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Edited by the Rev. J. Cowley Fowler, B. A. F.G.S.

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COAST EROSION.*

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

**Lecture delivered before the Field Club on January 17th, 1914'*

COAST erosion is not confined to the island of Great Britain as we are perhaps apt to think. It is more or less the fate of all sea-bordered land-areas in all parts of the world.

Denudation of all land surfaces is forever going on, and slowly but surely the sea is swallowing the hills and eating up the valleys. Perhaps, because it is slow in operation, it does not impress many with its reality, but a walk along any of our sea cliffs will satisfy us of the great wastage of land and the encroachment of the sea, and we must be impressed with the importance of the subject both locally and nationally. We may, however, judge too generally from concrete instances, and hastily conclude that our so called tight little island is becoming very leaky and that at last, instead of Britannia ruling the waves, those waves which now batter our rocky coasts and are thrown back in wild confusion, defeated and shattered, will ride over our moors and wolds and up our inland valleys in swelling triumph, with perhaps a few rocky islets named Snowden, Helvellyn or Ben Nevis marked on some future chart of the Atlantic Ocean as the British Isles.

The case is serious enough on some of our coasts, but without earth movements of an extensive character, which may cause depression of the land or elevation of the sea bottom England will remain seaworthy and probably undiminished in size through geological periods as yet unnamed.

It is not easy to ascertain the actual loss of land which has taken place over a long past period as the old-time cartographers had to deal with many difficulties which are spared their successors, and their plans and maps are not at all reliable for accurate data upon which to base any close calculation of erosion, but they are sufficiently definite upon many points, and their evidence is supported by other documentary testimony. Combined, they prove that in some parts of the country, and notably in Yorkshire, there has been an enormous encroachment by the sea upon the land, and that the site of many towns and churches is now beneath a waste of waters. In the estuary of the Humber the Manor of Tharlesthorpe in the thirteenth century provided pasturage for 1,274 sheep and yielded 300 quarters of grain annually (Trans. East Riding Antiq. Soc., 1893). Notwithstanding some protective works erected at a later date, the whole of the area disappeared early in the fifteenth century.

Ravenser or Ravenspurne was a port of such wealth and importance that it once returned two members to Parliament and had a bi-weekly market. It was the place of embarkation and debarkation of kings and armies, but the site on which it stood is to-day unknown, as it was entirely swept away soon

after the landing of Edward IV in 1471 (see Sheppard, "Lost Towns of the Yorkshire Coast").

On the Holderness coast the loss has been enormous. At Kilnsea there is trustworthy evidence that between 1847 and 1908 the sea encroached 334 yards. In 1822 there was a church and 30 houses there. In 1852 these had been reduced to 6 or 7 houses and the foundations of the church could only be seen at half tide. All have now disappeared.

Professor Philips writing in 1852 says:— Kilnsea has shared the fate of Ravenspurn. The broadlands, which intervened between the church and the sea, and perhaps constituted a rival to Dimlington Height have long vanished. The church fell in 1826, ten years later the village was removed, and at no distant date the whole of this little hill of hard land will disappear. Destruction of land, once fertile and populous, is the melancholy characteristic of the whole coast from Spurn northward to Bridlington. Those are impressive words which we read on old Yorkshire maps: 'Here stood Auburn which was washed away by the sea.' 'Hartburn, washed away by the sea;' 'Hyde, lost in the sea'. In other documents mention is made of



BAGSHOT SANDS ON HAMPSHIRE COAST,
SHEWING THE DESTRUCTION OF THE CLIFFS BY
ONE NIGHT'S HEAVY RAIN.



HARD ROCKS, STAIR HOLE, DORSET, SHEWING HOW JOINTED ROCKS ARE ATTACKED BY THE SEA.



ESTUARINE ROCKS NEAR HAYBURN WYKE, SHEWING THE UNEVEN WEATHERING OF HARD AND SOFT BEDDED ROCKS.

“Frismark, Tharlesthorpe, Redmayr, Pennysmerk, Upsal, and Pottersfleet. Where are they now?”

Thus we see that 86 years ago the same forces were in as full operation as we find them today.

It is probable that the most striking example of sea encroachment in England is along the 40 miles of coast north of Spurn Point.

Colonel Hellard, late Director General of the Ordnance Survey, in his evidence before the Royal Commission gives the following loss of coastland

	<i>Between</i>	<i>and</i>	<i>acres.</i>
Yorkshire	1848	1893	774
Lincolnshire	1883	1905	400
Norfolk	1883	1905	339
Suffolk	1879	1904	518
Essex	1872	1896	168
Kent	1858	1906	526
Sussex	1871	1898	374
Hampshire	1856	1897	198
Carmarthen	1878	1905	131
Cheshire	1870	1898	104
Lancashire	1842	1893	545
Cumberland	1859	1899	277
			<hr/> 4354 <hr/>

At Withernsea in 1883 the ruins of the church were 417 1/2 yards from the cliff. In 1895 the distance had been reduced to 280 yards. This church was built in 1848, the churchyard of its predecessor having been washed away and the site is now lost.

At Dimlington the old chapel was 147 yards from the cliff edge in 1833; in 1898 it was only 22 yards off. The ruins were pulled down in 1910, when the edge of the cliff was not more than 10 yards distant (see " The Naturalist, ." 1908, pp. 342 and 384).

The coast erosion Commissioners reported that it had been proved that twelve villages had been swept away between Bridlington and Spurn. In the North Riding too, with its more rocky coast-line, the sea has steadily been gaining ground. About thirty years ago I remember seeing a house between Sandsend and Whitby with part of its walls on the cliff and the remainder on the beach. The pantry with some of its shelves and crockery was in position, open to the inspection of the venturesome curious, but the outer wall and some of the contents had gone down to a lower elevation during the night and the site is now a vague recollection.

At Whitby, the East Cliff has long been a vanishing quantity, and it is not at the witching hour of night only that churchyards yawn, as within my own recollection much of St. Mary's burial ground has gradually slipped away, as many now living can well remember.

At Robin Hood's Bay some of the houses are in a parlous state. A snapshot I took some years ago shews how near the edge of an unstable cliff some of the houses then were. I tried to get round the same point a year ago but was unable to do so, and I do not think any measures can be adopted to save the houses from their impending fate.

A house built upon the sand is not more unstable than one built upon boulder clay resting upon friable shales.

An examination of the wave-washed shore of any part of the kingdom will in most cases tell very clearly the story of the erosion.

Thus, if we look on the northeast coast of England, we find that in Northumberland the rocks are mainly carboniferous limestone and coal measures. The erosion of the hard limestone is very slow and fitful; of the softer coal measures greater and more persistent, but not important.

On the Durham coast the rocks are mostly Magnesian limestone. This formation has many peculiarities and from the appearances presented on the coast one would be led to form the opinion that the wastage was rapid and enormous, but I do not think it really is so.

A study of the erosion of Magnesian limestone and chalk is of much interest, but as compared with the erosion of formations the resulting loss of land is small.

The Yorkshire coast is very varied. Passing the Tees mouth, the blown sand on the Redcar-Marske coastline with the dunes, mostly well-knitted together by the growth of grasses, is sufficient protection. South of Saltburn we have a long series of lofty cliffs composed generally of alternating layers of hard and soft shales and sandstones or limestones, or Cretaceous clays, with many ancient valleys and bays filled in with boulder clays and sands, and gravels, through which existing streams have cut their courses. Here and there the harder rocks have presented their faces to the sea and their greater resistance has resulted in the formation of promontories. Where the softer rocks have come down to the sea level they have been more quickly acted upon and there we find bays.

In the neighbourhood of Filey, the boulder clays come down to the sea level in many cases, and marine and atmospheric denudation is very rapid.

South of Filey we have the chalk of Flambro, which is a very compact rock, and like the Magnesian limestone of Durham, has resisted denudation and erosion more than the other rocks and consequently stands out as a prominent headland, but, nevertheless, it has not escaped.

South of the chalk cliffs to the Humber the low cliffs are almost entirely glacial drift, and it is along this portion of the coast that the greatest waste occurs.

South of the Humber the cliffs are mostly low and there is here and there considerable loss by erosion, but probably more gain by accretion, until we come to the neighbourhood of Cromer, where water-logged, slippery drift

and quick-sands form a long length of coastline and are an easy prey to the sea waves; consequently the loss of land in this neighbourhood is very heavy. Protective works and natural sand dunes or shingle spits have done much to protect and in places to reclaim land along the coast of Suffolk, which consists of drift, Pliocene crag and London clay, but all the same there has been much loss, particularly in the neighbourhood of Lowestoft.

On the south side of the Thames estuary there has been a good deal of erosion, but protective works have done much to arrest its progress by collecting beach material.

On the east coast of Kent there has been a give-and-take action by the sea. In places it has yielded up new land, and in other places it has claimed the land as its victim.

In the Channel, the Hampshire coast between Southampton and Christchurch consists largely of mudflats with very low cliffs, mostly composed of sands and gravels, and erosion has been very severe.

West of Hurst Castle the Hampshire coast to Poole Harbour is made up of cliffs of loose friable material, mostly Bagshot sands. At the base there are fresh water or estuarine soft clays varying much in texture, and full of semi-preserved leaves and vegetable matter. Succeeding these are sands and gravels, often in alternate layers, to a height in many cases of about 100 feet. In most cases these sands are loosely held together by the pressure of superincumbent material, but in other cases there has been an infiltration of oxide of iron through the beds which has not only stained the sands yellow or brown in varying beautiful shades, but here and there has cemented together the loose grains of sand and so presented a more resisting surface to atmospheric and marine denudation, and added much to the interest of the coast line when looked at in profile.

On the South Devon coast the cliffs are mostly hard resisting material.

Cornwall's rocky coast bids brave defiance to the pounding of the Atlantic waves, and the Devonian limestone and Old Red sandstones or older rocks yield up very little along the North Devon coast.

With the exception of parts of Lancashire the West coast of England and Wales is, by reason of its geological formations, very little eroded, and the same applies to a large part of Scotland. In Ireland the chief loss has taken place in Wexford and Cork.

Rocks (in which term we include all earthy substances,) vary enormously in their degree of hardness and in their power of resistance to attrition or solvent forces. Granite, which we find in many parts of our coast, will resist almost indefinitely the battering force of sea waves, but an estuarine rock such as we find north of Scarborough, composed, as it is, of alternating

beds of soft and hard material has much less resisting power and suffers greatly by marine and also by atmospheric denudation. And this last again suffers much less than does the same material, which has been deposited on a shelving surface with water percolating in, over or under it; and even this gives less to the greedy ocean than the sandy shingley clay cliffs of Holderness and Hampshire.

Perhaps nowhere can we better see the different effects of stormy waves upon hard rocks than in parts of the Dorset coast where the chalk is protected by Portland stone. Although the stone facing is jointed and tilled, and would appear easy to smash up, it has had much greater resisting power than the more or less distorted chalk behind it. Where the sea has once got through the protecting armour, it has scooped out inland bays as in Lulworth Cove and Stair Hole.

Much more than mere hardness then has to be considered when dealing with the question of erosion, in fact the power of resistance to sea encroachment is very complex, and such things as jointing, bedding, dip of strata, faults, homogeneity of material, alternating bands of permeable or impermeable strata, an abrupt or a shelving beach, currents and tides, springs, surface drainage, nature of the shore between high and low water mark, the boring operations of sea organisms, protection by vegetable growths, and many other matters largely determine the amount of erosion which is taking place.

Sedimentary rocks are usually much bedded, and the varying character of the material of which they are composed renders them very susceptible to wave action if the water contains any gritty particles, but investigation seems to have established the surprising fact that except in lifting and thrusting power and the effect of mere weight to force asunder, the most powerful waves which are free from sand or shingle have very little eroding action.

The power of a stormy sea in lifting and hurling and smashing down is enormous. The engineer to the Tees Conservancy Commissioners has kindly given me the following facts to illustrate the power of breaking waves on the South Gare Breakwater. An upright bar of iron 1 in. in diameter and 2 ft. 6in. long fixed into the face of the platform was bent down to a right angled position.

On July 18th, 1912, two blocks of concrete, 12ft. cube, and weighing 60 tons each, were washed off the breakwater, having been carried about 100 feet. The height of the tide below the coping of the outer wall was 5 ft 10_{in}.

On October 2nd, 1912, a similar block was washed off; the height of the tide being 5 ft. 4 in. below the coping.

On July 23rd, 1913 six similar blocks were washed off; the height of the tide being 4 ft. 9 in. below the coping.

These 60 tons concrete blocks are made in position at the head of the breakwater, and are launched into the sea for the purpose of breaking the waves and thus protecting the head of the breakwater.

These facts cannot but impress one with the battering power of a stormy sea when breaking upon the foot of cliffs or a boulder-strewn shore.

The atmosphere has great crumbling action on soft bedded rocks and they would gradually accumulate as rock debris or talus, and be banked up against any cliff exposure and in time protect it from further denudation, but in the case of shore cliffs this protective action is denied them, and the waves lift and carry away the weather worn material almost as fast as it is produced, and so the cliffs remain open to continued loss by weathering, and in all such cases there is a loss of land the rate of which is determined by other considerations.

Amongst the causes determining the rate of erosion of bedded rocks is the dip of the strata. Since their deposition they have been lifted or tilted or broken in most cases, and if this has resulted in a dip towards the ocean the rate of loss is much greater than when the dip is inland. This is probably due to the fact that in the latter case there can be no slipping along the lines of the bedding planes and that the cross joints are generally perpendicular to the strike, tending to produce overhang in the harder strata, and affording greater protection from weathering action upon the softer beds.

