harbour.

The existence of the peat deposits have been long known* but not investigated. This was probably due to the fact that they are below low water mark, and consequently difficult of access. In fact, had it not been for the dredging operations further investigations could not have been made.

References have been made previously to both the peat and the animal remains.

In the article on "Palaentology" by Lydekker in the Victorian History of Durham, the following local references are made:-

- I Mr Howse records remains of the Red Deer (Cervus elephus) from Hartlpool

* G.A. Lebour, Victorian History of Durham

II. Remains of the Elk (*alces alces*) from beneath the peat at Hartlepool.

III. Bones of the Celtic Shorthorn (*Bos longifrons*).

IV. A pair of antlers of the extinct Irish deer (*Cervus giganteus*) has been obtained from an ancient forest deposit at Seaton Snook. (The remains are preserved in the Durham University Museum).

V. A fragment of tusk, five inches in circumference, found in the excavation of the West Hartlepool Docks, is said to be the only evidence of the Mammoth or Hairy Elephant (*Elephas primigenius*) within the limits of this County. *It was preserved in the Atheneum, West Hartlepool*. Mr. Howse regards it as prehistoric, but Mr. Lydekker refers it to the antecedent Pleistocene Epoch.

References to the peat deposits are found in Sharp's "History of Hartlepool." The following reference appears as a footnote to page 3 :-

" The Slake or outer Harbour is filled with the remains
" of trees of large dimensions and similar remains are
" frequently perceptible at low-water along the coast
" from Hartlepool towards Seaton; they extend nearly
" two miles. Hazel nuts are likewise found in the
" clay in which the trees are embedded."

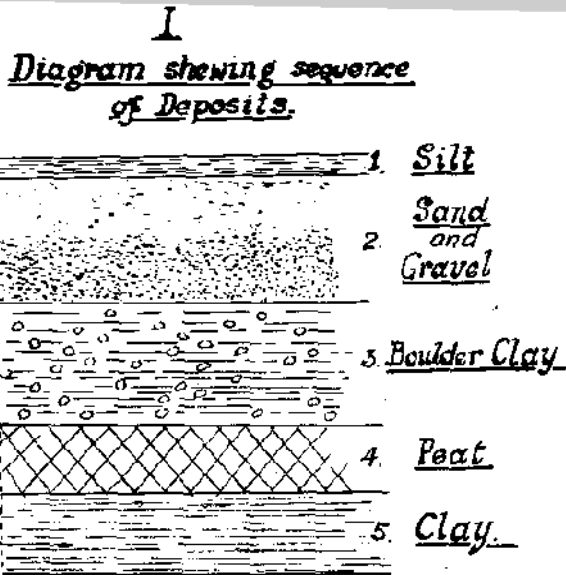
The following is taken from the Supplement to same (page 13), and deals with the Victoria Dock Excavation 1833 :-

" It was here found that the bottom of the old harbour,
" only about 12 feet below the high water line of
" ordinary spring tides, rested upon a bed of soft peat,
" with trees, nuts, and other remains of vegetation,
" such as are frequently met with among alluvial
" deposits."

The references given above were practically all that was known of these deposits.

RESULTS OF PRESENT INVESTIGATION.

The former depth of the "Channel" at low-water was 11 ft., but the Harbour Commissioners are now maintaining an average depth of 23 ft. at low spring tides.
Hence ground untouched as yet in any dredging operations is now



being cut through.

The section usually found is shown in figure 1.

1. Silt.
2. Sand and Gravel.
3. Boulder Clay.
4. Peat.
5. Clay.

The upper layers of the section, consisting of silt, sand and gravel, are merely the ordinary marine deposits that accumulate in the Channel every Winter.

Below these there is a thin bed of Clay. As this clay has been found overlying the peat, wherever the latter has been dredged, it can be assumed quite safely that it covers persistently the whole of the peat. In thickness it varies from 3 to 5 feet; its colour is generally brown, but in some places it is quite bluish. In the clay are found sand, gravel and stones ranging in size from mere pebbles to boulders of nearly two tons in weight. At the beginning of the dredging operations they were tipped at sea; now, however, they are deposited on the beach to help protect the sea-wall from the full force of the waves.

The large boulders are chiefly of Mountain Limestone and shew fine glacial striations.

In addition to these, but not so numerous, are large boulders of gypsum. These are cream or grey coloured boulders, and when first dredged up are extremely soft and easily cut. On exposure, however, they soon harden and become more brittle. (The boulders are rapidly becoming covered with sea-weed).

THE PEAT.

Below this bed of clay occur the peat deposits. Peat has been dredged in the parts marked by crosses on the chart, but from the earlier references I have quoted, its least probable extent may be indicated by the continuous line.

In thickness it varies from two to ten feet, and it is found usually about 20 feet below low-water level. It varies in colour from dark to light brown, and is quite fresh when dried. It consists of the usual mossy mass, in which occur branches of trees (oak, hazel, willow, &c.)

Hazel nuts in a beautiful state of preservation are found in great quantities. Seeds are also found scattered throughout the mass.

Prof. M. C. Potter, Armstrong College, has noticed in the piece sent to him, leaves of the willow, grasses and sedges.

F. J. Lewis, Liverpool University, in another sample found, in addition much Sphagnum sp. with leaves, stems and capsules, Polytrichum Commune, the two being closely matted together.

It is interesting to note that the peat on being raised

above the water rapidly expands and overflows the buckets of the dredger; also when the nuts are exposed to the atmosphere they gradually darken and shrivel up.

THE LOWER CLAY.

The lower Clay is lighter in colour than the upper bed; being almost grey; it is intercalated with the peat in its upper portion and, unlike the upper Clay, is soft and quite free from grit. Its thickness is unknown, because the dredger does not cut down further than is necessary to maintain 23 feet at low-water. For the same reason, also, I was unable to determine what the clay rested upon.

AGE OF THE DEPOSITS.

As I have already stated accurate observations of the deposits are most difficult, hence in determining the age one has to be careful in stating exactly what is found.

The chief factor in this respect is that the peat is covered by a bed of true Boulder Clay, but rests upon a bed of Clay quite different in character and contents from the Boulder Clay above the Peat. This goes to prove that the peat is pre or interglacial in age, (In the various peat deposits round the district both the overlying and underlying - beds of clay are true boulder clays, and the deposits are postglacial).

In conclusion, the following observations may prove interesting :-

(1) The well-preserved condition of the nuts shows that they must, have grown on or very near the spot where they are now found,

because if carried any distance by ice they most certainly would have been ground to fragments.

(2) The presence of Sphagnum in such quantities goes to prove that the peat was formed in situ.

(3) There is no trace of any marine organism in the peat or clay. This appears to indicate that the peat was not an accumulation of vegetable matter in a lagoon separated from the sea by a temporary embankment of sand and gravel.

The evidence, therefore, seems to indicate that the deposits are the remains of a forest existing during pre or interglacial times in the area indicated, and that the forest contained a peat bog.

COLEOPTERA OBSERVED IN CLEVELAND

M. LAWSON THOMPSON F.E.S

The following Report on Beetles occurring in the Cleveland district is compiled from observations made during the five years-1920 to 1924.

Those insects marked with an asterisk are additions to the Cleveland list since the last Report was published, and amount to 14 species. With these additions the list of Cleveland Coleoptera recorded in the Proceedings of the Cleveland Naturalists' Field Club now numbers 1,084 species.

I have again followed the arrangement and nomenclature contained in the List of British Coleoptera compiled in 1915, by E. A. Newbery and the late W. E. Sharp, F.E.S., including, of course, such revisions affecting my notes which have been made since that date.

COLEOPTERA

Carabus nitens, L. On Stony Ridge, Ingleby. Several specimens in May, 1921.

Elaphrus riparius, L. On the margin of a pond at Stillington-June, 1920.

Bembidium lunatum, Duft. On the Coast at Eston. July, 1923.

Bembidium atroviolaceum, Duf. (**stomoides**, Dej). On the banks of the Tees near Yarm. August, 1920.

Calathus micropterus, Duft. On Stony Ridge, Ingleby Common in May, 1921.

Olisthopus rotundatus, Payk. On Stony Ridge, Ingleby Common in May, 1921.

***Agonum (Anchomenus) micans**, Nic. On the banks of the Tees near Yarm. July, 1923.

***Patrobus assimilis**, Chaud. On the high moor at Burton Head, near Ingleby. June, 1921.

Agabus melanarlus, Aubé. In a small pool in Arncliffe Wood, Glaisdale .. A few specimens on September 17th, 1924.

Astilbus canaliculatus, Leach. In a nest of *Formica fusca* on the moor at Kildale.

Tachyusa constricta, Er. At Middlesbrough. June, 1921.

Leptusa euficollis, Er. In moss at Glaisdale. August, 1914.