The reverse is the case when the dip is towards the coast,

This is, I think, a safe rule, but in trying to lay down any principles it must be understood that they are of general and not of universal application, as for instance an exception to the one just stated appears to be that of some of the hard Silurian grits. As far as my observation goes where the rock is on a shore dipping into the water it merely forms a shelving beach and is little worn, but in the case of a dip in any other direction, the strata are broken across leaving jagged edges which get worn away, and there is usually found a series of immense teeth with channels in between them, down, over and along which the sea rolls or drives gritty debris, cutting deeper the channels and wearing away the prominent edges with every recurring tide.

Faults aid greatly in increasing erosion. They always form a line of weakness in the strata, and surface and shore denudation often proceed more rapidly at the fault than at either side of it. Faults also frequently cause springs of water, which are one of the most prolific sources of waste of land.

Sea cliffs, which appear hard and homogeneous, are subject to erosion in varying degrees. For instance, the Magnesian limestone on the coast of Durham is, in parts, a porous soluble rock and seems in course of time to have assumed a brecciated and recemented form, which renders it peculiarly

liable to marine denudation. It is dissolved out in hollows and caves. It is battered by the material derived from its own destruction. The sea waves rush into the hollows and imprisoned air is forced into the joints and cracks and cavities, and it is rent and torn in a way which is hardly credible and which, without inspection, would be thought to be impossible.

An abrupt beach generally indicates that the turbulent underwash of the stormy sea is breaking up or has broken up some of the floor below the level of the water, and if the conditions remain constant it is probable that the same forces will continue in action and attack the existing more or less stable cliffs. The extension of this action will ultimately lead to the shoreline being extended inwards. On the other hand, a shelving beach unaffected by currents acts as a protector of the land as the waves break themselves

Currents and tides have enormous influence. Tidal action has been referred to directly and by implication already, but it is not merely the rise and fall of tides but their direction around the coast also which greatly affects the stability of the shoreline.

Currents play a very important part indeed in removing the broken up material of the land surfaces, and an equally important part in transporting it to another part of the coast where it may or may not have a very great effect upon the future growth or retention of land areas.

The set of currents are not easy to explain, but that they exist is certain. To them we owe many shingle banks such as Spurn Point, Chesil Bank, Dungeness and others.

Without them much of the cliff debris thrown down by the battering force of sea waves and the accumulation of cliff waste caused by atmospheric disintegration would remain as a banked up deposit at the base of the cliffs.

Where there are sandbanks or shoals off the coast these often deflect the currents and compress the tides so that we not only have heavy breakers in such positions, but strong tidal currents running at such a rate that they deepen the bottom and scour the sides and carry away the eroded material.

The general travel of beach material, according to the best evidence obtainable, is north to south between the Tweed and the Thames, west to east along the south coast to the Thames, south to north along the west coast as far north as Morecambe Bay. Beyond this point there is a stretch of coast from Walney Island to Workington where local conditions seem to have altered the normal travel, and the set is from north to south. From Workington northward the travel is again in a northerly direction. Round Scotland the travel seems to be almost continuously along the coast from the west side until it again joins our starting point, the Tweed. Winds have much to do with arresting or accelerating the making or removing of beach material.

Springs greatly help to destroy the massiveness of rocks and render them more liable to destruction by other forces.

Fresh water percolating through Magnesian and Carboniferous limestone and chalk, and under certain conditions in ferruginous rocks, dissolves some of the contents and leaves them porous and full of hollows and caves, and it then acts as handmaid to its kin, salt water, in preparing them for more rapid destruction. Instances of this are seen in the Durham and Yorkshire coast, and in many other parts of the country.

Surface drainage to the sea contributes to coast erosion, inasmuch as it cuts down the land surface until this finally reaches ordinary tide level when it becomes open to the attack of the more destructive element of stormy sea waves; and almost every small stream running into the sea gives fine examples of this as the coast where such streams debouch are almost always in bays or have bell-mouthed exits.

There are interesting exceptions where water trickling over the precipitous surface of sea cliffs actually protects them.

On our Yorkshire coast there are several places where small streams topple over the cliffs direct into the sea. In some cases the film of water covering the cliff face has protected it from the drying action of wind and sun. Air has not been drawn in where moisture has been expelled and crumbling away has not taken place. The surface has been cut down into a deep V-shaped valley, but the place where it has fallen over instead of being cut out into a bay actually stands out as a promontory.

These cases are interesting but not of great importance in relation to the bigger subject of waste.

The nature of the shore is of importance. A laminated, jointed or faulted soft shale floor is peculiarly liable to attack, and as it is deepened the breaking waves reach further in shore and their force upon the landlines becomes greater.

On the other hand a harder or less laminated floor is not so broken up. The tide runs far out and the breakers exhaust their force before they can do much damage.

It is an every day observation that the minute is important, but who on walking along our pebbly coasts and noting the lucky stones with holes bored in them as clean as if drilled by an augur, would think that to the work of the lowly rock boring mollusc, *Pholas*, any importance could be attached, and yet it is proved that these little molluscs in carrying on their work have contrived to lower the chalk beds in the neighbourhood of Cromer below low water mark.

On the other hand some organisms protect the rocks from abrasion and attrition. The little limpet sticking tenaciously to the blocks strewn the shore between high and low water mark fends off from its home the scouring swish of the sand-laden incoming tide and the rocky shore giving a foothold to seaweed, is often protected from the hammering and destructive blows of pebble and shingle-charged billows, which beat harmlessly upon its soft cushion floor.

Rocks, which may have originally been hard of the hardest when laid down, have in some instances been so broken and disturbed by subsequent earth movements that they are now quickly acted upon by the sea. Such are some of the very interesting volcanic rocks of the south of the Isle of Man.

In all these operations of nature we observe a perfect cycle of action. That which is now being destroyed was formerly created. Some peculiar instances of this I noticed at Oban and at Llandudno where massive rocks of conglomerate as hard as adamant had come into contact with the ever restless ocean, and were slowly returning to the shingle out of which they were created in long past geological ages.

The secondary rocks of our coasts have been laid down under the sea and subsequently raised to dry land. They are now slowly returning to the sea from which they were withdrawn.

Our sands and gravels and boulder clay cliffs, whilst not in all cases derived from the sea, have filled up bays and valleys which formerly were occupied by water and the water is slowly claiming back its own. Our chalk and limestone was formed in ocean depths. Water is slowly carrying back to the sea the lime, which was extracted from it in past geological time and supplying it with those elements, which are necessary for the continued life of millions of its inhabitants.

Currents are carrying from one place land material and depositing it elsewhere to form new land.

Thus we have change and evolution but in the true sense no waste.

RECORD OF PLANTS FOUND DURING EXCURSIONS OF THE FIELD CLUB.

BY T. J. COZENS

A record of plants found in the districts covered by the Cleveland Naturalists during excursions held in the last 30 years, together with rarer plants, which, in the future, might be found again. The latter are denoted by an asterisk.

The most common plants in the British Flora are found in 112 counties and vice-counties. These are shown by numerals. The Roman numerals mark the Orders.

Where there are blanks, the particulars are unsatisfactory, or the records are not convincing.

The compiler acknowledges, with many thanks, the kindness and curtesy of Mr. T.F. Ward J.P., who placed at his disposal notes referring to many years' observations. With his own observations in Teesdale (12 years) and Cleveland (11 years) this record should prove useful to future botanists.

Botanical Name	Common Name	Order and Number	Rarity etc.	Habitat	Remarks
<i>Clematis Vitalba</i>	Traveller's Joy	Ranunculaceae, I.	47	Goathland	
<i>Thalictrum minus</i>	Lesser Meadow Rue	Ranunculaceae, I.	65	Redcar	
<i>flavum</i>	Common	Ranunculaceae, I.	65	Tees Side	
<i>*alpinum</i>	Alpine	Ranunculaceae, I.	rare	Cronkley Fell	
<i>Anemone nemorosa</i>	Wood Anemone	Ranunculaceae, I.	105	Pastures and Woods	
<i>Ranunculus repens</i>	Common Buttercup	Ranunculaceae, I.	111	Common	
<i>Ficaria</i>	Lesser Celandine	Ranunculaceae, I.	105	Common	
<i>acris</i>	Common Buttercup	Ranunculaceae, I.	111	Common	
<i>auricomus</i>	Wood Crowfoot	Ranunculaceae, I.	85	Battersby Woods, Saltburn	
<i>bulbosus</i>	Common Buttercup	Ranunculaceae, I.	97	Meadows	
<i>Flammula</i>	Lesser Spearwort	Ranunculaceae, I.	112	Ditches	
<i>aquatilis</i>	Water Crowfoot	Ranunculaceae, I.	69	Stokesley	
<i>arvensis</i>	Common Crowfoot	Ranunculaceae, I.	66	Broughton	
<i>hederaceus</i>	Ivy-leaved Crowfoot	Ranunculaceae, I.	101	Scarth Nick	
<i>Lingua</i>	Great Spearwort	Ranunculaceae, I.	78	Glaisdale	
<i>sceleratus</i>	Celery-leaved Crowfoot	Ranunculaceae, I.	95	Wet Ditches	
<i>Caltha palustris</i>	Marsh Marigold	Ranunculaceae, I.	111	Watery Places	
<i>Trollius europoeus</i>	Globe Flower	Ranunculaceae, I.	61	Teesdale	
<i>Helleborus viridis</i>	Green Hellebore	Ranunculaceae, I.	28	Ingleby, Skutterskelf	
<i>*foetidus</i>	Stinking Hellebore	Ranunculaceae, I.	rare	Cotherstone	
<i>*Aquilegia vulgaris</i>	Columbine	Ranunculaceae, I.	57	Teesdale	Probably an escape

<i>Aconitum Napellus</i>	Monkshood	Ranunculaceae, I.	7	Skutterskelf	
<i>Berberis vulgaris</i>	Common Barberry	Berberideae, II.	77	Ayton, Croft	
<i>Nymphæa alba</i>	White Water Lily	Nymphaeaceae, III.	82	Borrowdale	
<i>Nuphar luteum</i>	Yellow Water Lily		80	Borrowdale	
<i>Chelidonium majus</i>	Celandine	Papaveraceae, IV.	96	Great Ayton	
<i>Papaver Rhæas</i>	Red Poppy		102	Fields, Common	
<i>Fumaria officinalis</i>	Common Fumitory	Fumariaceae, V.	105	Fields and Gardens	
<i>Corydalis lutea</i>	Yellow Corydalis		?	Teesdale	Escape from garden
<i>Thlaspi alpestris</i>	Alpine Pennycress	Cruciferae, VI.	14	Aysgarth	
<i>Cheiranthus Cheiri</i>	Wallflower		?	Castleton	
<i>Capsella Bursa-pastoris</i>	Shepherd's Purse	Resedaceae, VII.	112	Roadsides, etc.	
<i>Iberis amara</i>	Candytulft		14	Ayton	Probably an escape
<i>Cochlearia officinalis</i>	Common Scurvy Grass		79	Coatham, Teesdale	
<i>Cardamine pratensis</i>	Cuckoo Flower		111	Damp places	
<i>amara</i>	Large Flowered Bitter Cress		71.	Teesdale	
<i>hirsuta</i>	Hairy Bitter Cress		106	Common Staithes	T.F.W., 1896
<i>sylvatica</i>					
<i>Arabis hirsuta</i>	Hairy Rock-Cress		91	Teesdale	
<i>Barbarea vulgaris</i>	Yellow Rocket		95	Newton Dale, Broughton	
<i>Nasturtium officinale</i>	Watercress		109	Watery Places	
<i>Sisymbrium officinale</i>	Hedge Mustard		107	Roadsides	
<i>thaliana</i>	Thale Cress		93	Dry Places	
<i>Erysimum Alliaria</i>	Garlic Mustard		94	Roadsides	
<i>Sinapis arvensis</i>	Charlock		111	Fields	

<i>Lepidium latifolium</i>	Broad-leaved Pepperwort			Saltmarshes, Redcar
<i>Cakile maritima</i>	Sea Rocket		59	Redcar
* <i>Crassica oleracea</i>	Herb-like cabbage		11	Staithes
<i>Crambe maritima</i>	Common Sea-kale			Whitby
<i>Reseda luteola</i>	Dyer's Weed			Broughton, Staithes
<i>lutea</i>	Wild Mignonette			Stokesley
<i>Helianthemum vulgare</i> .	Rock Rose	Cistaceae, VIII.	88	Hart, Teesdale
* <i>canum</i> .	Hoary Rock Rose		?	Cronkley
<i>Viola odorata</i>	Sweet Violet	Violaceae, IX.	79	Hedge Banks
<i>canina</i>	Dog Violet		112	Hedge Banks
<i>tricolor</i>	Pansy		110	Cornfields
<i>lutea</i>	Yellow Pansy		62	Teesdale
<i>hirta</i>	Hairy Violet		71	Redcar
<i>Polygala vulgaris</i>	Milkwort	Polygalaceae, X.	59	Teesdale
<i>Silene inflata</i>	Bladder Champion	Caryophyllaceae, XI	102	Teesdale
<i>Silene maritima</i>	Sea Champion		71	Redcar
<i>Lychnis diurna</i>	Rose Champion		111	Common
<i>Githago</i>	Corn Cockle		97	Wilton
<i>vespertina</i>	White Cockle		94	Stokesley
<i>Flos-cuculi</i>	Ragged Robin		111	Damp Places
<i>Sagina apetala</i>	Pearlwort		62	Stanley Grove, Stokesley
<i>porcumbens</i>	Procumbent Knotted Pearlwort		112	Dry Places
<i>maritima</i>	Sea Pearlwort			Sea Shores, Coatham
<i>Spergula arvensis</i>	Corn Spurrey		111	Cornfields
<i>Spergularia marina</i>	Seaside Sandwort Spurrey		43	Coatham