Bolitochara obliqua, Er. In rotten wood at Kildale. September, 1923.

Bolitobius thoracicus, Fab. (*pygmaeus*, F.), At Glaisdale and Kildale, in decaying fungi.

Quedius flliginosus, Grav. and **Q. boops**, Grav. Common at Kildale.

***Quedius othiniensis**, Johan (*talparum*, Deville). In a mole's nest at Great Ayton, in 1922.

Staphylinus brunnipes, F. At Glaisdale.

Philonthus ventralis, Grav. In dung at Ingleby Greenhow. June, 1921.

Baptolinus affinis, Payk (*aterrans* Grav.) At Kildale.

Stenus pusillus, Er. At Leven Bridge.

***Stenus foveicollis**, F. In sphagnum on Stony Ridge, Ingleby. One specimen in May, 1921.

Syntomium aenium, Mull. In moss at Kildale.

Lesteva heeri, Fauv. (*sieula*, Brit. Cat). On Stony Ridge, Ingleby, in Sphagnum. May, 1921.

***Deliphrum crenatum**, Grav. (**Phyllodrepoides crenata**). In Arncliffe Wood, Glaisdale. One specimen near larch trees, on September 17th, 1924.

Phyllodrepa floralis, Payk (*rufipas*, Brit. Cat.). At the head of Bransdale, June, 1921.

Phyllodrepa vilis, Er. Under bark at Kildale. September, 1923.

***Phyllo Drepa (Hapalaræa) pygmæa**, Payk. On the mountain Ash, at Kildale One specimen in July, 1921.

Anthobium minutum, F. A. **torquatum**, Marsh and **A.sorbi**, Gyll. Common at Kildale.

Tychus niger, Payk. In moss at Kildale.

Choleva cisteloides, Fröh. On the banks of the Tees near Yarm.

Catops (Choleva) morio, F. In a dead grouse on the moor at Baysdale. One specimen, May, 1921.

Liodes (Anisotoma) litura, Steph. (**punctulata**, Gyll.) By sweeping at Kildale, September, 1923.

Trichopteryx fascicularis, Hbst. (**lata**, Mots). In sphagnum on the high moor at the Esklets. September, 1916.

***Sphaerites glabratus**, F. In the gills of a growing fungus (an Agaric) in a wood below the moor at Kildale. One specimen at the end of September, 1923. A rare insect.

Epuraea florea, Er. On the mountain ash at the head of Bransdale. One specimen in June, 1921.

Monotoma picipes, Hbst. In garden refuse at Middlesbrough.

Telmatophilus caricis, 01. At Marton.

Antherophagus pallens, 01. At Ingleby.

Cryptophagus cellaris, Scop. Very abundant in a dwelling-house at Egton, in 1920.

Byrrhus fasciatus, F. On the Moor at Burton Head near Ingleby.

***Heptaulæus villosus**, Gyll. On the coast sandhills at Redcar. One specimen in June, 1921. Very rare in the North of England.

Triscagus (Throscus) dermestoides, L. At Staithes, in May, 1920.

Hypnoidus (Cryptohypnus) riparius, F. On the Moor at Burton Head. Common.

Rhagonycha fulva, Scop. Common at Kildale, and Leven Bridge.

***Ptinus tectus**, Boield. In a dwelling-house at Middlesbrough, in July, 1921; also on the banks of the Tees near Yarm, in July, 1923.

Priobium excavatum, F. (**castaneum**, F.) On Scotch Fir, at Kildale.

Grammoptera ruficornis, L. At Kilton Wood, and Staithes.

Phytodecta olivacea, First. var. **flavicans**, F. On the broom at Castleton. August, 1921.

***Galerucella nymphaeae**, L. var. **sagittariae**, Auct. On aquatic plants in a pond near Redcar, in 1924.

Phyllotreta undulata, Kuts. At Guisborough.

Phyllotreta nemorum, L. On the coast at Eston.

Otiorhynchus ligneus, 01. On the coast at Eston, in 1923.

***Phytonomus (Hypera) fasciculatus**, Hbst. On the coast at Redcar under *Erodium cicutarium*. September, 1923 (R. S. Bagnall).

Phytonomus (Hypera) punctatus, F. At Kildale.

***Dorytomus longimanus**, Fust. (**vorax**, Fab.). On poplars on the banks of the Tees near Yarm. July, 1923.

Dorytomus taeniatus, Fab. (**maculatus**, Marsh). On sallows in Kilton Wood.