<i>Stellaria media</i>	Chickweed		112	Waste Places	
<i>graminea</i>	Lesser Stitchwort		107	Dry Places	
<i>nemorum</i>	Wood Stitchwort		44	Croft	
<i>Holostea</i>	Greater Stitchwort		106	Hedges	
<i>glauca</i>	Marsh Stitchwort		48	Boosbeck	
<i>Cerastium glomeratum</i>	Mouse-ear		1102	Liverton	
<i>semidecandrum</i>	Chickweed				
	Little Mouse-ear		85	Redcar	
<i>triviale</i>	Chickweed				
	Narrow-leaved		111	Common	
<i>arvense</i>	Chickweed				
	Field Chickweed		69	Kilton	
<i>Arenaria peploides</i>	Sea Purslane or		68	Redcar	
	Sandwort				
<i>manna</i>	Sea Spurrey			Redcar	
	Sandwort				
<i>trinervis</i>	Three nerved		96	Kilton, Teesdale	
	Sandwort				
* <i>verna</i>	Vernal Sandwort		27	Cronkley	
<i>serpyllifolia</i>	Thyme-leaved		101	Dry Places	
	Sandwort				
<i>Linum catharticum</i>	Purging Flax	Linaceae, XIII.	111	Teesdale	
<i>usitatissimum</i>	Common Flax			Tanton	Cultivated
<i>Malva sylvestris</i>	Common Mallow	Malvaceae, XIV.	96	Redcar	
<i>rotundifolia</i>	Dwarf Mallow		78	Coatham	
<i>Tilia europæa</i>	Lime Tree	Tiliaceae, XV.	?	Woods	
<i>Hypericum pulchrum</i>	Small St. John's	Hypericineae, XVI.	111	Commons	
	Wort				
<i>perforatum</i>	St. John's Wort		97	Mulgrave	
<i>dubium</i>	Imperforate St.		76	Wilton	

<i>Hypericum</i>	John's Wort				
<i>quadrangulum</i>	Square stemmed St. John's Wort	Hypericineae, XVI.	71	Mulgrave, Staithes	
<i>hirsutum</i>	Hairy St. John's Wort		86	Mulgrave	
<i>Androsæmum</i>	Tutsan		74		
<i>montanum</i>	Mountain St. John's Wort		44	Ruswarp and Sandsend	T.F.W., 1896
<i>Acer Pseudo-platanus</i>	Sycamore		?	Woods	
<i>campestre</i>	Maple		62	Woods	
<i>Geranium sanguineum</i>	Bloody Cranesbill	Geraniaceae, XVIII	62	Hart	
<i>lucidum</i>	Shining Cranesbill		89	Teesdale	
<i>molle</i>	Dove's-foot Cranesbill		112	Redcar	
<i>pratense</i>	Blue-meadow Cranesbill		85	Teesdale	
<i>Robertianum</i>	Herb Robert Cranesbill		109	Waste Places	
<i>columbinum</i>	Longstalked Cranesbill		74	Teesdale	
<i>dissectum</i>	Jagged-leaved Cranesbill		104	Teesdale	
<i>sylvaticum</i>	Wood Cranesbill		51	Teesdale	
<i>Erodium cicutarium</i>	Hemlock Stork's Bill		99	Redcar	
<i>Oxalis Acetosella</i>	Wood Sorrel	Oxalidaceae, XIX.	109	Woods	
<i>Cytisus scoparius</i>	Broom	Leguminosae XXII	109	Stokesley	
<i>Ulex europæus</i>	Furze		110	Stokesley	
<i>Genista tinctoria</i>	Dyer's Greenweed		73	Broughton	
<i>Ononis arvensis</i>	Rest-harrow		99	Hart	
<i>spinosa</i>	Spiny Rest-harrow		60	Newby, Redcar	
<i>campestris ?</i>	<i>O. repens ?</i>		?	Staithes	T.F.W.,

<i>Astragalus hypoglottis</i>	Purple Milkvetch			Redcar
<i>Medicago lupulina</i>	Nonsuch	100		Waste Places
<i>Melilotus officinalis</i>	Melilot	72		Stokesley
<i>Trifolium repens</i>	Dutch Clover	112		Pastures
<i>arvense</i>	Hare's-foot Clover	92		Pastures
<i>procumbens</i>	Hop-Trefoil	101		Pastures
<i>pratense</i>	Purple Clover	112		Meadows
<i>filiforme</i>	Slender Yellow Trefoil	61		Redcar
<i>minus</i>	Lesser Yellow Trefoil	100		Pastures
<i>Lotus corniculatus</i>	Bird's Foot Trefoil	112		Dry Places
<i>Lotus major</i>	Narrow-leaved Trefoil	100	Leguminosae. XXII.	Staithes
<i>Anthyllis Vulneraria</i>	Kidney Vetch	105		Stanley Grove
<i>Vicia sepium</i>	Bush Vetch	105		Hedges
<i>sativa</i>	Common Vetch	87		Fields
<i>Cracca</i>	Tufted Vetch	112		Hedges, Fields
<i>sylvatica</i>	Wood Vetch	72		Liverton
<i>lathyroides</i>	Spring Vetch	52		Hutton Moor, Pastures, Roadsides
<i>tetrasperma</i>	Slender Vetch	72		Stokesley
<i>Lathyrus pratensis</i>	Meadow Vetch	109		Hedges
<i>macrorrhizus</i>	Tuberous Bitter Vetch	99		Copses
<i>Hippocrepis comosa</i>	Horseshoe Vetch	45		Cronkley, Castleton.
<i>Prunus communis</i>	Sloe	103	Rosaceae, xxiii	Copses
" <i>Padus</i>	Bird Cherry	58		Teesdale

“ <i>Avium</i>	The Gean		?	Croft	T.F.W., 1896
“ <i>Cerasus</i>	Wild Cherry		90	Teesdale	
<i>Rubus Chamæmorus</i>	Cloudberry		35	Teesdale Moors	
<i>saxatilis</i>	Stone Bramble		61	Tees Side	
<i>Idæus</i>	Raspberry		105	Roadsides .	
<i>fruticosus</i>	Common Bramble		?	Hedges	
<i>cæsius</i>	Dewberry		68	Aysgarth	
<i>Agrimonia Eupatoria</i>	Agrimony		?	Banks	
<i>Rosa spinosissima</i>	Burnet Rose		90	Broughton	
<i>canina</i>	Dog Rose		110	Hedges	
<i>villosa</i>	Villous Rose		106	Hedges	
<i>arvensis</i>	Trailing Rose		70	Helmsley	
<i>Spiræa Ulmaria</i>	Meadow Sweet		112	Meadows	
<i>Geum urbanum</i>	Wood Avens		104	Hedges	
<i>Geum rivale</i>	Water Avens		90	Loftus	Geum intermedium, a hybrid was also found
<i>Geum urbanum</i>	<i>Geum intermedium</i>	Rosaceae, xxiii		Kilton?	
<i>Fragaria vesca</i>	Wild Strawberry		111	Woods	
<i>Potentilla anserina</i>	Silverweed		112	Roadsides	
“ <i>Fragariastrum</i>	Barren Strawberry		101	Dry Banks	
“ <i>reptans</i>	Creeping Cinquefoil		89	Meadows	
“ <i>Tormentilla</i>	Tormentil		112	Moors	
“ <i>Comarum</i>	Marsh Cinquefoil		99	Newton Dale	
“ <i>fruticosa</i>	Shrubby Potentil		?	Tees side	
“ <i>alpestris</i>	Alpine Cinquefoil		14	Winch Bridge	
<i>Poterium Sanguisorba</i>	Salad Bumet		70	Wilton	
<i>Alchemilla vulgaris</i>	Lady's Mantle		101	Hilly Pastures	

" <i>alpina</i>	Alpine Lady's Mantle		27	Stokesley	Probably introduced
<i>Crataegus Oxyacantha</i> .	Hawthorn		110	Hedges	
<i>Pyrus Malus</i>	Crab Apple		84	Hedges	
" <i>Aucuparia</i>	Mountain Ash		106	Woods	
" <i>communis</i>	Pear		49	Stokesley	
" <i>Aria</i>	Whitebeam Tree		46	Tees side	
* <i>Dryas octopetala</i>	Mountain Avens		16	Cronkley	
<i>Epilobium angustifolium</i>	Rosebay Willow	Onagraceae, XXIV	92	Sandsend	
	Herb. .				
" <i>parviflorum</i>	Small-flowered Herb		101	Ingleby Arncliffe	
" <i>montanum</i>	Broad Smooth-leaved Herb		112	Banks	
" <i>hirsutum</i>	Great Hairy Herb		93	Ingleby Arncliffe	
" <i>tetragonum</i> .	Square-Stalked Herb		82	Watery Places	
" <i>palustre</i>	Narrow-leaved Herb		104	Ditches	
" * <i>alpinum</i>	Alpine Willow Herb		21	Near Cauldron Snout	
" * <i>alsinefolium</i>	Chickweed-leaved Herb		?	Cronkley Fell	
" <i>roseum</i>	Pale Herb		?	Teesdale	
<i>Circæa lutetiana</i>	Enchanter's Nightshade		97	Gardens and Woods	
<i>Lythrum Salicaria</i>	Purple Loosestrife	Lythrariea, XXVI	92	Borrowdale	
<i>Bryonia dioica</i>	Bryony	Cucurbitaceae, XXVI	59	Darlington and Tees side	
<i>Hippuris vulgaris</i>	Mare's tail	Haloragaeae XXV	86	Ditches	
<i>Callitriche verna</i>	Water Starwort		93	Ditches	
<i>Ribes nigrum</i>	Black Currant	Grossularia, XXIX	?	High Force	
" <i>rubrum</i>	Red Currant		?	Tees Side	

“	<i>alpinum</i>	Mountain Currant		32	Rokeby
“	<i>petræum</i>	Rock Currant		?	Tees Side
“	<i>Grossularia</i>	Wild Gooseberry		?	Hedges
	<i>Sedum album</i>	White Stonecrop	Crassulaceae, XXX. .	?	Sandsend
“	<i>Rhodiola</i>	Rose Root		37	Teesdale
“	<i>acre</i>	Biting Stonecrop		104	Tees Side
“	<i>*villosum</i>	Hairy Stonecrop		29	Teesdale
“	<i>*rupestre</i>	Rock Stonecrop		12	Tees Side
	<i>Sempervivum tectorum</i>	House Leek			Stokesley
	<i>Saxifraga Geum</i>	Kidney-leaved Saxifrage	Saxifragacea, XXXI	?	Teesdale
“	<i>umbrosa</i>	London Pride		?	Teesdale
“	<i>granulata</i>	Meadow Saxifrage		75	Teesdale
“	<i>tridactylites</i>	Rue-leaved Saxifrage		81	Teesdale
“	<i>*stellaris</i>	Starry Saxifrage		38	Teesdale
“	<i>*Hirculus</i>	Yellow Marsh Saxifrage		?	Teesdale
“	<i>*aizoides</i>	Yellow Mountain Saxifrage		32	Teesdale
“	<i>*hypnoides</i>	Mossy Saxifrage		46	Teesdale
	<i>Chrysosplenium</i>	Golden-leaved		104	Teesdale
	<i>oppositifolium</i>	Saxifrage			
“	<i>alternifolium</i>	Alternate-leaved Saxifrage		67	Teesdale
	<i>Parnassia palustris</i>	Grass of Parnassus		81	Teesdale
†	<i>Drosera rotundifolia</i>	Sundew	Droseraceae, XXXII.	107	Moors
†	<i>Hedera Helix</i>	Ivy	Araliaceaea, XXXIII.	111	Woods
†	<i>Hydrocotyle vulgaris</i>	Marsh Pennywort	Umbelliferae, XXXIV	109	Wet places
	<i>Cicuta Virosa</i>	Cowbane		32	Northallerton

<i>Apium graveolens</i>	Celery		55	Coatham	
<i>Sanicula europæa</i>	Wood Sanicle		104	Sandsend	
<i>Conium maculatum</i>	Hemlock		101	Waste places	
<i>Bunium flexuosum</i>	Earthnut		104	Pastures	
<i>Æthusa Cynapium</i>	Fools' Parsley		91	Waste places	
<i>Angelica sylvestris</i>	Wild Angelica	Umbelliferae, XXXIV	110	Moist Woods	63
<i>Pastinaca sativa</i>	Wild Parsnip		57	Staithes	
<i>Heracleum Sphondylium</i>	Cow Parsnip		110	Waste Places	
<i>Daucus Carota</i>	Wild carrot		106	Pastures	
<i>Torilis anthriscus</i>	Hedge Parsley		106	Hedges	
<i>Scandix Pecten Veneris</i>	Shepherd's Needle		88	Stokesley	
<i>Anthriscus sylvestre</i>	Wild Beaked Parsley		102	Waysides	
<i>Chærophyllum temulum</i>	Rough Chervil		97	Waysides	
<i>sylvestris</i>	Wild Chervil			Kilton	
<i>Myrrhis odorata</i>	Sweet Cicely		60	Stokesley	
<i>Peucedanum</i>	Masterwort			Aysgarth	
<i>Obstruthium</i>					
<i>Astrantium major</i>	Black Hellebore		rare	Teesdale	
* <i>Cornus suecica</i>	Dwarf Cornel	Cornaceae, XXXV	rare	Near Goathland	
<i>Sambucus nigra</i>	Common Elder	Caprifoliaceae. XXXVI.	106	Woods	
" <i>Ebulus</i>	Dwarf Elder		74	Mount Grace	
<i>Adoxa Moschatellina</i>	Moschatel	Rubiaceae XXXVII	88	Stokesley	
<i>Viburnum Opulus</i>	Guelder Rose		75	. Stokesley	
<i>Lonicera Peryclymenum</i>	Honeysuckle		109	Hedges, etc.	
<i>Gallium verum</i>	Yellow Bedstraw		109	Broughton	
" <i>cruciatum</i>			95	Waysides	
" <i>palustre</i>			112	Common, Marshy Places	
" <i>Aparine</i>	Cleavers		112	Common, Hedges .	

“ <i>saxatile</i>	Smooth Heath Bedstraw		111	Common, Heaths . .	
“ <i>uliginosum</i>	Rough Water Bed- straw		89	Moist Places	
<i>Sherardia arvensis</i>	Field Madder		104	Hart	
<i>Asperula odorata</i>	Woodruff		101	Shady Places	
<i>Valeriana officinalis</i>	Great Wild Valerian	Valerianeae, XXXVIII	111	Broughton	
“ <i>dioica</i>	Small Marsh Valerian		69	Tees Side	
<i>Valerianella olitoria</i>	Lamb’s Lettuce		95	Hole of Horcum	
“ <i>dentata</i>	Smooth Narrow Fruited Lettuce		79	Ayton Fields	
<i>Scabiosa succisa</i>	Devil’s Bit Scabious	Dipsaceae, XXXIX	112	Pastures	
“ <i>Columbaria</i>	Small Scabious		71	Richmond	
<i>Knautia arvensis</i>	Field Scabious		95	Fields Teesdale	
<i>Tragopogon pratensis</i>	Goat’s-beard	Compositae, XL	83	Stokesley	
“ <i>minor</i>	Small Goat’s-beard			Staithes	T.F.W., 1896
<i>Leontodon autumnalis</i>	Autumnal Hawk-bit		110	Waste Places	
<i>Lactuca muralis</i>	Ivy-leaved Lettuce		67	Ingleby, Walls	
“ <i>virosa</i>	Strong-scented Lettuce			Barnard Castle	
<i>Sonchus oleraceus</i>	Sow-thistle		109	Waste Places	
“ <i>asper</i> ?	Prickly Sow-thistle			Boosbeck, Castleton	T.F.W., 1896
“ <i>arvensis</i>	Corn Sow-thistle		107	Fields	
<i>Leontodon hispidus</i>	Rough Hawk-bit?		87	Staithes	
“ <i>hirtus</i>	Hairy Hawk-bit?		65	Broughton ?	
“ <i>Taraxacum</i>	Dandelion Hawk-bit			Broughton ?	

<i>Crepis virens</i>	Smooth Hawk's-beard	106	Waste Ground
<i>Hieracium Pilosella</i>	Mouse-ear Hawkweed	110	Banks
<i>Taraxacum officinale</i>	Dandelion	110	Common
<i>Lapsana communis</i>	Nipplewort	110	Common
<i>Cichorium Intybus</i>	Chicory	63	Hole of Horcum
<i>Arctium Lappa</i>	Burdock	91	Waste Places
<i>Serratula tinctoria</i>	Saw-wort	64	
<i>Carduus lanceolatus</i>	Spear Thistle	112	Waste Places
“ <i>nutans</i>	Musk Thistle	73	Richmond
“ <i>palustris</i>	Marsh Thistle	112	Wet Meadows
“ <i>arvensis</i>	Creeping Thistle	112	Waste Places
“ <i>heterophyllus</i>	Melancholy Thistle	51	Swaledale
“ <i>eriophorus</i>	Woolly-headed Plume Thistle	46	Redcar
<i>Carlina vulgaris</i>	Carline Thistle	77	Teesdale
<i>Centaurea nigra</i>	Black Knapweed	110	Meadows
“ <i>Cyanus</i>	Corn Blue-bottle	90	Stokesley
“ <i>Scabiosa</i>	Great Knapweed	81	Fields
<i>Eupatorium cannabinum</i>	Hemp Agrimony	97	Tanton
<i>Tanacetum vulgare</i>	Tansy	102	Stokesley
<i>Artemisia vulgaris</i>	Mugwort	110	Seamer
“ <i>Absinthium</i>	Wormwood	71	Mickleton . .
“ <i>maritima</i>	Sea Wormwood		Redcar
<i>Antennaria dioica</i>	Mountain Everlasting	84	Winch Bridge
<i>Gnaphalium sylvaticum.</i>	Cudweed	97	Pastures
“ <i>uliginosum</i>	Marsh Cudweed	107	Damp Places
“ <i>dioica</i>	Mountain Cudweed		Rosedale and Teesdale

<i>Petasites vulgaris</i>	Butter-bur		102	Broughton Bridge
<i>Solidago Virga-aurea</i>	Golden-rod		108	Carlton Bank
<i>Tussilago Farfara</i>	Colts-foot		112	Common
<i>Erigeron acris</i>	Flea-bane		65	Redcar
<i>Senecio vulgaris</i>	Common Groundsel		112	Waste Places
“ <i>sylvaticus</i>	Mountain Groundsel		104	Ayton
“ <i>viscosus</i>	Stinking Groundsel		28	Hartlepool, Staithes
“ <i>erucifolius</i>	Hoary Ragwort		67	Staithes
“ <i>Jacobæa</i>	Ragwort		112	Waysides
“ <i>aquaticus</i>	Marsh Ragwort		110	Wet Places
<i>Inula dysenterica</i>	Flea-bane		76	Staithes
<i>Bellis perennis</i>	Daisy		112	Common
<i>Anthemis Cotula</i>	Stinking May-weed		72	Staithes
<i>Chrysanthemum Leucanthemum</i>	Ox-eye		108 .	Pastures
“ <i>segetum</i>	Corn Marigold		109	Hutton, Rudby
“ <i>Parthenium</i>	Feverfew			Castleton, Staithes
<i>Matricaria inodora</i>	Corn Feverfew		111	Fields
<i>Chamomilla</i>	Wild Chamomile		62	Stokesley
<i>Achillea Ptarmica</i>	Sneeze-wort		108	Meadows
“ <i>Millefolium</i>	Yarrow		112	Waysides
<i>Helminthia echioides</i>	Ox-tongue		65	Staithes
<i>Campanula rotundifolia</i>	Hare-bell	Campanulaceae, XLI	110	Pastures
“ <i>latifolia</i>	Giant Blue-bell		59	Broughton
<i>Erica Tetralix</i>	Cross-leaved Heath	Ericaceae, XLII	109	Heaths
“ <i>cinerea</i>	Fine-leaved Heath		108	Heaths
<i>Calluna vulgaris</i>	Common Ling		110	Heaths
<i>Vaccinium Myrtillus</i>	Whortleberry.		100	Heaths
	Bilberry			
<i>Vaccinium Vitis-idæa</i>	Cowberry		62	Teesdale

“ <i>Oxycoccus</i>	Cranberry		66	Newton Dale
“ <i>*uliginosum</i>	Swamp-loving Cranb			Teesdale
<i>Pyrola minor</i>	Lesser Wintergreen		65	Teesdale
<i>Ilex aquifolium</i>	Common Holly	Aquifoliacea, XLIII.		Common
<i>Ligustrum vulgare</i>	Privet	Oleaceae, XLIV.	81	Thickets
<i>Fraxinus excelsior</i>	Ash		109	Common
<i>Vinca minor</i>	Lesser Periwinkle	Apocynaceae, XLV.	71	Woods
<i>major</i>	Great Periwinkle			Stokesley
<i>Menyanthes trifoliata</i>	Buck-bean	Gentianaceae, XLVI	106	Bogs
<i>Gentiana campestris</i>	Field Gentian		85	Teesdale
“ <i>Amarella</i>	Small-flowered Gentian		81	Redcar
“ <i>verna</i>	Green or Alpine Gentian		rare	Teesdale, Widdy Bank
<i>Erythræa Centaurium</i>	Common Centaury		98	Broughton
“ <i>*pulchella</i>	Common Centaury		rare	Coatham
<i>Convolvulus arvensis</i>	Small Bindweed	Convolvulaceae, XLVIII	92	Redcar
“ <i>sepium</i>	Great Bindweed		93	Hedges
“ <i>Soldanella</i>	Seaside Bindweed		44	Hart
<i>Hyoscyamus niger</i>	Henbane	Solanaceae, XLIX	78	Rokeby
<i>Solanum nigrum</i>	Nightshade		61	Teesdale
<i>Dulcamara</i>	Bittersweet		96	Hedges, Redcar
<i>Atropa Belladonna</i>	Deadly Nightshade		33	Teesdale
<i>Veronica arvensis</i>	Wall Speedwell	Scrophularineae, L	109	Dry Places
“ <i>hederæfolia</i>	Ivy-leaved Speedwell		96	Banks
“ <i>serpyllifolia</i>	Thyme-leaved Speedwell		111	Moist Places
“ <i>agrestis</i>	Field Speedwell		107	Waste Places
“ <i>scutellata</i>	Marsh Speedwell		100	Ditches

“	<i>Chamædryas</i>	Germander		111	Banks
		Speedwell			
“	<i>Beccabunga</i>	Brooklime		116	Ditches
“	<i>Anagallis</i>	Water Speedwell		97	Redcar
“	<i>officinalis</i>	Common Speedwell		111	Dry Places
“	<i>montana</i>	Mountain Speedwell		86	Richmond
	<i>Pedicularis palustris</i>	Marsh Lousewort		107	Marshes
“	<i>sylvatica</i>	Field Lousewort		112	Moist Meadows
	<i>Rhinanthus Crista-galli</i>	Yellow Rattle.		112	Pastures
	<i>Melampyrum pratense</i>	Cow-wheat		105	Copses
“	<i>* sylvaticum</i>	Wood Cow-wheat		21	Winch Bridge
	<i>Bartsia alpina</i>	Alpine Bartsia		8	Teesdale
“	<i>Odontites</i>	Red Bartsia		111	Waste Places
	<i>Euphrasia officinalis</i>	Eyebright		111	Waste Places
	<i>Linaria vulgaris</i>	Yellow Toad-flax		98	Sandsend
“	<i>Cymbalaria</i>	Ivy-leaved Toad-flax			Mulgrave
	<i>Scrophularia nodosa</i>	Knotted Figwort		106	Moist Places
“	<i>aquatica</i>	Water Figwort		70	Marshes
	<i>Digitalis purpurea</i>	Foxglove		107	Banks and Woods
	<i>Mimulus luteus</i>	Monkey-flower			Ayton Fields
	<i>Lathræa squamaria</i>	Great Toothwort	Orobanchaceae, LI	61	Kildale
	<i>Mentha aquatica</i>	Water-mint	Labiatae, LIII	104	Marshes
“	<i>sativa</i>	Marsh Whorled-mint		83	Staithes
“	<i>piperita</i>	Peppermint		64	Broughton
“	<i>arvensis</i>	Cornmint		100	Cornfields
	<i>Thymus Serpyllum</i>	Thyme		111	Dry Heaths
	<i>Origanum vulgare</i>	Marjoram		89	Teesdale
	<i>Tencrium Scorodonia</i>	Wood Germander		108	Woods
	<i>Ajuga reptans</i>	Bugle			Common, Woods

<i>Ballota nigra</i>	Black Horehound		76	Redcar	
<i>Lamium galeobdolon</i>	Archangel		61	Borrowdale	
<i>Calamintha Clinopodium</i>	Wild Basil		85		
“ <i>officinalis</i>	Calamint		61	Staithes	
<i>Lamium album</i>	White Deadnettle		100	Waste Places	
“ <i>purpureum</i>	Red Deadnettle		110	Waste Places	
<i>Galeopsis Ladanum</i>	Red Hempnettle		73	Guisboro'	
“ <i>Tetrahit</i>	Common Hempnettle		112	Guisboro'	
<i>Stachys Betonica</i>	Wood Betony	Labiatae. LIII	81	Roadsides	
“ <i>sylvatica</i>	Hedge Woundwort		108	Waste Places	
“ <i>palustris</i>	Marsh Woundwort		109	Moist Places	
<i>Salvia Verbenaca</i>	Sage		64	Teesdale	
<i>Nepeta Glechoma</i>	Ground Ivy		102	Roadsides	
<i>Prunella vulgaris</i>	Self-heal		112	Moist Pastures	
<i>Scutellaria galericulata</i>	Skull-cap		97	Kildale	
<i>Myosotis palustris</i>	True Forget-me-not	Boragineae, LIV	98	Wet Places	
“ <i>sylvatica</i>	Wood Scorpion Grass		42	Teesdale, Kilton	
“ <i>arvensis</i>	Field Scorpion Grass		111	Waste Places	
“ <i>versicolor</i>	Yellow and Blue Scorpion Grass		103	Damp Meadows	
“ <i>*alpestris</i>	Alpine Scorpion Grass		rare	Teesdale	
<i>Lithospermum officinale</i>	Common Gromwell		77	Teesdale	
<i>Symphytum officinale</i>	Comfrey		85	Broughton	
<i>Borago officinalis</i>	Borage			Tanton	Probably an escape
<i>Lycopsis arvensis</i>	Bugloss		99	Marske	
<i>Echium vulgare</i>	Viper's Bugloss		90	Coatham	