Ceuthorhynchus pleurostigma, Marsh. At Kildale.

Apion pisi, F. Common at Eston, Kilton Wood, and Saltburn.

Apion marchicum, Hbst. and **A. curtirostre**, Germ. (humile). At Ingleby.

***Tetratoma desmaresti**, Lat. At Sandsend, in September, 1917 (B. R. Lucas).

***Tetratoma ancora**, F. On Scotch Fir at Kildale. One specimen, in July, 1921.

ORIGIN OF THE CLEVELAND NATURALISTS' FIELD CLUB.

As a result of University Extension Lectures on Physical Geography, a meeting of the Cleveland Literary and Philosophical Society was held on April 4th, 1881, to take into consideration the formation of a Field Club. At this meeting, presided over by Dr. W. Y. Veitch, it was decided to call the club the Cleveland Naturalists' Field Club, and that the objects of its studies should be Natural History, Archaeology and Antiquities. Field Meetings were to be held and records made of the various natural productions, ancient buildings and other remains of the district as well as accounts of its Geology.

At an adjourned meeting on the 11th April, it was decided to add to the title of the club the words "and University Extension Society," and to arrange sections for the purpose of continuing the study of subjects taught at the University Extension Lectures. By the inclusion of the word "Cleveland" in the title, it was intended to define the district to which its investigations should be mainly confined, and from which its membership should be largely supplied. Both of these objects have been attained in the history of the Club, as may be seen in its Transactions and the lists of its members at different periods of its forty-four years of existence.

This then was the origin of the Cleveland Naturalists' Society and its Field Club which, though it has been separated from the parent society, yet through close contact with the sister institution, the University Extension Society, has kept before the

local inhabitants a knowledge of and an interest in their district, and by the contribution of several of its members of valuable objects to the Dorman Museum, among which should be noted the exhibit of local birds collected by the late Mr. T. H. Nelson, the Geological specimens given by the late Dr. Veitch, Mr. J. J. Burton, the late Rev. J. Hawell, M.A., F.G.S., of Ingleby Greenhow, and the Roman Antiquities discovered at Saltburn, by Mr. W. Hornsby, B.A., of

Saltburn, Mr. Frank Elgee, the present Curator of the Museum, who has been a member of the the Field Club since 1899, by his knowledge of the Moorlands and of its animal and plant life has contributed much to its value, and by what he has written has given the Club a distinguished place among similar societies. The Club too can always feel with pride that such men as the late Canon Atkinson and Dr. J. E. Stead, F.R.S., Messrs Henry Simpson, J. A. Jones, R. G. Clayton, T. M. Fallow, F.S.A., Baker Hudson and Rev. J. Cowley Fowler actively interested in all the things for which the Club stood, were of the number of its membership. Among the Yorkshire Naturalists several members of the Cleveland Field Club have a reputation for special knowledge in various branches of Natural History, and in this connection may be mentioned Messrs J. J. Burton, E. W. Jackson, F. W. Allison, J. M. Meek, T. A. Lofthouse, M. L. Thompson, Dr. J. W. H. Harrison and J. W. R. Punch.

On two occasions the Club has been specially honoured by the Yorkshire Naturalists' Union, for in 1900 and again in 1910, Middlesbrough was the place chosen for the holding of the Annual Meeting. Excursions took place in the neighbourhood during the day, and exhibitions of microscopic-slides and other objects of interest were displayed at meetings in the evenings.

A Society such as this cannot be run without a good deal of hard work and continued interest on the part of its members, and the Club has had such in the late Dr. W. Y. Veitch, F.G.S., the first President, Mr. R. Lofthouse and Mr. T. F. Ward, original members, the late Mr. W. H. Thomas, who long fulfilled the post of Secretary, Mr. H. Frankland, the present Treasurer, Mr. J. S. Calvert, the second President, Mr. J. J. Burton, the first Secretary, and the late Mr. Angus Macpherson.

Since the formation of the Club in 1881, the excursions, five or six every summer, have been mostly in the Cleveland district, and there is probably no road, lane or fieldpath, that is not known and has not been worked, its flora studied its birds noted, its moths, beetles and butterflies collected and its Geological features examined.

Credit may be given to various of its members for the discovery of earthworks, burrows, camps and stone circles, for the description of ancient buildings, churches, castles and forts and in particular of such ecclesiastical ruins as those of Mount Grace and Guisborough Priors.