<i>Pinguicula vulgaris</i>	Butterwort	Lentibulaceae, LV	91	Hart
<i>Primula vulgaris</i>	Primrose	Primulaceae, LVI	111	Banks and Woods
“ <i>veris</i>	Cowslip		89	Fields and roadsides
“ <i>elatior</i>	Oxlip			Norton, Saltburn, Redcar
“ <i>farinosa</i>	Bird's-eye Primrose		11	Tees Side
<i>Glaux maritima</i>	Sea Milkwort			Coatham
<i>Lysimachia Nummularia</i>	Moneywort		67	High Force, Staithes
“ <i>nemorum</i>	Yellow Pimpernel		105	Shady Places
<i>Anagallis arvensis</i>	Pimpernel		96	Waste Places
“ <i>tenella</i>	Bog-Pimpernel		93	Osmotherley
“ <i>cærulea</i>	Blue Pimpernel		rare	Middleton, Teesdale
<i>Hottonia palustris</i>	Water Violet		48	Stokesley
<i>Trientalis europæa</i>	Chickweed		rare	Snotterdale, Danby
	Wintergreen			
<i>Armeria vulgaris</i>	Thrift	Plumbagineae, LVII	108	Teesmouth and Teesdale
<i>Statice limonium</i>	Sea Lavender		35	Teesmouth and Teesdale
<i>Plantago major</i>	Greater Plantain	Plantagineae, LVIII.	112	Pastures
“ <i>media</i>	Hoary Plantain		81	Waste Places
“ <i>lanceolata</i>	Ribwort Plantain		112	Pastures
“ <i>maritima</i>	Sea-side Plantain		78	Redcar and Cronkley
“ <i>Coronopus</i>	Buck's-horn Plantain		96	Coatham
<i>Salicornia herbacea</i>	Glasswort	Chenopodiaceae. LIX	64	Redcar
<i>Chenopodium album</i>	White Goose-foot		109	Waste Places
“ <i>rubrum</i>	Red Goose-foot		64	Redcar
<i>Bonus Henricus</i>	Good King Henry		97	Seamer

<i>Beta maritima</i>	Sea Goosefoot		35	Teesmouth
<i>Salsola Kali</i>	Prickly Saltwort			Coatham
<i>Polygonum Bistorta</i>	Bistort Snake-root	Polygonaceae, LX.	70	Teesdale
“ <i>viviparum</i>	Alpine Bistort		28	High Force
“ <i>amphibium</i>	Amphibious Bistort		105	Marshes
“ <i>Persicaria</i>	Spotted Persicaria		112	Waste Places
“ <i>aviculare</i>	Knotgrass		110	Waste Places
<i>Rumex obtusifolius</i>	Broad-leaved Dock		109	Waste Places
“ <i>Acetosa</i>	Sorrel		112	Meadows
“ <i>Acetosella</i>	Sheep's Sorrel		112	Dry Pastures
<i>Daphne Laureola</i>	Spurge Laurel	Thymeleaceae, LXI.	51	Tanton, Stokesby
<i>Empetrum nigrum</i>	Crowberry	Empetraceae, LXIV.	71	Danby, Castleton
<i>Euphorbia exigna</i>	Dwarf Spurge	Euphorbiaceae. LXV	81	Redcar
“ <i>Helioscopia</i>	Sun Spurge		106	Waste Places
“ <i>Peplus</i>	Petty Spurge		98	Waste Places
<i>Mercurialis perennis</i>	Dog's Mercury		105	Shady Places
<i>Humulus Lupulus</i>	Hop	Urticaceae, LXVI	82	Swainby
<i>Urtica urens</i>	Small Nettle		107	Castleton
“ <i>dioica</i>	Great Nettle		112	Waste Places
<i>Parietaria officinalis</i>	Pellitory of the Wall		91	Old Walls, Richmond
<i>Ulmus montana</i>	Wych Elm	Ulmaceae, LXVII	91	Woods
“ <i>suberosa</i>	Cork-barked Elm			Croft
“ <i>campestris</i>	Common Elm			Woods
<i>Castanea vulgaris</i>	Spanish Chestnut	Cupuliferae, LXVIII		Upsall Moor
<i>Fagus sylvatica</i>	Beech		64	Woods
<i>Quercus Robur</i>	Oak		105	Woods
<i>Corylus Avellana</i>	Hazel		111	Woods
<i>Carpinus Betulus</i>	Hornbeam		35	Tees Side
<i>Alnus glutinosa</i>	Alder	Betulaceae, LXIX	109	Wet Places . .

<i>Betula alba</i>	Birch		107	Woods	
<i>Populus tremula</i>	Aspen	Salicineae, LXX	100	Moist Woods	
<i>Salix viminalis</i>	Osier		80	Wet Places .	
“ <i>alba</i>	White Willow		86	Marshy Ground	
“ <i>petandra</i>	Sweet Bay Willow		54	Tees Side	
“ <i>laurina</i>	Shining Willow			Middleton	
“ <i>Croweana</i>	Broad-leaved Willow			Middleton	
“ <i>arenaria</i>	Downy Willow			Teesdale	
<i>Myrica Gale</i>	Sweet Gale, Bog	Myricaceae, LXXI	79	Newton Dale	
	Myrtle				
<i>Pinus sylvestris</i>	Scotch Fir	Coniferae, LXXII	12	Teesdale	
<i>Juniperus communis</i>	Juniper		73	Teesdale	
<i>Taxus baccata</i>	Yew		48	Teesdale	
<i>Orchis maculata</i>	Spotted Orchis	Orchidaceae, LXXIII	108	Moist Places	
“ <i>ustulata</i>	Dwarf Orchis		42	Hart	
“ <i>mascula</i>	Early Purple Orchis		100	Pastures	
“ <i>Morio</i>	Green- winged		63	Filey	
	Meadow Orchis				
<i>Habenaria bifolia</i>	Butterfly Orchis		73	Teesdale	
“ <i>viridis</i>	Frog Orchis		91	Broughton Teesdale	
“ <i>Cholorantha?</i>	Yellow Orchis			Aysgarth	T.F.W.
“ <i>albida</i>	White Orchis		45	Winch Bridge	
<i>Gymnadenia conopsea</i>	Fragrant Orchis		98	Sandsend	
<i>Epipactis latifolia</i>	Broad-leaved		85	Wilton	
	Helleborine				
<i>Listera ovata</i>	Tway Blade		102	Pastures	
“ <i>cordata</i>	Heart-leaved Tway		54	Freeborough Hill	
	Blade				
<i>Iris Pseudo-acorus</i>	Yellow-Flag	Iridaceae, LXXIV	112	Ditches	
<i>Narcissus Pseudo-</i>	Daffodil	Amaryllideae, LXXV	76	Farndale	

<i>narcissus</i>					
<i>Galanthus nivalis</i>	Snowdrop				
<i>Narthecium ossifragum</i>	Bog Asphodel	Liliacea LXXVI.	95	Newton Dale	
<i>Allium ursinum</i>	Ramsons or Broad-leaved Garlic		99	Woods	
“ <i>oleraceum</i> .	Field Garlic		47	Teesdale	
<i>Gagea lutea</i>	Yellow Star of Bethlehem		41	Stokesley	
<i>Hyacinthus nonscriptus</i>	Bluebell		109	Banks	
<i>Convallaria majalis</i>	Lily of the Valley		56	Winch Bridge	
<i>Polygonatum multiflorum</i>	Solomon's Seal		32	Danby	
<i>Paris quadrifolia</i>	Herb Paris	Trilliaceae, LXXVII.	72	Loftus. Teesdale	
<i>Tamus communis</i>	Black Byrony	Dioscorideae, LXXVIII	69	Kilton	T.F.W.
<i>Butomus umbellatus</i>	Flowering Rush	Alismaceae. LXXXI.	59	Stokesley	
<i>Alisma Plantago</i>	Water Plantain		99	Coatham	
“ <i>ranunculoides</i>	Lesser Water Pntain	.	84	Coatham	
<i>Sagittaria sagittifolia</i>	Arrowhead		57	Stokesley	
<i>Potamogeton natans</i>	Broad-leaved Pond Weed	Naiadeae, LXXXII	79	Teesdale	
“ <i>rufescens</i>	Reddish Pond Weed		62	Teesdale	
“ <i>crispus</i>	Curly Pond Weed		92	Ditches	
<i>Lemna minor</i>	Common Duckweed	Lemnaceae, LXXXIII	105	Stagnant Water	
<i>Arum maculatum</i>	Cuckoo-pint	Araceae, XXXIV	80	Hedges	
			104	Ditches	
<i>Sparganium ramosum</i>	Branched Bur-weed	Typhaceae, LXXXV.	?	Teesdale	
<i>Juncus communis</i>	Common Rush	Juncaceae, LXXXVI.	110	Wet Places .	
“ <i>triglumis</i>	Three-flowered Rush		21	Cauldron Snout	
“ <i>articulatus</i>	Jointed Rush		109	Bogs	
“ <i>squarrosus</i>	Heath Rush		105	Moorlands	
“ <i>bufonius</i>	Toad-Rush		112	Watery Places	

"	<i>effusus</i>	Soft Rush			Ewe Crag Slack
"	<i>conglomeratus</i>	Common Rush			Ewe Crag Slack
<i>Luzula sylvatica</i>		Great Hairy Wood Rush	105		Woods
"	<i>pilosa</i>	Broad-leaved Wood Rush	106		Woods
"	<i>campestris</i>	Field Wood Rush	105		Woods
<i>Carex avenaria</i>		Sea Carex		Cyperaceae, LXXXVII.	Seashore
"	<i>glauca</i>	Glaucous Heath Sedge	106		Moors
"	<i>pendula</i>	Great Pendulous Sedge	72		Ingleby Arncliffe
"	<i>sylvatica</i>	Pendulous Wood Sedge	83		Ingleby Arncliffe
"	<i>praecox</i>	Vernal Sedge	94		Bamborough
"	<i>capillaris</i>	Capillary Sedge			Widdy Bank
"	<i>rigida</i>	Rigid Sedge			Forest
"	<i>binervis</i>	Green Ribbed Sedge	93		Wet Moors
<i>Eriophorum angustifolium</i>		Common Cotton Grass			Moors
"	<i>vaginatum</i>	Hare's-tail Cotton Grass	89		Moors
"	<i>pubescens</i>	Downy-stalked Cotton Grass			Winch Bridge
<i>Scirpus lacustris</i>		Bulrush	95		Stokesley
"	<i>maritimus</i>	Sea Club Rush	77		Redcar, Salt Marshes
<i>Anthoxanthum odoratum</i>		Sweet-scented Vernal Grass	110	Graminea,,LXXXVIII	Meadows
<i>Agrostis vulgaris</i>		Fine Bent Grass	112		Pastures

“ <i>alba</i>	Fiorin Grass	103	Fields
“ <i>canina</i>	Brown Bent Grass	93	Moors
<i>Aira flexuosa</i>	Waved Hair Grass	105	Woods
“ <i>cæspitosa</i>	Tufted Hair Grass	111	Wet Pastures
“ <i>præcox</i>	Early Hair Grass	108	Pastures
<i>Festuca ovina</i>	Sheep's Fescue Grass	110	Hilly Pastures
<i>Nardus stricta</i>	Mat Grass	107	Moors
<i>Triodia decumbens</i>	Heath Grass	103	Moors
<i>Molinia cærulea</i>	Blue Molinia	106	Wet Moors
<i>Lolium perenne</i>	Rye Grass	112	Fields
<i>Alopecurus pratensis</i>	Fox-tail Grass	104	Meadows
“ <i>agrestis</i>	Slender Grass	60	Fields, Croft
“ <i>geniculatus</i>	Floating Foxtail Grass	108	Ditches
<i>Triticum repens</i>	Couch Grass	108	Fields
<i>Brachypodium sylvaticum</i>	Slender Wood Brome Grass	105	Woods
<i>Holcus lanatus</i>	Meadow Soft Grass	111	Meadows
“ <i>mollis</i>	Creeping Soft Grass	103	Pastures
<i>Festuca gigantea</i>	Giant Fescue Grass	96	Staithes
<i>Sesleria cærulea</i>	Blue Moor Grass	10	Teesdale
<i>Cynosurus cristatus</i>	Dog's-tail Grass	112	Pastures
<i>Briza media</i>	Quaking Grass	105	Pastures
<i>Dactylus glomerata</i>	Cock's-foot Grass	112	Pastures
<i>Melica uniflora</i>	Wood Melic Grass	91	Staithes
<i>Poa trivialis</i>	Rough Meadow Grass	108	Pastures
“ <i>annua</i>	Common Meadow Grass	110	Everywhere

<i>" pratensis</i>	Smooth Meadow Grass		108	Meadows
<i>Bromus asper</i>	Hairy Brome Grass		93	Damp Woods
<i>" mollis</i>	Soft Brome Grass		111	Waste Places
<i>Hordeum maritimum</i>	Sea Barley			Coatham
<i>Glyceria fluitans</i>	Floating Meadow Grass			Watery Places
<i>Osmunda regalis</i>	Royal Fern	Filices, LXXXIX.		Mulgrave
<i>Ophioglossum vulgatum</i>	Adder's Tongue		87	Middleton, Teesdale
<i>Botrychium Lunavia</i>	Moonwort		96	Middleton, Teesdale
<i>Polypodium vulgare</i>	Common Polypody		112	Banks
<i>" Phegopteris</i>	Beech Fern		73	Teesdale
<i>" Dryopteris</i>	Oak Fern		69	Teesdale
<i>" calcareum</i>	Mountain Polypody		24	Keld
<i>Pteris aquilina</i>	Common Bracken		112	Common
<i>Blechnum boreale</i>	Hard Fern		111	Banks
<i>Allosorus crispus</i>	Parsley Fern		54	Teesdale
<i>Scolopendrium vulgare</i>	Hart's Tongue Fern		96	Teesdale
<i>Cystopteris fragilis</i>	Bladder Fern		79	Teesdale
<i>Asplenium ruta-muraria</i>	Wall-rue Spleenwort		105	Stokesley
<i>" viride</i>	Green Spleenwort		41	Teesdale
<i>" Adiantum-nigrum</i>	Black Spleenwort		102	Teesdale
<i>" Trichomanes</i>	Maidenhair Spleenwort		108	Teesdale
<i>Athyrium Filix-femina</i>	Lady Fern		110	Shady Places
<i>Polystichum Lonchitis</i>	Holly Fern		22	Teesdale
<i>" Aculeatum</i>	Prickly Shield Fern		100	Teesdale
<i>Lastrea spinulosa</i>	Spiny Buckler Fern		83	Teesdale
<i>Lastrea Oreopteris</i>	Sweet Mountain Fern		97	Teesdale