Outside of its special area there have been at various times visits to more distant localities, the observations of which have furnished material for comparison of the district immediately South of the lower course of the Tees with the rest of the North Eastern part of England. In this way, the whole coast and a wide area inland from Flambrough Head to Souter Point have received attention. The Geology, Animal and Plant Life, notable ancient buildings and traces of Roman, Saxon and Danish occupation have been brought before the Club by letters and papers contributed by members.

JOHN SMALES CALVERT

AN APPRECIATION

On the 15th February, 1926, one of Middlesbrough's oldest citizens, Mr. John S. Calvert, quietly passed away. His long unselfish life will influence for good, a younger generation to whom he was possibly personally unknown, and one may be permitted to believe that the "white flower of a blameless life" having fulfilled its mission and faded into a recollection after spreading its fragrance all around, will be followed by fruitful seed which will spring up in many places and bloom afresh in the hearts and minds of those who come hereafter. Mr. Calvert's life as an educationist in Middlesbrough was full of performance, and there are many around us who, as years go, may be considered old who can recall the eventful years in their lives when they received their early education under him in the Stockton Street or Newport Road Schools. All this, as well as his work in carrying out official duties as Superintendent or Director of Education under the Old School Board or its successors has been told elsewhere, and it is chiefly his connection with the Cleveland Naturalists' Field Club that I desire to place on record here.

On the initiative and by the active assistance of Sir Hugh (then Mr.) Bell, in the late seventies, a series of University Extension Lectures on literary, economic and scientific subjects was commenced in Middlesbrough, and I refer in particular to those given in the Spring and Autumn of 1881 by Dr. Roberts on "Physical Geography" and by the late Sir Jethro Teall (then Mr. J. J. Harris Teall) on "Geology." In passing I may mention that four or five years ago I sat next to Sir Jethro at a Geological Club dinner and reminded him of his visit to Middlesbrough, and told him of the permanent effect of his course of lectures. My recalling his Lectures and their results gave him infinite pleasure and he enquired about many people prominent in 1881, now alas! numbered with the majority.

These two courses aroused an interest which had apparently been dormant and there was a general desire to pursue

the studies in the field. A meeting was held in the Hall of the Cleveland Literary and Philosophical Society - then as now, the ever willing handmaid of any scheme identified with progress - and there and then it was decided to form a Society to be known as "The Cleveland Naturalists' Field club and University Extension Society" with Dr. W. Y. Veitch as first President, and the writer as Secretary. At the meeting Bye-Laws were sketched out, largely based on those of the defunct Tees Valley Field Club-a Society formed for a similar purpose but apparently prematurely, as after a fitful-feverish existence it had died out. Mr. Calvert was one of those who took a prominent part in the formation of the new Society, and for many years continued one of its most active members.

I well recollect what a host he was in the field. The topography of Cleveland was an open book to him. He knew well the folk lore of the district, and his quaint manner of relating many of the dales stories gave added interest to the matter. He was an excellent botanist, a good archaeologist, and had more than a passing acquaintance with all the subjects which Field excursions brought under observation or discussion. As a walker he neither tired nor hurried; as a companion in the excursions or in discussions at the meetings he was always entertaining and possessed that cautious, enquiring, non-too-common temperament which acted on the principle, never discard old views until modern ones have proved worthy of acceptance. He was neither reticent nor obtrusive in giving his opinions, but when he had anything to say it was the result of thought and expressed with modest assurance of correctness. He was a delightful leader in the open; his fund of information on many subjects was inexhaustible and his contribution to the common stock of knowledge was unstinted.

With leaders like those old stalwarts Mr. Calvert, Dr. Veitch, Mr. T. F. Ward and Mr. R. Lofthouse, the progress of the Society (which soon dropped its double title) was rapid, and the youngest members by their enthusiasm carried on the tradition. Many papers for the excursions were contributed by Canon Atkinson, Dr. Veitch, Mr. W. H. Burnett and others, but I fear they have been lost, as they have not appeared in the Proceedings.

The old members have in turn given place to a new generation, and It is to be hoped that the pressure of many new claims upon the active interest of everybody will not diminish the interest in scientific investigation and close observation of nature in the field.

No record of the origin of the Field Club would be complete which did not refer to the assistance the newly formed Society received from Dr. (then plain Mr.) Stead. He thought full advantage of field excursions was impossible without some knowledge of Chemical facts, and he asked me to get up a class of thirty students, which I did, and we met regularly on two evenings weekly in his old laboratory in Zetland Road. There by Lectures and Demonstration he sacrificed his own time in teaching us without any fee until his health broke down and he had to go away for a long rest. The act was characteristic of the man.

Another of Mr. Calvert's activities which, like the Field Club, kept him much in the open air was his love of sketching. On the 2nd April, 1884, at the invitation of Mr. J. S. Calvert and Mr. R. Lofthouse, a few friends met for the purpose of considering the formation of a Sketching Club, and then began the Cleveland Sketching Club which is still going strong. Of that original band of enthusiasts I believe the writer alone remains. The earlier exhibits of members' work took place in Mr. Calvert's school room in Newport Road, but developments led to permanent premises being acquired: The credit of fostering artistic taste in Middlesbrough is due to the old Mechanics Institute under the guidance of Mr. Wm. Taylor, by whom an Art Teacher was engaged and class rooms erected in Durham Street, in 1870.

Mr. Calvert travelled far in search of the picturesque as subjects for his pencil and brush, and the excellent water colour drawings which we exhibited year after year were a testimony alike to his skill and industry. He rarely travelled even with the Field Club, without having a sketch book with him, in which he made hasty studies of forms and colours for subsequent use, and hand and eye were thus in constant training. He also took a prominent part in the active duties of the Cleveland Literary and Philosophical Society, on the Council of which body he sat during a very long period

and his advice was constantly sought and much appreciated, especially in connection with books and the Lecture programme.

At last after 90 years of active life, and whilst the intellect was still keen and the enjoyment of old pursuits strong, the call came to "cease work "and was as willingly accepted as any of the calls to action. The tall spare frame bowed, and the light within flickered and then died out, but his moral and intellectual personality survives and the influence of his character and accomplishments remains with us

" Like a vase in which roses have once been distilled,
" You may break, you may ruin the vase, if you will,
" But the scent of the roses will hang round it still."

Of him I think it may truly be said :-

" Happy the man that, when his day is done,
" Lies down to sleep with nothing of regret.
" Folding at last his hands upon his breast,
" Happy is he, if hoary and forespent,
" He sinks into the last eternal rest,
" Breathing those only words, , I am content.' "

J. J. BURTON,
22nd February, 1926.

IN MEMORIUM – BAKER HUDSON

By the death of Mr. Baker Hudson on August 5, 1925, the Field Club lost one of its oldest members and Middlesbrough its Public Librarian. Mr. Hudson was one of the few surviving original members of the Club when it was founded in 1880, of which he was at one time Secretary. He was specially interested in conchology, and many of his notes on that subject appear in the earlier volumes of the Naturalist and in the Journal of Conchology. For his services in these and other branches of natural history he was elected an Honorary Member of the Club.

The public services rendered by Mr. Hudson are too well-known to need enlarging upon. He was appointed Librarian in 1889 and saw the development of the library from a few small rooms in the Municipal Buildings until it was housed in the present handsome structure, the gift of Mr. Andrew Carnegie.

He was also associated with the early days of the Middlesbrough Museum when it was under the care of the late Dr. W. Y. Veitch. When Sir Arthur J. Dorman, Bart., presented the Dorman Museum to the town, Mr. Hudson was appointed Curator, with Dr. Veitch as Honorary Director. He held this position from 1904 to the autumn of 1923, when he resigned in favour of Mr. F. Elgee, who had been assistant-curator since the inception of the Dorman Museum.

Mr. Hudson was also an early member of the Yorkshire Naturalists' Union, and in 1888 he was Secretary to the Conchological Section. He contributed notes on the Land and Fresh-water Shells of the Middlesbrough District to Science Gossip in 1883-4. In his later years Mr. Hudson was a prominent member of the Cleveland Sketching Club, and he had filled most of the offices in connection therewith. In fact landscape painting in both water and oil-colours was his chief interest in later life, and a special exhibition of his work was held at the Annual Sketching Club Exhibition in April, 1926.

Most of his natural history specimens, chiefly mollusca were presented to the Museum in his life-time, and the rest by Mrs Hudson after his death together with a number of his books on local and other subjects .

Mr. Hudson, who was in his seventy-first year at the time of his death, leaves a widow and four sons to mourn his loss and to whom we tender every sympathy.

We are indebted to the Proprietors and the Editor of the "Naturalist" for the loan of the portrait-block accompanying this article.