“	<i>filix-mas</i>	Male Fern		112	Common
“	<i>dilatata</i>	Broad Prickly Toothed Fern		76	Teesdale
	<i>Lycopodium selago</i>	Fir Club Moss	Lycopodia , XC.	83	Teesdale
“	<i>clavatum</i>	Common Moss		88	Teesdale
	<i>Equisetum arvense</i>	Corn Horsetail	Equisetaceae, XCI.	108	Roadsides
“	<i>sylvaticum</i>	Branched Wood Horsetail		90	Woods and banks
“	<i>limosum</i>	Smooth Naked Horsetail		103	Marshes
“	<i>palustre</i>	Marsh Horsetail		104	Marshes

A further list of plants to be found in Upper and Lower Teesdale and the Cleveland District, but of which there are no records by Members of the Field Club:-

<i>Ranunculus hirsutus</i>	Hairy Crowfoot	Ranunculaceae, I		Coatham
<i>Anemone Pulsatilla</i>	Pasque Flowered Anemone		18	Piercebridge
<i>Glaucium luteum</i>	Yellow Horned Poppy	Papaveraceae, IV.	50	Whitby
<i>Corydalis claviculata</i>	White Climbing Corydalis	Fumariaceae, V	83	Great Ayton, Eston Nab
<i>Draba incana</i>	Twisted-podded Whitlow Grass.	Cruciferae, VI	26	Cronkley
<i>Sinapsis tenuifolia</i>	Narrow-leaved Wall Mustard			Middlesbrough and Coatham
“	<i>muralis</i>	Sand Wall Mustard		Middlesbrough and Coatham
<i>Saponaria officinalis</i>	Common Soapwort			Worsall, Yarm
<i>Cerastium aquaticum</i>	Water Mouse Ear Chickweed			Tees Side
“	<i>tetandrum</i>	Fourclef Mouse Ear Chickweed		Coatham, Redcar

<i>Hypericum elodes</i>	Marsh St. John's Wort	Hypericineae, XVI.	60	Rosedale
<i>Euonymus europæus</i>	Spindle Tree	Celastraceae XX.	71	Crathorne
<i>Astragalus glycyphyllos</i>	Sweet Milkvetch	Leguminosae, XXII	63	Egglestone, Tees
<i>Medicago maculata</i>	Spotted Medick		40	Marske
<i>Trifolium striatum</i>	Knotted Trefoil		70	Neat Ayton, on the basalt
<i>frangiferum</i>	Strawberry-beaded Trefoil		70	Coatham
<i>Lathyrus sylvestris</i>	Narrow-leaved Everlasting Pea		60	Ruswarp
<i>Vicia bithynica</i>	Purple Vetch		17	Upgang
<i>Rubus plicatus</i>	Shining Bramble	Rosaceae, XXIII		Kildale
<i>Rosa Sabini</i>	Sabinian Bristly Rose			Winch Bridge
" <i>micrantha</i>	Small Flowered Sweet Briar.		54	Mulgrave Woods
<i>Spiræa Filipendula</i>	Common Dropwort		61	Marske, Saitburn
<i>Myriophyllum verticillatum</i>	Whorled Water Milfoil	Halorageae, XXV.	49	Yarm
<i>Peplis portula</i>	Water Purslane	Lythraceae, XXVI. .	95	Cronkley, Sleights
<i>Sedum anglicum</i>	White English Stonecap	Crassulaceae, XXX	55	Ayton
<i>Drosera anglica</i>	Great Sundew	Droseraceae, XXXII		Battersby Moor
<i>Eryngium maritimum</i>	Sea Holly	Umbelliferae, XXXIV	50	Near Lazenby
<i>Ænanthe crocata</i>	Hemlock Water- Dropwort		89	Yarm
<i>Sium latifolium</i>	Broad-leaved Water Parsnip		40	Coatham
<i>Smyrniium Olusatrum</i>	Alexanders		62	Whitby, Pinchinthorpe
<i>Galium sylvestre</i>	Mountain Bed-straw	Rubiaceae, XXXVI	22	Teesdale
" <i>boreale</i>	Cross-leaved Bed-straw		42	Teesdale
<i>Picris hieracioides</i>	Hawkweed Ox-tongue	Compositae, XL	60	Battersby
<i>Tragopogon porrifolius</i>	Purple Goatsbeard			Ayton
<i>Anthemis nobilis</i>	Chamomile		46	Eskside, Ainthorpe
<i>Bidens tripartita</i>	Bur Marigold		80	Newton
<i>Inula Helenium</i>	Elecampane			Grosmont
<i>Hieracium murorum</i>	Wall Hawkweed		24	Winch Bridge

<i>Carduus tenuiflorus</i>	Slender-flowered thistle		70	Coatham, Redcar
<i>Campanula Rapunculus</i>	Rampion Bell Flower	Campanulaceae	24	Ayton
“ <i>glomerata</i>	Clustered Bell-Flower		47	Picton
“ <i>patula</i>	Spreading Bell-Flower			Yarm
<i>Arbutus Uva-ursi</i>	Red Bearberry	Ericaceae, XLII		High Force
<i>Pyrola secunda</i>	Serrated Wintergreen			White Force
<i>Pyrola rotundifolia</i>	Round-leaved Wintergreen		21	Croft
“ <i>media</i>	Intermediate Wintergreen			Mulgrave Woods
<i>Stachys ambigua</i>	Ambiguous Woundwort	Labiatae, LIII.	—	Piercebridge
<i>Marrubium vulgare</i>	White Horehound		65	Newton
<i>Samolus Valerandi</i>	Brookweed	Primulaceae, LVI.	80	Great Ayton, Marske
<i>Littorella lacustris</i>	Shoreweed	Plantaginae, LVIII	80	Cronkley
<i>Rumex aquaticus</i>	Grainless Dock	Polygonaceae, LX	37	Cronkley
<i>Chenopodium urticum</i>	Upright Goosefoot	Chenopodiaceae, LIX	38	Redcar
<i>Atriplex portulacoides</i>	Sea Purslane		35	Coatham
“ <i>littoralis</i>	Grass-leaved Orache			Coatham
<i>Salicornia radicans</i>	Creeping Jointed Glasswort			Coatham
<i>Salix phylicifolia</i>	Tea-leaved Willow	Salicaceae, LXX.	24	Teesdale
<i>Epipactis ensifolia</i>	Narrow-leaved Helleborine	Orchidaceae, LXXIII		Guisborough
<i>Neottia Nidus-avis</i>	Bird's Nest Orchis		81	Mulgrave Woods
<i>Allium Scorodoprasum</i>	Sand Garlic	Liliaceae, ,XXVI.	16	Ayton
<i>Triglochin maritimum</i>	Sea Arrowgrass	Alismaceae, LXXXI.	76	Coatham
<i>Zannichellia pedicellata</i>	Pondweed	Naiadeae, LXXXII		Coatham
<i>Zostera marina</i>	Common Grasswrack			Teesmouth
<i>Ruppia maritima</i>	Tassel Pondweed			Coatham
<i>Juncus maritimus</i>	Lesser Sharp Sea Rush	Juncaceae, LXXXVI		Coatham
“ <i>cænosus</i>	Mud Rush			Coatham
<i>Eriophorum gracile</i>	Slender Cotton Grass	Cyperaceae. LXXXVII		Croft
<i>Carex teretiuscula</i>	Lesser Panicked Sedge		53	Sleddale
“ <i>stricta</i>	Tufted Bog Sedge		40	Kildale Moor

<i>“ lævigata</i>	Smooth Stalked Braked Sedge		54	Goathland
<i>“ extensa</i>	Long Bracted Sedge			Coatham
<i>“ distans</i>	Loose Sedge		78	Coatham
<i>Scirpus pauciflorus</i>	Chocolate Headed Club Rush			Cotherstone
<i>“ glaucus .</i>	Glaucus Club Rush			Coatham
<i>Schoenus nigricans</i>	Bog Rush		70	Marske
<i>Melica nutans</i>	Mountain Melic Grass	Gramineae, LXXXVIII	40	Winch Bridge
<i>Poa nemoralis</i>	Wood Meadow Grass		82	Winch Bridge
<i>Arundo Calamagrostis</i>	Small Reed Grass			Kildale
<i>“ Epigejos</i>	Wood Reed Grass			Kildale
<i>Glyceria maritima</i>	Sea Meadow Grass		67	Coatham
<i>“ distans</i>	Reflexed Sweet Grass			Coatham
<i>“ procumbens</i>	Procumbent Grass			Coatham
<i>Triticum junceum</i>	Rushy Wheat Grass		36	Coatham
<i>Elymus arenarius</i>	Sea Lyme Grass			Coatham
<i>Equisetum variegatum</i>	Variegated Rough Horsetail	Equisetaceae, XCL	24	Teesdale
<i>“ hyemale</i>	Rough Horsetail		41	Grosmont

REPORT ON COLEOPTERA OBSERVED IN CLEVELAND

M. LAWSON THOMPSON

THE following report on beetles occurring in the Cleveland district is compiled from observations made during 1912 and 1913 excepting that I have inserted a few records made at Redcar many years ago by my friend, the late Rev. W. C. Hey. Some very interesting insects were met with during the last two years. Those marked with an asterisk are additions to the Cleveland list, and amount to twenty-three species and one variety.

COLEOPTERA

Carabus nemoralis Mull. At Saltburn.

Elaphrus cupreus Duft. At Kildale and Eston.

Badister bipustulatus F. At Kildale, among roots of grass.

***Pterostichus æthiops** Panz. On the moor at Ingleby Greenhow. One specimen in May, 1913 (W J Fordham).

Amara fulva De G. Guisborough, among shale (W. C. Hey), also at Eston on the coast.

Amara trivialis Gyll. On the Redcar sandhills; also at Kildale

***Anchomenus gracilis** Gyll In *Sphagnum* on the high moor at Kildale, June 1912

***Bembidium concinnum** Steph. On the banks of the Tees (G. T. Rudd), also at Middlesbrough in 1913

Bembidium flammulatum Clair on the banks of the stream at Leven Bridge

Halplus striatus Shp. Mr. G. B. Walsh found this extremely local species in abundance in pools and ditches near the coast at Eston in 1913

Hydroporus lituratus F. Common at Eston and Middlesbrough in ditches.

***Ilybius aenescens** Th. On the high moor at Eston in 1912 (W. J. Fordham).

Ochthebius rufimarginatus Steph. At Leven Bridge.

Oxypoda longiuscula Gravs. In *sphagnum* on the high moor at Kildale.

***Homalotas graminicola** Gyll. At Eston.

Homalota nigricornis Thorns. At sap of a tree stump in Saltburn Wood, April, 1912.

***Homalota atricolor** Sharp. Common in dung at Redcar.

Tachyusa constricta Er. Common on the banks of the stream at Leven Bridge.

***Gyrophæna gentilis** Er. In fungi at Great Aycon.

Myllæna brevicornis Mat. Common in *sphagnum* on the high moor at Kildale.

***Gymnusa variegata** Kies. In *sphagnum* on the high moor at Kildale, June, 1912.

***Tachyporus solutus** Er. At Saltburn.

Mycetoporus lepidus Grav. On the moor at Kildale.

Mycetoporus nanus Er. On the Redcar sandhills, March 1912.

***Mycetoporus clavicornis** Steph. I swept a single specimen of the type form from mixed herbage on the edge of Airyholme Wood, Great Ayton, in August 1913

Ocypus morio Grav. Common on the coast at Eston.

***Philonthus nigrita** Ner. In *sphagnum* on the high moor at Kildale, June, 1912.

***Bledius gulielmi** Sharp (**defensus** Fauv.) Four specimens of this **Bledius** were taken in the sandy banks of the small stream at Linthorpe, Middlesbrough, by Mr. W. E. Sharp in July, 1911. The insect was described as new to science by Dr. D. Sharp, but has subsequently been found to be identical with **B. defensus** Fauv. a continental species not previously known to occur in Britain. (*Vide* Ent. Mo. Mag. for 1913. pp. i. 14 and 256.).

Trogophlæus bilineatus (Steph.). On the banks of ditches at Eston.

Trogophlæus corticinus (Grav.). On the banks of the stream at Leven Bridge.

Geodromicus nigrita (Mull.). On the high moor at Kildale.

Lesteva longelytrata (Goez) Common at Kildale.

Homalium rivulare (Payk.), **H. concinnum** (Marsh), and **H. *deplanatum** (Gyll.). By sweeping marram grass on the coast at Eston, September, 1912.

***Pseudopsis sulcata** (New.). By sweeping marram grass on the coast at Eston. One specimen in September 1912.

Anisotoma dubia (Kng.). Common on the coast at Eston,

***Anisotoma ovalis** (Sch :.) Under a stone at Eston. One specimen in May 1913

Hydnobius perrisi (Fair.). On the coast at Eston. September and October 1912.

Choleva tristis (Panz.). Common at Kildale and Glaisdale.

Hister 12-striatus (Schr.). On Redcar sandhills (W. C Hey).