SUMMARY OF SECRETARY'S REPORT 1920 – 1925

FIELD MEETINGS - 1920

- May 1 - Ayton-Kildale.
- May 15 - Grinkle Rigg Lane, Staithes.
- June 5 - Bishopton.
- June 19 - Guisbrough.
- July 3 - Hummersea-Skinningrove.
- July 17 - Battersby-Castleton.
- Aug 18 - Danby Head.
- Sept 4 - Eston Nab.

WINTER MEETINGS 1920 -21

- Nov. 8 - " Edible and Poisonous Mushrooms," by Mr. A. E. Peck.
- Dec. 9 - " Heraldry," by Mr. Emmerson Beckwith, B. Sc.
- 1921 "North-Western Europe in the Carboniferous
- Jan. 20 - Period," by Dr. Albert Gilligan, B.Sc., F.G.S.
- March 5 - " Wade's Causeway or The Aud Wife's Trod," Frank Elgee.

FIELD MEETINGS 1921

- May 7 - Coatham.) *Not held owing to*
- May 28 - Wainstones.) *Railway Strike.*
- June 11 - Redcar (Y.N.D.)
- July 23 - Battersby-Castleton.
- Aug. 17 - Danby Head.
- Sept. 3 - Piercebridge.
- Sept 17 - Meggitts Lane to Kirkleatham

WINTER MEETINGS 1921 - 22

- Oct. 12 - " The Heights and Depths of the Earth," by Dr. Albert Gilligan, B. Sc., F.G.S.
- Nov. 30 - " Ironstone-British and Foreign," by Lieut-Col. E. L. Johnson, L es Sc., F.G.S.
- 1922
- Jan. 20 - " Regional Survey," Mr. Norman King, M. Sc.
- Feb. 9 - " Volcanoes and Geysers," Mr. M. Odling, M.A., B.Sc. (Oxon), F.G.S.
- March 11 - " Geological Revolutions," by G. Knight.

FIELD MEETINGS - 1922

- 1922
May 6 - Cheese Stones.
May 20 - Middleton- One- Row.
June 3 - Thornton Dale (Y.N.V.)
June 17 - Whorlton.
July 1 - Yarm to Castle Levington.
July 15 - Greatham Creek.
Aug 23 - Kildale to Castleton.
Sept 9 - Ayton to Kildale.

WINTER MEETINGS – 1922-23

- Oct. 28 - " Roman Occupation of Cleveland," by Mr. F. Elgee.
Nov. 18 - Museum Meeting.
Dec. 1 - Photo-Micrography applied to Insect Anatomy," Rev. T. A. Baxter, B.A.
Feb. 8 - " The Evolution of a Yorkshireman," by Mr. T. Sheppard, M. Sc., F.G.S., F.S.A.
March 1 - " The Arts and Civilization of Ancient Troy and Crete," W. H. Thomas.

SUMMER MEETINGS – 1923

- May 5 - Yarm and Worsall.
May 12 - Visit to Mr. T. A. Lofthouse's Rock Garden.
May 29 - Botanical Exhibition at Dorman Museum.
June 2 - Billingham (Trollius Marsh).
June 30 - Swainby and Carlton.
June 21 - Sleddale.
Sept 8 - Cawthorn Camps.
Sept 29 - Castleton and Commondale.

WINTER MEETINGS – 1923 – 4

- Nov. 21 - " Ancient Man in N. E. Yorkshire," by Mr. F. Elgee.
1924
Jan. 10 - " Roman Defences on N. E. Coast," Mr. Gerald Simpson, F.S.A. (Scot).

March 12 - "Roseberry Topping," by Mr. J. J. Burton, F.G.S.

SUMMER MEETINGS – 1924

May 10 - Sandsend and Mulgrave Castle
May 24 - Eston to Wilton
June 7 - Ravenscar (Y.N.U.)
June 21 - Skelton to Saltburn
July 5 - Billingham (Trollius Marsh)
July 19 - Hinderwell
Aug 4 - Croft (Y.N.U.)
Aug 20 - Hole of Horcum
Sept 13 - Danby Rigg

WINTER MEETINGS 1924 -5

Nov 12 - "Whity Abbey" Mr P Hood
1925
March 25 - A Trip to Swizerland, Geological and
Otherwise" Mr M Odling M.A., B.Sc (Oxon)
F.G.S.