***Ips quadriguttata** (F.). At sap of a tree stump in Saltburn Wood. One specimen in April 1912.

Rhizophagus bipustulatus (L.). At sap of a tree stump in Saltburn Wood.

Ephistemus gyrnoides (Marsh.). Common at Kildale.

Byrrhus pilula (L.). On Stanghow Moor.

Parnus ernesti (Des Gozis) (**auriculatus** (Panz.)). On the Redcar sandhills

Aphodius merdarius (F) At Guisborough. **Aphodius foetens** (F.) **A. rufescens** (F.), **A. inquinatus** (F.), and **A. rufipes** On Redcar sandhills (W. C Hey).

Anomala trischi (F.). On the Redcar sandhills (W. C Hey).

Limonium minutus (L.). At Kildale.

Telephorus hæmorrhoidalis (F). Common on whitethorn at Leven Bridge

Malthodes mysticus (Kies) At Kildale in August 1913

Sermyla halensis (L.) On the Redcar sandhills (W. C Hey)

Longitarsus atricillus (L.) Common on Ragwort in Aireyholme Wood Great Ayton.

Longitarsus suturalis (Marsh) By sweeping marram grass on the coast at Eston. September, 1912.

Longitarsus ochroleucus (Marsh) On the coast at Eston, on *Senecio vulgaris* (Groundsel), August 1913.

Longitarsus gracilis var. *poweri (Al). On Ragwort at Saltburn.

Apteropeda orbiculata (Marsh.). At Kildale.

***Psylliodes napi** (Koch.). On *cruciferae* in a damp place in Airyholme Wood, Great Ayton, 1913

Anthicus floralis (L.). At Kildale.

Otiorhynchus ovatus (L.). On the Redcar sandhills (W. C. Hey).

Phyllobuis pomonae (Ol.). At Kildale.

***Cœliodes rubicundus** (Hbst). and **C. quercus** (F.). Common at Kildale, the former on birch on the high moors, and the latter on young oaks.

Ceuthorhynchus cricae (Gyll.). **C. quadridens** (Panz.), and **C. pollinarius** (Forst.). Common at Great Ayton.

Calandra oryzae (L.). At Middlesbrough.

***Dryocætes villosus** (F.). By sweeping at Eston, July.1912 (W. E. Sharp).

SECRETARY'S REPORT FOR THE YEAR ENDING 31st March 1913

Presented at the Thirty-second Annual Meeting, held on 7th April. 1913

I have pleasure in submitting my fifth Annual Report upon the work of our Society during the past twelve months.

SUMMER MEETINGS. Eight field meetings were held during the summer, viz.: Sexhow to Yarm, Loftus to Handale and Danby, Roseberry Topping, Northallerton to Sigston and Leake, Fryup Dale and Danby Crag, Swainby, Newton Dale, Saitburn to Skinningrove.

The first Summer Meeting was held at Sexhow on 11th May, under the leadership of Mr. T. J. Cozens, in glorious weather. A party of about thirteen was present and visited the grounds of Skutterskelf Hall, permission to do so having been granted by Sir R. Ropner, Bart.

The second Summer Meeting was held on Whit Monday, this being a new departure, as for many years it has not been customary to hold our meetings on bank holidays unless these are associated with local visits of the Yorkshire Naturalists' Union. Under the able leadership of our president and Mr. E. W. Jackson, a party of thirty members trained to Loftus and walked through the woods to Handale, where the scanty remains of the abbey were inspected. Thence the party wended its way to the British Settlement on Easington High Moor, which gave rise to much discussion, after which members proceeded to Castleton where they were kindly entertained to tea by the President.

The third Meeting, on June 15th, was most interesting to all who were able to be present, and was given over to an exploration of Roseberry Topping under the expert guidance of Mr. J. J. Burton. About 30 members and friends were present, and on the way to Roseberry attention was directed to a sand quarry, the sand in which was deposited during the Glacial Period, and among the sand the geologists discovered fragmentary marine shells. Some 850 feet above sea level, the party was shown *in situ* several blocks of sandstone which had recently been exposed, and which were interesting in that they exhibited deeply-cut striae, due to the passage over them of the glaciers in the Ice Age.

Near the summit, on the site of one of the earthworks which are by some believed to be British settlements, Mr. Burton gave a succinct and interesting address on the geological and other features of Roseberry Topping, which is of the Lias formation, capped by the Lower Oolite. He first dealt with the great Cleveland Whin Dyke which is on the south flank of the hill and which is so extensively quarried for road metal. It is believed to be of Tertiary Age, and that it slowly welled up from the interior of the earth in a

molten state. The ironstone, where it has been in contact with the Dyke, is greatly altered and the sandstone has assumed a primatic form.

With respect to the criticisms which had appeared in the newspapers respecting the mutilation of the hill through mining operations, Mr. Burton remarked that no one regretted more than he that it had been found impossible to preserve intact every feature of this ancient landmark, but it was to be remembered that Cleveland was not a tourists' but an industrial centre, depending for its continued existence on a plentiful supply of ironstone. This supply is getting greatly restricted in area and (however regrettable the consequences) wherever commercially workable stone is found in the district, the needs of the community, if not "love of gold," require that it shall be won and converted into pig-iron. Some of those who now made the loudest outcry owe their position to similar operations in the past or depended for their continued residence and employment in the district on a recognition of the fact that in a commercial and industrial area industrial requirements must take precedence of aesthetic or sentimental considerations. The mine owners desired, nevertheless, to carry on their work with all possible respect for the sentiments, which had accumulated round the name of Roseberry Topping.

The west flank of the hill has been much disturbed, not because the stone has been drawn from under it, but because the covering of clay and debris has slipped from the top and buckled itself up in the most extraordinary way. It is not at all a question of pitfalls, but of a huge landslide, which might have been started by ancient jet workings just as easily as by ironstone mining, or it might have occurred had neither been carried on. As a matter of fact there has been a very big similar landslide at a lower elevation further round to the north where there has been no working. Where the pitfalls are most numerous (though unobservable from a distance) there has been practically no slipping.

Mr. Burton stated that in his opinion the ancient ice-sheet scraped the sides of the hill, leaving them smooth. On this smooth surface the clay and debris in the ice was deposited when the ice melted. Much of this deposit has since been denuded and carried away. Where the hard rock forms a terrace there is only a light covering. The toe of the clay having been disturbed, and heavy rains having penetrated to the smooth surface of the old formation, a movement down the slope began which nothing could arrest. The hard sandstone at the top rests on soft pliable shale, and the backing of clayey matter at the foot of the sandstone having slipped away, some pieces of the hard rock have broken off from the mass and fallen on the clay, It may be mentioned that the landslide on the Ayton side appears to be still on the move.

Mr. Burton then dealt at some length on the pits, which surround Roseberry in an irregular double belt on the west, north and east. By some these are held to be the remains of a British settlement, and some of the excavations appear to have been paved. Other people believe the

excavations were old pits sunk for working jet. Mr. Burton is exploring these pits.

Mr. Punch, the president, proposed a vote of thanks to Mr. Burton for his address, and in seconding this Mr. R. B. Turton, of Kildale Hall, gave some interesting information relative to the origin of the name of Roseberry Topping, upon which he had lately contributed an article to the "Yorkshire Archaeological Journal." The name, Roseberry Topping, was not used until about the year 1600, previously the hill was called what is equivalent to the hill of Odin, the Scandinavian god of war, the spelling being very various, but in the fifteenth century Ounsberry Hill was the general appellation, and afterwards Osebury, from which it is not a far cry to Roseberry. About the end of the reign of Queen Elizabeth, Roseberry is mentioned as one of the beacons, but is printed Oseburye Toppinge. The earliest record of the name of the hill was in the Guisbrough Cartulary about 1119, and it was then Outhenesbergh.

On 29th June, the fourth Meeting was held under my leadership at Northallerton, Kirby Sigston, Cotcliffe Bank and Leake, when sixteen members and friends enjoyed a very interesting outing over country that had not been visited by the Club for many years. The party drove from Northallerton to Bullamoor and Sigston, where they were met by Mr. Tutin of Sigston, who kindly acted as guide to the ancient castle and church. Of the former, which seems to have been an Edwardian structure, nothing remains but a series of mounds and a moat of which the bed is almost totally dry. But the church is an interesting structure, and attention was particularly called to the stone coffins, which are believed to have covered the remains of Saxon or Danish warriors, to the remarkable carvings on the capitals of the pillars of the three-blocked up arches, which formerly opened into chantry chapel on the north side of the chancel. Several finely carved grave covers were pointed out, also a Runic cross, and in the north aisle were some fine specimens of coloured glass, depicting the arms of the Wassands, Colvilles and Sigstons, the various lords of the manor. An effigy of the wife of one of the Wassands, who died in the thirteenth or fourteenth century, was seen. I gave various facts illustrative of the geology of the district, there being here the largest dislocations of strata in North Yorkshire. On the west side of Cotcliffe Bank, the *Bucklandi* limestones of the Lower Lias were seen resting against the Jet rock which has been mined here, and the whole of the Middle Lias, some twenty-five feet of the Upper Lias and more than 250 feet of the Lower Lias are faulted out, the throw being about 400 feet.

It had been intended that Leake Church and the site of the ancient village should be visited but time did not allow. The village appears to have been destroyed by the Conqueror when he devastated the whole of Yorkshire in 1068, and it has not since been rebuilt.

The fifth Meeting, held at Glaisdale on July 13th, under the leadership of the President, was attended by a party of about twelve and the weather

proving fine, a most enjoyable outing was the result. The route followed was across Glaisdale Ridge to Great Fryup Dale, thence by Danby Crag and Castle, where the Jury Room and ancient deed box were inspected, to Castleton where members were entertained to tea by the President.

The sixth Meeting, arranged for Swainby and Whorl Hill was, owing to the threatening weather, attended by two members only.

A most successful outing was the seventh, held in fine weather on 21st August and attended by a party of twelve to fourteen. Originally, it was proposed to train to Levisham and walk to Goathland by the Hole of Horcum and Fen Bogs, but owing to the connection not waiting at Grosmont, the party trained to Goathland and reversed the route. The weather was somewhat windy, but the rain held off and there were occasional gleams of sunshine. Fen Bogs was well searched for plants, but the season being rather late, most flowers were over. Amongst those observed were the Flying Bent, Sweet Gale, Cranberry, Marsh-Tway-Blade, Bog Valerian, Common Reed, Marsh Cinquefoil, Grass of Parnassus, etc. Two vipers and two blindworms were observed in Newton Dale. Fen Bogs, the only bit of real "fenland" in our district was comparatively dry, contrary to what was expected, even after the very heavy rains of the preceding weeks.

The eighth and last summer Meeting was held in fine weather on 21st September, and a party of six to twelve members under the leadership of Mr. J. R. Harwood walked from Saltburn to Skinningrove via the shore. Many interesting observations were made.

.WINTER MEETINGS- Five of these have been held, an advance of one on the previous session. The first was held on November 14th, when Mr. George Knight, jun., delivered an interesting address on the "Roman Wall," illustrated by some special lantern slides. There was a good attendance of members and a vote of thanks was proposed by Mr. J. S. Calvert and seconded by Mr. T. A. Lofthouse.

On 14th December, I delivered a lecture dealing with the "Ancient Iron Workings in the Cleveland District" before a good attendance of members, which was followed by an interesting discussion in which several members took part. I do not propose to say anything here on the subject matter of this lecture as I intend making it into a paper for our "Proceedings."

The third Meeting of the winter session was held on 1st March, when Mr. J. J. Burton, F.G.S., gave an extremely interesting paper on the "Cleveland Ironstone," illustrated by diagrams and lantern slides. This lecture was a very welcome addition to our list of lectures, as it was the first on the subject that had been presented to the Society. Mr. Burton dealt with the discovery of the ironstone, the stratigraphical features of the ore, the quantity available for commercial purposes and other interesting items connected with the stone. The problem of the origin of the ore was also

introduced by the lecturer, which led to an interesting discussion at the close of the lecture. This paper appeared in "The Naturalist," April-May, 1913

The fourth Meeting of the winter session was held on 15th March, when Mr. T. J. Cozens made a welcome re-appearance at our evening gatherings with a limelight lecture on the "Curiosities of Plant Life." Unfortunately the attendance was rather small; the lecture was most instructive and interesting, the lecturer describing many striking features of plant life from the microscopic to the highest forms.

The fifth winter Meeting was held on 29th March when Mr. Cosmo Johns, of Sheffield, delivered a most original address on "Pre-Celtic Britain, its Monuments and People," illustrated by lantern slides. Unfortunately the wretched weather spoilt the attendance though the lecture was delivered to the members of the Lit. and Phil. as well as those of our own Society.

I am sorry to say that it has been difficult to arrange winter meetings once more, but recently we have lost so many of our more active members that an appreciable gap in our evening meetings has been the result. I hope, however, to arrange lectures for next session well beforehand, and have already been promised one from Dr. Drake Brockman, and our President has also, I believe, been able to arrange with Mr. Wooler, of Darlington, for an archaeological lecture next session. If more members would come forward for this purpose, our programme would be easily filled and the task of the officials considerably lightened.

MEMBERSHIP. During the year five new members were elected, ten resigned or left the district, and two deceased, leaving a total membership of 107, a decrease of seven on last year's total.

It is with profound regret that I have to record the death of two of our oldest members, Mr. Henry Simpson and Mr. W. T. Knaggs. Mr. Simpson passed away on 1st August, 1912, and the funeral at Redcar on 4th August was attended by Messrs. J. J. Burton, G. J. Lane, T. A. Lofthouse, F. Elgee and other members. An obituary notice appeared in the last number of our Proceedings, it being decided to insert one before the present issue was published.

Mr. W T. Knaggs, who passed away on 10th March, 1913- was another original member elected on 11th April 1881. He served on the Committee during 1884--5 and again from 1887-1890. At the meeting held on 15th March last, a vote of condolence was passed with Mrs. Knaggs and the Secretary was requested to convey to her the deep sympathy of the members in her great loss.

PROCEEDINGS. I hope to be able to distribute Part I, of Volume III., being our Proceedings for 1910-11 to members by the end of April. I regret

there has been such a protracted delay in issuing them but owing to lack of time they could not be dealt with until after Christmas.

In conclusion I have to thank all who have assisted me in various ways during the past year, without whose valuable services I should have been unable to carry out the work of the Society. Our thanks as a Club are due to those members who have given us papers and acted as guides at the Field Meetings and to those gentlemen who have given us permission to visit their estates.

FRANK ELGEE

	INCOME.	£	s.	d
Balance brought forward		36	19	9
Subscriptions,	1912	20	0	0
	Arrears	3	15	0
"	1913		10	0
Sale of Proceedings		0	5	0
Bank Interest		0	16	0

EXPENDITURE.

YNU Subscription & Levy		1	0	0
Lit. & Phil. Subscription		0	10	6
Jordisan & Co Printing		4	10	0
Lecture & Excursion Expenses		2	13	1
Hon. Sec Clerical Assistance		0	12	0
Postages		3	6	0
Balance at Bank		49	14	2

H. FRANKLAND,
Hon. Treasurer.

SECRETARY'S REPORT FOR THE YEAR ENDING 31st MARCH. 1914.

Presented at the Thirty-third Annual Meeting held on 25th March. 1914.

In submitting my sixth Annual Report on the work of our Society during the past year, I regret to say that though the Field Meetings were very successful both as regards attendance and weather, yet there seems to be a lack of that enthusiasm which characterised our activities a few years ago. No new workers have come forward to replace those we have lost. There is still plenty of room for new discoveries in the Cleveland district, in all departments of the Field Club's work. We may look with some satisfaction on the reputation we have attained as a sound, active Society whose members have added

considerably not only to the sum of local knowledge, but also to knowledge of general scientific interest and value. I refer more especially to the investigation of the Jurassic Flora, the antiquarian discoveries in the neighbourhood of Saltburn and various other lines of research taken up almost independently by individual members. A reaction was bound to follow after such a plethora of good things, and it is to be hoped that a more active spirit of research will again manifest itself amongst us.

Such being our present position, this report will necessarily be somewhat meagre in details though there are a few outstanding features of interest.

Eight Summer Meetings were held, the Kettlewell meeting, arranged for 5th July, had to be indefinitely postponed owing to the unveiling of the Sadler Memorial on 21st June, the Battersby Westerdale meeting being held on 5th July.

The first summer meeting was at Crunkley Gill on 3rd of May. A party of over twenty were present, the weather being very fine. The party had the opportunity of exploring the Rock Garden in the Gill by kind permission of Sir Francis Ley, Bart.

The second Summer Meeting was also favoured by fine weather when on 17th May a party of a dozen trained to Ormesby and walked by way of Marton Hall Grounds to Marton Church where Mr. T. A. Lofthouse (who acted as leader) pointed out some of the architectural features. The members then proceeded up Marton Gill to Nunthorpe where Mr. A. J. Dorman not only shewed them his beautiful rock garden, but most hospitably entertained them to tea. Permission to go over private footpaths was granted by Mr. H. W. F. Bolckow and Mr. A. Head.

The third Summer Meeting was an excellent one for geological members, but except myself not a single geological member turned up. This meeting was held on 7th June, at Castle Eden Dene, the party numbering 7 only. The Weather was perfect and members had the special advantage of being led by Mr. C. T. Trechmann, of Castle Eden, who proved a most interesting guide owing to his thorough knowledge of the local geology. On arriving at Castle Eden the party proceeded to the Dene where Mr. Trechmann explained the geological structure, origin and transformations of the Permian, Magnesian limestone, explanations based largely on his own investigations, which have recently been published in the Q.J.G.S. of London. Return was made along the shore to Black Hall Rocks, this portion of the Durham coast presenting many admirable cliff sections in the Magnesian limestone, which were lucidly described by Mr. Trechmann. At Black Hall Mr. Otto Trechmann entertained the members to tea. Many interesting plants were observed in the Dene and on the cliffs.

The fourth Summer Meeting, under the leadership of Mr J. W. R. Punch, was held on 5th July. In spite of the threatening aspect of the weather, a party took the route from Battersby through Baysdale to Westerdale and Castleton, one of the most interesting moorland districts in North Yorkshire.

The site of the Cistercian nunnery of Baysdale was found, but only two or three stones of the original building are left. A moulded head of rather late date and door-jamb stones built into the byre of a farm may have belonged to a later part of the abbey buildings. At this same farm an interesting turf oven was inspected, a relic of earlier times.

Further on the way to Castleton, the track crosses a deep ravine known as Hograh, which is well wooded from the stream that runs down it, up the sides to about the level of the moor but not perceptibly above the moor level. This ravine has a luxurious undergrowth of bilberry (of which the bushes are unusually large), heather and ferns of various kinds. At the upper end of the ravine quite a quantity of the cowberry occurs. Some large nests of the wood ant (*Formica rufa*) were noticed.

On arrival at Westerdale the party was hospitably entertained by Mr. and Mrs. C. Hood at their moorland residence.

The fifth Summer Meeting on 19th July was also favoured by fine weather, when a party of about twenty-five, under the leadership of Mr. E. W. Jackson explored the country between Castleton and Staithes. On arriving at Castleton members walked through the Park Wood and along the brow of the moor where a fine view was obtained of the main valley of the Esk and the branching valleys of Danby and the Fryups. Ewe Crag Slack was once more examined, its ever-interesting features being carefully studied. Geologists found many curious erratics in the gravel deposit at the lower end of the slack. The party now split in two, the geologists walking to Staithes and the botanists remaining in the slack. It was found that the time was too short to allow of the whole walk being done easily, and in the future, if this excursion is again undertaken, a whole day will have to be devoted to it.

The Y.N.U. meeting at Great Ayton on August Bank Holiday week-end was made the occasion for our sixth excursion. Two of our members, Mr. J. J. Burton and Mr. T. A. Lofthouse acted as leaders to the various parties, but the muster of local members was rather small for such an interesting outing. A full report of this meeting will be found in "The Naturalist" for 1913.

The seventh Summer Meeting was held on Wednesday, 20th August, when a party of about twelve members trained to Levisham, and in fine weather, explored the country between Newton Dale, the Bride Stones, Blakey Topping and Goathland. This ramble was particularly favourable for all sections. The Bride Stones are a picturesque and somewhat weird group of rocks occurring in the moors north of Staindale. They are formed of the Passage Beds, strata lying between the lower horizons of the Middle Oolite and the Corallian limestones above. The great outlier of the Lower Calcareous Grit, Blakey Topping, also attracted much attention. This area is very good for botanists, but I do not know that anything very rare was found.

The last summer meeting was held at Osmotherley on 13th September in fine weather, in fact the Club has been very lucky this year in its atmospheric adventures. A party of ten drove from Trenholm Bar to the picturesque old village, walked to the Chequers Inn, and some of the more energetic spirits even ascended Black Hambleton. Several interesting features were noticed.

Five Winter Meetings have been arranged, one of which is unavoidably held on 4th April.

The first was held in the Dorman Memorial Museum on 29th November. Twenty-one members were present. They had the advantage of hearing Mr. Baker Hudson (whose presence as curator and lecturer was much appreciated), deliver a short address on the Antiquities from the Roman Look-out Station at Huntcliffe, relics presented to the Museum by Messrs. Wm. Hornsby and R. Stanton. The latter gentleman also made some very interesting remarks on his valuable finds which were afterwards handed round for inspection.

Messrs. Harwood and Thompson exhibited fossils and beetles, and members were shown some of the latest additions to the Museum collections.

Mr J. J. Burton, F.G.S., gave a very interesting lecture on "Coast Erosion" on 17th January to a very poor audience. The lecture was illustrated by many fine slides, and is published in the present issue of Proceedings.

The Y.N.U. lecture to the Club and the Lit. and Phil. was delivered on 19th February by Mr. Riley Fortune, F.Z.S., of Harrogate, the subject dealt with being "The Farne Islands and their Bird Life." The lecture was well attended and proved most fascinating to all who had the pleasure of listening to it. It was illustrated by two hundred fine slides of bird life on these rocky marine outliers of the Great Whin Gill. Mr. Fortune dealt with the habits of Gulls, Terns, Puffins, Razorbills, Guillemots, Cormorants and other sea-fowl.

The fourth Winter Meeting was held on 14th March, when we again welcomed Mr. T. J. Cozens, of Stokesley, who gave us one of his interesting nature study lectures on " Wayside Wonders," which was illustrated by some very fine slides. The attendance was over twenty.

MEMBERSHIP. This stands at 100 as compared with 107 last March. During the year seven new members were elected, ten resigned or left the district, and unfortunately, we have had to strike off the names of four members for arrears of subscription under Rule 8.

PROCEEDINGS. Part 1 of Volume III was issued to members in April, and it is proposed to issue another part this summer, papers for which have been gathered together. Workers in various branches of Natural History are

finding our Proceedings exceedingly useful and during the year I have been able to dispose of a complete set and eight separate parts.

COMMITTEE MEETINGS. Two of these have been held on 19th November and 14th March.

At the conclusion of my Annual Report for 1910, I brought forward a few suggestions for increasing the scope and utility of the work of the Field Club. None of these has yet been carried out, and before concluding this report I will again mention them and other suggestions that have occurred to me, and which, in my opinion, would very considerably add to our status.

1. We need a permanent room of our own. It has always been a matter of regret to me that the Museum cannot be our headquarters, as is the case with so many similar societies in other towns, to the mutual benefit of both. The present room has obvious disadvantages, which counterbalance its advantages. If we could even use the Lit. and Phil. room as our home, it would be a distinct advance. Here could be kept the Field Club Library, papers and records. It would be necessary to purchase some pieces of furniture, bookcases, easy chairs, some interesting photographs or pictures of natural objects, etc. Here "The Naturalist" which scarcely any member of the society, except those who subscribe to it, ever sees, could be placed for reading, together with other scientific journals, which, I am sure, would be willingly lent by some of our members, such as the Q.J.G.S., Transactions of the Entomological Society, the Journal of Ecology, etc. Further, the Club ought to subscribe to some of the scientific papers, such as "Nature," "Country Life," "Annals and Magazine of Natural History," etc.
2. If this could be done we could make the Society more of a Club, where it would be possible to spend pleasant winter evenings of an informal character, and where refreshments could be obtained, and by making it more "clubbable," I don't mean that whiskies and sodas can be readily mixed on a fancy sideboard or that billiard tables should be introduced, but that our surroundings should be more comfortable and more refined, so bringing the Society to a higher level and more on a level with other flourishing scientific societies.
3. The Library of the Society should be considerably enlarged to include not only local works but cognate and expensive works that would be of real utility to our members. Many valuable scientific works can be picked up very cheap, and as an instance I may mention that Mortimer's "Forty Years' Researches in East Yorkshire," published at 52s., can now be got for 20s. By judicious purchases, a very useful working library

could be gathered together in a few years' time. Papers of local scientific interest could also be collected.

4. It is an undeniable fact that there is a lack of real workers in this district, but many who are now outside the Society would doubtless join if they found it more useful to them. I merely repeat what I have been told by outsiders, that they do not care to join the Society because it is not of much use to them. Without denying the possibility that some of these may be wanting too much, I think they are partly right. It is our business to make it more useful in the ways I have indicated and the results, I am sure, would be satisfactory.

5. It has been suggested that we should have classes in different subjects. This was tried some years ago but did not prove a great success. The Club is not really a teaching organisation, but an organisation for investigating and enlarging our knowledge of the natural history, geology and archaeology of the district. But if the ideas I have suggested can be carried out, younger members would feel more at home, as the meetings would be rendered more informal and conversational, and a lot of useful information and guidance exchanged. I do not wish to be misunderstood on this point. The Club has done good work in the past and has been of great service to members in many ways. But if we wish to rise to higher levels (and why should we not?) we must face our defects and remedy them. The improvements I have indicated will cost very little. For my own part, I am prepared to do what I can to raise our status if members will consider my proposals, and assist me in bringing them to fruition.

And now in conclusion, the thanks of the Club are due to all those who have entertained us during the past year, to those gentlemen who have delivered lectures and acted as guides at our excursions, and to those landowners who have kindly given us permission to ramble over their estates. I also have to thank those who have assisted me in many ways to carry out my secretarial work.

FRANK ELGEE.

Balance Sheet 31 Dec 1913

INCOME

Balance at Bank	£49	14s	2d
Subscriptions 1913	£19	10s	0
" Arrears	£4	5s	0
Subscriptions 1914		!5s	0
Sale of Proceedings	£1	5s	6d
Bank interest		19s	0
	£76	8s	8d

EXPENDITURE

YNU Subscription & Levy	£1	0	0
Lit & Phil Subscription		10s	6d
Jordison & Co Printing	£5	10s	0
Printing Proceedings	£16	19s	7d
Lecture Expenses	£1	12s	6d
Binding Naturalist		3s	5d
Subscr. to "Moorlands North East Yorkshire"		12s	6d
Hon. Sec. Clerical Assistance		13s	0
Postage	£4	5s	6d
Balance at Bank	£45	1s	8d
Total	£76	8s	8d

H. FRANKLAND *Hon Treasurer*