FIELD MEETINGS 1925

May 2 - Thornaby
May 9 - Egton (Y.N.U.)
May 23 - Rigg Lane to Roxby
June 1 - Middleton in Teesdale (Y.N.U.)
June 13 - Billingham (Northern Naturalists')
June 27 - Whitby Abbey
July 11 - Eston to Nunthorpe
July 18 - Cawthorne Camps
Aug 19 - Potto – Scugdale to Carlton
Sept 12 - Lealholm, Holly Wood and Danby Castle

WINTER MEETINGS – 1925 – 26

Nov 29 - Lantern Slides of British Wild Flowers (taken by
Mr C A Cheetham)
Nov 26 - "Heredity in Man" by Mr J W Heslop Harrison,
D.Sc

Feb 26

"Economic Development of Lower Tees Area"
by Mr C B Fawcett, D Sc., (in conjunction
Geological Association)

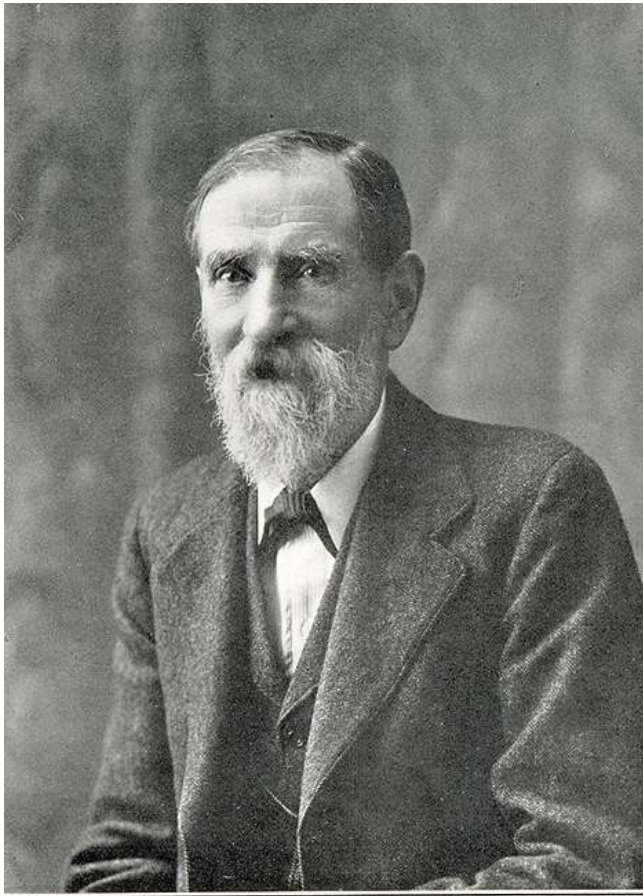
CLEVELAND NATURALISTS' FIELD CLUB.

FINANCIAL STATEMENT, 31st December, 1925.

	£	s.	d.	£	s.	d.
INCOME.						
Balance Dec. 31st, 1924 . . .	50	0	0			
4 1/2 % Forthequer Bonds . . .						
Cash in Bank and Hand . . .	30	7	8			
Subscriptions, 1925						
Do. arrears . . .				80	7	8
Do. in Advance . . .				3	0	0
Exchequer Funds Dividends, &c. . .				1	0	0
4 1/2 % Conversion Loan Dividend . . .				2	11	3
Bank Interest . . .				1	2	6
				0	10	3
				299	16	8
EXPENDITURE.						
Yorkshire Naturalists' Union—						
Subscription and Levy . . .				1	1	0
Literary and Miscellaneous Society . . .				0	10	6
Subscription . . .				7	13	2
Printing, &c. . .				0	16	0
Lecture Expenses . . .				1	8	10
Excursion Expenses . . .				2	3	1
Postages . . .						
Balance Dec. 31st, 1925 : . . .				450	0	0
4 1/2 % Conversion Loan . . .				136	3	1
Cash in Bank and Hand . . .				86	3	1
				299	16	8

H. FRANKLAND,
HON. TREASURER.

23rd February, 1926.



THE LATE J. S. CALVERT.



THE LATE BAKER HUDSON.

Conditions and Advantages of Membership

MEMBERSHIP – The terms of Membership are a subscription of an annual sum' of not less than 5s. Members receive the Proceedings, copies of all Circulars for Summer and Winter Meetings, Associate Card of Membership of the Yorkshire Naturalists' Union, and access to the Society's small Library

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

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

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

Persons interested in the work of the Society are invited to become members, even if they are not able to be active Members. Their support would be valuable, and would also show that the work of the Society is appreciated

Proceedings of the Cleveland Naturalists' Field Club.

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